Construction Monitoring Report No. 2

Sydney Metro West – Western Tunnelling Package

January 2023 to July 2023

ISSUE DATE: NOVEMBER 2023

Document Details

Document Title	**Construction Monitoring Report No. 2**
Project Name	**Sydney Metro West – Western Tunnelling Package**
Client	**Sydney Metro**
GA Project No.	**00013/13065**
Document Reference No.	**SMWSTWTP-GLO-1NL-EN-RPT-000006**
Principal Contractor	**Gamuda Engineering (Australia)**
ABN	**36 636 433 522**
Project Address	**L8, 60 Station Street, Parramatta NSW 2150**

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

TABLE OF CONTENTS

1 INTRODUCTION 4
1.1 Background 4
1.2 Project Description 4
1.3 Project Requirements 6
1.4 Summary of Works 6

2 SUMMARY OF RESULTS 8
2.1 Noise and Vibration 8
2.2 Surface Water Quality Summary 8
2.3 Groundwater Summary 9

ATTACHMENTS 10
Attachment A – Construction Noise and Vibration Monitoring Report 10
Attachment B – Surface Water Quality Monitoring Report 11
Attachment C – Groundwater Monitoring Report 12

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

1 INTRODUCTION

1.1 Background

Sydney Metro West (SMW) is a new underground railway connecting Greater Parramatta and the Sydney CBD. It will provide fast connections between greater Sydney's two major business centres as well as providing better access to the growing business and entertainment precincts in Olympic Park and Pyrmont, the health and medical research hub at Westmead and the future business and tourism site at The Bays.

An Environmental Impact Statement (EIS) (Jacobs/Arcadis, 2020) for the Concept and Stage 1 assessed the surface water quality impacts in response to the Secretary Environmental Assessment Requirements issued by the Department of Planning and Environment (DPE). The Project was approved on 11 March 2021 (SSI 10038).

1.2 Project Description

Sydney Metro is delivering the Sydney Metro West project via several different packages, including the Western Tunnelling Package (WTP, the Project).

The WTP Project locations are from Westmead to Sydney Olympic Park. Figure 1 provides an overview of the WTP Project work sites and locations.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

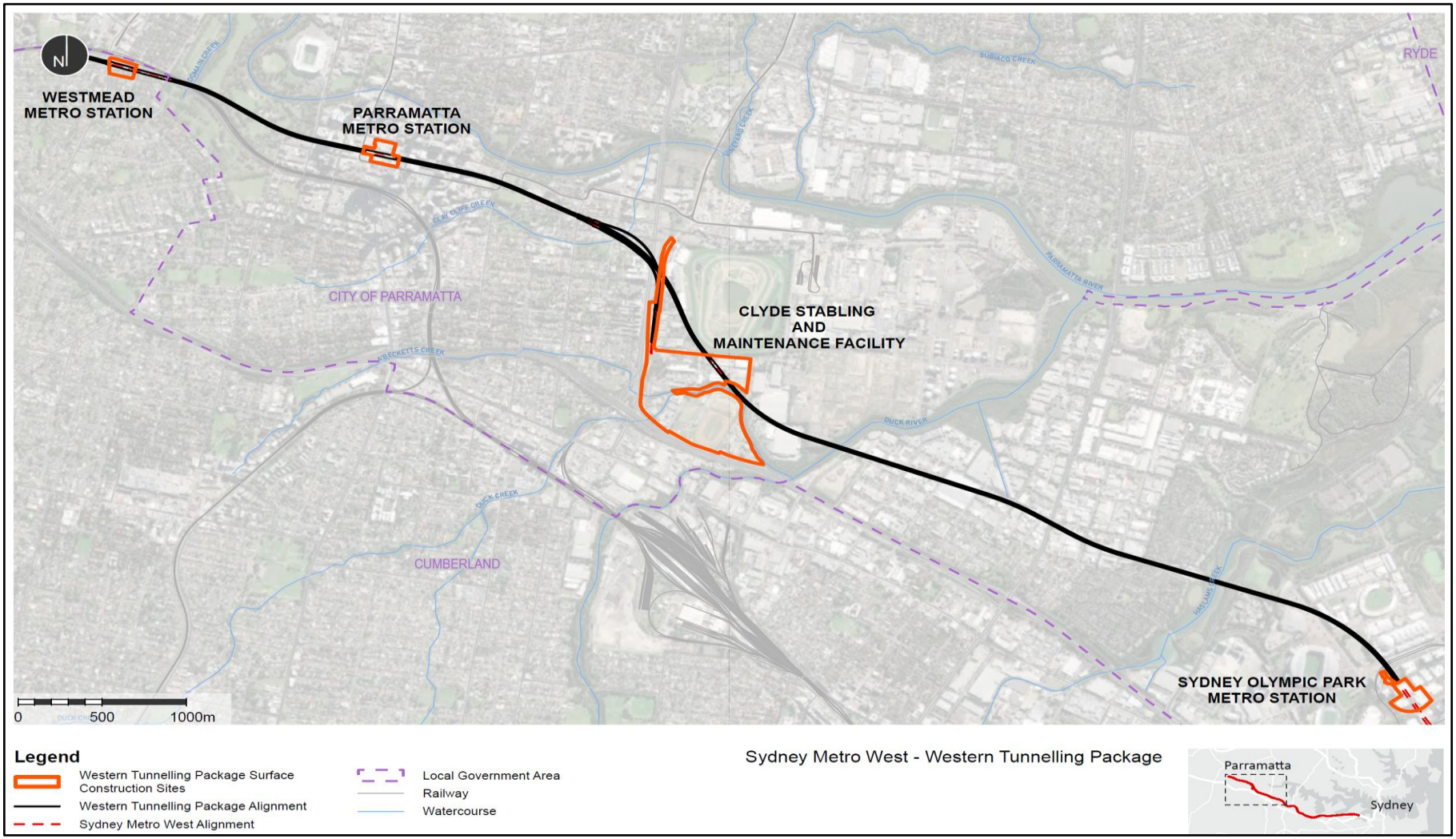


Figure 1 WTP Project Map Overview

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

1.3 Project Requirements

The Construction Monitoring Programs set out the requirement to develop and issue a Construction Monitoring Report (this report), collating noise and vibration, surface water and groundwater monitoring data every six months. This report collates the noise and vibration, surface water and groundwater monitoring undertaken during the reporting period of 19th January 2023 to 19th July 2023.

The Project requirements relevant to the preparation of this Construction Monitoring Report are identified in Table 1. A document reference is also included to indicate where the requirement is addressed in this Monitoring Report or other documents.

Table 1 Monitoring Report Compliance Matrix.

<table>
<tr><th>REFERENCE</th><th>REQUIREMENTS</th><th>DOCUMENT REFERENCE</th></tr>
<tr><td>Condition of Approval C14</td><td>The following Construction Monitoring Programs must be prepared in consultation with the relevant government agencies identified for each to compare actual performance of construction of Stage 1 of the CSSI against the performance predicted in the documents listed in Condition A1 of this schedule or in the CEMP:
<table>
<tr><th></th><th>Required Construction Monitoring Programs</th><th>Relevant government agencies to be consulted for each Construction Monitoring Program</th></tr>
<tr><td>(a)</td><td>Noise and vibration</td><td>EPA, SOPA (in respect of Sydney Olympic Park), Place Management NSW (in respect of The Bays) and Relevant Council(s)</td></tr>
<tr><td>(c)</td><td>Surface Water Quality</td><td>DPE Water, Relevant Council(s) and Sydney Water (if any Sydney Water assets are impacted)</td></tr>
<tr><td>(d)</td><td>Groundwater</td><td>DPE Water and SOPA (in respect of Sydney Olympic Park)</td></tr>
</table></td><td>(a) Section 1.2 of the Noise and Vibration Monitoring Program (SMWSTWTP-GLO-1NL-NV-RPT-000002)
(b) Section 1.3 of the Surface Water Quality Monitoring Program (SMWSTWTP-GLO-1NL-EN-RPT-000009)
(c) Section 1.4 of the Groundwater Monitoring Program (SMWSTWTP-GLO-1NL-EN-RPT-000008).</td></tr>
<tr><td>Condition of Approval C23</td><td>The results of the Construction Monitoring Programs must be submitted to the Planning Secretary, ER and relevant regulatory agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program.</td><td>This document.</td></tr>
</table>

1.4 Summary of Works

The construction activities and associated plant and equipment used at each of the construction sites are outlined in Table 2**.** These activities generally aligned with those observed to be underway on-site during the works during the reporting period:

Table 2 Construction Activities undertaken during the reporting period.

SITE	CONSTRUCTION ACTIVITIES
Westmead	• Site preparatory works • Initial investigation work • Tunnelling Works • Protecting and/or relocating utilities • Establishing site amenities

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

	• General operation of ancillary facilities • Establishing Water Treatment Plant • Establishing concrete slabs or piling platforms • Establishing spoil shed (slab and structure) • Station Box Bored Piling • Station Box Pile Breakback • Box Excavation and Ground Support - Ground Anchors, Shotcrete & Rock Bolts • Mined Tunnel Excavation • Delivery of Equipment & Spoil Haulage • General operation of ancillary facility
Parramatta	• Initial investigation work • Archaeological clearance • Removal and/or relocating utilities • Establishing vehicle access and egress points • General operation of ancillary facilities • Establishing vehicle access and egress points • Establishing concrete slabs or piling platforms and D-Wall Infrastructure • Diaphragm Wall (D-Wall) construction. • General operation of ancillary facilities
Clyde Dive[1]	• Construction site establishment/haul roads • Demolition of former Rosehill Station • Shaft excavation and piling • Establishing concrete slabs/acoustic shed • Bulk earthworks • Haul road FRP and hoarding installation • Decline structure construction (including piling and capping beam formation) • Spur line excavation • General operation of ancillary facilities • Minor utilities relocations • Remediation of contaminated hotspots.
Clyde MSF[1]	• Construction site establishment/demolition of structures • Haul roads and site amenities • Bulk earthworks • Drainage installation & combined services route • Utility trench and services corridor • FRP works, Concrete works and retaining walls • Construction of water conveyance structures • Construction of Unwin Street Diversion – construction • Unwin Street Overpass (Piling, FRP, Earthworks, Heavy Lifting) • General operation of ancillary facility • Utility adjustment works • Remediation of contaminated hotspots • PASS Treatment • Vegetation removal • Utility adjustment works
Rosehill[1]	• Diaphragm wall (D-Wall) construction • Box excavation • FRP concrete work • Delivery of equipment • General operation of ancillary facility

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

	• TBM Construction • Water Treatment Plant construction/commissioning and discharge and .
Sydney Olympic Park	• No works undertaken.

[1] The Clyde Maintenance Stabling Facility consists of three sub-sites, specifically the Clyde Dive, Clyde MSF and Rosehill construction sites.

2 SUMMARY OF RESULTS

2.1 Noise and Vibration

Noise and vibration monitoring between January to July 2023 was undertaken in accordance with the WTP Noise and Vibration Management Plan (NVMP), Noise and Vibration Monitoring Program (NVMoP) and Detailed Noise and Vibration Impact Statement (DNVIS). Attended monitoring was conducted in line with the Project EPL and NVMP.

During the monitoring period, there were a total of 171 attended monitoring sessions recorded. Of these, 84 monitoring events resulted in LAeq above the predicted noise levels (PNL). However, upon further analysis, it was found that heightened ambient noise levels of the surrounding environment were the main cause of these events.

In addition to attended monitoring, unattended noise monitoring was also conducted during the reporting period. However, there were some gaps in the results due to equipment issues, such as breaks in power supply and breakdowns.

Unattended vibration monitoring resulted in 12,197 exceedance triggers. Upon analysis, it was found that all exceedances, except for one, were due to non-work-related activities such as rainfall or human interference.

The one instance where a vibration exceedance was identified was in the context of excavation works at Parramatta. Upon becoming aware of the exceedance of vibration criteria, works were stopped and the excavator responsible for the exceedance removed, until the works methodology and equipment was reviewed and appropriately re-selected.

Where non-construction noise or vibration are not responsible for noise and vibration exceedances, investigations are undertaken to ensure consistency with plant and equipment modelling, and appropriate mitigation measures implemented. Site teams are typically briefed via toolbox talks to ensure awareness of construction methodology and appropriate mitigation measures implimented.

Refer to Attachment A for the Construction Noise and Vibration Monitoring Report January – July 2023 (SMWSTWTP-GLO-1NL-NV-RPT-000002).

2.2 Surface Water Quality Summary

Surface Water Quality Monitoring between January to July 2023 was undertaken in accordance with the WTP Surface Water Quality Monitoring Program (SWQMoP).

During the reporting period, the alignment of the Parramatta discharge line was confirmed to be connected with the Parramatta River below the Charles Street Weir and is situated in the marine

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

environment. Positioning of the Parramatta discharge line made sample points SW04 and SW05 redundant, prompting the establishment of sampling point SW11 downstream.

Monitoring during the reporting period saw samples collected from a total of 11 sampling points across the project, against which chemical and physical properties were assessed (As per the NSW Water Quality Objectives and the Australian and New-Zealand Guidelines 2018). Results obtained from this monitoring period indicated that there has not been a degradation of the surrounding surface water network due to construction. Results are generally consistent with the adopted assessment criteria and pre-construction baseline water quality data.

Refer to Attachment B for the Surface Water Quality Monitoring Report January – July 2023 (SMWSTWTP-GLO-1NL-EN-RPT-000009).

2.3 Groundwater Summary

Groundwater Monitoring for the reporting period of January to July 2023 was undertaken in accordance with the WTP Groundwater Monitoring Program (GMP).

During the reporting period, twelve sampling events occurred at the Rosehill temporary Water Treatment Plant between January and July 2023. Each sampling event consisted of a pre-treatment and post-treatment sample, which were assessed against the discharge criteria stipulated in the Project EPL (21676). Of the 12 sampling events undertaken during the reporting period, three were non-compliant due to exceedances of hexavalent chromium, zinc, ammonia, and nitrogen. The non-compliant treated water was collected in tanks for disposal offsite or re-treated at the permanent Rosehill Water Treatment Plant.

The groundwater monitoring network constantly changes due works associated with delivering the WTP. Several groundwater monitoring wells (GWMW's) from the July 2022 baseline monitoring period for example, were inaccessible and/or destroyed. Alternative GWMWs installed as part of the Detailed Site Investigations were used as replacement GWMWs. Groundwater quality sampling was undertaken by suitably qualified personnel, in accordance with AS/NZS 5667.11:1998 and samples sent to NATA accredited laboratories for analysis of selected Chemicals of Potential Concern (CoPC).

The following results for groundwater drawdown were concluded:

- Groundwater drawdown observed at GWMWs SMW_ADD_BH02, SMW_ENV042 and SMW_BH057 does not indicate potential drawdown trigger level exceedances.

The following groundwater quality observations were made:

- Copper at SMW_ENV039 ammonia at SMW_ADD_BH02 have increased to more than 2x their respective baseline values during the April 2023 monitoring event.
- At SMW_ENV224, CZ6_MW05 and PM_BH14 GWMW’s, Phosphorous, Nitrogen and Copper respectively, have shown exceedances of adopted criteria, where this was not previously identified in baseline data.

The results from the July 2023 monitoring event will continue to be monitored to determine if there are any exceedances against the performance criteria, and the findings reported in the next biannual Groundwater Monitoring Report.

Refer to Attachment C for the Groundwater Monitoring Report January – July 2023 (SMWSTWTP-GLO-1NL-EN-RPT-000008).

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

ATTACHMENTS

Attachment A – Construction Noise and Vibration Monitoring Report

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Construction Noise and Vibration Monitoring Report

Sydney Metro West – Western Tunnelling Package

January 2023 to July 2023

ISSUE DATE: 24 OCTOBER 2023

Document Details

Document Title	**Noise and Vibration Monitoring Report**
Project Name	**Sydney Metro West – Western Tunnelling Package**
Client	**Sydney Metro**
GA Project No.	**00013/13065**
Document Reference No.	**SMWSTWTP-GLO-1NL-NV-RPT-000002**
Principal Contractor	**Gamuda Engineering (Australia)**
ABN	**36 636 433 522**
Project Address	**L8, 60 Station Street, Parramatta NSW 2150**

Document Authorisation

Revision	Date	Description of changes	Prepared by	Reviewed by
Rev A	28/08/23	First Draft	Scott Thomson	Candice Somerville. Stephanie Mifsud
Rev B	5/10/23	Reviewed to address the Sydney Metro, the ER and the AA's comments	Scott Thomson	Candice Somerville, Stephanie Mifsud
Rev C	24/10/2023	Reviewed to address AA's comments	Scott Thomson	Candice Somerville, Stephanie Mifsud

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Terms and Definitions

Term	Definition
AA	Acoustic Advisor
AS	Australian Standard
CEMF	Construction Environmental Management Framework
NVMoP	Construction Noise and Vibration Monitoring Program
NVMP	Construction Noise and Vibration Management Plan
CNVS	Sydney Metro Construction Noise and Vibration Standard
dBA	Decibel (A-weighted)
DNVIS	Detailed Noise and Vibration Impact Statement
DPE	Department of Planning and Environment (NSW)
DSI	Detailed Site Investigation
EIS	Environmental Impact Statement
EPL	Environmental Protection Licence
ER	Environmental Representative
GLC	Gamuda Laing O'Rourke Consortium
ICNG	Interim Construction Noise Guideline
MCoA	Minister's Conditions of Approval
MSF	Maintenance and Stabling Facility
NCA	Noise Catchment Area
NML	Noise Management Level
OOHW	Out Of Hours Work
PNL	Predicted Noise Level
PPV	Peak Particle Velocity
RBL	Rated Background Noise Level
REMMs	Revised Environmental Mitigation Measures
SMW	Sydney Metro West
SSI	State Significant Infrastructure
SWL	Sound Power Level
WTP	Sydney Metro West Western Tunnelling Package Works

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

TABLE OF CONTENTS

1 INTRODUCTION 5
1.1 Project Description 5
1.2 Project Requirements 6
1.3 Endorsement and Publication 8

2 DESCRIPTION OF WORKS 9
2.1 Summary of works 9
2.2 Noise Management Objectives 11

3 MONITORING METHODOLOGY 12
3.1 Overview 12
3.2 Monitoring Equipment 13
3.3 Monitoring Locations 13

4 RESULTS 14
4.1 Noise Monitoring 14
4.2 Ground borne Noise Monitoring 14
4.3 Vibration Monitoring 14
4.4 Complaints Monitoring 15

5 CONCLUSION 16

APPENDICES 17
Attachment 1 – Monitoring Locations 17
Attachment 2 – Noise Monitoring Summary 21
Attachment 3 – Real Time Monitoring Summary 32
Attachment 4 –Vibration Monitoring Summary 36
Attachment 5 –Calibration Certificates 37

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

1 INTRODUCTION

1.1 Project Description

Sydney Metro West (SMW) is a new underground railway connecting Greater Parramatta and the Sydney CBD. It will provide fast connections between greater Sydney's two major business centres as well as providing better access to the growing business and entertainment precincts in Olympic Park and Pyrmont, the health and medical research hub at Westmead and the future business and tourism site at The Bays.

An Environmental Impact Statement (EIS) (Jacobs/Arcadis, 2020) for the Concept and Stage 1 assessed the surface water quality impacts in response to the Secretary Environmental Assessment Requirements issued by the Department of Planning and Environment (DPE). The Project was approved on 11 March 2021 (SSI 10038).

Sydney Metro is delivering the Sydney Metro West project via several different packages, including the Western Tunnelling Package (WTP, the Project). Figure 1 is an overview map outlining the extent of the Project.

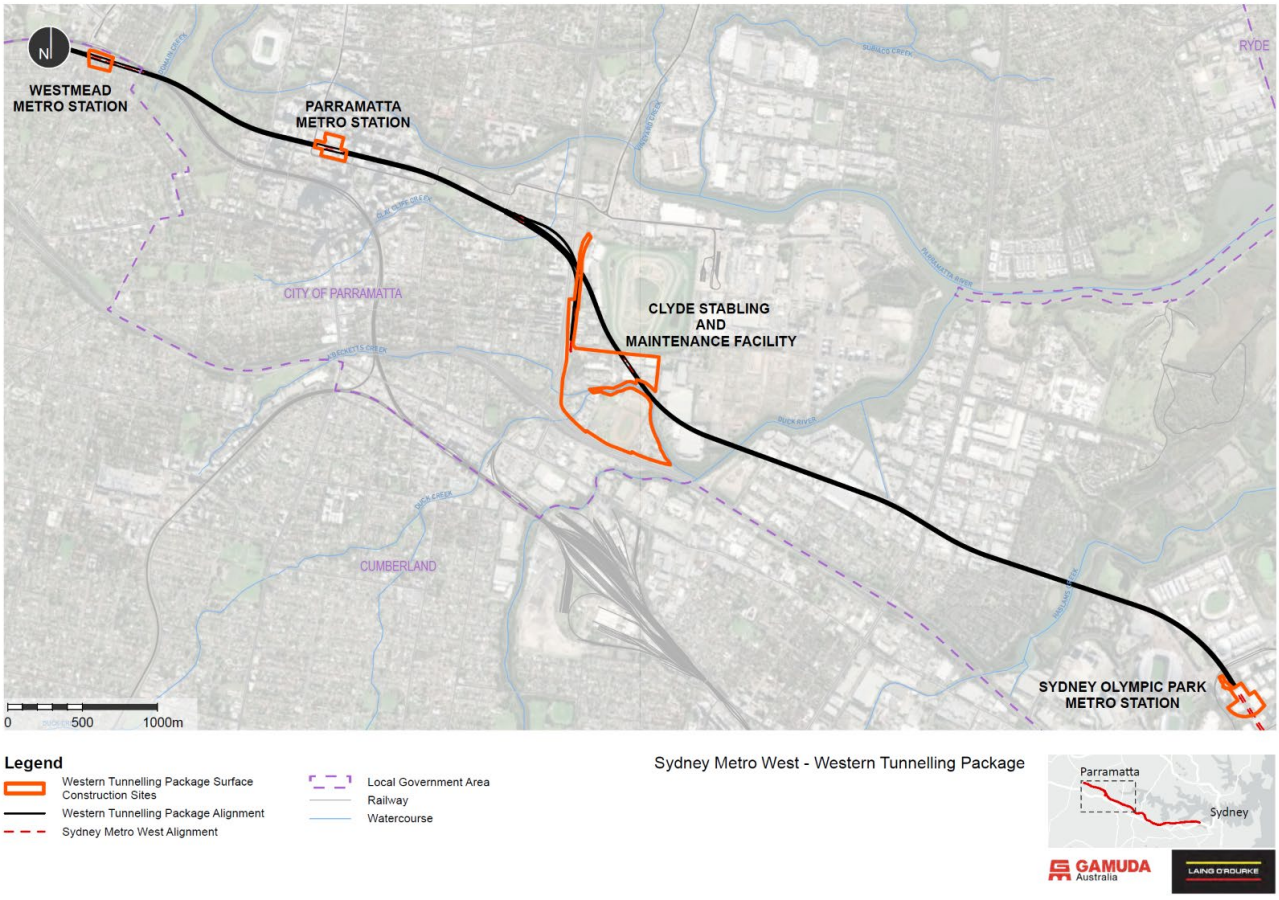


Figure 1 WTP Project Map Overview

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

1.2 Project Requirements

The Noise and Vibration Monitoring Program (NVMoP) sets out the requirement to develop and issue a Construction Noise and Vibration Monitoring Report (this report), collating construction noise and vibration monitoring data. This report collates noise and vibration monitoring undertaken during the second six months of construction, from 19th January 2023 to 19th July 2023.

The Project requirements relevant to the preparation of this Monitoring Report are identified in Table 1. A document reference is also included to indicate where the requirement is addressed in this Monitoring Report or other documents. Additional monitoring requirements are outlined in the NVMoP and construction noise and vibration project requirements are outlined in the Construction Noise and Vibration Management Plan (NVMP).

Table 1 Monitoring Report Compliance Matrix

Reference	Requirement	Document Reference
Condition of Approval C23	The results of the Construction Monitoring Programs must be submitted to the Planning Secretary, ER and relevant regulatory agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program.	This document

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Reference	Requirement	Document Reference
CEMF 8.2	c. Noise and vibration monitoring would be undertaken for construction as specified in the CNVS. d. The following compliance records would be kept by Principal Contractors: i. Records of noise and vibration monitoring results against appropriate NMLs and vibration criteria	This report collates records of noise and vibration monitoring results against appropriate NMLs and vibration criteria, refer Appendices A-C.
REMM NV20	Undertake consultation with the Rosehill Gardens Racecourse and an equine veterinary expert to inform construction noise and vibration objectives for this sensitive receiver. Achievement of objectives are to be demonstrated in accordance with Noise and Vibration Construction Monitoring Program required by Conditions C15 and C16 and would include reference to equine behavioural responses where feasible.	Following completion of the Equine Study, there was no change to Noise Objectives. Data included at Appendices A-C includes monitoring results in accordance with the NVMoP.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Reference	Requirement	Document Reference
CNVS 6.2	**Noise Monitoring** • Noise monitoring where noise goals predicted to be exceeded • All noise monitoring results would be assessed against the nominated noise goals and compiled into a report to be forwarded to the construction contractor and project manager. • Reporting would be submitted to the construction contractor and project manager within one week of being undertaken or at weekly intervals for continuous monitoring. • All noise monitoring reports would also be made available to the public through a publicly accessible website.	This report includes tabulated monitoring data collected during the reporting period (Section 4.1 of this report). This monitoring report would be made publicly available on the GLC WTP website.
CNVS 6.3	**Vibration Monitoring** • Vibration monitoring where exceedance of cosmetic damage criteria expected, or where human response exceedance is expected and where concerns raised. • All vibration monitoring results would be assessed against the nominated vibration goals and compiled into a report to be forwarded to the construction contractor and project manager. • Reporting would be submitted to the construction contractor and project manager within one week of being undertaken or at weekly intervals for continuous monitoring. • All vibration monitoring reports would also be made available to the public through the publicly accessible website.	This report includes tabulated monitoring data collected during the reporting period (Section 4.2 of this report). This monitoring report would be made publicly available on the GLC WTP website.
NVMoP	GLC data summary reports presenting tabulated monitoring data collected during the reporting period and highlighting performance criteria exceedances. Applicable management responses will be documented.	This report
NVMoP	The six-monthly monitoring reports will be provided to the relevant authorities within 40 business days of the monitoring period ending.	Section 1.3

1.3 Endorsement and Publication

In accordance with the NVMoP, this Construction Monitoring Report has been provided to the independent Acoustics Advisor (AA) and independent Environment Representative (ER) for review and endorsement sought from the AA. Following endorsement, this report will be issued to the DPE and relevant regulatory authorities for information.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

In line with MCoA B11(e), a copy of the Construction Monitoring Report will be published on the project website within a week following submission to DPE.

2 DESCRIPTION OF WORKS

2.1 Summary of works

The construction activities, and associated plant and equipment used at each of the construction sites, are outlined in Table 2**.** Construction activities are derived from the modelled work scenarios from the Western Tunnelling Package Detailed Noise and Vibration Impact Statement (DNVIS). These activities generally aligned with those observed to be underway on site during the works during the reporting period:

Table 2 Construction Activities undertaken during the reporting period

SITE	CONSTRUCTION ACTIVTIES	EQUIPMENT LIST
Westmead	• Site preparatory works (WM.01) • Initial investigation work (WM.02) • Protecting and/or relocating utilities (WM.04) • Establishing site amenities (WM.05) • Establishing Water Treatment Plant (WTP) (WM.06) • Establishing concrete slabs or piling platforms (WM.08) • Establishing spoil shed (slab) (WM.09) • Establishing spoil shed (structure) (WM.10) • Station Box Bored Piling (WM.11) • Station Box Pile Breakback (WM.12) • Box Excavation Ground Support – Ground Anchors, Shotcrete & Rock Bolts (WM.14) • Box Excavation (from surface) (WM.16a) • Box Excavation (with Hydraulic Hammers) (WM.16b) • Box Excavation (fully enclosed) (WM.17a) • Mined Tunnel Excavation (WM.18) • Delivery of Equipment & Spoil Haulage (WM.19) • General operation of ancillary facility (WM.21)	Plant and equipment consistent with modelling list of the WTP DNVIS (**Attachment 2 of DNVIS)**
Parramatta	• Initial investigation work (PM.02) • Archaeological clearance (PM.03) • Removal and/or relocating utilities (PM.04) • Establishing vehicle access and egress points (PM.07) • Establishing concrete slabs or piling platforms and D-Wall Infrastructure – Approved Hours (PM.08a) • D-Wall Infrastructure – OOHW 1 (PM.08b) • Station Box D-Wall – Approved Hours (PM.09a) • Station Box D-Wall – OOHW 2 (PM.09c)	Plant and equipment consistent with modelling list of the WTP DNVIS (**Attachment 2 of DNVIS)**

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

SITE	CONSTRUCTION ACTIVTIES	EQUIPMENT LIST
	• General operation of ancillary facilities (PM.18)	
Clyde Dive[1]	• Construction site establishment/haul roads (CD.01a) • Demolition of former Rosehill station (CD.01b) • Shaft excavation and piling (CD.04) • Establishing concrete slabs/acoustic shed (CD.05) • Bulk earthworks (CD.06) • Haul road FRP and hoarding installation (CD.07) • Decline structure construction (Piling) (CD.08a) • Decline structure construction (capping beam – 50% overlap with piling) (CD.08b) • Decline structure construction (10% overlap with capping beam) (CD.08c) • Spur line excavation (CD.09) • General operation of ancillary facilities (CD.14)	Plant and equipment consistent with modelling list of the WTP DNVIS (**Attachment 2 of DNVIS)**
Clyde MSF[1]	• Construction site establishment/demolition of structures (MSF.01a) • Haul roads and site amenities (MSF.02) • Earthworks (MSF.03) • Drainage installation & combined services route (MSF.04) • Utility trench and services corridor (MSF.05) • FRP works, Concrete works and retaining walls (MSF.06) • Water conveyance structure – construction (MSF.07a) • Unwin Street Diversion – construction (MSF.09) • Unwin Street Overpass (Piling, FRP, Earthworks, Heavy Lifting) (MSF.12a) • General operation of ancillary facility (MSF.13) • Utility adjustment works (MSF.14)	Plant and equipment consistent with modelling list of the WTP DNVIS (**Attachment 2 of DNVIS)**
Rosehill[1]	• Diaphragm wall (D-Wall) construction (RH.16a) • Diaphragm wall (D-Wall) construction (RH.16b) • Box excavation (RH.17) • Box excavation (RH.18) • FRP concrete work (RH.19) • Delivery of equipment (RH.20) • General operation of ancillary facility (RH.22)	Plant and equipment consistent with modelling list of the WTP DNVIS (**Attachment 2 of DNVIS)**
Sydney Olympic Park	• No works undertaken	Not Applicable

[1] The Clyde Maintenance Stabling Facility consists of three sub-sites, specifically the Clyde Dive, Clyde MSF and Rosehill construction sites.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

2.2 Noise Management Objectives

The existing noise environment was quantified (via measurement) at representative Noise Catchment Areas (NCAs) surrounding the Project site during preparation of the Environmental Impact Statement (EIS). A summary of the measured ambient and background noise levels (RBLs) are presented in Table 3 below.

Baseline data from the EIS has been reviewed and is representative of ambient noise in the Project area. No further baseline monitoring was undertaken prior to commencement of construction of the WTP.

Table 3 Summary of Project Noise Management Levels

LOCATION ID	NCA	RECEIVER TYPE	NOISE MANAGEMENT LEVEL (dBA)				SLEEP DISTURBANCE SCREENING LEVEL (dBA)
			Approved Construction Hours (RBL +10dB)	Out of Hours (RBL +5dB)			
			DAY	DAY[1]	EVENING	NIGHT	NIGHT
B.02	NCA01	Residential	58	53	51	46	56
B.01	NCA02	Residential	59	54	52	42	52
B.03	NCA03	Residential	68	63	58	48	58
B.04	NCA04	Residential	61	56	53	46	56
B.05	NCA05	Residential	60	55	54	50	60
B.06	NCA06	Residential	62	57	56	49	59
B.07	NCA07	Residential	56	51	49	46	56
B.08	NCA08	Residential	58	53	53	51	61
B.09	NCA09	Residential	58	53	51	46	56

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

3 MONITORING METHODOLOGY

The monitoring methodology is outlined in the NVMoP. The methodology has been developed in accordance with the NVMP, NVMoP, DNVIS and policy, guidelines, and standards as listed below:

- *Interim Construction Noise Guideline* (ICNG) (DECC, 2009)
- *Sydney Metro Construction Noise and Vibration Standard* (Sydney Metro CNVS) (Sydney Metro, 2020).

A summary of the noise and vibration monitoring methodology is provided below.

3.1 Overview

The Construction Monitoring Program outlines the monitoring methodology. Modelling includes but is not limited to monitoring under the following circumstances:

- Commencement of works and at regular intervals throughout works.
- Where it has been identified that activities may exceed relevant noise and vibration goals
- In consideration of a complaint received
- During approved Out Of Hours Work (OOHW) activities
- As identified by additional mitigation measures
- Where ground-born noise or vibration generating activities are undertaken within safe working distances, and
- Vibration monitoring at sensitive buildings or structures.

3.1.1 Noise Monitoring

The noise measurement procedures employed throughout the monitoring were established in accordance with the requirements of *Australian Standard (AS) 1055:2018 Acoustics - Description and Measurement of Environmental Noise*. Attended noise measurements were conducted by an operator using a calibrated handheld Type 1 'integrating averaging' sound level meter. All measurements were completed with the sound level meter mounted to a tripod and with a windscreen fitted, at a height of 1.2 to 1.5 metres above the ground.

Instantaneous noise levels for all noted noise emission sources (extraneous or otherwise), meteorological conditions (average and maximum wind speeds, temperature, precipitation, and cloud cover etc.) were recorded during all measurements. Relevant measurement parameters (i.e. Leq, Lmin, Lmax, L10 and L90) were recorded in dBA. All noise samples were recorded using the "fast" time response of the sound level meter.

Noise monitoring was not completed within 3.5 metres of any reflective structure or wall, unless behind a barrier. A reduction of up to 2.5 dBA was not applied to the measured ambient or site noise contribution (Leq, 15 minute in dBA) as the barrier was reducing noise emissions from site and in general did not increase noise due to the reflective properties of the surface.

Noise monitoring was undertaken to avoid periods of heavy rain and wind speeds exceeding 5 m/s at the microphone. Any noise monitoring data impacted by extraneous weather conditions has been excluded from the report.

3.1.2 Ground borne Noise Monitoring

No Ground borne noise monitoring was undertaken during this reporting period.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

3.1.3 Vibration Monitoring

All vibration monitoring results were assessed and reported against the acceptable values of human exposure and structural/cosmetic damage outlined in the Sydney Metro CNVS the NVMP.

Unattended vibration monitoring was undertaken with due regard to and in accordance with the requirements of the Sydney Metro CNVS and ICNG using a calibrated vibration logger.

The monitoring device was placed (fixed to the structure or embedded in the ground nearby the structure) at the potentially most affected receiver/s or structure/s prior to works commencing.

The device was set to continuously record vibration levels (PPV data in mm/s) at sample intervals (e.g. 5 second, 15 second or 1 minute) appropriate to the activity.

3.1.4 Sound Power Level Monitoring

Plant and equipment Sound Power Level (SWL) spot checks were undertaken during the reporting period. During the reporting period no equipment was suspected of having an exceedance and therefore no audit was conducted

3.2 Monitoring Equipment

All noise and vibration measurements were conducted by suitably experienced and qualified personnel with due regard to, and in accordance with, the relevant local and international standards for environmental monitoring.

Noise and Vibration equipment was calibrated and checked to the manufacturer's specification, with certification at intervals not exceeding 2 years at the time of use. Calibration certificates can be found in attachment 5.

The equipment used for monitoring are as follows:

- Site Hive Hexanode Multi (real time noise monitor)
- Rion NL-52 handheld noise monitor
- Omnidots SWARM V2.2cw vibration monitor.

3.3 Monitoring Locations

Generally, noise monitoring was carried out at the most sensitive receivers and as prescribed in the DNVIS. GLC has determined the most appropriate monitoring locations based on construction activities, community feedback and location of OOHW activities. Maps outlining the monitoring locations for the reporting period can be found in Attachment 1.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

4 RESULTS

4.1 Noise Monitoring

During the reporting period a total of 171 attended monitoring sessions were recorded. A total of 143 monitoring sessions were identified to be above the noise management levels (NML).

Of the 143 monitoring sessions identified to be above the NML, 84 sessions resulted LAeq above the predicted noise levels (PNL), however most of those were attributed to high ambient noise levels. One session was identified to have noise generated by construction activities exceeding PNL. This monitoring session occurred during instrumentation and measurement equipment installation adjacent to the Westmead construction site. During this monitoring session, mitigation measures were reviewed and additional mitigation measures put in place. Works were stopped and noise blankets were erected around the works before recommencing.

Refer to Attachment 2 for all attended noise monitoring results, obtained within the reporting period.

During the reporting period, unattended noise monitoring was also undertaken, and a summary of results have been included at Attachment 3. Note gaps in the unattended noise monitoring results were due to equipment issues such as breaks in power supply and breakdowns.

4.2 Ground borne Noise Monitoring

No ground borne noise monitoring was undertaken during the reporting period

4.3 Vibration Monitoring

All vibration monitoring sessions during the reporting period were undertaken using real-time monitors that were located according to relevant site-specific activities. The monitors were generally located on the boundary of the nearest sensitive receiver, closest to the activity, however one vibration monitor was set up within the property of a residential receiver adjacent to the Westmead construction site.

During the reporting period unattended vibration monitoring was undertaken. A total of 12,197 exceedance triggers were received. All exceedances were analysed to determine the likely source of vibration and all but one exceedance was due to non-work related activities such as rainfall or human interference. The results of these exceedances can be found in **Attachment 4.**

The works related exceedance occurred at the Parramatta construction site where an excavator was constructing the guide wall. Upon notification of the exceedance of the trigger, works were stopped, and the excavator was tracked away from the area. The activity was stopped, equipment reviewed and given the size of the area being compacted, a handheld shovel was used instead.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

4.4 Complaints Monitoring

During the reporting period 4 monitoring sessions occurred as the result of a community complaint as required by the NVMoP. Attended monitoring results showed 4 sessions were compliant with implemented mitigation measures.

4.4.1 Complaints

Community complaint (4419) was received on the morning of 28/02/2023 via the community hotline. The complaint regarded noise from high voltage cable pulling works on the 07/03/2023 at Westmead construction site. Attended noise monitoring conducted on the 07/03/2023 showed works to be compliant with predicted levels and mitigation measures implemented. A works update was provided to the resident at the time of the complaint advising them the works were now completed.

Community complaint (4563) was received on the morning of the 28/03/2023 via the community hotline. The complaint regarded metal rolling sounds related to work activities on the 27/03/2023 at Westmead construction site. Attended noise monitoring conducted on the 27/03/2023 showed works to be compliant with predicted levels and mitigation measures implemented. A works update was provided to the resident at the time of the complaint advising them the works were now completed.

Community complaint (4809) was received in the afternoon of the 27/06/2023 via the community hotline. The complaint regarded noise from general work activities on the 27/06/2023 at Westmead construction site. Attended noise monitoring conducted on the 27/06/2023 showed works to be compliant with predicted levels and mitigation measures implemented. Further noise monitoring was offered to the resident at their property – they declined the offer.

Community complaint (4817) was received in the afternoon of 30/06/2023 via the community hotline. The complaint regarded noise from I&M drilling at the Westmead construction site during standard construction hours. Attended monitoring results showed noise levels were higher than predicted noise levels. As such, additional mitigation measures were installed. Further noise monitoring was offered to the resident at their property – they declined the offer.

Noise monitoring session results can be found in Attachment 2.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

5 CONCLUSION

Noise and vibration monitoring undertaken on the WTP Project during the reporting period of 19 January 2023 to 19 July 2023 was in accordance with the NVMP and NVMoP. Attended monitoring was conducted in line with the Project EPL, NVMP and NVMoP.

Generally, where attended noise monitoring events resulted in LAeq above the modelled noise limits, it was due to heightened ambient noise levels of the surrounding environment. One event resulted in construction generated noise levels above the PNL on the 30 June 2023 at Westmead during Instrument and Measurement equipment installation.

Construction activities were responsible for one vibration exceedance during the reporting period.

Noise and vibration monitoring will continue in accordance with the Project NVMP, NVMoP and DNVIS.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

APPENDICES

Attachment 1 – Monitoring Locations

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY



WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY



WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY



WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Attachment 2 – Noise Monitoring Summary

Table 2.1 – Results of attended noise monitoring where monitoring results were considered to be above NML and PNL

Date	Time (hh:mm)	Site	Monitoring Location	Construction Activity	Modelled Prediction (PNL) L_{Aeq}	Noise Management Level (NML) L_{Aeq}	Measured 15-minute Noise Levels – dBA				Notes
							L_{Amin}	L90	L_{Aeq}	L_{max}	
30/01/2023	9:10:00 PM	Westmead	NCA02 - 10 Hassall St Westmead	CCTV sewer relocation works	52	52	43	44	54	68	Construction Inaudible, not visible, traffic along Hassall and Alexandria st were loudest and dominated the monitoring session. Works align with mitigation measures.
6/02/2023	8:45:00 PM	Westmead	14 Alexandra Ave, Westmead	Potable Water - Saw Cutting	63	52	48.6	56.9	64.5	79.1	Distance of works to monitor 67m. Main source of noise was vehicle traffic on Alexandra and Hassall Street and train movements stopping and leaving Westmead station. Works only audible during breaks in traffic (59-62dB). Noise blankets installed as per OOHW mitigation measures. result: works compliant
30/06/2023	3:10:00 PM	Westmead	NCA02 - 10-12 Hassall Street Westmead	Drill rig running to complete I&M Installations on Hassall Street (WM.02)	70.8	54	83	84	84.7	86	Drill rig consistently working, cannot hear any other works or activities.

Table 2.2 – Results of attended noise monitoring where monitoring results were above NML but below PNL

Date	Time (hh:mm)	Site	Monitoring Location	Construction Activity	Modelled Prediction (PNL) L_{Aeq}	Noise Management Level (NML) L_{Aeq}	Measured 15-minute Noise Levels – dBA				Notes
							L_{min}	L90	L_{Aeq}	L_{max}	
23/01/2023	8:28:00 PM	Westmead	NCA02 - 10 Hassall St Westmead	HV Works - Section 1 Stage 4	76	52	57	63.4	71	84	Distance of source to monitor: 10m Distance of source to receiver:15m. Works main source of noise during monitoring (68-71dB). Other sources of noise present and contributing to monitoring levels: local traffic (60-75dB) train (73dB). Result: works compliant with modelling and mitigation measures implemented.
23/01/2023	10:07:00 PM	Westmead	NCA03 - 156-152 Hawkesbury Rd Westmead	I&M Installation stage 2 - Drilling	72	42	45.1	49.4	65.6	92.4	Distance of source to monitor 40m. Distance of source to receiver: 48m. Main source of noise: traffic on Hawksbury Road (53-68dB). Works only audible during breaks in traffic (48-49dB) work area encased in noise blankets. No works before 10:00pm as waiting for equipment. Result: compliant with modelling and mitigation measures implemented.
23/01/2023	10:40:00 PM	Westmead	NCA02 - 6 Alexandra Avenue, Westmead	HV works Section 1 - Stage 4	76	42	57.1	63.4	71.3	83.6	Distance of source to monitor: 7m Distance of source to receiver:10m. Works main source of noise during monitoring (67-73dB). Other sources of noise present and contributing to monitoring levels: local & freight trains (69-73dB). Result: works compliant with modelling and mitigation measures implemented.
31/01/2023	9:26:00 PM	Clyde Dive	NCA 04 - 120 James Ruse Drive	Drilling in acoustic shed	53	53	55	63	73	88	Only one moment of the monitoring session recorded work activities at 55db, throughout the rest of the monitoring session traffic dominated. Works concluded to be below evening NML
31/01/2023	10:40:00 PM	Clyde Dive	NCA 04 - 120 James Ruse Drive	Drilling/EWP	46	46	57	60	74	86	Works were not audible, drilling was occurring, EWP was audible initially before starting monitoring, James Ruse Drive (JRD) dominated throughout the monitoring session. Works under PNL.
31/01/2023	10:18:00 PM	Parramatta	NCA03 - 14 Pitt St, Parramaa	Section 5 - Sawcutter	70	48	43	46	59	71	Noise attenuation set up around sawcutting activities. Works were not visible from monitoring location. Works were measured under PNL. Sawcutting did not exceed 60db
1/02/2023	7:45:00 PM	Clyde Dive	NCA 04 - 120 James Ruse Drive	Excavation works at Clyde Dive Shaft	55	53	-	62	73	85	Works were not audible due to JRD traffic, noise as predicted for evening period.
1/02/2023	10:46:00 PM	Clyde Dive	NCA 04 - 120 James Ruse Drive	Excavation in shaft	46	46	56	58	71	79	JRD traffic dominated throughout the entirety. Limited breaks in traffic. 58db was contributed by the lighting tower generator. Solar power generator swapped out. traffic dominated and works were compliant.
1/02/2023	10:01:00 PM	Parramatta	NCA03 - Macquarie St, Parramatta	Sawcutting and vac truck Section 6	70	48	61	70	72	79	Vac truck was not audible throughout the entire noise monitoring session. Sawcutting was loudest point of works however traffic interfered and increased the noise levels. Sawcutting works were completed quickly. Results under PNL.

Date	Time (hh:mm)	Site	Monitoring Location	Construction Activity	Modelled Prediction (PNL) L_{Aeq}	Noise Management Level (NML) L_{Aeq}	Measured 15-minute Noise Levels – dBA				Notes
							L_{min}	L90	L_{Aeq}	L_{max}	
1/02/2023	10:19:00 PM	Parramatta	NCA03 - 4 Pitt Street, Parramatta	Excavation and vac truck	77	48	65	66	72	89	Noise due to works were below PNL. Noise blankets were set up around works on resident side. Workers were being quiet, as required, next to sensitive receivers
2/02/2023	7:51:00 PM	Clyde Dive	NCA 04 - 120 James Ruse Drive	New Drill Rig in acoustic shed shaft	55	53	56	65	73	85	Works were not audible. JRD traffic dominated. Compliant and under PNL.
2/02/2023	10:02:00 PM	Parramatta	NCA03 - 4 Pitt Street, Parramatta	Cable Pulling and Vacuum Truck	70	48	60	66	69	78	Vac truck was only audible throughout the entirety of the monitoring session, excavator 14 tonner not audible. Compliant
2/02/2023	10:31:00 PM	Parramatta	NCA03 - 4 Pitt Street, Parramatta	Cable Pulling on Macquarie st Section 6 HV	67	48	49	51	64	85	Works were not audible, quiet most of times, traffic dominated and caused spikes in noise monitoring. Works were compliant.
2/02/2023	10:45:00 AM	Westmead	NCA03 – Hassell Street & Alexandria	Pile breakback - Jackhammering	70	54	54.7	60.2	67.2	84.1	Distance of source from monitor: 33m Monitoring location on Hassall Street and Alexandra. Heavy flow of traffic of vehicle and trains. Activity was audible for a short period. Other construction activities were taking place, movement of spoil material and piling works. Results below PNL.
4/02/2023	9:27:00 AM	Parramatta	NCA03 169 Macquarie St, Parramatta	Macquarie Lane Quickway Works	58	55	57	57	62	76	Works were not audible, echoes occasionally heard from behind the EY building. Traffic was loudest on Smith Street. Compliant. LAeq was higher than NML, due to traffic.
6/02/2023	11:22:00 AM	Parramatta	NCA03 -146 Marsden St, Parramatta	Sawcutting MW34 on Marsden St, DSI	75	63	54	58	74	90	Works were audible however good attenuation was set up around works. 76-79db was recorded from the roadsaw. Results were below PNL. Works compliant
6/02/2023	10:20:00 PM	Parramatta	NCA03 330 Church Street, Parramatta	-	54	48	51.5	53.8	59.7	83.7	Monitoring conducted 239m away from source location. Main source of noise was from the restaurant - people talking and music. Construction works inaudible from monitoring location. result: compliant
7/02/2023	9:16:00 AM	Parramatta	NCA03 -146 Marsden St, Parramatta	Drilling DSI works	75	63	71	90	74	83	Works were compliant and had adequate noise attenuation set up. Drilling remained consistent at around 72-74db. Occasional metal tapping occurred to retrieve sample materials. result: compliant with modelling and mitigation measures implemented
7/02/2023	12:24:00 AM	Westmead	NCA-2 13-17 Bailey Street	HV - Cable Pulling	76	42	53.7	60.4	70.6	86.7	Monitoring conducted 17m away from source location. Main source of noise was the vac truck (60-67) during HV cable pulling. Occasional vehicle traffic and train movements from Westmead station during time of monitoring. Works compliant
7/02/2023	10:15:00 PM	Westmead	NCA-03 74 Great Western Highway	Pitt Street Fencing - Stage: Fence Installation	97	42	45.4	54	59.2	76.1	Monitoring conducted 5m away from source. Site works adjacent to main road Great Western Highway and Pitt Street. Main source of noise was from vehicles and buses. Noise mats installed whilst vac truck in operation. result: compliant
8/02/2023	9:12:00 PM	Westmead	NCA03 - 14 Pitt Street, Parramatta	HV Works - Section 5 - Cable Pulling	52	52	43.9	50.2	61.9	84.4	Monitoring distance 120m away from source. Monitoring conducted on main road (Pitt Street). Works audible only when there are breaks in between traffic. Main source of noise was from vehicles passing by. works compliant
8/02/2023	11:20:00 PM	Westmead	NCA02 21-23 Railway Parade, Westmead	HV - Cable Pulling - Vac truck	76	42	41.7	45.6	58.8	76.3	works compliant with modelling and mitigation measures implemented
8/02/2023	11:23:00 PM	Westmead	NCA03 - 14 Pitt Street, Parramatta	-	52	42	42.1	48.1	58.5	77.7	Monitoring distance 120m away from source. Monitoring conducted on main road (Pitt Street). Works audible only when there are breaks in between traffic. Main source of noise was from vehicles passing by. result: compliant
9/02/2023	3:40:00 PM	Westmead	NCA-02 2 Hassall Street, Westmead	Piling Concrete Works	62	54	52.3	56	68.5	94.9	Monitoring distance 62m away from source. Monitoring conducted on Hassall Street. Works inaudible from monitoring locations. Main source of noise was from vehicles and pedestrians passing by. Hoarding around Westmead site installed. result: compliant
9/02/2023	9:25:00 PM	Westmead	NCA-03 74 Great Western Highway	Pitt Street Fencing - Installing Fence - Core Drilling for fence post	97	52	54.4	57.8	69.5	84.4	Monitoring distance 19m away from source. Monitoring conducted on main road (Pitt Street). Works audible only when there are breaks in between traffic. Main source of noise was from vehicles passing by. Noise Blankets installed as per OOHW permit. Coir logs installed along kerbside drain. result: compliant
13/02/2023	3:31:00 PM	Clyde Dive	NCA 04 - 120 James Ruse Drive	Shaft Excavation - Hammering with excavator	38	56	59.9	65.3	76.1	92.7	Distance of source to receiver: 55m, Distance of source to receiver: 60m. Traffic on JRD main source of noise. Works not audible during monitoring even during breaks in traffic. Result: per modelling.

Date	Time (hh:mm)	Site	Monitoring Location	Construction Activity	Modelled Prediction (PNL) L_{Aeq}	Noise Management Level (NML) L_{Aeq}	Measured 15-minute Noise Levels – dBA				Notes
							L_{min}	L90	L_{Aeq}	L_{max}	
13/02/2023	8:46:00 PM	Parramatta	91 Hassall street	PARRA-26 stage 2 Drilling	84	58	63.7	64.6	65.3	76.1	Distance of monitor to source: 4m. Distance of monitor to receiver: 7m. Main source of noise: works (64-65dB) traffic was also audible in frequent intervals. Result: per modelling and mitigation measures implemented. NOTE: another non-WTP work crew located at western end of Hassall street.
13/02/2023	9:43:00 PM	Parramatta	NCA03 - 262 Church St, Parramatta	PARA-003 Trenching	90	70	72.3	75.9	78.2	92.5	Distance of monitor to source:20m. Distance of Monitor to receiver 21m. Main source of noise: works (76-82dB). Noise did not exceed modelling and implemented mitigation measures. Note: non GLC works were occurring within 50m of GLC works on both George St and Church St (concrete cutting, concrete breaking, Vac trucking)
13/02/2023	10:01:00 PM	Parramatta	NCA03 - 262 Church St, Parramatta	PARA 003 HV works - Trenching	90	70	75	84	85	87.8	Distance of monitor to source:20m. Distance of Monitor to receiver 21m. Main source of noise: works (77-84dB) minutes 9-15 polluted by non WTP concrete cutting on Church street . Results of monitoring align with modelling with implemented mitigation measures. Note: non GLC works were occurring within 50m of GLC works on both George St and Church St (concrete cutting, concrete breaking, Vac trucking)
13/02/2023	10:29:00 PM	Parramatta	91 Hassall street	PARA 026 stage 2 Drilling	84	48	62.6	65.8	66.3	74.1	Distance of monitor to source: 4m. Distance of monitor to receiver: 7m. Main source of noise: works (64-65dB) traffic was also audible in frequent intervals. Result: monitoring results do not exceed modelling and mitigation measures implemented. NOTE: another non-WTP work crew located at western end of Hassall street.
14/02/2023	6:59:00 PM	Clyde Dive	NCA 04 - 120 James Ruse Drive	Shaft excavation- milling head	38	53	55.9	65.9	76.5	89.4	Distance of source to monitor: 55m. Distance of monitor to receiver:60m. Main source of noise: traffic on JRD(72-85dB). Breaks in traffic (58-60dB) works not audible during this time. Works not audible during monitoring period. result compliant
16/02/2023	6:06:00 PM	Westmead	NCA02 - 26-30 Bailey Street Westmead	WEST - 30 Bored pilling	52	42	44.9	48.5	57.2	82	Works not audible at nearest receiver. Main source of noise: traffic on Bailey street. Result: compliant with modelling and mitigation measures implemented
17/02/2023	10:34:00 PM	Westmead	NCA02 - 7 Park Parade - Westmead	HV underboring works including excavation of retrieval pit.	75	42	48.7	51.4	65.9	86	Under boring activities being completed. Vacuum truck and 5T excavator being utilised to support the under boring works. Battery and solar lighting plants in use. Under boring activity inaudible over other activities. Trains and traffic audible over the under boring works throughout the monitoring event. Works compliant
17/02/2023	11:06:00 PM	Westmead	NCA02 - 7 Park Parade - Westmead	HV under boring activities at Domain Creek. Excavator and vaccuum truck supporting the works.	75	42	44.6	47.5	69.4	83	Under boring activities being completed. Excavation and vac truck works being completed to support the under boring works. Under boring activities inaudible over supporting the under boring and background activities. Background activities including traffic and trains audible over construction activities. result: compliant with modelling
20/02/2023	6:38:00 PM	Westmead	NCA02 - 13-17 Bailey Street, Westmead	Concrete works agi, concrete pump, hand tools	52	42	45	47	56	72	Works were inaudible for majority of the monitoring session. 49db tumbling of agi audible. No works were audible after the 4th minute. Works below PNL.
24/02/2023	3:48:00 PM	Clyde Dive	ATC pedestrian walkway	1250Kv generator	74	53	68	69.2	66	84.2	Distance of monitor to source 8m. Distance of source to receiver 30m. Commercial receiver NML: 70dB at exterior during use. Monitoring took place from ATC walkway (1/3 distance to receiver exterior) as entry into ATC car park that is adjacent to receiver exterior was not permitted. Raw output: 71dB. A 5dB deduction was applied to account for distance of monitor to receiver. Final result: 66dB. Align with modelling and NML.
24/02/2023	12:12:00 AM	Parramatta	Roxy Theatre	Moving ATF fencing and Hoarding Concrete Barriers	48	48	46	48	49	69	Works were compliant, occasional spikes in works 49db works were not audible for most part. Workers remained quiet and did not make unnecessary noises where required.
1/03/2023	1:15:00 PM	Westmead	NCA02 - 10 Hassall St Westmead	Pad 9 - Drilling for anchoring	71.6	54	51.6	56.2	66	88.4	Distance of works to monitor 24m. Main source of noise was vehicle traffic on Alexandra and Hassall Street and train movements stopping and leaving Westmead station. Works audible during breaks in traffic (55-59dB). within modelled level. Result: Compliant with modelling and mitigation measures implemented.
1/03/2023	1:30:00 PM	Westmead	NCA-02 24 Bailey Street, Westmead	Establishing Site Amenities	64.5	54	50.6	53.3	68.2	88.6	Distance of works to monitor 22m. Main source of noise was vehicle traffic on Alexandra and Bailey Street. Works not audible in isolation. Hoarding around site of perimeter. result: compliant
6/03/2023	6:00:00 PM	Westmead	NCA02 - 10 Hassall St Westmead	WEST 46 Shotcrete run over	51	52	49.5	54.6	63.7	77.8	Distance of monitor to source: 30m. Distance of monitor to receiver 3m. Traffic on Hassell St and Alexandria Ave main source of noise. Works only audible briefly during break in traffic (52dB). Result: compliant with 5.3 low impact works

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Date	Time (hh:mm)	Site	Monitoring Location	Construction Activity	Modelled Prediction (PNL) L_{Aeq}	Noise Management Level (NML) L_{Aeq}	Measured 15-minute Noise Levels – dBA				Notes
							L_{min}	L90	L_{Aeq}	L_{max}	
7/03/2023	9:05:00 PM	Parramatta	NCA03 169 Macquarie St, Parramatta	PARRA-035 median strip removal	65	55	63	64.2	67.3	88	Monitoring distance to source: 60m. Distance of monitor to receiver: 5m. Main source of noise: combination of building exhaust fan, pedestrian crossing buzzer and works only audible when concrete separator is dropped into tipper (71-80dB) only occurring 3 times during monitoring. Result: Aligns with modelling.
9/03/2023	8:37:00 PM	Parramatta	85 George street Parramatta	PARRA -023 saw cutting & concrete breaking	87	70	47.6	52.3	71.4	85.8	Monitoring distance to source: 50m. Monitoring distance to receiver: 5m. Main source of noise: saw cutting works and concrete breaking. Excavator was also audible during tracking and works. Cutting was intermittent during the monitoring. Result: compliant with OOHW modelling and mitigation measures implemented.
9/03/2023	9:07:00 PM	Parramatta	28 Charles street Parramatta	PARRA-023 excavator moving pavement	63	58	53	62.3	69	87.3	Monitoring distance to source: 100m. Monitoring distance to receiver: 20m. Monitoring between source and receiver. Main source of noise: traffic on Charles street. Works not audible. Result: aligns with OOHW modelling and mitigation measures implemented.
9/03/2023	10:25:00 PM	Parramatta	28 Charles street Parramatta	PARRA-023 NDD	61	58	56.7	63.8	66.8	87.4	Monitoring distance to source 100m. Distance of source from receiver 20m. Main source of noise traffic (65dB - 80dB) Works not audible. Result: aligns with OOHW monitoring and mitigation measures implemented.
9/03/2023	8:35:00 PM	Westmead	NCA02 - 10 Hassall St Westmead	Box excavation - pad 8 (from surface)	75.6	52	55.2	59.5	66.2	85.2	Distance of works to monitor 22m. Main source of noise was vehicle traffic on Alexandra and Hassall Street and train movements stopping and leaving Westmead station. Works only audible during breaks in traffic (57dB). Hoarding installed around site perimeter. Compliant
10/03/2023	12:45:00 PM	Clyde Dive	ATC Stables - North	Dive Structure Piling - Headwall using a piling rig and excavator (for spoil management)	66.6	60	55.2	57.6	60.1	72.2	Measured noise levels aligns with DNVIS modelled scenario for piling (CD.08a). Protection piles for headwall pile 188 (P189/P191)
10/03/2023	7:30:00 PM	Westmead	NCA02 - 154 Hawkesbury Road, Westmead	Box excavation - load out spoil from pad 1	69.4	52	55.2	57.1	65.1	85.2	Monitored level below modelled and permitted level. Result: compliant
15/03/2023	9:45:00 AM	Westmead	NCA02 - 154 Hawkesbury Road, Westmead	Box excavation ground support - Shotcrete - pad 1	-	54	55.1	58.9	64.5	81.1	Distance of works to monitor 23m. Main source of noise was vehicle traffic on Hawkesbury and Alexandra and train movements stopping and leaving Westmead station. Works only audible during breaks in traffic (58-60dB). Hoarding installed around site perimeter,. Compliant under PNL.
23/03/2023	4:40:00 PM	Clyde MSF	Rosehill Stables	Rock Hammering	80	60	50.8	54.2	70.4	90.9	Rock hammering was inaudible for entire duration of monitoring event. Compliant
27/03/2023	9:08:00 PM	Rosehill	ATC Stables	Excavation - demolition road island	48	60	47.5	49.5	60.7	82.5	Distance of works to monitor 170m. Main source of noise was vehicle traffic on James Ruse Drive. Works inaudible from monitoring location. Other scope of works (loading of spoil inside Rosehill site audible (53-56 dB) works below predicted level. result: compliant
27/03/2023	10:55:00 PM	Westmead	NCA02 - 154 Hawkesbury Road, Westmead	Restoration works - Corner of Hawkesbury Road and Alexandra Avenue	77	42	46.8	55.2	66.2	90.5	Distance of works to monitor 170m. Main source of noise was vehicle traffic on Alexandra Ave and wkesbury Road. Works audible from monitoring location (59-61db). Noise blankets installed as per OOHW permit. works below predicted level: result compliant
29/03/2023	9:36:00 AM	Clyde Dive	ATC Stables (at stables)	Pile drilling - Zone 1 piles 12 & 16	66	60	57.5	61.9	67.3	88.2	Distance of work to receiver: 15m. Monitoring undertaken within receiver. Main source of noise: pile drilling (64-68dB) Secondary sources of noise: aeroplane (66dB) and works within stables (70-80dB). Monitoring Level 1.7dB above predicted level however monitoring level increased due to secondary sources of noise. Implemented mitigation measures adequate given monitored LAeq. RESULT: COMPLIANT
11/04/2023	10:27:00 PM	Clyde Dive	NCA05 - 108 James Ruse Drive	Barrier installation telehandler, 5T excavator, tipper	57	50	54	64	73	91	JRD dominated Noise. Works were inaudible.
14/04/2023	9:30:00 PM	Parramatta	169 Macquarie Street, Parramatta	Road line removal/ line marking	77	58	65.9	67.7	75.8	97.1	Workers were requested to turn down radios during monitoring period. Works were measured under PNL.
14/04/2023	9:30:00 PM	Clyde MSF	169 Macquarie Street, Parramatta	Traffic signage installation	60	58	57.1	58.4	62.2	74.9	Temporary sound barriers were installed around work area during high impact activities. Works were quiet and under PNL. – compliant.

Date	Time (hh:mm)	Site	Monitoring Location	Construction Activity	Modelled Prediction (PNL) L_{Aeq}	Noise Management Level (NML) L_{Aeq}	Measured 15-minute Noise Levels – dBA				Notes
							L_{min}	L90	L_{Aeq}	L_{max}	
17/04/2023	11:38:00 AM	Clyde Dive	ATC Stables (at stables)	Piling Works - Cage works	66	60	50.8	55.9	60.2	83.4	Monitoring undertaking within receiver. Receiver distance to source: 10m. Works partially audible but within modelling levels and appropriate mitigation measures. Result: Compliant
19/04/2023	6:30:00 PM	Clyde Dive	120 James Ruse Drive	Concrete Pours CD029	54	53	58.4	65.8	76.1	94	Activity being monitored was inaudible during the measurement period result: compliant
27/04/2023	9:31:00 PM	Westmead	NCA02 - 10 Hassall St Westmead	Sewer investigations	49	52	56	57.3	66.1	82.6	Distance of monitor to works: 2m. Distance of works to receiver: 10m. Main source of noise: traffic on Alexandra drive. Works partially audible during breaks in traffic at 57dB given distance to works it is calculated to be 45 dB at receiver. Result: compliant with modelling and mitigation measures implemented.
2/05/2023	6:15:00 PM	Clyde Dive	120 James Ruse Drive	Concrete Pours CD030	45	53	56.2	68.5	76.1	91.5	Traffic was louder than construction activities, works under PNL.
2/05/2023	9:35:00 AM	Clyde Dive	NCA 04 - 1 Hope street	Temporary exhaust fan within shed	38	56	62	69.8	77.5	99.5	Distance of source to receiver: 80m. Distance of source to monitor 10m. Works not audible during monitoring including breaks in traffic. Result: aligns with modelling
4/05/2023	9:43:00 PM	Clyde Dive	NCA 04 - 120 James Ruse Drive	Axis exhaust fan	37	53	55.4	67.4	76.5	89.5	Monitoring distance to source: 60m. Monitoring distance to receiver:10m. Main source of noise: traffic on JRD. Works not audible during monitoring including breaks in traffic. Result: compliant
4/05/2023	10:00:00 PM	Clyde Dive	NCA 04 - 120 James Ruse Drive	Axis exhaust fan	37	46	53.6	67.5	76.7	86.9	Monitoring distance to source: 60m. Monitoring distance to receiver:10m. Main source of noise: traffic on JRD. Works not audible during monitoring including breaks in traffic. Result: compliant
9/05/2023	9:37:00 AM	Clyde Dive	ATC Stables (at stables)	CD.08a Decline structure construction (piling)	69	60	65.2	-	73.5	93.9	Monitoring distance to source: 10m. Monitoring undertaken within receiver. Main source of noise: CD.08a - Piling. Secondary noise sources: Works within ATC Stables (spikes of 68dB), Capping beam works (CD.07) - concrete break back using electric hand tools (66db). Monitored level above modelled output. However, required mitigation measures as per DNVIS already in place including consultation with ATC and Letterbox drop for works 11-20dB above NML. Result compliant.
9/05/2023	10:17:00 AM	Westmead	NCA02 - 10-12 Hassall Street Westmead	Box excavation with bulldozer & acoustic shed installation (WM16A)	75.6	54	56.9	60.9	63.5	76.1	Construction works audible during monitoring, however, works below modelled level background traffic was major contributor to noise during monitoring event. Monitoring completed 20m from site boundary where EWP was operating installing acoustic shed cladding. works compliant
11/05/2023	8:34:00 PM	Westmead	NCA02 - 10-12 Hassall Street Westmead	Tracking 5T excavator off site	52	52	49	53	72	86	Tracking was audible as the 5T excavator travelled down towards Alexandria Ave. Excavator travelled as quickly as possible. main source of noise - traffic. Works compliant
11/05/2023	9:28:00 PM	Westmead	NCA02 - 154 Hawkesbury Road, Westmead	Roadplates removal and shovelling stabilised sand	52	52	45	51	65	80	Construction inaudible, traffic dominated, compliant
11/05/2023	10:00:00 PM	Westmead	NCA02 - 154 Hawkesbury Road, Westmead	Roadplates removal and material removal hotmix fill	42	42	48	54	64	79	Works were compliant not audible traffic dominated
11/05/2023	10:18:00 PM	Westmead	NCA02 - 10-12 Hassall Street Westmead	Roadplates removed, removing backfill with new fill	46	42	43	45	56	74	Works were compliant, not audible traffic dominated
15/05/2023	8:36:00 PM	Parramatta	NCA03 169 Macquarie St, Parramatta	PARRA-048	67	55	51.6	54	64.6	86.4	Monitoring distance to source 20m. Monitoring distance to receiver: 5m. Main source of noise: pedestrians(65-70dB), traffic(70-73dB) , generator (64-66dB). Result: aligns with modelling and mitigation measures implemented.
15/05/2023	8:56:00 PM	Parramatta	46 Macquaire street	PARRA-048	89	70	61.5	66	72.7	82.7	Monitoring distance to source 15m. Monitoring distance to receiver: 2m. Main source of noise: pedestrians(65-70dB), works (65-80dB). Commercial receiver closed during monitoring Result: aligns with modelling and mitigation measures implemented.
15/05/2023	10:03:00 PM	Parramatta	NCA03 330 Church Street, Parramatta	PARRA-048	42	48	50.9	53.2	58.9	82.8	Monitoring distance to source 220m. Monitoring distance to receiver 7m. Works not audible during monitoring. Result: aligns with modelling and mitigation measures implemented.
15/05/2023	10:29:00 PM	Parramatta	NCA03 169 Macquarie St, Parramatta	PARRA-048	67	55	47.3	48.7	57.5	78.3	Monitoring distance to source:100m. Distance work monitor to receiver:10m. Works not audible during works. Result: aligns with modelling and mitigation measures implemented.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Date	Time (hh:mm)	Site	Monitoring Location	Construction Activity	Modelled Prediction (PNL) L_{Aeq}	Noise Management Level (NML) L_{Aeq}	Measured 15-minute Noise Levels – dBA				Notes
							L_{min}	L90	L_{Aeq}	L_{max}	
17/05/2023	3:08:00 PM	Westmead	NCA02-26-30 Bailey Street, Westmead	WM. 16 a, Box Excavation with Bulldozer	71	54	52.6	54.7	67	87.6	Monitoring device is set up 10 m away from construction site boundary. Construction works are audible but bulldozer not able to he heard during monitoring. However, traffic and pedestrians noises were more audible. result compliant - works below modelling level
17/05/2023	3:33:00 PM	Westmead	NCA 02 - 154 Hawkesbury Street, Westmead	WM. 16 a Box excavation with bulldozer	69.4	54	55.8	-	67	92.2	Monitoring device is set up 15 m away from construction site boundary. Construction works are audible but bulldozer not audible during monitoring event. However, traffic noise was more audible. works below modelled level. Result - compliant
23/05/2023	9:13:00 PM	Clyde Dive	NCA 04 - 120 James Ruse Drive	New exhaust fan at 350rpm	42	53	58	64	74	87	Fan not audible, JRD traffic dominated. Compliant.
23/05/2023	9:34:00 PM	Clyde Dive	NCA 04 - 1 Hope street	New exhaust fan at 350rpm	37	53	56	63	73	86	Construction inaudible, fans were not audible, JRD traffic dominated. Compliant under PNL.
23/05/2023	10:00:00 PM	Clyde Dive	NCA 04 - 1 Hope street	Exhaust Fan at 350rpm	37	46	57	68	71	85	JRD dominated all noise levels, fan not audible. compliant under PNL.
24/05/2023	10:33:00 AM	Clyde Dive	ATC Stables (at stables)	Piling drilling & cage work	69	60	52.5	56.2	67.5	88.5	Monitoring distance to source: 15m. Monitoring within receiver. Main sources of noise: piling works and non-WTP works occurring within stables. Horses appear not effected. Result: compliant with modelling and mitigation measures implemented.
24/05/2023	10:58:00 AM	Clyde Dive	ATC Stables (at stables)	Drilling zone 3	69	60	53.3	58.2	65.8	91.4	Monitoring distance to source: 25m. Monitoring at receiver. Main source of noise: piling works. Monitored level within modelled level and mitigation measures implemented. Result compliant.
31/05/2023	8:12:00 PM	Parramatta	46 George Street Parramatta	PARRA-051 concrete cutting	84	70	57.3	67.8	80.5	89.3	Monitoring distance to source: 10m. Distance of monitor to receiver: 2m. Main source of noise: concrete cutting. Result: compliant with modelling and mitigation measures implemented.
31/05/2023	9:43:00 PM	Parramatta	NCA03 330 Church Street, Parramatta	PARRA 051	58	55	51.5	54.3	57.9	78.2	Monitoring distance to source:330m. Distance of monitor to receiver: 5m. Works not audible during monitoring. Result compliant.
31/05/2023	10:02:00 PM	Parramatta	NCA03 330 Church Street, Parramatta	PARRA 051	58	55	50.8	53.1	58	81.4	Monitoring distance to source:330m. Distance of monitor to receiver: 5m. Works not audible during monitoring. Result compliant.
2/06/2023	9:54:00 AM	Parramatta	Dwall test panel	Dwall test panel eastern pad grabber	87	70	69	71	77.3	98	Concurrent works happening around the d-wall test panel, no isolating monitoring was available. Note: monitored 5m from work zone. Banging from grabber unloading material due to material wedged between the grabber's arm - this will not be applicable when the grabber is lubricated with bentonite and will easily be able to transfer material into the stockpile. Further monitoring is required during the first actual D-Wall Panel. Works under PNL.
2/06/2023	9:00:00 PM	Westmead	154 Hawkesbury Road	WEST-058A Tunnel support activities	67	52	47.2	53.8	65.2	86	Works below modelled level, Note implemented mitigation measures. Result: Compliant
2/06/2023	9:25:00 PM	Westmead	10-12 Hassall Street, Westmead	WEST-058A Tunnel support activities	67	52	43.3	46.1	57.7	73.4	Works below modelled level. Note implemented mitigation measures. Result: Compliant
2/06/2023	9:25:00 PM	Westmead	26-30 Bailey Street	WEST-058A Tunnel support activities	67	52	-	46.1	52.7	69.4	Works below modelled level. Note implemented mitigation measures. Result: Compliant
5/06/2023	6:04:00 PM	Westmead	NCA02 - 10-12 Hassall Street Westmead	Tunnel Support Activities - Stage 4 (Dozer Operation)	70	52	50.4	53.7	76	106.2	Validation monitoring for EPL L5.3 works. While dozer was operating, the activity was mostly inaudible during the monitoring event. Dominant source of noise was traffic and trains. works compliant
5/06/2023	6:28:00 PM	Westmead	NCA02-26-30 Bailey Street, Westmead	Tunnel Support Works - Stage 4 (Dozer Operation)	60	52	45.1	49.4	58.4	76.7	Monitoring being completed to verify compliance with EPL Condition L5.3. Dozer was barely audible throughout the monitoring event. Dominant noise sources during monitoring event was traffic. works compliant
5/06/2023	6:53:00 PM	Westmead	NCA02 - 154 Hawkesbury Road, Westmead	Tunnel Support Works - Stage 4 (Dozer Operation)	60	52	46.8	52.4	66.5	81.2	Monitoring being completed to verify compliance with EPL Condition L5.3. Dozer operating over the entire monitoring event and barely audible over the background noise. Dominant noise source was traffic over the monitoring event. works compliant

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Date	Time (hh:mm)	Site	Monitoring Location	Construction Activity	Modelled Prediction (PNL) L_{Aeq}	Noise Management Level (NML) L_{Aeq}	Measured 15-minute Noise Levels – dBA				Notes
							L_{min}	L90	L_{Aeq}	L_{max}	
5/06/2023	8:19:00 PM	Westmead	NCA02 - 10-12 Hassall Street Westmead	Tunnel Support Works - Stage 1, 2 & 4	72	52	48.1	51.1	60	79.9	Tunnel support works being completed throughout monitoring event. Dozer operations audible intermittently throughout the monitoring event, however, traffic and trains are the dominant source of noise. compliant with modelling
6/06/2023	6:23:00 PM	Westmead	NCA02 - 10-12 Hassall Street Westmead	Tunnel Support Works - Stage 3 (Shotcreting) & Stage 4 (Dozer Operation)	70	52	47.9	52.3	64.7	85.5	Monitoring for Tunnel Support Works - Stage 3 & 4. Dozer operation faintly audible during monitoring event. Dominant noise source during monitoring event was traffic and trains. Activities compliant with modelling.
6/06/2023	6:43:00 PM	Westmead	NCA02-26-30 Bailey Street, Westmead	Tunnel Support Activiites - Stage 4 (Dozer Operation)	60	52	45.3	48.2	56	75.2	Monitoring for Tunnel Support Works - Stage 4. Dozer operation faintly audible during monitoring event. Dominant noise source during monitoring event was traffic and adjacent residences. Activities compliant with modelling report.
6/06/2023	9:44:00 PM	Westmead	NCA02-26-30 Bailey Street, Westmead	Tunnel Support Activities - Stage 3 & 4 (Shotcreting & Dozer Operation)	61	52	43.5	46.7	55.4	76.2	Monitoring for tunnel support works - Stages 3 & 4. Dominant noise source during monitoring event was traffic and adjacent residences. Activities compliant with modelling report.
7/06/2023	9:35:00 PM	Parramatta	NCA03 330 Church Street, Parramatta	PARRA-040	42	55	50.6	53	58.1	83	Works not audible. Result: compliant
7/06/2023	10:05:00 PM	Parramatta	NCA03 330 Church Street, Parramatta	PARRA-040	42	55	49.1	51.4	55.3	70.8	Works not audible. Result: compliant
7/06/2023	5:23:00 PM	Westmead	NCA02-26-30 Bailey Street, Westmead	Rock hammering (WM.16B)	71	54	47.6	-	61.3	86.4	Verification monitoring for Scenario WM.16B. Rock hammering audible throughout monitoring event. Monitoring compliant with predictions from DNVIS.
7/06/2023	6:43:00 PM	Westmead	NCA02 - 10-12 Hassall Street Westmead	Tunnel Support Activities - Stage 4 (Dozer Operation)	70	52	45.8	49.8	62.4	83.5	Monitoring for compliance with L5.3 conditions. Dozer operation in Zones 1 to 3 over the monitoring event and only heard at four (4) occasions over the background noise. Dominant noise source was traffic and trains over the monitoring period. works compliant
7/06/2023	7:03:00 PM	Westmead	NCA02 - 13-17 Bailey Street, Westmead	Tunnel support works - Stage 4 (Dozer Operation)	62	52	46.1	51.1	58.4	76.7	Tunnel support works - Stage 4 Bulldozer Operation being completed during monitoring event. Bulldozer heard at various occasions throughout the monitoring event when traffic and train noise subsided. Bulldozer operation below NML for NCA-02 during all events. Dominant noise source was passing traffic during the monitoring event. Note: site gate was closed at time of monitoring event. result: compliant
7/06/2023	7:22:00 PM	Westmead	NCA02-26-30 Bailey Street, Westmead	OOHW - Tunnel Support Works - Stage 4 - Spoil Movement	60	52	46.6	48.5	54.8	69.9	Verification monitoring being completed for EPL Condition L5.3 works - Stage 4 Spoil Movement. Bulldozer audible during monitoring event. Bulldozer operation in isolation measured between 47.4 - 51.9dBA. Impacted by traffic and adjacent resident talking and smoke alarms beeping constantly through monitoring event. Monitoring Record No. 0082 works compliant
7/06/2023	8:45:00 PM	Westmead	NCA02-26-30 Bailey Street, Westmead	Tunnel Support Works - Stages 1, 2 & 4	62	52	44.5	46.4	53.4	74.1	Tunnel support activities being completed during monitoring. Construction activities intermittently audible during monitoring event but only when traffic and trains were not passing monitoring location. Dominant noise source traffic and trains passing monitoring location. works compliant
7/06/2023	9:03:00 PM	Westmead	NCA02 - 10-12 Hassall Street Westmead	Tunnel Support Activities - Stages 1, 2 & 4	72	52	44.3	48.2	59.4	73.4	Tunnel support activities being completed during monitoring. Construction activities intermittently audible during monitoring event but only when traffic and trains were not passing monitoring location. Dominant noise source traffic and trains passing monitoring location. works compliant
8/06/2023	9:30:00 PM	Parramatta	46 George Street Parramatta	PARRA-054	84	70	58.3	61.5	73.7	83.6	Distance of receiver to source:15m. Distance of receiver to monitor: 18m. Main source of noise: Vac truck and drill. Noise mats in place. Result: compliant with modelling and mitigation measures implemented.
8/06/2023	10:16:00 PM	Parramatta	46 George Street Parramatta	PARRA-054	84	70	57.7	58.8	76.2	88.5	Distance of receiver to source:15m. Distance of receiver to monitor: 18m. Main source of noise: Vac truck and drill. Noise mats in place. Result: compliant with modelling and mitigation measures implemented.
9/06/2023	7:06:00 PM	Clyde MSF	10-12 Hassall Street, Westmead	WEST-058A Tunnel Support Works	67	52	52.6	55.6	64.9	79.6	works below modelled level and in line with implemented mitigation measures. result: compliant
9/06/2023	5:45:00 PM	Clyde MSF	Freedman Training Stable	MSF-02 Haul Roads and Site Amenities (Basin Excavation)	120	60	60.5	63.6	73.7	99.1	Works were compliant, not audible traffic dominated

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Date	Time (hh:mm)	Site	Monitoring Location	Construction Activity	Modelled Prediction (PNL) L_{Aeq}	Noise Management Level (NML) L_{Aeq}	Measured 15-minute Noise Levels – dBA				Notes
							L_{min}	L90	L_{Aeq}	L_{max}	
9/06/2023	5:45:00 PM	Clyde MSF	19 James Ruse Drive	MSF015 Concrete Pours	47	54	60.1	67.1	76.3	91.6	Works were compliant, not audible traffic dominated
15/06/2023	10:09:00 PM	Westmead	NCA02 - 119 Priddle Street & Hawkesbury Road	-	85	42	53	56	77	86	Noise blankets set up as required around works. Sawcut between 77-84db with light traffic running along Hawkesbury. Construction work compliant. Sawcutting was unable to be completed prior to 10pm due to late ROL starting at 9pm.
15/06/2023	10:28:00 PM	Westmead	NCA02 - 119 Priddle Street & Hawkesbury Road	NDD utilities at priddle st X Hawkesbury	79	42	52	54	64	71	NDD was compliant, great noise blanket setup in place. Surrounding traffic controllers kept noise to minimum, light traffic
15/06/2023	11:08:00 PM	Westmead	7 Park Ave	CCTV sewer line from park ave	56	42	45	46	53	68	Car idling was below PNL. Unfortunately, works were still pending due to water line too high, trafficked sewer line. Noise monitoring simulated the exact construction activity.
27/06/2023	3:40:00 PM	Westmead	1-9 Bailey Street, Westmead	Rockhammering, movement of material - tunnel activities. General site activities	-	54	47	50	56	67	Construction barely audible, hammering in box audible, no other works were. External noise factors such as traffic and pedestrians caused spikes in noise monitoring. Works were under PNL.
28/06/2023	6:49:00 PM	Westmead	NCA02 - 10-12 Hassall Street Westmead	WEST-058	67	52	49.2	56	67.1	80.9	Monitoring distance to source: 10m. Monitoring distance to receiver 3m. Works not audible during recording. Light rain during recording. Main source of noise traffic on Hassall St and trains. Result: aligns with modelling and implemented mitigation measures.
28/06/2023	7:46:00 PM	Westmead	NCA02 - 154 Hawkesbury Road, Westmead	WEST-058 stage 2	56	52	52.2	57.1	81.2	111.1	Monitoring distance to source: 20m. Monitoring distance to receiver 3m. Works not audible during recording. Light rain during recording. Main source of noise traffic on Hawkesbury road. Result: aligns with modelling and implemented mitigation measures.
28/06/2023	8:08:00 PM	Westmead	NCA02-26-30 Bailey Street, Westmead	WEST 58 stage 2	56	52	52	55.5	61.1	77.3	Monitoring distance to source 50m. Distance of monitoring to receiver 10m. Works audible during monitoring (53-56dB). Traffic and planes also audible. Result. Aligns with modelling and implemented mitigation measures.
30/06/2023	3:10:00 PM	Westmead	NCA02 - 10-12 Hassall Street Westmead	Drill rig running to complete I&M Installations on Hassall Street (WM.02)	70.8	54	83	84	84.7	86	Drill rig consistently working, cannot hear any other works or activities.
1/07/2023	8:31:00 AM	Clyde MSF	71 Penelope Lucas Lane	MSF-022 piling	47	54	63	65.7	74.8	94.9	Monitoring distance to source 50m. Distance of monitor to receiver 5m. Main source of noise. Traffic on JRD. Result: compliant.
3/07/2023	8:49:00 PM	Westmead	NCA02 - 10-12 Hassall Street Westmead	Cladding installation using an EWP and rattle gun	52	52	46.2	49.9	61.5	78.8	Modelled works compliant - traffic dominant noise source
3/07/2023	9:26:00 PM	Westmead	NCA - 01 16 Railway Parade	Cladding installation using an EWP	46	54	49.7	53.1	63.8	79	Modelled works compliant - traffic dominant noise source. Although Lmin recorded above the predicted level, this is due to environmental reasons (rain) and not reflective of the modelled activity.
3/07/2023	10:40:00 PM	Westmead	NCA02 - 10-12 Hassall Street Westmead	Cladding installation	52	42	44.4	46.4	60.4	77.6	Results align with modelled noise level - traffic dominant noise source.
3/07/2023	11:16:00 PM	Westmead	NCA - 01 16 Railway Parade	Cladding installation	46	42	44.8	46.9	64.3	86.4	Results align with modelled noise level - traffic and environmental noise dominant noise source.
4/07/2023	8:20:00 PM	Westmead	NCA02 - 10-12 Hassall Street Westmead	Acoustic Shed Cladding Installation	59	52	45	49	59	72	Works were not audible. Traffic and trains dominated
4/07/2023	8:40:00 PM	Westmead	NCA02 - 34 Bailey St Westmead	Acoustic Shed Cladding Installation	52	52	41	43	54	73	Works were hardly audible and only momentarily. Traffic and trains dominated noise levels. Works were compliant
4/07/2023	9:43:00 PM	Westmead	NCA - 01 16 Railway Parade	Acoustic Shed Cladding	54	52	46	50	62	76	Works were audible momentarily, traffic and trains dominated noise levels, compliant
4/07/2023	10:00:00 PM	Westmead	NCA - 01 16 Railway Parade	Cladding Installation	54	42	44	48	62	78	Works were compliant, EWP moving up and down was audible slightly, rattle gun and drill audible for short snippets. Compliant

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Date	Time (hh:mm)	Site	Monitoring Location	Construction Activity	Modelled Prediction (PNL) L_{Aeq}	Noise Management Level (NML) L_{Aeq}	Measured 15-minute Noise Levels – dBA				Notes
							L_{min}	L90	L_{Aeq}	L_{max}	
4/07/2023	10:21:00 PM	Westmead	NCA02 - 10-12 Hassall Street Westmead	Acoustic Shed cladding works	59	42	43	46	56	69	Works were not audible from location, traffic and trains dominated noise levels. Works were compliant.
4/07/2023	10:38:00 PM	Westmead	NCA02 - 34 Bailey St Westmead	Acoustic Shed cladding	42	42	37	39	50	62	Works were audible momentarily, traffic and ambient background dominated. Compliant
11/07/2023	8:56:00 PM	Westmead	10-12 Hassall Street, Westmead	West 044	85	52	85.4	91.1	92.5	96.4	Exhaust fan for compressor on the paint remover truck was pointed directly at the monitor for much of the monitoring period, leading to unrealistically elevated LAeq. Later additional monitoring yielded results that were closer to the predicted noise levels. Note: LAeq 92.5dBA was recorded between works area and 10-12 Hassall Street, Westmead Works were compliant under PNL
11/07/2023	9:25:00 PM	Westmead	22 Railway Parade	West 044	46	52	52	54	65.8	92.4	Works were compliant. Spikes in noise levels due to passing cars, trains, and pedestrians
11/07/2023	10:16:00 PM	Westmead	10-12 Hassall Street, Westmead	WEST-044	85	42	66.2	69.6	84.5	99.9	Works were compliant. Spikes in noise levels due to passing cars, trains, and pedestrians
11/07/2023	10:40:00 PM	Westmead	22 Railway Parade	WEST-044	46	42	57.4	63.2	65.3	76.9	Works were compliant. Spikes in noise levels due to passing cars, trains, and pedestrians
12/07/2023	5:00:00 PM	Westmead	22 Railway Parade	WEST-044, WEST-058A, WEST058B	46	54	49	51.5	59.9	81.1	Works were compliant. Spikes in noise levels due to passing cars, trains, and pedestrians
12/07/2023	9:05:00 PM	Westmead	10-12 Hassall Street, Westmead	WEST 044, WEST-058A, WEST-058B	85	52	56.9	58.6	63.6	81.1	Works were compliant. Spikes in noise levels due to passing cars, trains, and pedestrians
12/07/2023	9:25:00 PM	Westmead	22 Railway Parade	WEST-044, WEST-058A, WEST058B	46	52	50.7	54	65.8	85.9	Works were compliant. Spikes in noise levels due to passing cars, trains, and pedestrians
12/07/2023	10:11:00 PM	Westmead	10-12 Hassall Street, Westmead	WEST-044	85	42	60.5	61.8	65.6	90.2	Works were compliant. Spikes in noise levels due to passing cars, trains, and pedestrians
17/07/2023	10:26:00 PM	Parramatta	NCA03 330 Church Street, Parramatta	PARRA-027 stage 3 phase 2	38	48	49.7	51.4	55.4	77.5	Monitoring distance to works 330m. Works not audible. Pressure cleaning (not GLC works) occurring between receiver and work site. Result: compliant.
18/07/2023	10:31:00 PM	Parramatta	NCA03 169 Macquarie St, Parramatta	PARRA027 - Stage 3 Phase 2	57	55	54	56.8	62	76.9	Monitoring distance to source: 80m. Monitoring distance to source: 7m. Works audible 55-58dB, Traffic, wind, and Pedestrians all affecting results. Result: Compliant.
18/07/2023	11:10:00 PM	Parramatta	NCA03 330 Church Street, Parramatta	Parra027 Stage 3 Phase 2	38	48	54.1	55.6	57.2	69.9	Monitoring distance to works 330m. Works not audible. Result Compliant
19/07/2023	10:06:00 PM	Parramatta	NCA03 330 Church Street, Parramatta	PARRA027 Stage 3 Phase 2	38	48	52.8	57.7	64.5	82.5	Monitoring distance to works: 300m Distance of monitor to works: 40m. Works not audible. Main source of noise: Traffic and Pedestrians. Result: Compliant.
19/07/2023	10:49:00 PM	Parramatta	NCA03 169 Macquarie St, Parramatta	PARRA027 Stage 3 Phase 2	57	55	58.5	59.8	64.1	85.7	Monitoring distance to works: 80m. Monitoring distance to source:7m. Works audible 54-58dB, Traffic and Pedestrians effecting results. Result: compliant.
19/07/2023	7:33:00 PM	Westmead	NCA02 - 26-30 Bailey Street Westmead	WEST 058 A- Stage 3 Shotcreting	60	52	49.2	51.7	61.5	82	Monitoring distance to works: 50m. Distance of monitor to receiver: 10m. Works audible 51-55 dB. Main source of noise: traffic. Result: compliant with modelling and mitigation measures implemented
19/07/2023	7:55:00 PM	Westmead	NCA02 - 154 Hawkesbury Road, Westmead	WEST058A - stage 3 shotcreting	60	52	47.9	53.2	68.6	90.8	Monitoring distance to works: 50m. Distance of monitor to receiver: 10m. Works not audible. Main source of noise: traffic. Result: compliant with modelling and mitigation measures implemented
19/07/2023	8:14:00 PM	Westmead	NCA02 - 10-12 Hassall Street Westmead	WEST058A stage 3 shotcreting	60	52	50.1	53.1	63.6	84.3	Monitoring distance to works: 50m. Distance of monitor to receiver: 6m. Works audible 51-56dB. Main source of noise: traffic. Result: compliant with modelling and mitigation measures implemented

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Table 2.3 – Results of attended noise monitoring where results were below NML

Date	Time (hh:mm:ss)	Site	Monitoring Location	Construction Activity	Modelled Prediction (L_{Aeq})	Noise Management Level (NML)	Measured 15-minute Noise Levels – dBA				Notes
							v	L90	L_{Aeq}	L_{max}	
6/02/2023	9:50:00 PM	Westmead	29-30 Parkside Lane	HV - Excavation - Jointing Bay	44	52	38.1	40.6	43.3	69.8	Monitoring location 173m away from construction works. Monitoring conducted in a quiet field in front of the residence. Works were audible (40-43dBA). Construction works (Parramatta Swimming Pool) were being conducted adjacent to GLC HV site. works compliant
9/02/2023	6:15:00 PM	Parramatta	NCA - 39 George Street, Parramatta	Hand Tools	67	70	47	51.2	60.3	89.9	Monitoring distance 26m away from source on main Road (George Street). Works not audible at time of monitoring. Heavy vehicle and pedestrian traffic observed. Main source of noise was from vehicles and pedestrians walking by talking. works compliant
11/02/2023	8:53:00 AM	Parramatta	NCA - 88-100 George Street, Parramatta	LAW - Macquarie Lane, Asphalting Works	71	70	55.7	60.2	64.8	81.7	Monitoring distance 115m away from source. Monitoring conducted on main road (George Street). Works inaudible from monitoring location. Main source of noise was from vehicles passing by. Result: Compliant
11/02/2023	9:35:00 AM	Parramatta	NCA - 23 Smith Street, Parramatta	LAW - Macquarie Lane Asphalting Works	71	70	56.9	59	67	84.3	Monitoring distance 46m away from source. Monitoring conducted on main road (Smith Street). Works audible only when there are breaks in between traffic. Main source of noise was from vehicles passing by. Works compliant
6/03/2023	12:49:00 PM	Parramatta	NCA03 - 15 Union St, Parramatta	Union St MW23 drilling	68	63	60	61	62	70	Drilling works were audible but remained under PNL and noise management level. 61-64db drilling Attenuation is set up around works zone. Workers are aware of compliance requirements. Result: Compliant
9/03/2023	9:07:00 PM	Parramatta	100 George street, parramatta	PARRA-023 dry vacuum NDD	67	70	53.8	59.1	66.7	90.3	Distance monitor to source: 100m. Distance of monitor to source: 10m. Main source of noise: traffic on George street. Works only particularly audible during breaks in traffic (58-61dB) result: compliant with OOHW modelling and mitigation measures implemented.
9/03/2023	10:00:00 PM	Parramatta	100 George street, parramatta	PARRA 023 NDD	65	70	49.7	56.1	64.3	79.5	Monitoring distance to source: 100m. Distance of monitor to receiver 10m. Main source of noise: traffic on George street. Works only audible in between traffic (58-63dB) result; compliant with OOHW modelling and mitigation measures implemented
22/03/2023	6:31:00 AM	Parramatta	NCA-03 - Westen Sydney University - 169 Macquarie Street, Parramatta	Removal of existing asphalt for Macquarie Street paving works - use of hand tools to break and lift existing asphalt materials, hand carried and loaded into tipper truck which was not on.	49	70	58.4	59.5	65.6	82.9	Monitoring Record No. 0043. OOH works being completed in accordance with EPL Condition L5.3. Verification monitoring completed outside of Western Sydney University Building to verify NML not being exceeded ~25m from works location. High vehicle and pedestrian traffic at monitoring location. Works intermittently heard between traffic noise. Work compliant
27/03/2023	10:10:00 PM	Rosehill	ATC Stables	Road Islands - Excavator Remove existing kerb & slab	48	60	47.2	49.5	59	80	Distance of works to monitor 170m. Main source of noise was vehicle traffic on James Ruse Drive. Works audible from monitoring location 49-54db). No hammering conducted (not required). Result: compliant
2/05/2023	7:56:00 PM	Rosehill	1-3 Grand Avenue, Rosehill	Cleaning up debris from roadplates and mobilising roadplates to original position	63	70	47	49	64	82	Compliant, works were inaudible. Monitoring completed 30m away from works. Truck passing by was loudest
2/05/2023	8:05:00 PM	Rosehill	ATC Stables	Rosehill typical night works	49	70	46	49	65	83	Works were compliant trucks passing JRD was audible, occasional works were audible not exceeding 52db for more than a few secondd
2/05/2023	7:40:00 AM	Clyde Dive	NCA 07 - Gate B Rosehill gardens	Exhausted fan	65	70	57.9	60	61.9	77.9	Distance on monitor to source 15m. Distance of source to receiver:27m. Sound Le or below modelling and NML. result: compliant.
3/05/2023	6:02:00 PM	Parramatta	NCA - 39 George Street, Parramatta	Generator running on site	63	70	56	59	64	78	Generator not audible, verified by noise monitoring. Traffic on George st dominated. Compliant under PNL.
11/05/2023	9:52:00 AM	Parramatta	211 Church St	Archaeological clearance of eastern end of station box	65	70	53.3	-	62.4	77.9	Monitoring undertaken at 211 Church St Parramatta (UNE building). and dozer. Archaeological clearance consisting of GML team excavating site. High pedestrian activity between monitoring location and activity and background noise mainly consists of pedestrians walking/talking, as well as vehicle movement along adjacent streets and traffic lights. Key construction activities contributing to high noise includes plant movement with excavator arm and track squeaking, plant squawker, etc. Compliant under PNL.

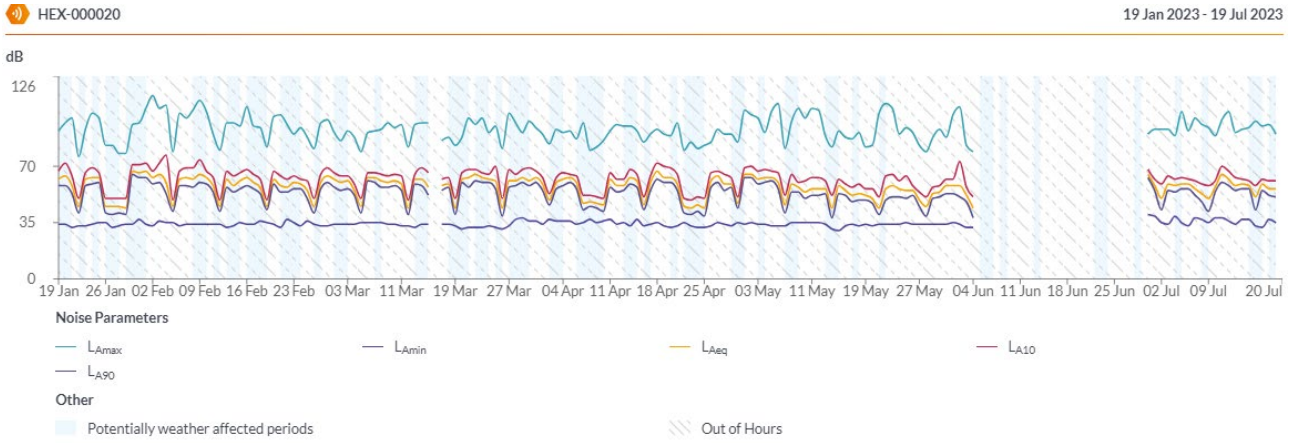
WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

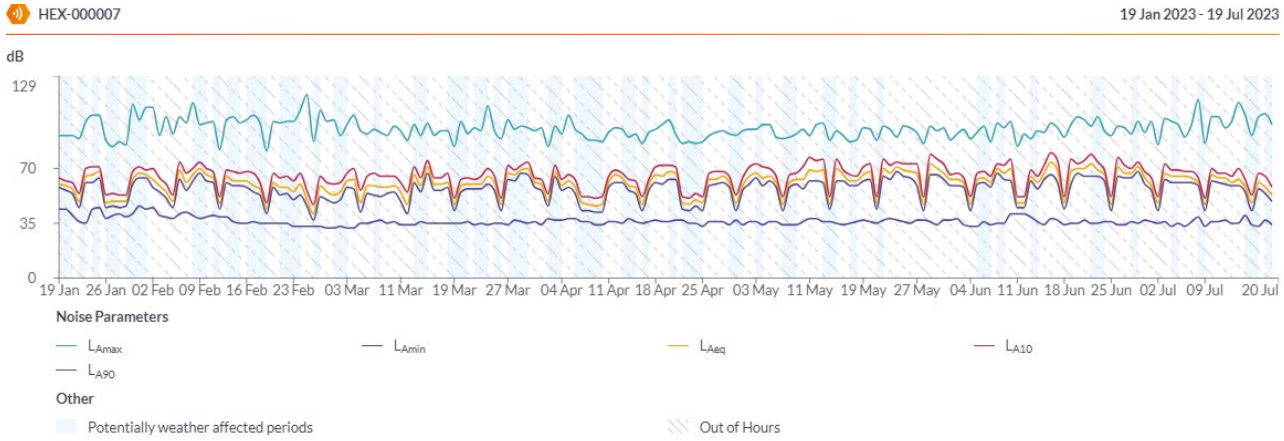
Date	Time (hh:mm:ss)	Site	Monitoring Location	Construction Activity	Modelled Prediction (L_{Aeq})	Noise Management Level (NML)	Measured 15-minute Noise Levels – dBA				Notes
							v	L90	L_{Aeq}	L_{max}	
11/05/2023	9:00:00 PM	Westmead	NCA02 - 10-12 Hassall Street Westmead	NDD manual shovelling	52	52	47	52	48	97	Construction inaudible, emergency services caused the highest spike, traffic dominated noise levels. Compliant
15/05/2023	9:44:00 PM	Parramatta	NCA03 330 Church Street, Parramatta	PARRA-048	42	58	50.8	52.9	55.8	72.6	Distance of monitor to works: 220m. Distance of monitor to receiver: 7m. Works not audible during monitoring. Result: compliant with modelling and mitigation measures implemented
31/05/2023	8:29:00 PM	Parramatta	244 Church St, Parramatta	PARRA 051	75	70	57.9	60.4	67.3	79.9	Distance of monitor to receiver: 30m. Distance of receiver to source 1m. Main source of noise. GLC works. Result: compliant with modelling and mitigation measures implemented.
2/06/2023	10:21:00 AM	Parramatta	NCA03 - 211 Church St, Parramatta	Dwall test panel	87	70	50	53	56	71	Dwall test panel not audible. Crane arm of grabber visible, approximately 100m distance. Lots of leaf litter stepped on by pedestrians, light chatter from the public. Compliant under PNL.
6/06/2023	10:32:00 AM	Parramatta	NCA03- Church Street, Parramatta	Concrete Pouring	70	70	53.1	-	69	75.4	Based on Know Noise model, the noise predicted level is 70. Based on the DNVIS, the noise predicted level is 64.1. Construction works are the noticeable. Noise monitor is set 20 m away from construction site. Noise monitor was calibrated, however, it had 0.4db reading less than the acoustic calibration value. Compliant under PNL.
7/06/2023	12:08:00 PM	Parramatta	NCA03-52 George Street	Concrete Pouring, stockpiling, and concrete breaking.	84	70	57.6	61.5	67.9	92.7	Noise monitor is set 15m away from site. Pedestrian and traffic noise are most audible. Construction noise is barely audible. Based on Know Noise model, noise predicted level is 84, NML is 70, and NM exceedance is 14. Based on DNVIS, RBL is 58, LAeq: 69, and predicted noise level is 40.9. works compliant
29/06/2023	7:51:00 PM	Parramatta	NCA - 39 George Street, Parramatta	PARRA-060	38	70	48.1	50.8	60.4	75.9	Monitoring undertaken at nearest receiver. Works not audible. Result: compliant.
29/06/2023	10:01:00 PM	Parramatta	NCA - 39 George Street, Parramatta	PARRA-060	38	70	46	47.9	61.1	77.7	Monitoring undertaken at receiver. Works not audible. Result: compliant
30/06/2023	6:20:00 PM	Parramatta	NCA-03 - Parramatta Mission 119 Macquarie Street	D-Wall Activities - Stage 2 - Concrete Pour Clean Off with Vacuum Truck	61	70	50.8	52.5	55.4	72.3	Vacuum truck operating to clean off concrete pour for three (3) minutes of the monitoring session. Vac truck barely audible over the background noise at the monitoring location. Dominant source of noise was passing pedestrians and traffic on Smith Street. works compliant
6/07/2023	6:25:00 PM	Parramatta	Nca03 - 119 Macquarie Street	Dwall concrete pour	64	70	53	55	56	64	Monitoring was compliant, works not audible, live music drowning out any construction noises. Construction not audible during concrete pours
6/07/2023	7:01:00 PM	Parramatta	Nca03 - 119 Macquarie Street	Dwall vac truck works	56	70	53	56	58	70	Works were compliant, hardly audible with drowned out music from Parramatta square.
6/07/2023	7:23:00 PM	Parramatta	46 George Street Parramatta	Vacuum truck clean off	68	70	51	56	62	76	Works were hardly audible and drowned out by conversation at the front of the institution. Traffic dominated. Compliant. Was not able to capture isolated measurement
18/07/2023	10:50:00 PM	Parramatta	46 George Street Parramatta	PARRA027 Stage 3 Phase 2	71	70	60.9	62	67.8	88.4	Monitoring distance to source: 30m. Monitoring distance to source: 5m. Works audible61dB-64dBdB, Traffic, and Pedestrians all affecting results. Result: Compliant.
19/07/2023	10:26:00 PM	Parramatta	46 George Street Parramatta	PARRA027 Stage 3 Phase 2	71	70	58	59.4	66.6	84.8	Monitoring distance to works: 30m. Monitoring Distance to Receiver:5m. Result: Compliant

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Attachment 3 – Real Time Monitoring Summary

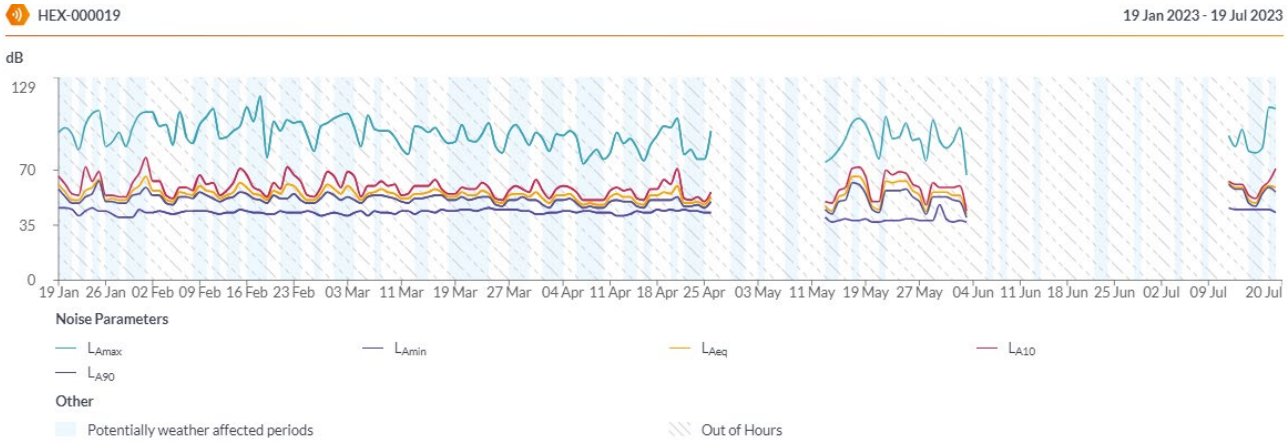
Westmead

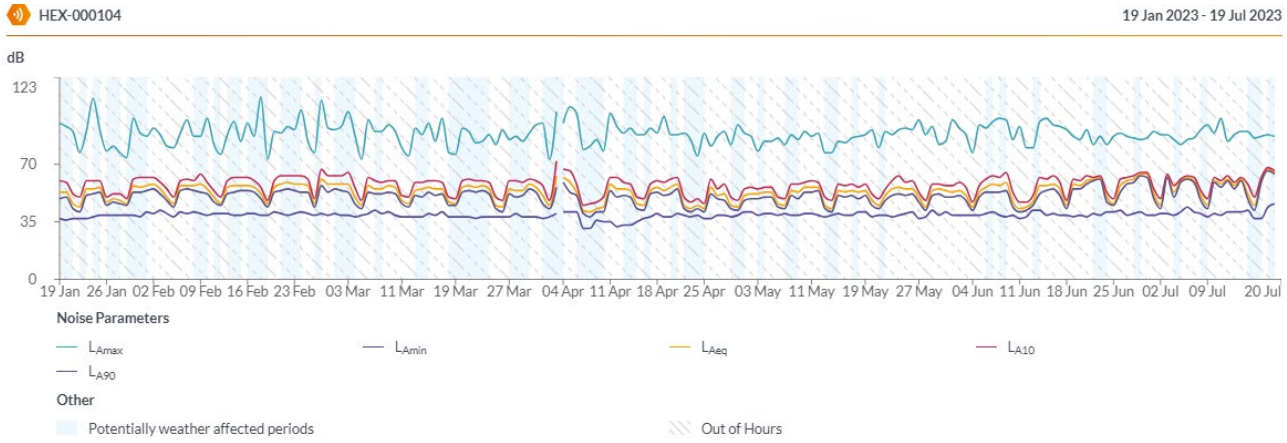




WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

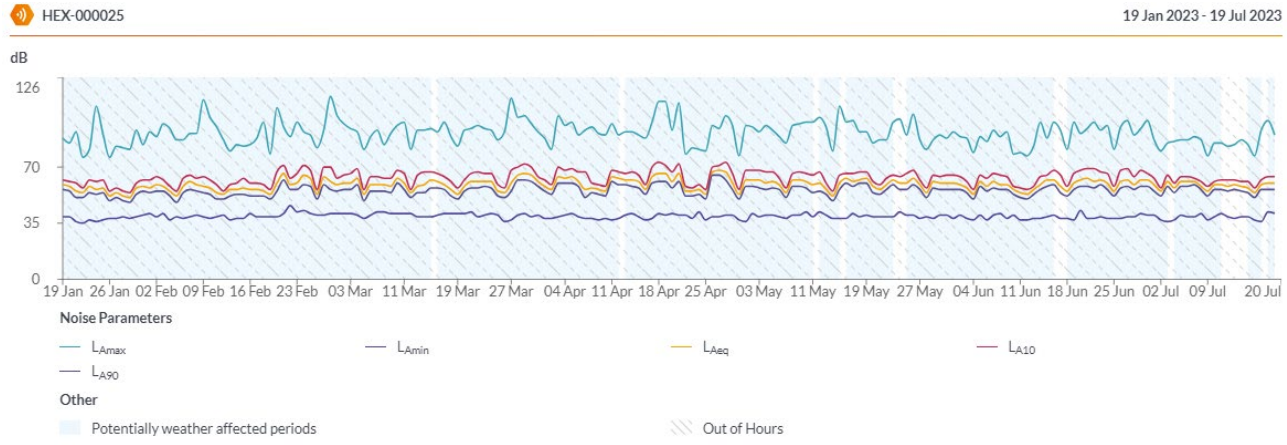
Parramatta

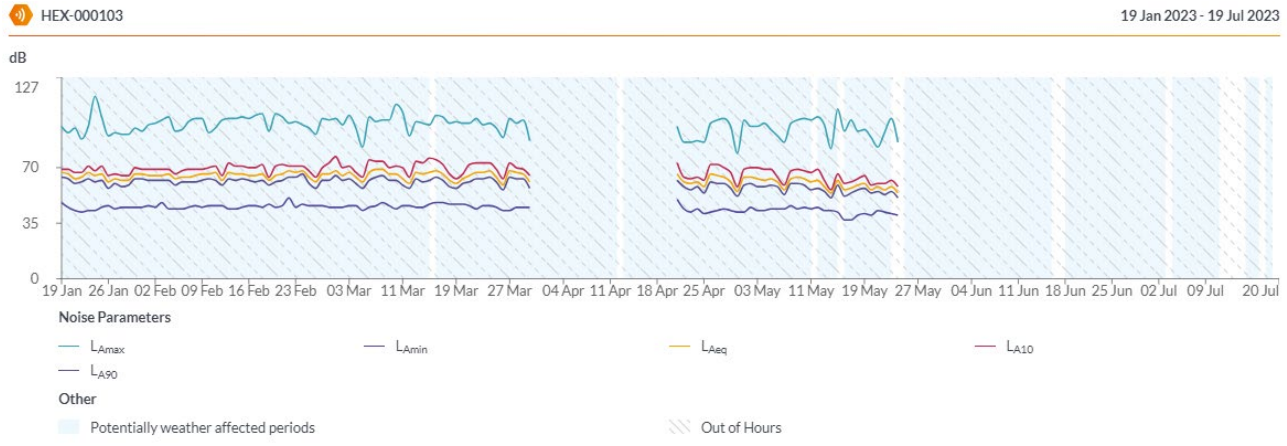


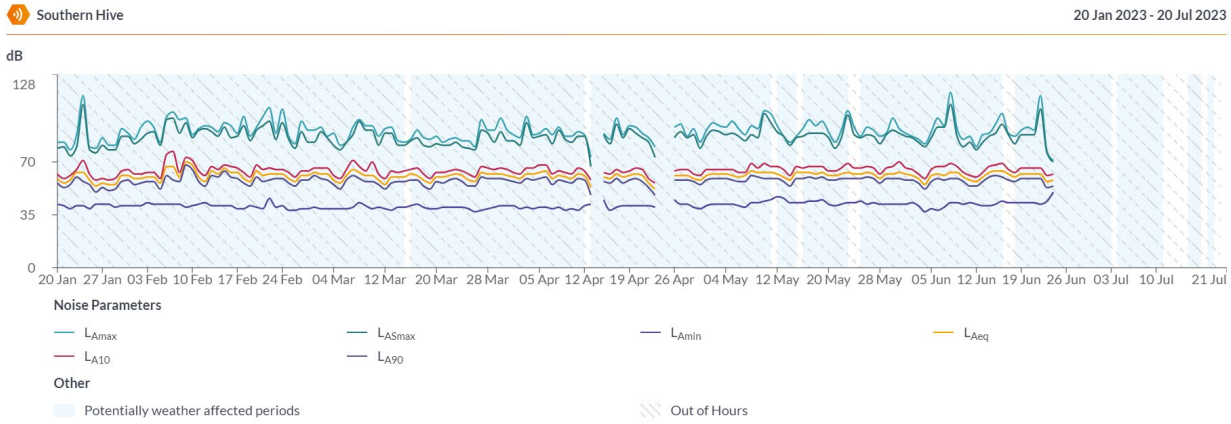


WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

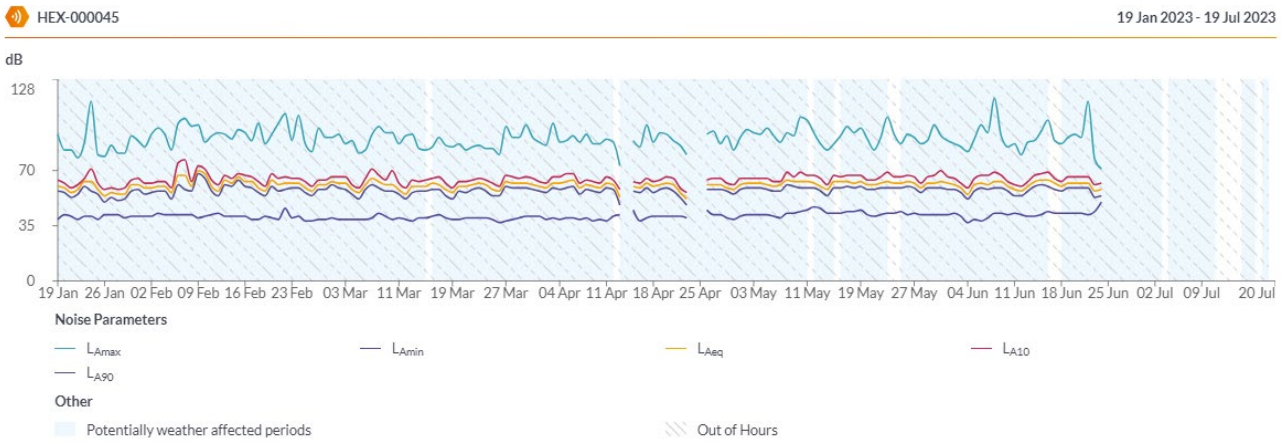
Clyde







WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY



WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Attachment 4 –Vibration Monitoring Summary

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Gamuda Laing O'Rourke

Sydney Metro West WTP Parramatta

GLC related vibration exceedances - Roxy Theatre

Vibration Events

Date and time	Parameter	Value	Rule	Category	Monitoring Point
07 Feb 2023 **09:02**	vSum	**10.87**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre
23T excavator working to compact an access ramp for drill rig onto guide wall. Works ceased and excavator was tracked away from the area. Alternative method for compaction completed using track-rolling instead,					
07 Feb 2023 **09:02**	vSum	**8.14**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre
23T excavator working to compact an access ramp for drill rig onto guide wall. Works ceased and excavator was tracked away from the area. Alternative method for compaction completed using track-rolling instead,					
07 Feb 2023 **09:02**	vSum	**6.07**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre
23T excavator working to compact an access ramp for drill rig onto guide wall. Works ceased and excavator was tracked away from the area. Alternative method for compaction completed using track-rolling instead,					

Gamuda Laing O'Rourke

Sydney Metro West WTP Parramatta

Vibration Events

Date and time	Parameter	Value	Rule	Category	Monitoring Point
23 Jan 2023 **07:50**	vSum	**355.33**	Vibration Waveform **mm/s**	Installation	George St Shops
23 Jan 2023 **07:50**	vSum	**243.77**	Vibration Waveform **mm/s**	Installation	George St Shops
23 Jan 2023 **07:51**	vSum	**255.13**	Vibration Waveform **mm/s**	Installation	George St Shops
23 Jan 2023 **07:51**	vSum	**242.97**	Vibration Waveform **mm/s**	Installation	George St Shops
23 Jan 2023 **07:51**	vSum	**319.37**	Vibration Waveform **mm/s**	Installation	George St Shops
23 Jan 2023 **07:51**	vSum	**366.13**	Vibration Waveform **mm/s**	Installation	George St Shops
23 Jan 2023 **07:51**	vSum	**328.51**	Vibration Waveform **mm/s**	Installation	George St Shops
23 Jan 2023 **07:52**	vSum	**333.69**	Vibration Waveform **mm/s**	Installation	George St Shops
23 Jan 2023 **07:52**	vSum	**401.31**	Vibration Waveform **mm/s**	Installation	George St Shops
23 Jan 2023 **07:52**	vSum	**340.98**	Vibration Waveform **mm/s**	Installation	George St Shops
23 Jan 2023 **07:52**	vSum	**491.56**	Vibration Waveform **mm/s**	Installation	George St Shops
24 Jan 2023 **21:13**	vSum	**7.91**	Vibration Waveform **mm/s**	Weather Induced: Heavy Electric Storm	George St Shops
Heavy thunder storm					
24 Jan 2023 **21:13**	vSum	**19.54**	Vibration Waveform **mm/s**	Weather Induced: Heavy Electric Storm	Kia Ora
Heavy thunder storm					

24 Jan 2023 **21:14**	vSum	**10.67**	Vibration Waveform **mm/s**	Weather Induced: Heavy Electric Storm	George St Shops
Heavy thunder storm					
24 Jan 2023 **21:15**	vSum	**10.55**	Vibration Waveform **mm/s**	Weather Induced: Heavy Electric Storm	George St Shops
Heavy thunder storm					
24 Jan 2023 **21:15**	vSum	**5.90**	Vibration Waveform **mm/s**	Weather Induced: Heavy Electric Storm	George St Shops
Heavy thunder storm					
24 Jan 2023 **21:16**	vSum	**11.82**	Vibration Waveform **mm/s**	Weather Induced: Heavy Electric Storm	George St Shops
Heavy thunder storm					
24 Jan 2023 **21:16**	vSum	**11.51**	Vibration Waveform **mm/s**	Weather Induced: Heavy Electric Storm	George St Shops
Heavy thunder storm					
24 Jan 2023 **21:16**	vSum	**8.96**	Vibration Waveform **mm/s**	Weather Induced: Heavy Electric Storm	George St Shops
Heavy thunder storm					
24 Jan 2023 **21:17**	vSum	**9.66**	Vibration Waveform **mm/s**	Weather Induced: Heavy Electric Storm	George St Shops
Heavy thunder storm					
24 Jan 2023 **21:19**	vSum	**10.90**	Vibration Waveform **mm/s**	Weather Induced: Heavy Electric Storm	George St Shops
Heavy thunder storm					
24 Jan 2023 **21:23**	vSum	**23.44**	Vibration Waveform **mm/s**	Weather Induced: Heavy Electric Storm	George St Shops
Heavy thunder storm					
24 Jan 2023 **21:39**	vSum	**13.06**	Vibration Waveform **mm/s**	Weather Induced: Heavy Electric Storm	George St Shops
Heavy thunder storm					

25 Jan 2023 **19:58**	vSum	**695.50**	Vibration Waveform **mm/s**	Non GLC related	240 Church Street Parramatta

No GLC works being completed at this time.

30 Jan 2023 **07:46**	vSum	**549.51**	Vibration Waveform **mm/s**	Installation	George St Shops

Moving monitor to revised location to assist with guide wall excavation monitoring.

30 Jan 2023 **07:46**	vSum	**346.11**	Vibration Waveform **mm/s**	Installation	George St Shops

Moving monitor to revised location to assist with guide wall excavation monitoring.

30 Jan 2023 **07:46**	vSum	**359.57**	Vibration Waveform **mm/s**	Installation	George St Shops

Moving monitor to revised location to assist with guide wall excavation monitoring.

30 Jan 2023 **07:47**	vSum	**465.53**	Vibration Waveform **mm/s**	Installation	George St Shops

Moving monitor to revised location to assist with guide wall excavation monitoring.

30 Jan 2023 **07:47**	vSum	**408.20**	Vibration Waveform **mm/s**	Installation	George St Shops

Moving monitor to revised location to assist with guide wall excavation monitoring.

30 Jan 2023 **07:47**	vSum	**434.13**	Vibration Waveform **mm/s**	Installation	George St Shops

Moving monitor to revised location to assist with guide wall excavation monitoring.

30 Jan 2023 **07:53**	vSum	**515.13**	Vibration Waveform **mm/s**	Installation	George St Shops

Moving monitor to revised location to assist with guide wall excavation monitoring.

30 Jan 2023 **12:07**	vSum	**6.14**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

No vibration induced works are going ahead beside the roxy building. 12T excavator sighted working there.

30 Jan 2023 **12:12**	vSum	**5.35**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

No vibration induced works are going ahead beside the roxy building. 12T excavator sighted working there.

30 Jan 2023 **12:21**	vSum	**5.73**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

No vibration induced works are going ahead beside the roxy building. 12T excavator sighted working there.

30 Jan 2023 **12:49**	vSum	**5.99**	Vibration Waveform **mm/s**	Vehicle Movement	Roxy Theatre

Vacuum Truck in the vicinity completing NDD works

30 Jan 2023 **12:50**	vSum	**6.84**	Vibration Waveform **mm/s**	Vehicle Movement	Roxy Theatre
Vacuum Truck in the vicinity completing NDD works					
30 Jan 2023 **12:53**	vSum	**7.63**	Vibration Waveform **mm/s**	Vehicle Movement	Roxy Theatre
Vacuum Truck in the vicinity completing NDD works					
30 Jan 2023 **12:54**	vSum	**7.00**	Vibration Waveform **mm/s**	Vehicle Movement	Roxy Theatre
Vacuum Truck in the vicinity completing NDD works					
30 Jan 2023 **12:55**	vSum	**1.91**	Vibration Waveform **mm/s**	Vehicle Movement	Roxy Theatre
Vacuum Truck in the vicinity completing NDD works					
30 Jan 2023 **12:57**	vSum	**7.13**	Vibration Waveform **mm/s**	Vehicle Movement	Roxy Theatre
30 Jan 2023 **14:10**	vSum	**5.64**	Vibration Waveform **mm/s**	Vehicle Movement	Roxy Theatre
30 Jan 2023 **14:10**	vSum	**5.53**	Vibration Waveform **mm/s**	Vehicle Movement	Roxy Theatre
30 Jan 2023 **14:17**	vSum	**11.51**	Vibration Waveform **mm/s**	Vehicle Movement	Roxy Theatre
30 Jan 2023 **17:28**	vSum	**5.92**	Vibration Waveform **mm/s**	Non GLC related	Roxy Theatre
No works being undertaken or personnel on-site at time of alert. Heavy rainfall being experienced at the time of event.					
30 Jan 2023 **17:30**	vSum	**17.69**	Vibration Waveform **mm/s**	Non GLC related	Kia Ora
No works being undertaken or personnel on-site at time of alert. Heavy rainfall being experienced at the time of event.					
30 Jan 2023 **17:46**	vSum	**6.76**	Vibration Waveform **mm/s**	Non GLC related	240 Church Street Parramatta
No works being undertaken or personnel on-site at time of alert. Heavy rainfall being experienced at the time of event.					
30 Jan 2023 **17:48**	vSum	**13.80**	Vibration Waveform **mm/s**	Non GLC related	Kia Ora
No works being undertaken or personnel on-site at time of alert. Heavy rainfall being experienced at the time of event.					
30 Jan 2023 **17:49**	vSum	**12.11**	Vibration Waveform **mm/s**	Non GLC related	Kia Ora
No works being undertaken or personnel on-site at time of alert. Heavy rainfall being experienced at the time of event.					
30 Jan 2023 **17:51**	vSum	**16.95**	Vibration Waveform **mm/s**	Non GLC related	Kia Ora
No works being undertaken or personnel on-site at time of alert. Heavy rainfall being experienced at the time of event.					

31 Jan 2023 **10:01**	vSum	**7.13**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Excavator working in the area but not directly adjacent to the building. Personnel on foot in the area dewatering adjacent trench - personnel believed to have interfered with the monitor.

31 Jan 2023 **14:35**	vSum	**13.08**	Vibration Waveform **mm/s**	Human movement	Kia Ora
01 Feb 2023 **07:26**	vSum	**9.00**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
01 Feb 2023 **09:50**	vSum	**7.81**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
01 Feb 2023 **09:54**	vSum	**8.36**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
01 Feb 2023 **09:54**	vSum	**8.26**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
01 Feb 2023 **09:56**	vSum	**7.45**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
01 Feb 2023 **10:27**	vSum	**20.02**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
01 Feb 2023 **10:29**	vSum	**127.15**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
01 Feb 2023 **11:58**	vSum	**111.99**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
01 Feb 2023 **11:59**	vSum	**301.82**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
01 Feb 2023 **11:59**	vSum	**434.67**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
01 Feb 2023 **12:00**	vSum	**59.48**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
01 Feb 2023 **12:03**	vSum	**105.09**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
01 Feb 2023 **12:08**	vSum	**7.35**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
01 Feb 2023 **12:19**	vSum	**7.48**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
01 Feb 2023 **12:20**	vSum	**6.21**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
01 Feb 2023 **12:34**	vSum	**16.43**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

02 Feb 2023 **09:08**	vSum	**11.26**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

No works occurring in the area. Only personnel traversing this area completing formwork.

02 Feb 2023 **13:43**	vSum	**6.19**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Formworker working in the immediate area comtacted monitor.

02 Feb 2023 **14:54**	vSum	**68.71**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Formworker working in the immediate area and kicked the monitor.

02 Feb 2023 **14:56**	vSum	**8.99**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Formworker working in the immediate area and kicked the monitor.

02 Feb 2023 **15:44**	vSum	**45.76**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Formworker working in the immediate area and kicked the monitor.

02 Feb 2023 **15:44**	vSum	**9.53**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Formworker working in the immediate area and kicked the monitor.

03 Feb 2023 **07:31**	vSum	**6.89**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Formworker working in the immediate area and kicked the monitor.

03 Feb 2023 **07:32**	vSum	**9.90**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Formworker working in the immediate area and kicked the monitor.

03 Feb 2023 **07:32**	vSum	**7.50**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Formworker working in the immediate area and kicked the monitor.

03 Feb 2023 **14:35**	vSum	**5.57**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Formworker working in the area and bumped/interacted with monitor.

04 Feb 2023 **10:05**	vSum	**6.23**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:06**	vSum	**8.57**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:06**	vSum	**9.41**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:06**	vSum	**9.22**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:06**	vSum	**8.26**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:06**	vSum	**9.42**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:06**	vSum	**11.83**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:07**	vSum	**10.21**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:07**	vSum	**11.30**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:07**	vSum	**10.62**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:07**	vSum	**10.35**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:08**	vSum	**7.68**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:08**	vSum	**15.96**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:09**	vSum	**11.75**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:09**	vSum	**11.14**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:09**	vSum	**11.63**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:09**	vSum	**13.18**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:09**	vSum	**15.62**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:12**	vSum	**12.87**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:13**	vSum	**13.03**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:13**	vSum	**12.72**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **10:28**	vSum	**12.59**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

Works were going ahead beside the Roxy Theatre. No vibration limits exceeded our criteria. Continuous monitoring required.

04 Feb 2023 **11:27**	vSum	**6.45**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Formworkers working in the area and have bumped/interacted with monitor.

07 Feb 2023 **09:02**	vSum	**10.87**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

23T excavator working to compact an access ramp for drill rig onto guide wall. Works ceased and excavator was tracked away from the area. Alternative method for compaction completed using track-rolling instead,

07 Feb 2023 **09:02**	vSum	**8.14**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

23T excavator working to compact an access ramp for drill rig onto guide wall. Works ceased and excavator was tracked away from the area. Alternative method for compaction completed using track-rolling instead,

07 Feb 2023 **09:02**	vSum	**6.07**	Vibration Waveform **mm/s**	Plant/Equipment	Roxy Theatre

23T excavator working to compact an access ramp for drill rig onto guide wall. Works ceased and excavator was tracked away from the area. Alternative method for compaction completed using track-rolling instead,

07 Feb 2023 **09:19**	vSum	**380.55**	Vibration Waveform **mm/s**	Installation	Roxy Theatre

Monitor moved to a more suitable location away from foot traffic.

07 Feb 2023 **12:42**	vSum	**17.48**	Vibration Waveform **mm/s**	Human movement	Kia Ora

10 Feb 2023 **09:32**	vSum	**92.97**	Vibration Waveform **mm/s**	Installation	George St West

10 Feb 2023 **10:10**	vSum	**66.95**	Vibration Waveform **mm/s**	Human movement	George St West

Operator was hosing down works however kept bumping the monitor with the hose.

10 Feb 2023 **10:11**	vSum	**128.60**	Vibration Waveform **mm/s**	Human movement	George St West

Operator was hosing down works however kept bumping the monitor with the hose.

10 Feb 2023 **10:11**	vSum	**121.16**	Vibration Waveform **mm/s**	Human movement	George St West

Operator was hosing down works however kept bumping the monitor with the hose.

10 Feb 2023 **10:11**	vSum	**126.15**	Vibration Waveform **mm/s**	Human movement	George St West

Operator was hosing down works however kept bumping the monitor with the hose.

10 Feb 2023 **10:11**	vSum	**121.52**	Vibration Waveform **mm/s**	Human movement	George St West

Operator was hosing down works however kept bumping the monitor with the hose.

10 Feb 2023 **10:12**	vSum	**133.43**	Vibration Waveform **mm/s**	Human movement	George St West

Operator was hosing down works however kept bumping the monitor with the hose.

10 Feb 2023 **10:12**	vSum	**120.72**	Vibration Waveform **mm/s**	Human movement	George St West

Operator was hosing down works however kept bumping the monitor with the hose.

10 Feb 2023 **10:13**	vSum	**168.40**	Vibration Waveform **mm/s**	Human movement	George St West

Operator was hosing down works however kept bumping the monitor with the hose.

10 Feb 2023 **10:13**	vSum	**179.59**	Vibration Waveform **mm/s**	Human movement	George St West

Operator was hosing down works however kept bumping the monitor with the hose.

10 Feb 2023 **10:14**	vSum	**239.64**	Vibration Waveform **mm/s**	Human movement	George St West

Operator was hosing down works however kept bumping the monitor with the hose.

10 Feb 2023 **10:15**	vSum	**172.78**	Vibration Waveform **mm/s**	Human movement	George St West
Operator was hosing down works however kept bumping the monitor with the hose.					
10 Feb 2023 **10:15**	vSum	**305.59**	Vibration Waveform **mm/s**	Human movement	George St West
Operator was hosing down works however kept bumping the monitor with the hose.					
10 Feb 2023 **10:15**	vSum	**277.50**	Vibration Waveform **mm/s**	Human movement	George St West
Operator was hosing down works however kept bumping the monitor with the hose.					
10 Feb 2023 **10:16**	vSum	**330.10**	Vibration Waveform **mm/s**	Human movement	George St West
Operator was hosing down works however kept bumping the monitor with the hose.					
10 Feb 2023 **10:20**	vSum	**201.37**	Vibration Waveform **mm/s**	Human movement	George St West
Operator was hosing down works however kept bumping the monitor with the hose.					
10 Feb 2023 **10:20**	vSum	**118.61**	Vibration Waveform **mm/s**	Human movement	George St West
Operator was hosing down works however kept bumping the monitor with the hose.					
10 Feb 2023 **10:21**	vSum	**310.70**	Vibration Waveform **mm/s**	Human movement	George St West
Operator was hosing down works however kept bumping the monitor with the hose.					
10 Feb 2023 **10:21**	vSum	**225.19**	Vibration Waveform **mm/s**	Human movement	George St West
Operator was hosing down works however kept bumping the monitor with the hose.					
10 Feb 2023 **13:35**	vSum	**6.22**	Vibration Waveform **mm/s**	Human movement	George St West
10 Feb 2023 **13:37**	vSum	**5.95**	Vibration Waveform **mm/s**	Human movement	George St West
16 Feb 2023 **11:37**	vSum	**6.88**	Vibration Waveform **mm/s**	Human movement	George St West
16 Feb 2023 **11:38**	vSum	**15.00**	Vibration Waveform **mm/s**	Human movement	George St West
16 Feb 2023 **11:47**	vSum	**7.65**	Vibration Waveform **mm/s**	Human movement	George St West
16 Feb 2023 **12:43**	vSum	**7.99**	Vibration Waveform **mm/s**	Human movement	George St West
16 Feb 2023 **12:59**	vSum	**6.49**	Vibration Waveform **mm/s**	Human movement	George St West

16 Feb 2023 **13:09**	vSum	**9.45**	Vibration Waveform **mm/s**	Human movement	George St West
16 Feb 2023 **13:09**	vSum	**15.25**	Vibration Waveform **mm/s**	Human movement	George St West
16 Feb 2023 **15:46**	vSum	**15.37**	Vibration Waveform **mm/s**	Human movement	George St West
16 Feb 2023 **15:59**	vSum	**12.49**	Vibration Waveform **mm/s**	Human movement	George St West
16 Feb 2023 **15:59**	vSum	**5.64**	Vibration Waveform **mm/s**	Human movement	George St West
16 Feb 2023 **16:05**	vSum	**11.20**	Vibration Waveform **mm/s**	Human movement	George St West
16 Feb 2023 **16:05**	vSum	**13.33**	Vibration Waveform **mm/s**	Human movement	George St West
16 Feb 2023 **16:05**	vSum	**7.54**	Vibration Waveform **mm/s**	Human movement	George St West
17 Feb 2023 **07:32**	vSum	**6.30**	Vibration Waveform **mm/s**	Human movement	George St West
People interaction with monitor during site set-up.					
18 Feb 2023 **19:31**	vSum	**10.84**	Vibration Waveform **mm/s**	Weather Induced: Heavy Electric Storm	Kia Ora
Storm passed through site between 6:30 - 7:30pm. No construction works being undertaken.					
24 Feb 2023 **12:05**	vSum	**71.63**	Vibration Waveform **mm/s**	Human movement	Kia Ora
24 Feb 2023 **12:12**	vSum	**30.76**	Vibration Waveform **mm/s**	Human movement	Kia Ora
01 Mar 2023 **07:27**	vSum	**6.07**	Vibration Waveform **mm/s**	Installation	Roxy Theatre
03 Mar 2023 **09:45**	vSum	**27.63**	Vibration Waveform **mm/s**	Human movement	Kia Ora
03 Mar 2023 **09:45**	vSum	**11.06**	Vibration Waveform **mm/s**	Human movement	Kia Ora
14 Mar 2023 **14:22**	vSum	**12.12**	Vibration Waveform **mm/s**	Weather Induced: Heavy Electric Storm	Kia Ora
No works being completed at time of event. Heavy rainfall being experienced.					

14 Mar 2023 **14:28**	vSum	**11.64**	Vibration Waveform **mm/s**	Weather Induced: Heavy Electric Storm	Kia Ora

No works being completed at time of event. Heavy rainfall being experienced.

14 Mar 2023 **14:30**	vSum	**12.00**	Vibration Waveform **mm/s**	Weather Induced: Heavy Electric Storm	Kia Ora

No works being completed at time of event. Heavy rainfall being experienced.

14 Mar 2023 **18:20**	vSum	**15.89**	Vibration Waveform **mm/s**	Weather Induced: Heavy Electric Storm	Kia Ora

No works being completed at time of event. Heavy rainfall being experienced.

14 Mar 2023 **18:20**	vSum	**13.25**	Vibration Waveform **mm/s**	Weather Induced: Heavy Electric Storm	Kia Ora

No works being completed at time of event. Heavy rainfall being experienced.

15 Mar 2023 **14:11**	vSum	**12.85**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Personnel interaction with monitor during concreting activities for the new Civic Link footpath.

22 Mar 2023 **16:05**	vSum	**14.02**	Vibration Waveform **mm/s**	Human movement	Kia Ora
22 Mar 2023 **16:05**	vSum	**36.72**	Vibration Waveform **mm/s**	Human movement	Kia Ora
22 Mar 2023 **16:05**	vSum	**34.80**	Vibration Waveform **mm/s**	Human movement	Kia Ora
23 Mar 2023 **08:01**	vSum	**14.41**	Vibration Waveform **mm/s**	Human movement	Kia Ora
23 Mar 2023 **08:07**	vSum	**11.22**	Vibration Waveform **mm/s**	Installation	Kia Ora
23 Mar 2023 **08:08**	vSum	**19.41**	Vibration Waveform **mm/s**	Installation	Kia Ora
23 Mar 2023 **08:08**	vSum	**15.44**	Vibration Waveform **mm/s**	Installation	Kia Ora
23 Mar 2023 **08:12**	vSum	**28.63**	Vibration Waveform **mm/s**	Installation	Kia Ora
23 Mar 2023 **08:12**	vSum	**17.66**	Vibration Waveform **mm/s**	Installation	Kia Ora
23 Mar 2023 **09:09**	vSum	**33.22**	Vibration Waveform **mm/s**	Human movement	Kia Ora

24 Mar 2023 **12:55**	vSum	**10.11**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
24 Mar 2023 **12:55**	vSum	**8.85**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
24 Mar 2023 **12:56**	vSum	**5.68**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
24 Mar 2023 **12:56**	vSum	**7.49**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
24 Mar 2023 **12:56**	vSum	**21.80**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
24 Mar 2023 **12:57**	vSum	**9.70**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
24 Mar 2023 **12:58**	vSum	**281.62**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
24 Mar 2023 **14:53**	vSum	**5.16**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
27 Mar 2023 **10:17**	vSum	**5.90**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	Roxy Theatre
Construction work is compliant and under the threshold					
27 Mar 2023 **10:19**	vSum	**7.24**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	Roxy Theatre
Construction work is compliant and does not hit the threshold					
27 Mar 2023 **10:51**	vSum	**874.91**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
monitored kicked					
27 Mar 2023 **15:13**	vSum	**46.42**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	Roxy Theatre
construction work compliant					
27 Mar 2023 **15:59**	vSum	**5.42**	Vibration Waveform **mm/s**	works are compliant and do not reach vibration thr	Roxy Theatre
works are compliant and do not reach vibration threshold					
27 Mar 2023 **16:00**	vSum	**6.36**	Vibration Waveform **mm/s**	works are compliant and do not reach vibration thr	Roxy Theatre

27 Mar 2023 **16:00**	vSum	**9.79**	Vibration Waveform **mm/s**	works are compliant and do not reach vibration thr	Roxy Theatre
27 Mar 2023 **16:02**	vSum	**74.47**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
27 Mar 2023 **16:02**	vSum	**43.24**	Vibration Waveform **mm/s**	works are compliant and do not reach vibration thr	Roxy Theatre
27 Mar 2023 **16:03**	vSum	**9.27**	Vibration Waveform **mm/s**	works are compliant and do not reach vibration thr	Roxy Theatre
29 Mar 2023 **12:35**	vSum	**12.29**	Vibration Waveform **mm/s**	Human movement	Kia Ora
29 Mar 2023 **15:56**	vSum	**137.70**	Vibration Waveform **mm/s**	Human movement	Kia Ora
02 Apr 2023 **09:20**	vSum	**10.96**	Vibration Waveform **mm/s**	Non GLC related	Kia Ora
02 Apr 2023 **11:32**	vSum	**15.69**	Vibration Waveform **mm/s**	Non GLC related	Kia Ora
04 Apr 2023 **15:07**	vSum	**22.19**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
Personnel interaction with monitor during concreting activities for the new Civic Link footpath.					
05 Apr 2023 **11:43**	vSum	**49.86**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
Personnel interaction with monitor during concreting activities for the new Civic Link footpath.					
05 Apr 2023 **11:43**	vSum	**55.51**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
Personnel interaction with monitor during concreting activities for the new Civic Link footpath.					
05 Apr 2023 **11:45**	vSum	**467.53**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
Personnel interaction with monitor during concreting activities for the new Civic Link footpath.					
05 Apr 2023 **11:45**	vSum	**130.83**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
Personnel interaction with monitor during concreting activities for the new Civic Link footpath.					
05 Apr 2023 **11:45**	vSum	**65.21**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
Personnel interaction with monitor during concreting activities for the new Civic Link footpath.					

05 Apr 2023 **11:45**	vSum	**670.11**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Personnel interaction with monitor during concreting activities for the new Civic Link footpath.

05 Apr 2023 **11:47**	vSum	**98.98**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Personnel interaction with monitor during concreting activities for the new Civic Link footpath.

05 Apr 2023 **12:49**	vSum	**7.38**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Personnel interaction with monitor during concreting activities for the new Civic Link footpath.

05 Apr 2023 **12:49**	vSum	**11.82**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Personnel interaction with monitor during concreting activities for the new Civic Link footpath.

05 Apr 2023 **13:23**	vSum	**29.88**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Personnel interaction with monitor during concreting activities for the new Civic Link footpath.

05 Apr 2023 **13:23**	vSum	**6.07**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Personnel interaction with monitor during concreting activities for the new Civic Link footpath.

05 Apr 2023 **13:23**	vSum	**1000.19**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Personnel interaction with monitor during concreting activities for the new Civic Link footpath.

05 Apr 2023 **13:24**	vSum	**62.23**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Personnel interaction with monitor during concreting activities for the new Civic Link footpath.

06 Apr 2023 **04:57**	vSum	**19.49**	Vibration Waveform **mm/s**	Non GLC related	Roxy Theatre

No works being completed at tome of event. Evidence of animal interaction with monitor

06 Apr 2023 **07:33**	vSum	**744.48**	Vibration Waveform **mm/s**	Installation	Roxy Theatre

Re-installation of monitor in location following charge-up over the easter break.

06 Apr 2023 **07:43**	vSum	**421.58**	Vibration Waveform **mm/s**	Installation	Kia Ora

Re-installation of monitor in location following charge-up over the easter break.

06 Apr 2023 **07:43**	vSum	**520.57**	Vibration Waveform **mm/s**	Installation	Kia Ora

Re-installation of monitor in location following charge-up over the easter break.

11 Apr 2023 **13:33**	vSum	**7.46**	Vibration Waveform **mm/s**	works are compliant and do not reach vibration thr	Roxy Theatre

Clean-up works being conducted adjacent to monitor. No exceedance of cosmetic damage criteria.

11 Apr 2023 **13:34**	vSum	**10.82**	Vibration Waveform **mm/s**	works are compliant and do not reach vibration thr	Roxy Theatre

Clean-up works being conducted adjacent to monitor. No exceedance of cosmetic damage criteria.

11 Apr 2023 **13:34**	vSum	**8.27**	Vibration Waveform **mm/s**	works are compliant and do not reach vibration thr	Roxy Theatre

Clean-up works being conducted adjacent to monitor. No exceedance of cosmetic damage criteria.

11 Apr 2023 **13:48**	vSum	**8.46**	Vibration Waveform **mm/s**	works are compliant and do not reach vibration thr	Roxy Theatre

Clean-up works being conducted adjacent to monitor. No exceedance of cosmetic damage criteria.

11 Apr 2023 **13:48**	vSum	**8.26**	Vibration Waveform **mm/s**	works are compliant and do not reach vibration thr	Roxy Theatre

Clean-up works being conducted adjacent to monitor. No exceedance of cosmetic damage criteria.

11 Apr 2023 **15:25**	vSum	**19.94**	Vibration Waveform **mm/s**	works are compliant and do not reach vibration thr	Roxy Theatre

Excavator working in the are to clean/tidy up. While vibration trigger received, no exceedance of the cosmetic damage criteria.

12 Apr 2023 **17:16**	vSum	**13.19**	Vibration Waveform **mm/s**	Plant/equipment movement	240 Church Street Parramatta
12 Apr 2023 **17:18**	vSum	**29.41**	Vibration Waveform **mm/s**	Plant/equipment movement	240 Church Street Parramatta
12 Apr 2023 **17:19**	vSum	**16.60**	Vibration Waveform **mm/s**	Plant/equipment movement	240 Church Street Parramatta
12 Apr 2023 **17:19**	vSum	**6.59**	Vibration Waveform **mm/s**	Plant/equipment movement	240 Church Street Parramatta
12 Apr 2023 **17:19**	vSum	**15.81**	Vibration Waveform **mm/s**	Plant/equipment movement	240 Church Street Parramatta

14 Apr 2023 **00:40**	vSum	**8.35**	Vibration Waveform **mm/s**	Human movement	240 Church Street Parramatta
Monitor bumped by labourers completing remediation works in the immediate area.					
19 Apr 2023 **11:35**	vSum	**402.90**	Vibration Waveform **mm/s**	Installation	Roxy Theatre
19 Apr 2023 **11:36**	vSum	**512.81**	Vibration Waveform **mm/s**	Installation	Roxy Theatre
19 Apr 2023 **11:36**	vSum	**620.17**	Vibration Waveform **mm/s**	Installation	Roxy Theatre
19 Apr 2023 **11:36**	vSum	**592.93**	Vibration Waveform **mm/s**	Installation	Roxy Theatre
19 Apr 2023 **11:42**	vSum	**633.07**	Vibration Waveform **mm/s**	Installation	Roxy Theatre
19 Apr 2023 **11:43**	vSum	**688.79**	Vibration Waveform **mm/s**	Installation	Roxy Theatre
20 Apr 2023 **12:53**	vSum	**54.58**	Vibration Waveform **mm/s**	Human movement	240 Church Street Parramatta
27 Apr 2023 **14:41**	vSum	**442.06**	Vibration Waveform **mm/s**	Human movement	240 Church Street Parramatta
Surveyors working in and around monitor have bumped monitor resulting in triggers.					
27 Apr 2023 **14:42**	vSum	**51.34**	Vibration Waveform **mm/s**	Human movement	240 Church Street Parramatta
Surveyors working in and around monitor have bumped monitor resulting in triggers.					
27 Apr 2023 **14:47**	vSum	**203.08**	Vibration Waveform **mm/s**	Human movement	240 Church Street Parramatta
Surveyors working in and around monitor have bumped monitor resulting in triggers.					
27 Apr 2023 **15:26**	vSum	**83.22**	Vibration Waveform **mm/s**	Human movement	240 Church Street Parramatta
Surveyors working in and around monitor have bumped monitor resulting in triggers.					
11 May 2023 **07:25**	vSum	**136.18**	Vibration Waveform **mm/s**	Installation	Roxy Theatre
11 May 2023 **07:25**	vSum	**112.91**	Vibration Waveform **mm/s**	Installation	Roxy Theatre
Monitor being moved to alternative monitoring location.					
11 May 2023 **08:30**	vSum	**363.69**	Vibration Waveform **mm/s**	Installation	Roxy Theatre

11 May 2023 **08:30**	vSum	**561.15**	Vibration Waveform **mm/s**	Installation	Roxy Theatre

Monitor being moved to alternative monitoring location.

12 May 2023 **09:07**	vSum	**5.52**	Vibration Waveform **mm/s**	Plant/equipment movement	Roxy Theatre

5T excavator working in adjacent area to complete backfill. Triggers received below criteria for structural and cosmetic damage.

12 May 2023 **09:07**	vSum	**14.62**	Vibration Waveform **mm/s**	Plant/equipment movement	Roxy Theatre

5T excavator working in adjacent area to complete backfill. Triggers received below criteria for structural and cosmetic damage.

12 May 2023 **09:07**	vSum	**10.70**	Vibration Waveform **mm/s**	Plant/equipment movement	Roxy Theatre

5T excavator working in adjacent area to complete backfill. Triggers received below criteria for structural and cosmetic damage.

12 May 2023 **09:07**	vSum	**9.42**	Vibration Waveform **mm/s**	Plant/equipment movement	Roxy Theatre

5T excavator working in adjacent area to complete backfill. Triggers received below criteria for structural and cosmetic damage.

12 May 2023 **09:23**	vSum	**336.65**	Vibration Waveform **mm/s**	Installation	Roxy Theatre

Vibration monitor moved to an adjacent location - triggers from moving monitor.

12 May 2023 **09:34**	vSum	**7.55**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	Roxy Theatre

Trench roller being utilised in adjacent area to compact backfill. Triggers received, however, criteria for structural and cosmetic damage not exceeded.

12 May 2023 **09:35**	vSum	**10.64**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	Roxy Theatre

Trench roller being utilised in adjacent area to compact backfill. Triggers received, however, criteria for structural and cosmetic damage not exceeded.

12 May 2023 **09:35**	vSum	**11.18**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	Roxy Theatre

Trench roller being utilised in adjacent area to compact backfill. Triggers received, however, criteria for structural and cosmetic damage not exceeded.

12 May 2023 **09:35**	vSum	**9.12**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	Roxy Theatre

Trench roller being utilised in adjacent area to compact backfill. Triggers received, however, criteria for structural and cosmetic damage not exceeded.

12 May 2023 **09:36**	vSum	**17.60**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	Roxy Theatre

Trench roller being utilised in adjacent area to compact backfill. Triggers received, however, criteria for structural and cosmetic damage not exceeded.

12 May 2023 **09:36**	vSum	**15.55**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	Roxy Theatre

Trench roller being utilised in adjacent area to compact backfill. Triggers received, however, criteria for structural and cosmetic damage not exceeded.

12 May 2023 **09:49**	vSum	**18.36**	Vibration Waveform **mm/s**	Plant/equipment movement	Roxy Theatre

5T excavator working in adjacent area to complete backfill. Triggers received below criteria for structural and cosmetic damage.

12 May 2023 **09:52**	vSum	**38.38**	Vibration Waveform **mm/s**	Installation	Roxy Theatre

Monitoring being moved to a more suitable location away from backfill works.

12 May 2023 **09:52**	vSum	**536.48**	Vibration Waveform **mm/s**	Installation	Roxy Theatre

Monitoring being moved to a more suitable location away from backfill works.

12 May 2023 **09:59**	vSum	**23.08**	Vibration Waveform **mm/s**	Installation	Roxy Theatre

Monitoring being moved to a more suitable location away from backfill works.

12 May 2023 **10:16**	vSum	**376.48**	Vibration Waveform **mm/s**	Installation	United Lane

12 May 2023 **10:16**	vSum	**477.38**	Vibration Waveform **mm/s**	Installation	United Lane

Monitor deployed in new location. Triggers received during installation.

12 May 2023 **10:16**	vSum	**207.64**	Vibration Waveform **mm/s**	Installation	United Lane

Monitor deployed in new location. Triggers received during installation.

12 May 2023 **10:16**	vSum	**259.79**	Vibration Waveform **mm/s**	Installation	United Lane

Monitor deployed in new location. Triggers received during installation.

12 May 2023 **10:17**	vSum	**296.94**	Vibration Waveform **mm/s**	Installation	United Lane

15 May 2023 **12:18**	vSum	**13.84**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	Roxy Theatre

Excavator working in the immediate area compacting hardstand materials. While notification received, no trigger or structural or cosmetic damage criteria.

22 May 2023 **16:37**	vSum	**8.26**	Vibration Waveform **mm/s**	Vibration Roller	United Lane

Vibration roller operating nearby. Values are permittable.

22 May 2023 **16:39**	vSum	**6.21**	Vibration Waveform **mm/s**	Vibration Roller	United Lane

Vibration roller operating nearby. Values are permittable.

22 May 2023 **16:41**	vSum	**8.72**	Vibration Waveform **mm/s**	Vibration Roller	United Lane

Vibration roller operating nearby. Values are permittable.

22 May 2023 **16:42**	vSum	**7.93**	Vibration Waveform **mm/s**	Vibration Roller	United Lane

Vibration roller operating nearby. Values are permittable.

22 May 2023 **16:42**	vSum	**9.36**	Vibration Waveform **mm/s**	Vibration Roller	United Lane

Vibration roller operating nearby. Values are permittable.

22 May 2023 **16:43**	vSum	**9.95**	Vibration Waveform **mm/s**	Vibration Roller	United Lane

Vibration roller operating nearby. Values are permittable.

23 May 2023 **11:15**	vSum	**5.88**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction activities being completed on adjacent piling pad. While triggers received, none over structural or cosmetic damage criteria.

23 May 2023 **11:38**	vSum	**6.12**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction activities being completed on adjacent piling pad. While triggers received, none over structural or cosmetic damage criteria.

23 May 2023 **14:26**	vSum	**75.06**	Vibration Waveform **mm/s**	Installation	United Lane

Battery being replaced on monitoring device.

23 May 2023 **14:28**	vSum	**50.76**	Vibration Waveform **mm/s**	Installation	United Lane

Battery being replaced on monitoring device.

23 May 2023 **14:47**	vSum	**44.19**	Vibration Waveform **mm/s**	Installation	United Lane

Battery being replaced on monitoring device.

23 May 2023 **14:47**	vSum	**110.33**	Vibration Waveform **mm/s**	Installation	United Lane

Battery being replaced on monitoring device.

23 May 2023 **14:49**	vSum	**387.99**	Vibration Waveform **mm/s**	Monitor displaced	United Lane

24 May 2023 **07:23**	vSum	**5.89**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **07:24**	vSum	**7.95**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **07:24**	vSum	**5.86**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **07:24**	vSum	**7.14**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **07:24**	vSum	**9.90**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **07:38**	vSum	**9.47**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **07:45**	vSum	**17.69**	Vibration Waveform **mm/s**	Installation	Roxy Theatre

24 May 2023 **07:45**	vSum	**216.83**	Vibration Waveform **mm/s**	Installation	Roxy Theatre

Battry level being checked on monitor.

24 May 2023 **08:09**	vSum	**311.61**	Vibration Waveform **mm/s**	Installation	United Lane

24 May 2023 **08:09**	vSum	**104.93**	Vibration Waveform **mm/s**	Installation	United Lane

Battery being checked and removed from monitor.

24 May 2023 **08:09**	vSum	**213.01**	Vibration Waveform **mm/s**	Installation	United Lane

Battery being checked and removed from monitor.

24 May 2023 **08:09**	vSum	**329.60**	Vibration Waveform **mm/s**	Installation	United Lane

Battery being checked and removed from monitor.

24 May 2023 **08:10**	vSum	**285.49**	Vibration Waveform **mm/s**	Installation	United Lane

24 May 2023 **08:10**	vSum	**323.29**	Vibration Waveform **mm/s**	Installation	United Lane

Battery being checked and removed from monitor.

24 May 2023 **08:23**	vSum	**5.79**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction of piling pad being completed in adjacent location. While triggers received, these are below the structural and cosmetic damage criteria.

24 May 2023 **08:27**	vSum	**7.26**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **08:30**	vSum	**5.47**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **08:38**	vSum	**6.54**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **11:50**	vSum	**71.65**	Vibration Waveform **mm/s**	Installation	Roxy Theatre

Battery being checked/replaced on monitor

24 May 2023 **11:50**	vSum	**9.31**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break back being completed adjacent to Roxy Theatre. While triggers received, no exceedance of structural or cosmetic damage limits.

24 May 2023 **11:51**	vSum	**0.40**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break back being completed adjacent to Roxy Theatre. While triggers received, no exceedance of structural or cosmetic damage limits.

24 May 2023 **12:49**	vSum	**5.35**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **12:49**	vSum	**5.37**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **12:49**	vSum	**5.52**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **13:04**	vSum	**5.79**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **13:04**	vSum	**6.65**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **13:04**	vSum	**6.36**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **13:09**	vSum	**6.10**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **13:13**	vSum	**6.08**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **13:14**	vSum	**6.72**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **15:53**	vSum	**5.66**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **15:53**	vSum	**5.94**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **16:00**	vSum	**6.16**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **16:02**	vSum	**6.12**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

24 May 2023 **16:18**	vSum	**6.69**	Vibration Waveform **mm/s**	Earthworks Compaction of Material	United Lane

Compaction being completed on piling pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

25 May 2023 **07:06**	vSum	**260.87**	Vibration Waveform **mm/s**	Installation	Roxy Theatre
25 May 2023 **07:07**	vSum	**118.54**	Vibration Waveform **mm/s**	Installation	Roxy Theatre
25 May 2023 **07:07**	vSum	**8.25**	Vibration Waveform **mm/s**	Installation	Roxy Theatre
25 May 2023 **07:14**	vSum	**26.58**	Vibration Waveform **mm/s**	Installation	United Lane
25 May 2023 **07:14**	vSum	**259.67**	Vibration Waveform **mm/s**	Installation	United Lane
25 May 2023 **07:14**	vSum	**15.91**	Vibration Waveform **mm/s**	Installation	United Lane
25 May 2023 **07:24**	vSum	**519.88**	Vibration Waveform **mm/s**	Installation	Kia Ora

25 May 2023 **08:47**	vSum	**6.35**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break-back works being competed adjacent to Roxy Theatre. While triggers received, each are below the structural/cosmetic damage criteria.

25 May 2023 **08:48**	vSum	**6.41**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break-back works being competed adjacent to Roxy Theatre. While triggers received, each are below the structural/cosmetic damage criteria.

25 May 2023 **08:48**	vSum	**5.54**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break-back works being competed adjacent to Roxy Theatre. While triggers received, each are below the structural/cosmetic damage criteria.

25 May 2023 **08:48**	vSum	**5.69**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break-back works being competed adjacent to Roxy Theatre. While triggers received, each are below the structural/cosmetic damage criteria.

25 May 2023 **08:48**	vSum	**11.63**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break-back works being competed adjacent to Roxy Theatre. While triggers received, each are below the structural/cosmetic damage criteria.

25 May 2023 **08:56**	vSum	**8.99**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break-back works being competed adjacent to Roxy Theatre. While triggers received, each are below the structural/cosmetic damage criteria.

25 May 2023 **08:58**	vSum	**9.29**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break-back works being competed adjacent to Roxy Theatre. While triggers received, each are below the structural/cosmetic damage criteria.

25 May 2023 **08:59**	vSum	**8.07**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break-back works being competed adjacent to Roxy Theatre. While triggers received, each are below the structural/cosmetic damage criteria.

25 May 2023 **09:00**	vSum	**7.56**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break-back works being competed adjacent to Roxy Theatre. While triggers received, each are below the structural/cosmetic damage criteria.

25 May 2023 **09:00**	vSum	**9.28**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break-back works being competed adjacent to Roxy Theatre. While triggers received, each are below the structural/cosmetic damage criteria.

25 May 2023 **09:01**	vSum	**11.15**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break-back works being competed adjacent to Roxy Theatre. While triggers received, each are below the structural/cosmetic damage criteria.

25 May 2023 **09:49**	vSum	**5.98**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break-back being completed in adjacent areas. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

25 May 2023 **09:49**	vSum	**6.85**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break-back being completed in adjacent areas. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

25 May 2023 **09:49**	vSum	**6.35**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break-back being completed in adjacent areas. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

25 May 2023 **09:49**	vSum	**8.00**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break-back being completed in adjacent areas. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

25 May 2023 **09:49**	vSum	**6.32**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break-back being completed in adjacent areas. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

25 May 2023 **10:26**	vSum	**7.37**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break back being completed adjacent to Roxy Theatre. While triggers have been received these are below the structural and cosmetic damage thresholds.

25 May 2023 **10:48**	vSum	**7.36**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break back being completed adjacent to Roxy Theatre. While triggers have been received these are below the structural and cosmetic damage thresholds.

25 May 2023 **10:58**	vSum	**123.39**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Site team member accidentially bumped monitor during inspection of works.

25 May 2023 **13:16**	vSum	**8.30**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break back works being completed adjacent to Roxy Theatre monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

25 May 2023 **13:58**	vSum	**9.69**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break back being completed adjacent to Roxy Theatre. While triggers received, these did not exceed structural or cosmetic damage criteria.

25 May 2023 **14:38**	vSum	**8.44**	Vibration Waveform **mm/s**	Guide Wall Break-Back	Roxy Theatre

Guide wall break-back activities being completed adjacent to monitor. Triggers received, however, no exceedance of structural or cosmetic damage criteria.

26 May 2023 **09:39**	vSum	**12.76**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
26 May 2023 **16:56**	vSum	**6.10**	Vibration Waveform **mm/s**	Plant/Equipment	United Lane
27 May 2023 **09:39**	vSum	**199.04**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
27 May 2023 **10:00**	vSum	**11.17**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

29 May 2023 **08:18**	vSum	**6.19**	Vibration Waveform **mm/s**	Non GLC related	Roxy Theatre
29 May 2023 **12:33**	vSum	**7.12**	Vibration Waveform **mm/s**	Trench Roller	United Lane
29 May 2023 **12:34**	vSum	**6.51**	Vibration Waveform **mm/s**	Trench Roller	United Lane
29 May 2023 **15:01**	vSum	**7.95**	Vibration Waveform **mm/s**	Trench Roller	United Lane
29 May 2023 **15:10**	vSum	**8.90**	Vibration Waveform **mm/s**	Trench Roller	United Lane
29 May 2023 **15:11**	vSum	**6.34**	Vibration Waveform **mm/s**	Trench Roller	United Lane
29 May 2023 **15:15**	vSum	**4.23**	Vibration Waveform **mm/s**	Trench Roller	United Lane
29 May 2023 **15:16**	vSum	**7.10**	Vibration Waveform **mm/s**	Trench Roller	United Lane
29 May 2023 **15:17**	vSum	**6.65**	Vibration Waveform **mm/s**	Trench Roller	United Lane
29 May 2023 **15:23**	vSum	**8.57**	Vibration Waveform **mm/s**	Trench Roller	United Lane
29 May 2023 **15:23**	vSum	**6.00**	Vibration Waveform **mm/s**	Trench Roller	United Lane
29 May 2023 **15:24**	vSum	**8.12**	Vibration Waveform **mm/s**	Trench Roller	United Lane
29 May 2023 **15:25**	vSum	**8.63**	Vibration Waveform **mm/s**	Trench Roller	United Lane
30 May 2023 **08:50**	vSum	**7.97**	Vibration Waveform **mm/s**	Human movement	United Lane
30 May 2023 **08:50**	vSum	**6.75**	Vibration Waveform **mm/s**	Human movement	United Lane
30 May 2023 **08:50**	vSum	**5.35**	Vibration Waveform **mm/s**	Human movement	United Lane
30 May 2023 **14:32**	vSum	**5.91**	Vibration Waveform **mm/s**	Human movement	United Lane
30 May 2023 **14:35**	vSum	**7.80**	Vibration Waveform **mm/s**	Human movement	United Lane

30 May 2023 **14:35**	vSum	**7.50**	Vibration Waveform **mm/s**	Human movement	United Lane
30 May 2023 **14:35**	vSum	**5.34**	Vibration Waveform **mm/s**	Human movement	United Lane
30 May 2023 **14:36**	vSum	**6.05**	Vibration Waveform **mm/s**	Human movement	United Lane
30 May 2023 **14:37**	vSum	**8.54**	Vibration Waveform **mm/s**	Human movement	United Lane
30 May 2023 **14:37**	vSum	**9.87**	Vibration Waveform **mm/s**	Human movement	United Lane
01 Jun 2023 **07:32**	vSum	**10.82**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	D-Wall Test Panel
01 Jun 2023 **10:11**	vSum	**7.68**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	D-Wall Test Panel
01 Jun 2023 **14:08**	vSum	**14.75**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	D-Wall Test Panel
01 Jun 2023 **14:08**	vSum	**16.42**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	D-Wall Test Panel
01 Jun 2023 **15:12**	vSum	**12.06**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	D-Wall Test Panel
02 Jun 2023 **09:50**	vSum	**26.08**	Vibration Waveform **mm/s**	Grabber Banging on Concrete	D-Wall Test Panel

D-Wall Test Panel, 2M depth trial Spoil unload from inside the grabber was difficult to unload and too dangerous for spotter to shovel material out of the grab. During an actual D-Wall Excavation, the grabber will be lubricated with bentonite slurry when taking out material, unlikelihood of material stuck between the grabber.

02 Jun 2023 **09:51**	vSum	**13.02**	Vibration Waveform **mm/s**	Grabber Banging on Concrete	D-Wall Test Panel

D-Wall Test Panel, 2M depth trial Spoil unload from inside the grabber was difficult to unload and too dangerous for spotter to shovel material out of the grab. During an actual D-Wall Excavation, the grabber will be lubricated with bentonite slurry when taking out material, unlikelihood of material stuck between the grabber.

02 Jun 2023 **09:51**	vSum	**24.32**	Vibration Waveform **mm/s**	Grabber Banging on Concrete	D-Wall Test Panel

D-Wall Test Panel, 2M depth trial Spoil unload from inside the grabber was difficult to unload and too dangerous for spotter to shovel material out of the grab. During an actual D-Wall Excavation, the grabber will be lubricated with bentonite slurry when taking out material, unlikelihood of material stuck between the grabber.

02 Jun 2023 **09:55**	vSum	**7.73**	Vibration Waveform **mm/s**	Grabber Banging on Concrete	D-Wall Test Panel

D-Wall Test Panel, 2M depth trial Spoil unload from inside the grabber was difficult to unload and too dangerous for spotter to shovel material out of the grab. During an actual D-Wall Excavation, the grabber will be lubricated with bentonite slurry when taking out material, unlikelihood of material stuck between the grabber.

02 Jun 2023 **09:57**	vSum	**7.72**	Vibration Waveform **mm/s**	Grabber Banging on Concrete	D-Wall Test Panel

D-Wall Test Panel, 2M depth trial Spoil unload from inside the grabber was difficult to unload and too dangerous for spotter to shovel material out of the grab. During an actual D-Wall Excavation, the grabber will be lubricated with bentonite slurry when taking out material, unlikelihood of material stuck between the grabber.

02 Jun 2023 **09:58**	vSum	**13.21**	Vibration Waveform **mm/s**	Grabber Banging on Concrete	D-Wall Test Panel

D-Wall Test Panel, 2M depth trial Spoil unload from inside the grabber was difficult to unload and too dangerous for spotter to shovel material out of the grab. During an actual D-Wall Excavation, the grabber will be lubricated with bentonite slurry when taking out material, unlikelihood of material stuck between the grabber.

02 Jun 2023 **09:59**	vSum	**11.31**	Vibration Waveform **mm/s**	Grabber Banging on Concrete	D-Wall Test Panel

D-Wall Test Panel, 2M depth trial Spoil unload from inside the grabber was difficult to unload and too dangerous for spotter to shovel material out of the grab. During an actual D-Wall Excavation, the grabber will be lubricated with bentonite slurry when taking out material, unlikelihood of material stuck between the grabber.

02 Jun 2023 **09:59**	vSum	**12.38**	Vibration Waveform **mm/s**	Grabber Banging on Concrete	D-Wall Test Panel

D-Wall Test Panel, 2M depth trial Spoil unload from inside the grabber was difficult to unload and too dangerous for spotter to shovel material out of the grab. During an actual D-Wall Excavation, the grabber will be lubricated with bentonite slurry when taking out material, unlikelihood of material stuck between the grabber.

02 Jun 2023 **10:16**	vSum	**13.72**	Vibration Waveform **mm/s**	Grabber Banging on Concrete	D-Wall Test Panel

D-Wall Test Panel, 2M depth trial Spoil unload from inside the grabber was difficult to unload and too dangerous for spotter to shovel material out of the grab. During an actual D-Wall Excavation, the grabber will be lubricated with bentonite slurry when taking out material, unlikelihood of material stuck between the grabber.

02 Jun 2023 **11:30**	vSum	**7.68**	Vibration Waveform **mm/s**	Grabber Banging on Concrete	D-Wall Test Panel

02 Jun 2023 **11:30**	vSum	**11.18**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	D-Wall Test Panel
02 Jun 2023 **11:30**	vSum	**12.63**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	D-Wall Test Panel
02 Jun 2023 **12:20**	vSum	**10.81**	Vibration Waveform **mm/s**	Grabber Banging on Concrete	D-Wall Test Panel
02 Jun 2023 **12:21**	vSum	**7.49**	Vibration Waveform **mm/s**	Grabber Banging on Concrete	D-Wall Test Panel
02 Jun 2023 **12:25**	vSum	**7.91**	Vibration Waveform **mm/s**	Grabber Banging on Concrete	D-Wall Test Panel
02 Jun 2023 **12:25**	vSum	**11.14**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	D-Wall Test Panel
02 Jun 2023 **12:25**	vSum	**10.65**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	D-Wall Test Panel
02 Jun 2023 **12:39**	vSum	**11.23**	Vibration Waveform **mm/s**	Grabber Banging on Concrete	D-Wall Test Panel
02 Jun 2023 **14:30**	vSum	**663.80**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	D-Wall Test Panel
04 Jun 2023 **19:39**	vSum	**24.25**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
Electricians working within that area have bumped the vibration monitor					
04 Jun 2023 **19:39**	vSum	**34.98**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
Electricians working within that area have bumped the vibration monitor					
05 Jun 2023 **09:36**	vSum	**70.77**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
Electricians installing cable tray bumped into the device					

08 Jun 2023 **10:31**	vSum	**458.95**	Vibration Waveform **mm/s**	Human movement	Kia Ora
Workers working around the area					
08 Jun 2023 **13:03**	vSum	**6.97**	Vibration Waveform **mm/s**	Human movement	240 Church St
Workers working around the area					
08 Jun 2023 **13:34**	vSum	**8.29**	Vibration Waveform **mm/s**	Human movement	240 Church St
Workers working around the area					
08 Jun 2023 **13:35**	vSum	**6.52**	Vibration Waveform **mm/s**	Human movement	240 Church St
Workers working around the area					
08 Jun 2023 **13:42**	vSum	**8.07**	Vibration Waveform **mm/s**	Human movement	240 Church St
Workers working around the area					
08 Jun 2023 **14:39**	vSum	**13.26**	Vibration Waveform **mm/s**	Human movement	240 Church St
Workers working around the area					
08 Jun 2023 **14:40**	vSum	**6.04**	Vibration Waveform **mm/s**	Human movement	240 Church St
Workers working around the area					
08 Jun 2023 **14:45**	vSum	**18.25**	Vibration Waveform **mm/s**	Human movement	240 Church St
Workers working around the area					
08 Jun 2023 **14:51**	vSum	**5.36**	Vibration Waveform **mm/s**	Human movement	240 Church St
Workers working around the area					
14 Jun 2023 **13:53**	vSum	**6.58**	Vibration Waveform **mm/s**	Installation	Roxy Theatre
14 Jun 2023 **15:19**	vSum	**31.42**	Vibration Waveform **mm/s**	Installation	Roxy Theatre
15 Jun 2023 **08:17**	vSum	**6.17**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
16 Jun 2023 **06:59**	vSum	**11.53**	Vibration Waveform **mm/s**	Installation	Roxy Theatre
Worker moved the vibration monitor					

16 Jun 2023 **10:32**	vSum	**131.40**	Vibration Waveform **mm/s**	Monitor displaced	Roxy Theatre
Worker moved the vibration monitor to access inclinometer at the monitoring site					
16 Jun 2023 **11:00**	vSum	**7.37**	Vibration Waveform **mm/s**	Installation	Roxy Theatre
Worker moved the vibration monitor					
21 Jun 2023 **12:15**	vSum	**37.80**	Vibration Waveform **mm/s**	Monitor displaced	Roxy Theatre
Monitor bumped by SixSense personnel completing commissioning of inclinometer in the immediate area. No vibration generating works were otherwise being completed on the site at time of alert being received.					
29 Jun 2023 **11:57**	vSum	**368.09**	Vibration Waveform **mm/s**	Installation	Cutter TEMP_230629
29 Jun 2023 **11:57**	vSum	**374.74**	Vibration Waveform **mm/s**	Installation	Cutter TEMP_230629
29 Jun 2023 **11:58**	vSum	**437.59**	Vibration Waveform **mm/s**	Installation	Cutter TEMP_230629
29 Jun 2023 **11:58**	vSum	**456.04**	Vibration Waveform **mm/s**	Installation	Cutter TEMP_230629
29 Jun 2023 **11:58**	vSum	**523.16**	Vibration Waveform **mm/s**	Installation	Cutter TEMP_230629
29 Jun 2023 **16:05**	vSum	**54.14**	Vibration Waveform **mm/s**	Installation	Cutter TEMP_230629
30 Jun 2023 **07:50**	vSum	**55.71**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
Alternating battery packs					
03 Jul 2023 **11:34**	vSum	**495.23**	Vibration Waveform **mm/s**	Human movement	Grabber_P05
03 Jul 2023 **12:27**	vSum	**29.19**	Vibration Waveform **mm/s**	Human movement	Kia Ora
03 Jul 2023 **15:12**	vSum	**5.44**	Vibration Waveform **mm/s**	Human movement	Grabber_P05
03 Jul 2023 **15:18**	vSum	**5.77**	Vibration Waveform **mm/s**	Human movement	Grabber_P05
03 Jul 2023 **15:23**	vSum	**6.04**	Vibration Waveform **mm/s**	Human movement	Grabber_P05
03 Jul 2023 **16:25**	vSum	**6.26**	Vibration Waveform **mm/s**	Human movement	Grabber_P05

03 Jul 2023 **16:29**	vSum	**5.43**	Vibration Waveform **mm/s**	Human movement	Grabber_P05
03 Jul 2023 **16:56**	vSum	**1042.83**	Vibration Waveform **mm/s**	Human movement	Grabber_P05
03 Jul 2023 **16:56**	vSum	**9.53**	Vibration Waveform **mm/s**	Human movement	Grabber_P05
03 Jul 2023 **16:56**	vSum	**87.69**	Vibration Waveform **mm/s**	Human movement	Grabber_P05
03 Jul 2023 **16:56**	vSum	**10.95**	Vibration Waveform **mm/s**	Human movement	Grabber_P05
03 Jul 2023 **16:56**	vSum	**27.40**	Vibration Waveform **mm/s**	Human movement	Grabber_P05
03 Jul 2023 **16:57**	vSum	**12.39**	Vibration Waveform **mm/s**	Human movement	Grabber_P05
03 Jul 2023 **16:57**	vSum	**27.05**	Vibration Waveform **mm/s**	Human movement	Grabber_P05
03 Jul 2023 **16:57**	vSum	**342.31**	Vibration Waveform **mm/s**	Human movement	Grabber_P05
03 Jul 2023 **16:57**	vSum	**32.65**	Vibration Waveform **mm/s**	Human movement	Grabber_P05
03 Jul 2023 **16:57**	vSum	**84.75**	Vibration Waveform **mm/s**	Human movement	Grabber_P05
03 Jul 2023 **16:58**	vSum	**69.42**	Vibration Waveform **mm/s**	Human movement	Grabber_P05
03 Jul 2023 **16:58**	vSum	**62.62**	Vibration Waveform **mm/s**	Human movement	Grabber_P05
03 Jul 2023 **17:00**	vSum	**1100.40**	Vibration Waveform **mm/s**	Human movement	Grabber_P05
04 Jul 2023 **08:26**	vSum	**704.93**	Vibration Waveform **mm/s**	Monitor displaced	Grabber_P05
04 Jul 2023 **08:43**	vSum	**6.66**	Vibration Waveform **mm/s**	Monitor displaced	Grabber_P05
04 Jul 2023 **09:41**	vSum	**7.60**	Vibration Waveform **mm/s**	Installation	Grabber_P05
04 Jul 2023 **09:41**	vSum	**298.71**	Vibration Waveform **mm/s**	Installation	Grabber_P05

05 Jul 2023 **07:51**	vSum	**6.02**	Vibration Waveform **mm/s**	Monitor displaced	Grabber_P05
06 Jul 2023 **12:50**	vSum	**5.82**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
06 Jul 2023 **12:52**	vSum	**6.82**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
06 Jul 2023 **13:21**	vSum	**7.43**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
06 Jul 2023 **13:21**	vSum	**6.95**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
06 Jul 2023 **13:21**	vSum	**11.98**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
06 Jul 2023 **13:21**	vSum	**10.93**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
06 Jul 2023 **13:22**	vSum	**8.01**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
06 Jul 2023 **13:25**	vSum	**5.59**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
06 Jul 2023 **13:25**	vSum	**13.58**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
06 Jul 2023 **13:25**	vSum	**10.64**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre

06 Jul 2023 **13:25**	vSum	**9.06**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
06 Jul 2023 **13:26**	vSum	**5.64**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
06 Jul 2023 **13:26**	vSum	**6.86**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
06 Jul 2023 **13:50**	vSum	**5.38**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
06 Jul 2023 **14:09**	vSum	**5.69**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
06 Jul 2023 **14:09**	vSum	**6.38**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
06 Jul 2023 **14:16**	vSum	**6.67**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **07:59**	vSum	**5.70**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **07:59**	vSum	**7.08**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **08:12**	vSum	**7.79**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **08:12**	vSum	**5.37**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65

10 Jul 2023 **08:18**	vSum	**6.47**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **08:18**	vSum	**13.37**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **08:18**	vSum	**13.95**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **08:19**	vSum	**17.44**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **08:19**	vSum	**26.90**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **08:19**	vSum	**18.70**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **08:19**	vSum	**27.48**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **08:19**	vSum	**7.03**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **08:19**	vSum	**10.70**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **08:20**	vSum	**8.26**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **08:20**	vSum	**12.97**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65

10 Jul 2023 **08:23**	vSum	**7.87**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **08:25**	vSum	**10.67**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **08:25**	vSum	**19.75**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **08:25**	vSum	**13.40**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **08:25**	vSum	**24.11**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **08:30**	vSum	**13.85**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **08:30**	vSum	**22.78**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **08:30**	vSum	**14.99**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **08:30**	vSum	**25.29**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **08:31**	vSum	**794.21**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **08:32**	vSum	**614.85**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre

10 Jul 2023 **08:52**	vSum	**12.19**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **08:58**	vSum	**5.62**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **09:02**	vSum	**8.99**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **09:10**	vSum	**6.68**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **09:12**	vSum	**9.23**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **09:13**	vSum	**6.92**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **09:17**	vSum	**7.13**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **09:17**	vSum	**8.50**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **09:18**	vSum	**6.10**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **09:18**	vSum	**13.91**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **09:18**	vSum	**8.73**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre

10 Jul 2023 **09:18**	vSum	**23.25**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **09:18**	vSum	**12.34**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **09:18**	vSum	**11.92**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **09:18**	vSum	**23.70**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **09:18**	vSum	**11.44**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **09:18**	vSum	**16.32**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **09:20**	vSum	**18.29**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **09:51**	vSum	**8.41**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **10:04**	vSum	**28.85**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **10:04**	vSum	**24.95**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **10:05**	vSum	**0.34**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre

10 Jul 2023 **10:10**	vSum	**10.24**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **10:15**	vSum	**5.14**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **10:15**	vSum	**5.35**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **10:16**	vSum	**5.85**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **10:16**	vSum	**5.83**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **10:18**	vSum	**7.77**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **10:19**	vSum	**6.65**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **10:19**	vSum	**6.12**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **10:19**	vSum	**5.85**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **10:19**	vSum	**5.84**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **10:23**	vSum	**9.77**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65

10 Jul 2023 **10:23**	vSum	**9.78**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **10:24**	vSum	**6.49**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **10:29**	vSum	**10.35**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **10:30**	vSum	**7.21**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **10:36**	vSum	**14.41**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **10:36**	vSum	**8.02**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **11:17**	vSum	**8.33**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **11:17**	vSum	**6.10**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **11:20**	vSum	**5.27**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **11:21**	vSum	**7.74**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **11:24**	vSum	**6.04**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65

10 Jul 2023 **11:29**	vSum	**5.85**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **11:30**	vSum	**7.26**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **11:36**	vSum	**12.58**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **11:36**	vSum	**5.58**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **11:40**	vSum	**6.42**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **11:48**	vSum	**19.95**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **11:48**	vSum	**13.75**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **11:52**	vSum	**6.83**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **11:53**	vSum	**12.00**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **11:53**	vSum	**9.54**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **11:58**	vSum	**9.26**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre

10 Jul 2023 **11:58**	vSum	**7.82**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:02**	vSum	**28.61**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:02**	vSum	**26.30**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:04**	vSum	**7.08**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:10**	vSum	**7.10**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:10**	vSum	**8.10**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:14**	vSum	**8.56**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:16**	vSum	**5.21**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:16**	vSum	**6.68**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:16**	vSum	**6.07**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:16**	vSum	**5.85**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65

10 Jul 2023 **12:16**	vSum	**6.75**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:18**	vSum	**15.31**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:18**	vSum	**12.33**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:20**	vSum	**0.23**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:20**	vSum	**7.05**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:20**	vSum	**6.86**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:23**	vSum	**7.94**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:23**	vSum	**7.86**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:26**	vSum	**7.70**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:28**	vSum	**15.20**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:28**	vSum	**7.08**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65

10 Jul 2023 **12:29**	vSum	**7.33**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:29**	vSum	**8.22**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:29**	vSum	**9.11**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:29**	vSum	**8.57**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:29**	vSum	**9.84**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:29**	vSum	**9.26**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:30**	vSum	**9.28**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:30**	vSum	**10.31**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:32**	vSum	**13.71**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:34**	vSum	**9.50**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:34**	vSum	**9.81**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65

10 Jul 2023 **12:34**	vSum	**10.97**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:34**	vSum	**11.30**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:35**	vSum	**10.67**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:38**	vSum	**10.80**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:38**	vSum	**10.67**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:39**	vSum	**11.63**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:39**	vSum	**12.34**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:39**	vSum	**11.55**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:39**	vSum	**11.92**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:39**	vSum	**11.73**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:40**	vSum	**11.90**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65

10 Jul 2023 **12:44**	vSum	**12.59**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:44**	vSum	**15.82**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:44**	vSum	**17.48**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:44**	vSum	**16.22**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:44**	vSum	**12.87**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:44**	vSum	**17.36**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:44**	vSum	**14.70**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:44**	vSum	**18.43**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:44**	vSum	**13.43**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:44**	vSum	**19.79**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:45**	vSum	**15.37**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre

10 Jul 2023 **12:45**	vSum	**24.43**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:45**	vSum	**15.58**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:45**	vSum	**23.90**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:45**	vSum	**14.82**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:45**	vSum	**22.91**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:46**	vSum	**19.71**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:48**	vSum	**16.43**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:50**	vSum	**22.44**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:50**	vSum	**16.11**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:50**	vSum	**25.66**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:50**	vSum	**23.18**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65

10 Jul 2023 **12:50**	vSum	**18.11**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:50**	vSum	**23.03**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:50**	vSum	**12.15**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:50**	vSum	**16.36**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:50**	vSum	**23.16**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:50**	vSum	**0.28**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:50**	vSum	**13.76**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:51**	vSum	**16.53**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:51**	vSum	**24.87**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:51**	vSum	**17.51**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:51**	vSum	**25.41**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65

10 Jul 2023 **12:51**	vSum	**16.57**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:51**	vSum	**24.40**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:51**	vSum	**17.01**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:51**	vSum	**24.80**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:51**	vSum	**18.28**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:51**	vSum	**26.96**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:51**	vSum	**18.52**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:51**	vSum	**27.69**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:51**	vSum	**17.78**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:51**	vSum	**25.58**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:51**	vSum	**19.11**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre

10 Jul 2023 **12:51**	vSum	**28.17**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:55**	vSum	**18.86**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:55**	vSum	**25.80**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:56**	vSum	**31.76**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:56**	vSum	**21.89**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:56**	vSum	**23.84**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:56**	vSum	**33.33**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:56**	vSum	**20.18**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:56**	vSum	**28.51**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:56**	vSum	**20.17**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:56**	vSum	**29.79**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65

10 Jul 2023 **12:56**	vSum	**20.02**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:56**	vSum	**28.05**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:56**	vSum	**24.40**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:56**	vSum	**31.84**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:57**	vSum	**23.16**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:57**	vSum	**24.51**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:57**	vSum	**33.35**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:57**	vSum	**27.59**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:57**	vSum	**38.47**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **12:57**	vSum	**28.42**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **12:57**	vSum	**34.31**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65

10 Jul 2023 **13:18**	vSum	**9.08**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **13:18**	vSum	**6.94**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **13:21**	vSum	**10.33**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **13:21**	vSum	**6.34**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **13:27**	vSum	**8.34**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **13:30**	vSum	**7.00**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **13:34**	vSum	**7.79**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **13:37**	vSum	**7.67**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **13:37**	vSum	**10.08**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **13:37**	vSum	**11.29**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **13:37**	vSum	**14.00**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65

10 Jul 2023 **13:38**	vSum	**13.44**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **13:38**	vSum	**11.50**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **13:38**	vSum	**14.00**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **13:38**	vSum	**13.21**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **13:51**	vSum	**14.99**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **13:51**	vSum	**11.89**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **13:55**	vSum	**19.20**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **13:55**	vSum	**12.56**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **13:59**	vSum	**9.95**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **14:03**	vSum	**6.90**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **14:44**	vSum	**5.21**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65

10 Jul 2023 **14:46**	vSum	**8.22**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **14:46**	vSum	**7.61**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **14:46**	vSum	**16.13**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **14:46**	vSum	**8.20**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **14:47**	vSum	**6.13**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **14:48**	vSum	**5.19**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **14:48**	vSum	**5.94**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **14:49**	vSum	**5.46**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **14:51**	vSum	**5.84**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **14:52**	vSum	**6.32**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **14:55**	vSum	**7.30**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre

10 Jul 2023 **14:55**	vSum	**9.00**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **14:55**	vSum	**26.47**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **14:55**	vSum	**14.60**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **14:55**	vSum	**11.42**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **14:55**	vSum	**11.05**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **14:55**	vSum	**6.46**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **14:59**	vSum	**8.70**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **15:02**	vSum	**6.71**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **15:03**	vSum	**20.63**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **15:03**	vSum	**10.42**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **15:07**	vSum	**9.27**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre

10 Jul 2023 **15:11**	vSum	**16.63**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **15:11**	vSum	**17.48**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **15:14**	vSum	**6.17**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **15:16**	vSum	**12.49**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **15:16**	vSum	**9.09**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **15:18**	vSum	**5.11**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **15:18**	vSum	**5.04**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **15:20**	vSum	**12.37**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **15:20**	vSum	**21.52**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **15:24**	vSum	**14.10**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **15:24**	vSum	**15.31**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre

10 Jul 2023 **15:29**	vSum	**14.85**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **15:29**	vSum	**25.54**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **15:37**	vSum	**12.76**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **15:37**	vSum	**21.54**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **15:37**	vSum	**15.81**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **15:44**	vSum	**20.27**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **15:44**	vSum	**15.68**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **15:54**	vSum	**23.03**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **15:54**	vSum	**18.59**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **15:58**	vSum	**14.72**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **16:02**	vSum	**12.43**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre

10 Jul 2023 **16:02**	vSum	**5.40**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **16:06**	vSum	**10.41**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **16:11**	vSum	**7.17**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **16:15**	vSum	**5.32**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:17**	vSum	**5.40**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:17**	vSum	**5.38**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:17**	vSum	**7.19**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:26**	vSum	**7.98**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **16:26**	vSum	**0.25**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:31**	vSum	**5.53**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:32**	vSum	**5.60**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65

10 Jul 2023 **16:33**	vSum	**5.81**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:36**	vSum	**15.27**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **16:36**	vSum	**7.81**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:37**	vSum	**6.34**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:38**	vSum	**6.50**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:38**	vSum	**8.91**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:38**	vSum	**9.73**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:39**	vSum	**9.13**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **16:39**	vSum	**8.30**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:41**	vSum	**7.79**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:49**	vSum	**14.98**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre

10 Jul 2023 **16:49**	vSum	**11.71**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:50**	vSum	**9.49**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:50**	vSum	**9.86**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:50**	vSum	**10.33**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:50**	vSum	**10.82**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:51**	vSum	**22.65**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **16:51**	vSum	**14.28**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:54**	vSum	**10.18**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:54**	vSum	**6.28**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **16:54**	vSum	**12.89**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:55**	vSum	**6.44**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre

10 Jul 2023 **16:55**	vSum	**11.02**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:55**	vSum	**6.46**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **16:57**	vSum	**11.04**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **16:58**	vSum	**11.09**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **16:58**	vSum	**6.99**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **16:58**	vSum	**12.30**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:01**	vSum	**11.32**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:01**	vSum	**7.08**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:01**	vSum	**14.44**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:01**	vSum	**8.91**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:01**	vSum	**14.60**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65

10 Jul 2023 **17:01**	vSum	**10.95**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:01**	vSum	**15.46**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:01**	vSum	**10.41**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:01**	vSum	**15.79**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:02**	vSum	**9.07**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:02**	vSum	**16.56**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:02**	vSum	**16.23**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:02**	vSum	**10.08**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:03**	vSum	**15.19**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:04**	vSum	**11.40**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:06**	vSum	**10.54**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre

10 Jul 2023 **17:06**	vSum	**17.14**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:06**	vSum	**14.10**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:06**	vSum	**20.88**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:06**	vSum	**15.32**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:06**	vSum	**22.96**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:06**	vSum	**15.80**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:06**	vSum	**24.60**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:06**	vSum	**16.45**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:06**	vSum	**25.18**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:06**	vSum	**18.21**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:06**	vSum	**26.72**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65

10 Jul 2023 **17:06**	vSum	**23.10**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:06**	vSum	**17.29**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:06**	vSum	**26.40**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:06**	vSum	**19.01**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:06**	vSum	**29.71**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:06**	vSum	**21.02**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:06**	vSum	**31.39**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:06**	vSum	**19.59**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:06**	vSum	**30.76**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:06**	vSum	**20.86**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:06**	vSum	**30.97**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65

10 Jul 2023 **17:07**	vSum	**19.42**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:07**	vSum	**29.86**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:07**	vSum	**19.95**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:07**	vSum	**31.47**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Grabber_P65
10 Jul 2023 **17:07**	vSum	**21.76**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
10 Jul 2023 **17:08**	vSum	**20.78**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
Grabber scrapping against the blinding					
10 Jul 2023 **17:08**	vSum	**19.90**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre
end of shift pressure jet clean up					
11 Jul 2023 **11:53**	vSum	**5.56**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **11:53**	vSum	**5.74**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **11:54**	vSum	**5.29**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **11:54**	vSum	**5.45**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					

11 Jul 2023 **11:54**	vSum	**6.68**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **11:54**	vSum	**6.45**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **11:58**	vSum	**7.50**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **11:58**	vSum	**6.25**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **11:59**	vSum	**6.97**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **12:00**	vSum	**8.15**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **12:01**	vSum	**6.60**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **12:02**	vSum	**6.69**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **12:06**	vSum	**6.82**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **12:08**	vSum	**7.41**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **12:08**	vSum	**7.63**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **12:09**	vSum	**7.77**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					

11 Jul 2023 **12:09**	vSum	**7.85**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **12:10**	vSum	**7.95**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **12:14**	vSum	**5.95**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **12:14**	vSum	**7.18**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **12:14**	vSum	**6.40**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **12:15**	vSum	**5.04**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **12:15**	vSum	**7.10**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **12:15**	vSum	**5.10**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **12:16**	vSum	**2.07**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **12:22**	vSum	**6.84**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
11 Jul 2023 **12:31**	vSum	**6.60**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
Cutter operating					
13 Jul 2023 **13:56**	vSum	**5.48**	Vibration Waveform **mm/s**	Human movement	Grabber_P65
13 Jul 2023 **13:56**	vSum	**5.22**	Vibration Waveform **mm/s**	Human movement	Grabber_P65

13 Jul 2023 **14:01**	vSum	**5.29**	Vibration Waveform **mm/s**	Human movement	Grabber_P65
14 Jul 2023 **11:05**	vSum	**5.60**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **11:05**	vSum	**5.45**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **11:05**	vSum	**5.24**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **11:07**	vSum	**6.40**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **11:11**	vSum	**6.10**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **11:20**	vSum	**5.60**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **11:22**	vSum	**5.80**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **11:22**	vSum	**5.13**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **11:28**	vSum	**5.68**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **11:31**	vSum	**5.13**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **11:34**	vSum	**5.49**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **11:35**	vSum	**5.99**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **11:39**	vSum	**5.49**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **12:18**	vSum	**5.29**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **12:47**	vSum	**5.26**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **12:50**	vSum	**5.30**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **12:51**	vSum	**5.89**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65

14 Jul 2023 **12:56**	vSum	**5.88**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **12:57**	vSum	**5.67**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **12:57**	vSum	**6.18**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **12:58**	vSum	**7.08**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **12:59**	vSum	**5.88**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **12:59**	vSum	**6.08**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **13:01**	vSum	**3.84**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **13:01**	vSum	**5.90**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **13:01**	vSum	**7.12**	Vibration Waveform **mm/s**	Human movement	Grabber_P65
14 Jul 2023 **13:02**	vSum	**6.00**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **13:03**	vSum	**6.95**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **13:03**	vSum	**7.45**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **13:04**	vSum	**6.64**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **13:06**	vSum	**6.78**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **13:08**	vSum	**7.55**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
14 Jul 2023 **13:11**	vSum	**6.93**	Vibration Waveform **mm/s**	cutter in operation	Grabber_P65
17 Jul 2023 **08:05**	vSum	**70.00**	Vibration Waveform **mm/s**	Installation	Roxy Theatre
17 Jul 2023 **15:54**	vSum	**9.84**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre

Worker walking along the pipe lines

17 Jul 2023 **16:00**	vSum	**11.22**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
17 Jul 2023 **16:03**	vSum	**9.85**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
17 Jul 2023 **16:03**	vSum	**5.48**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
17 Jul 2023 **16:04**	vSum	**22.78**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
17 Jul 2023 **16:06**	vSum	**10.08**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
17 Jul 2023 **16:10**	vSum	**20.61**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
17 Jul 2023 **16:18**	vSum	**12.81**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
17 Jul 2023 **16:20**	vSum	**21.40**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
19 Jul 2023 **13:19**	vSum	**6.00**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
Workers in the area standing on the bentonite pipes during fixture					
19 Jul 2023 **13:19**	vSum	**8.03**	Vibration Waveform **mm/s**	Human movement	Roxy Theatre
19 Jul 2023 **17:41**	vSum	**11.18**	Vibration Waveform **mm/s**	Grabber scrapping against the blinding	Roxy Theatre

Gamuda Laing O'Rourke

Sydney Metro WTP Westmead

Vibration Events

Date and time	Parameter	Value	Rule	Category	Monitoring Point
19 Jan 2023 **12:42**	vSum	**793.86**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road
Relocating vibration monitor following charging.					
19 Jan 2023 **12:43**	vSum	**15.55**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road
Relocating vibration monitor following charging.					
19 Jan 2023 **12:43**	vSum	**7.22**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road
Relocating vibration monitor following charging.					
19 Jan 2023 **12:43**	vSum	**16.95**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road
Relocating vibration monitor following charging.					
19 Jan 2023 **12:44**	vSum	**18.55**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road
Relocating vibration monitor following charging.					
19 Jan 2023 **12:44**	vSum	**236.88**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road
Relocating vibration monitor following charging.					
19 Jan 2023 **12:53**	vSum	**357.80**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road
Relocating vibration monitor following charging.					
19 Jan 2023 **12:55**	vSum	**432.71**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road
Relocating vibration monitor following charging.					
19 Jan 2023 **12:55**	vSum	**370.20**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road
Relocating vibration monitor following charging.					
19 Jan 2023 **12:55**	vSum	**332.93**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road
Relocating vibration monitor following charging.					

19 Jan 2023 **12:55**	vSum	**380.55**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Relocating vibration monitor following charging.

19 Jan 2023 **12:58**	vSum	**18.23**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Relocating vibration monitor following charging.

19 Jan 2023 **12:59**	vSum	**402.46**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Relocating vibration monitor following charging.

19 Jan 2023 **13:00**	vSum	**212.77**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Relocating vibration monitor following charging.

19 Jan 2023 **13:00**	vSum	**282.94**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Relocating vibration monitor following charging.

19 Jan 2023 **13:00**	vSum	**389.88**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Relocating vibration monitor following charging.

19 Jan 2023 **13:01**	vSum	**488.62**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Relocating vibration monitor following charging.

19 Jan 2023 **13:02**	vSum	**279.68**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Relocating vibration monitor following charging.

19 Jan 2023 **13:02**	vSum	**294.72**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Relocating vibration monitor following charging.

19 Jan 2023 **13:03**	vSum	**445.00**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Relocating vibration monitor following charging.

19 Jan 2023 **13:03**	vSum	**396.36**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Relocating vibration monitor following charging.

19 Jan 2023 **13:03**	vSum	**404.16**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Relocating vibration monitor following charging.

19 Jan 2023 **13:03**	vSum	**558.79**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Relocating vibration monitor following charging.

19 Jan 2023 **15:06**	vSum	**5.75**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Relocating vibration monitor following charging.

19 Jan 2023 **15:37**	vSum	**216.64**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Relocating vibration monitor following charging.

20 Jan 2023 **07:27**	vSum	**6.00**	Vibration Waveform **mm/s**	Excavation Works	Hawkesbury Road

Excavator working in close proximity to monitor completing piling spoil management. No vibration intensive activities being completed.

20 Jan 2023 **08:46**	vSum	**396.91**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Monitor relocated by Site Superintendent.

20 Jan 2023 **11:21**	vSum	**5.90**	Vibration Waveform **mm/s**	Excavation Works	Hawkesbury Road

Excavator working in close proximity to monitor completing piling spoil management. No vibration intensive activities being completed.

20 Jan 2023 **11:26**	vSum	**6.01**	Vibration Waveform **mm/s**	Excavation Works	Hawkesbury Road

Excavator working in close proximity to monitor completing piling spoil management. No vibration intensive activities being completed.

20 Jan 2023 **11:26**	vSum	**12.13**	Vibration Waveform **mm/s**	Excavation Works	Hawkesbury Road

Excavator working in close proximity to monitor completing piling spoil management. No vibration intensive activities being completed.

20 Jan 2023 **11:27**	vSum	**10.11**	Vibration Waveform **mm/s**	Excavation Works	Hawkesbury Road

Excavator working in close proximity to monitor completing piling spoil management. No vibration intensive activities being completed.

20 Jan 2023 **11:30**	vSum	**11.33**	Vibration Waveform **mm/s**	Excavation Works	Hawkesbury Road

Excavator working in close proximity to monitor completing piling spoil management. No vibration intensive activities being completed.

20 Jan 2023 **11:58**	vSum	**14.56**	Vibration Waveform **mm/s**	Excavation Works	Hawkesbury Road

Excavator working in close proximity to monitor completing piling spoil management. No vibration intensive activities being completed.

20 Jan 2023 **11:59**	vSum	**9.31**	Vibration Waveform **mm/s**	Excavation Works	Hawkesbury Road

Excavator working in close proximity to monitor completing piling spoil management. No vibration intensive activities being completed.

20 Jan 2023 **12:00**	vSum	**5.59**	Vibration Waveform **mm/s**	Excavation Works	Hawkesbury Road

Excavator working in close proximity to monitor completing piling spoil management. No vibration intensive activities being completed.

20 Jan 2023 **12:00**	vSum	**7.32**	Vibration Waveform **mm/s**	Excavation Works	Hawkesbury Road

Excavator working in close proximity to monitor completing piling spoil management. No vibration intensive activities being completed.

20 Jan 2023 **12:01**	vSum	**6.46**	Vibration Waveform **mm/s**	Excavation Works	Hawkesbury Road

Excavator working in close proximity to monitor completing piling spoil management. No vibration intensive activities being completed.

20 Jan 2023 **15:53**	vSum	**13.58**	Vibration Waveform **mm/s**	Excavation Works	Hawkesbury Road

Excavator working in close proximity to monitor completing piling spoil management. No vibration intensive activities being completed.

24 Jan 2023 **10:24**	vSum	**8.53**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Personnel completing works in close proximity to monitor.

25 Jan 2023 **11:29**	vSum	**8.33**	Vibration Waveform **mm/s**	Excavation Works	Hawkesbury Road

Excavation works being completed in close proximity to monitoring device.

25 Jan 2023 **11:30**	vSum	**7.85**	Vibration Waveform **mm/s**	Excavation Works	Hawkesbury Road

Excavation works being completed in close proximity to monitoring device.

30 Jan 2023 **08:37**	vSum	**8.13**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

People working in close proximity to monitor.

30 Jan 2023 **08:37**	vSum	**6.82**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

People working in close proximity to monitor.

30 Jan 2023 **08:38**	vSum	**6.57**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

People working in close proximity to monitor.

30 Jan 2023 **08:38**	vSum	**8.19**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

People working in close proximity to monitor.

01 Feb 2023 **15:37**	vSum	**333.57**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with monitor. Not works related.

01 Feb 2023 **15:41**	vSum	**135.35**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with monitor. Not works related.

02 Feb 2023 **08:26**	vSum	**32.18**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with monitor while cages being assembled in laydown area

02 Feb 2023 **09:11**	vSum	**50.38**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with monitor. Not works related.

02 Feb 2023 **09:37**	vSum	**60.96**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with monitor. Not works related.

03 Feb 2023 **09:11**	vSum	**14.09**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Works assembling piling cages and moving with telehandler close-by.

03 Feb 2023 **13:52**	vSum	**246.59**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with monitor. Not works related.

03 Feb 2023 **13:52**	vSum	**130.66**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with monitor. Not works related.

04 Feb 2023 **08:24**	vSum	**36.88**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with monitor while capping beam was being poured in adjacent area.

06 Feb 2023 **10:00**	vSum	**12.58**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction in laydown area with adjacent piling cages being assembled.

07 Feb 2023 **14:04**	vSum	**9.65**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction in laydown area with adjacent piling cages being assembled.

09 Feb 2023 **12:26**	vSum	**13.97**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction in laydown area with adjacent piling cages being assembled.

09 Feb 2023 **12:29**	vSum	**9.86**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction in laydown area with adjacent piling cages being assembled.

09 Feb 2023 **12:34**	vSum	**9.64**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction in laydown area with adjacent piling cages being assembled.

09 Feb 2023 **12:36**	vSum	**31.39**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction in laydown area with adjacent piling cages being assembled.

10 Feb 2023 **18:00**	vSum	**8.73**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction during site pack-up

11 Feb 2023 **12:04**	vSum	**129.23**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with monitor. Not works related.

11 Feb 2023 **12:14**	vSum	**240.01**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with monitor. Not works related.

20 Feb 2023 **14:14**	vSum	**6.00**	Vibration Waveform **mm/s**	Weather - Rain	Hawkesbury Road

No vibration intensive activities being completed across site.

21 Feb 2023 **07:52**	vSum	**30.00**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with work adjacent to monitor.

21 Feb 2023 **07:52**	vSum	**7.02**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with work adjacent to monitor.

21 Feb 2023 **07:53**	vSum	**364.73**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with work adjacent to monitor.

21 Feb 2023 **07:53**	vSum	**266.96**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with work adjacent to monitor.

21 Feb 2023 **07:53**	vSum	**276.78**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with work adjacent to monitor.

21 Feb 2023 **07:53**	vSum	**232.42**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with work adjacent to monitor.

21 Feb 2023 **07:53**	vSum	**252.59**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with work adjacent to monitor.

21 Feb 2023 **07:54**	vSum	**275.37**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with work adjacent to monitor.

21 Feb 2023 **07:54**	vSum	**232.92**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with work adjacent to monitor.

21 Feb 2023 **07:54**	vSum	**359.34**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with work adjacent to monitor.

21 Feb 2023 **07:54**	vSum	**382.24**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with work adjacent to monitor.

21 Feb 2023 **07:55**	vSum	**543.85**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with work adjacent to monitor.

21 Feb 2023 **07:55**	vSum	**463.11**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with work adjacent to monitor.

21 Feb 2023 **23:56**	vSum	**14.28**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

No vibration intensive activities being completed across site.

23 Feb 2023 **09:08**	vSum	**5.87**	Vibration Waveform **mm/s**	Weather - Rain	Hawkesbury Road

No vibration intensive activities being completed across site.

23 Feb 2023 **09:19**	vSum	**9.04**	Vibration Waveform **mm/s**	Weather - Rain	Hawkesbury Road

No vibration intensive activities being completed across site.

25 Feb 2023 **09:14**	vSum	**208.77**	Vibration Waveform **mm/s**	Non GLC related	Hawkesbury Road

No vibration intensive activities being completed across site.

25 Feb 2023 **09:14**	vSum	**912.70**	Vibration Waveform **mm/s**	Non GLC related	Hawkesbury Road

No vibration intensive activities being completed across site.

25 Feb 2023 **10:06**	vSum	**19.89**	Vibration Waveform **mm/s**	Non GLC related	Hawkesbury Road

No vibration intensive activities being completed across site.

06 Mar 2023 **13:59**	vSum	**35.89**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

No vibration intensive works being completed at time of triggers. Excavators working completing excavation within box of soft materials - no hammering. Personnel in the vicinity so may have been personnel interaction.

06 Mar 2023 **13:59**	vSum	**119.49**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

No vibration intensive works being completed at time of triggers. Excavators working completing excavation within box of soft materials - no hammering. Personnel in the vicinity so may have been personnel interaction.

06 Mar 2023 **14:00**	vSum	**86.77**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

No vibration intensive works being completed at time of triggers. Excavators working completing excavation within box of soft materials - no hammering. Personnel in the vicinity so may have been personnel interaction.

06 Mar 2023 **14:05**	vSum	**471.59**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

No vibration intensive works being completed at time of triggers. Excavators working completing excavation within box of soft materials - no hammering. Personnel in the vicinity so may have been personnel interaction.

09 Mar 2023 **15:42**	vSum	**10.29**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

No vibration intensive activities being completed at time of triggers. Shotcrete activities being completed in box excavation below monitor including aggies and shotcrete rig.

09 Mar 2023 **16:20**	vSum	**31.23**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

No vibration intensive activities being completed at time of triggers. Shotcrete activities being completed in box excavation below monitor including aggies and shotcrete rig.

09 Mar 2023 **16:20**	vSum	**6.70**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

No vibration intensive activities being completed at time of triggers. Shotcrete activities being completed in box excavation below monitor including aggies and shotcrete rig.

24 Mar 2023 **16:02**	vSum	**7.48**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Contractor completing hoarding works in area adjacent monitor. No vibration-intensive activities being completed at the time of triggers.

24 Mar 2023 **16:02**	vSum	**9.56**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Contractor completing hoarding works in area adjacent monitor. No vibration-intensive activities being completed at the time of triggers.

24 Mar 2023 **16:04**	vSum	**7.93**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Contractor completing hoarding works in area adjacent monitor. No vibration-intensive activities being completed at the time of triggers.

24 Mar 2023 **16:07**	vSum	**10.28**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Contractor completing hoarding works in area adjacent monitor. No vibration-intensive activities being completed at the time of triggers.

24 Mar 2023 **16:07**	vSum	**7.04**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Contractor completing hoarding works in area adjacent monitor. No vibration-intensive activities being completed at the time of triggers.

24 Mar 2023 **16:07**	vSum	**14.74**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Contractor completing hoarding works in area adjacent monitor. No vibration-intensive activities being completed at the time of triggers.

24 Mar 2023 **16:11**	vSum	**11.83**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Contractor completing hoarding works in area adjacent monitor. No vibration-intensive activities being completed at the time of triggers.

24 Mar 2023 **16:11**	vSum	**40.65**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Contractor completing hoarding works in area adjacent monitor. No vibration-intensive activities being completed at the time of triggers.

24 Mar 2023 **16:11**	vSum	**25.04**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Contractor completing hoarding works in area adjacent monitor. No vibration-intensive activities being completed at the time of triggers.

24 Mar 2023 **16:11**	vSum	**36.03**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Contractor completing hoarding works in area adjacent monitor. No vibration-intensive activities being completed at the time of triggers.

24 Mar 2023 **16:12**	vSum	**42.36**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Contractor completing hoarding works in area adjacent monitor. No vibration-intensive activities being completed at the time of triggers.

24 Mar 2023 **16:13**	vSum	**15.84**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Contractor completing hoarding works in area adjacent monitor. No vibration-intensive activities being completed at the time of triggers.

24 Mar 2023 **17:47**	vSum	**12.59**	Vibration Waveform **mm/s**	Non GLC related	Hawkesbury Road

No wors being conducted at the time of trigger. Confirmation from Site Supervisor that work activities had ceased for the day and no personnel on-site.

25 Mar 2023 **07:08**	vSum	**6.30**	Vibration Waveform **mm/s**	Non GLC related	Hawkesbury Road

No construction works being completed at the time of event. Confirmed with Site supervisor no-one completing works on-site at time of triggers.

25 Mar 2023 **12:33**	vSum	**11.07**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Confirmed with GLC Supervisor that no vibratory works being completed at the time of triggers. Personnel completing works on hoarding adjacent to the monitor and may have had interaction with the monitor.

25 Mar 2023 **12:55**	vSum	**29.60**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Confirmed with GLC Supervisor that no vibratory works being completed at the time of triggers. Personnel completing works on hoarding adjacent to the monitor and may have had interaction with the monitor.

25 Mar 2023 **12:55**	vSum	**19.77**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Confirmed with GLC Supervisor that no vibratory works being completed at the time of triggers. Personnel completing works on hoarding adjacent to the monitor and may have had interaction with the monitor.

27 Mar 2023 **05:29**	vSum	**38.06**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human interaction with monitor while inspections of work area being completed. No construction works being completed at the time of event. Confirmed with Site supervisor no-one completing works on-site at time of triggers.

27 Mar 2023 **06:15**	vSum	**6.28**	Vibration Waveform **mm/s**	Non GLC related	Hawkesbury Road

No works being completed at the time of event. Confirmed with Site supervisor no-one on-site at time of triggers.

27 Mar 2023 **06:59**	vSum	**8.97**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Survey being completed in the area. Confirmed with Site Supervisor that no vibration-intensive activities being completed.

27 Mar 2023 **06:59**	vSum	**9.73**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Survey being completed in the area. Confirmed with Site Supervisor that no vibration-intensive activities being completed.

27 Mar 2023 **07:06**	vSum	**8.15**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

No vibration intensive activities being completed in the area. 40T excavator tracking within station box area at the time of triggers.

27 Mar 2023 **07:10**	vSum	**5.45**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

No vibration intensive activities being completed in the area. 40T excavator tracking within station box area at the time of triggers.

27 Mar 2023 **07:15**	vSum	**5.55**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

No vibration intensive activities being completed in the area. 40T excavator tracking within station box area at the time of triggers.

27 Mar 2023 **11:25**	vSum	**18.56**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

No vibration intensive activities being conducted at the time of triggers. Excavator loading spoil in adjacent location.

27 Mar 2023 **12:14**	vSum	**5.57**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

No vibration intensive activities being conducted at the time of triggers. Excavator loading spoil in adjacent location.

27 Mar 2023 **12:51**	vSum	**6.04**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

No vibration intensive activities being conducted at the time of triggers. Excavator loading spoil in adjacent location.

27 Mar 2023 **13:59**	vSum	**7.45**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

No vibration intensive activities being conducted at the time of triggers. Excavator loading spoil in adjacent location.

27 Mar 2023 **14:39**	vSum	**5.51**	Vibration Waveform **mm/s**	Non GLC related	Hawkesbury Road

Traffic

27 Mar 2023 **14:43**	vSum	**20.67**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Vibration monitor being relocated to monitoring location following charging

27 Mar 2023 **14:43**	vSum	**8.66**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Vibration monitor being relocated to monitoring location following charging

27 Mar 2023 **14:44**	vSum	**10.47**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Vibration monitor being relocated to monitoring location following charging

27 Mar 2023 **14:44**	vSum	**7.06**	Vibration Waveform **mm/s**	Non GLC related	Hawkesbury Road

Traffic

27 Mar 2023 **14:49**	vSum	**7.91**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Vibration monitor being relocated to monitoring location following charging

27 Mar 2023 **14:49**	vSum	**16.20**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Vibration monitor being relocated to monitoring location following charging

27 Mar 2023 **14:50**	vSum	**12.56**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Vibration monitor being relocated to monitoring location following charging

27 Mar 2023 **14:52**	vSum	**410.69**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Monitoring equipment being set-up following recharging.

27 Mar 2023 **14:52**	vSum	**475.82**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Monitoring equipment being set-up following recharging.

27 Mar 2023 **14:53**	vSum	**440.57**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Monitoring equipment being set-up following recharging.

27 Mar 2023 **14:53**	vSum	**410.09**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Monitoring equipment being set-up following recharging.

27 Mar 2023 **14:53**	vSum	**407.44**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Monitoring equipment being set-up following recharging.

27 Mar 2023 **14:53**	vSum	**495.57**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Monitoring equipment being set-up following recharging.

27 Mar 2023 **14:54**	vSum	**433.89**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Monitoring equipment being set-up following recharging.

27 Mar 2023 **14:55**	vSum	**518.84**	Vibration Waveform **mm/s**	Equipment Relocation	Hawkesbury Road

Monitoring equipment being set-up following recharging.

29 Mar 2023 **11:17**	vSum	**5.69**	Vibration Waveform **mm/s**	Non GLC related	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

29 Mar 2023 **11:19**	vSum	**5.62**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

29 Mar 2023 **12:41**	vSum	**6.67**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

29 Mar 2023 **12:42**	vSum	**6.37**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

31 Mar 2023 **14:42**	vSum	**5.79**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

31 Mar 2023 **15:37**	vSum	**6.09**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

31 Mar 2023 **16:12**	vSum	**5.21**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

31 Mar 2023 **16:56**	vSum	**6.95**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

01 Apr 2023 **09:33**	vSum	**6.69**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

01 Apr 2023 **11:23**	vSum	**6.16**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

01 Apr 2023 **13:49**	vSum	**6.25**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

01 Apr 2023 **13:51**	vSum	**8.09**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

01 Apr 2023 **14:07**	vSum	**5.80**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

03 Apr 2023 **00:57**	vSum	**19.13**	Vibration Waveform **mm/s**	Non GLC related	Hawkesbury Road

No works being completed at time of event.

03 Apr 2023 **08:32**	vSum	**7.60**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

03 Apr 2023 **08:33**	vSum	**7.37**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

03 Apr 2023 **08:34**	vSum	**7.55**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

03 Apr 2023 **08:35**	vSum	**7.82**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

03 Apr 2023 **08:47**	vSum	**8.50**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

03 Apr 2023 **08:47**	vSum	**12.25**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

03 Apr 2023 **09:03**	vSum	**8.76**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

03 Apr 2023 **09:06**	vSum	**10.39**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

03 Apr 2023 **09:07**	vSum	**6.47**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

03 Apr 2023 **09:29**	vSum	**6.88**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

03 Apr 2023 **09:33**	vSum	**6.33**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

03 Apr 2023 **09:43**	vSum	**6.75**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

03 Apr 2023 **10:07**	vSum	**6.13**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading out spoil on adjacent pad area. No vibration intensive activities being undertaken.

03 Apr 2023 **11:02**	vSum	**7.98**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading out spoil on adjacent pad area. No vibration intensive activities being undertaken.

03 Apr 2023 **11:16**	vSum	**6.71**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading out spoil on adjacent pad area. No vibration intensive activities being undertaken.

03 Apr 2023 **11:16**	vSum	**7.68**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading out spoil on adjacent pad area. No vibration intensive activities being undertaken.

03 Apr 2023 **11:17**	vSum	**6.46**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading out spoil on adjacent pad area. No vibration intensive activities being undertaken.

03 Apr 2023 **11:17**	vSum	**8.15**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading out spoil on adjacent pad area. No vibration intensive activities being undertaken.

03 Apr 2023 **11:51**	vSum	**6.07**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading out spoil on adjacent pad area. No vibration intensive activities being undertaken.

03 Apr 2023 **12:29**	vSum	**10.06**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading out spoil on adjacent pad area. No vibration intensive activities being undertaken.

04 Apr 2023 **14:41**	vSum	**5.36**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading out spoil on adjacent pad area. No vibration intensive activities being undertaken.

04 Apr 2023 **14:55**	vSum	**5.65**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading out spoil on adjacent pad area. No vibration intensive activities being undertaken.

04 Apr 2023 **14:55**	vSum	**12.66**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading out spoil on adjacent pad area. No vibration intensive activities being undertaken.

04 Apr 2023 **15:37**	vSum	**5.72**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading out spoil on adjacent pad area. No vibration intensive activities being undertaken.

04 Apr 2023 **15:48**	vSum	**9.60**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading out spoil on adjacent pad area. No vibration intensive activities being undertaken.

04 Apr 2023 **16:19**	vSum	**11.92**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading out spoil on adjacent pad area. No vibration intensive activities being undertaken.

05 Apr 2023 **08:22**	vSum	**7.47**	Vibration Waveform **mm/s**	Spoil load out	Hawkesbury Road

Excavator loading out spoil on adjacent pad area. No vibration intensive activities being undertaken.

05 Apr 2023 **08:47**	vSum	**5.95**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading out spoil on adjacent pad area. No vibration intensive activities being undertaken.

05 Apr 2023 **14:54**	vSum	**11.52**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

05 Apr 2023 **14:55**	vSum	**8.36**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

05 Apr 2023 **15:07**	vSum	**17.81**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

05 Apr 2023 **15:12**	vSum	**6.79**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

05 Apr 2023 **15:13**	vSum	**8.46**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavator loading trucks on pad adjacent to monitor. No vibration-intensive activities being completed.

05 Apr 2023 **15:21**	vSum	**6.06**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Personnel conducting survey around monitoring location.

05 Apr 2023 **15:29**	vSum	**12.68**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Personnel conducting survey around monitoring location.

05 Apr 2023 **15:31**	vSum	**13.25**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Personnel conducting survey around monitoring location.

06 Apr 2023 **08:46**	vSum	**5.55**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed on Pad 1 adjacent to monitor.

14 Apr 2023 **08:54**	vSum	**5.46**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load-out activities being completed in adjacent work area. D10 dozer walked past monitoring location int the box. No exceedance of cosmetic damage triggers for vibration.

14 Apr 2023 **09:42**	vSum	**9.92**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load-out activities being completed in adjacent work area. No exceedance of cosmetic damage triggers for vibration.

14 Apr 2023 **11:21**	vSum	**5.45**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load-out activities being completed in adjacent work area. No exceedance of cosmetic damage triggers for vibration.

14 Apr 2023 **11:33**	vSum	**5.16**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load-out activities being completed in adjacent work area. No exceedance of cosmetic damage triggers for vibration.

14 Apr 2023 **11:33**	vSum	**5.66**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load-out activities being completed in adjacent work area. No exceedance of cosmetic damage triggers for vibration.

14 Apr 2023 **12:46**	vSum	**10.18**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load-out activities being completed in adjacent work area. No exceedance of cosmetic damage triggers for vibration.

14 Apr 2023 **13:49**	vSum	**7.53**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load-out activities being completed in adjacent work area. D10 dozer walked past monitoring location int the box. No exceedance of cosmetic damage triggers for vibration.

14 Apr 2023 **13:50**	vSum	**5.12**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load-out activities being completed in adjacent work area. D10 dozer walked past monitoring location int the box. No exceedance of cosmetic damage triggers for vibration.

14 Apr 2023 **13:50**	vSum	**6.30**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load-out activities being completed in adjacent work area. D10 dozer walked past monitoring location into the box. No exceedance of cosmetic damage triggers for vibration.

14 Apr 2023 **13:51**	vSum	**6.74**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load-out activities being completed in adjacent work area. No exceedance of cosmetic damage triggers for vibration.

14 Apr 2023 **14:20**	vSum	**5.39**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load-out activities being completed in adjacent work area. D10 dozer walked past monitoring location int the box. No exceedance of cosmetic damage triggers for vibration.

17 Apr 2023 **16:07**	vSum	**11.34**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed on pad adjacent. Vibration triggers are below cosmetic damage criteria.

19 Apr 2023 **08:04**	vSum	**5.09**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed in adjacent stockpile area. While monitors have been triggered, no exceedances of cosmetic damage criteria.

19 Apr 2023 **08:28**	vSum	**5.49**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed in adjacent stockpile area. While monitors have been triggered, no exceedances of cosmetic damage criteria.

19 Apr 2023 **08:28**	vSum	**5.89**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed in adjacent stockpile area. While monitors have been triggered, no exceedances of cosmetic damage criteria.

19 Apr 2023 **08:30**	vSum	**5.05**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed in adjacent stockpile area. While monitors have been triggered, no exceedances of cosmetic damage criteria.

19 Apr 2023 **08:30**	vSum	**5.24**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed in adjacent stockpile area. While monitors have been triggered, no exceedances of cosmetic damage criteria.

19 Apr 2023 **08:32**	vSum	**5.73**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed in adjacent stockpile area. While monitors have been triggered, no exceedances of cosmetic damage criteria.

19 Apr 2023 **08:32**	vSum	**5.43**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed in adjacent stockpile area. While monitors have been triggered, no exceedances of cosmetic damage criteria.

19 Apr 2023 **08:32**	vSum	**5.56**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed in adjacent stockpile area. While monitors have been triggered, no exceedances of cosmetic damage criteria.

19 Apr 2023 **08:39**	vSum	**5.59**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed in adjacent stockpile area. While monitors have been triggered, no exceedances of cosmetic damage criteria.

19 Apr 2023 **08:39**	vSum	**6.02**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed in adjacent stockpile area. While monitors have been triggered, no exceedances of cosmetic damage criteria.

19 Apr 2023 **08:40**	vSum	**5.86**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed in adjacent stockpile area. While monitors have been triggered, no exceedances of cosmetic damage criteria.

19 Apr 2023 **08:42**	vSum	**5.96**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed in adjacent stockpile area. While monitors have been triggered, no exceedances of cosmetic damage criteria.

19 Apr 2023 **09:32**	vSum	**5.47**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed in adjacent stockpile area. While monitors have been triggered, no exceedances of cosmetic damage criteria.

26 Apr 2023 **12:43**	vSum	**9.63**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load-out activities being completed on adjacent pad area. While trigger was received, no exceedance of cosmetic or structural damage criteria.

26 Apr 2023 **12:55**	vSum	**5.78**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load-out activities being completed on adjacent pad area. While trigger was received, no exceedance of cosmetic or structural damage criteria.

26 Apr 2023 **16:23**	vSum	**7.91**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load-out activities being completed on adjacent pad area. While trigger was received, no exceedance of cosmetic or structural damage criteria.

26 Apr 2023 **16:28**	vSum	**6.89**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load-out activities being completed on adjacent pad area. While trigger was received, no exceedance of cosmetic or structural damage criteria.

27 Apr 2023 **15:57**	vSum	**8.87**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavators completing spoil load out activities on adjacent pad. While triggers have been received, no exceedance of cosmetic or structural damage criteria.

27 Apr 2023 **15:58**	vSum	**9.88**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavators completing spoil load out activities on adjacent pad. While triggers have been received, no exceedance of cosmetic or structural damage criteria.

27 Apr 2023 **15:58**	vSum	**6.38**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Excavators completing spoil load out activities on adjacent pad. While triggers have been received, no exceedance of cosmetic or structural damage criteria.

28 Apr 2023 **08:02**	vSum	**5.46**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed on adjacent Pad 1 area. While trigger was received, criteria were below the cosmetic and structural damage criteria.

28 Apr 2023 **10:22**	vSum	**7.87**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Ramp construction activities being completed in adjacent area. While triggers were received, these did not exceed cosmetic or structural vibration criteria.

28 Apr 2023 **10:22**	vSum	**5.11**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Ramp construction activities being completed in adjacent area. While triggers were received, these did not exceed cosmetic or structural vibration criteria.

02 May 2023 **16:58**	vSum	**7.11**	Vibration Waveform **mm/s**	Excavation Works	Hawkesbury Road

Excavation works occuring adjacent to monitor. While triggers activated, no exceedance of structural or cosmetic damage criteria.

02 May 2023 **16:58**	vSum	**6.18**	Vibration Waveform **mm/s**	Excavation Works	Hawkesbury Road

Excavation works occuring adjacent to monitor. While triggers activated, no exceedance of structural or cosmetic damage criteria.

03 May 2023 **16:05**	vSum	**6.28**	Vibration Waveform **mm/s**	Rock Bolting & Mesh Installation	Hawkesbury Road

Rock bolting being completed in Zone 6 underneath monitor. While triggers have been received, values are below the thresholds for structural or cosmetic damage.

03 May 2023 **16:27**	vSum	**5.30**	Vibration Waveform **mm/s**	Rock Bolting & Mesh Installation	Hawkesbury Road

Rock bolting being completed in Zone 6 underneath monitor. While triggers have been received, values are below the thresholds for structural or cosmetic damage.

03 May 2023 **17:24**	vSum	**5.64**	Vibration Waveform **mm/s**	Rock Bolting & Mesh Installation	Hawkesbury Road

Rock bolting being completed in Zone 6 underneath monitor. While triggers have been received, values are below the thresholds for structural or cosmetic damage.

03 May 2023 **17:28**	vSum	**7.44**	Vibration Waveform **mm/s**	Rock Bolting & Mesh Installation	Hawkesbury Road

Rock bolting being completed in Zone 6 underneath monitor. While triggers have been received, values are below the thresholds for structural or cosmetic damage.

10 May 2023 **16:28**	vSum	**15.41**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed on adjacent pad. No exceedance of structural and cosmetic damage criteria.

11 May 2023 **08:33**	vSum	**11.60**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Survey being conducted in the area and monitor has been bumped.

12 May 2023 **13:51**	vSum	**9.37**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out being completed on Pad 1. No exceedance of structural or cosmetic damage criteria.

13 May 2023 **10:09**	vSum	**360.69**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Surveyors working in the area have interacted with the monitor accidentally.

15 May 2023 **11:17**	vSum	**318.74**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Surveyors working in the area have interacted with monitoring device.

25 May 2023 **08:52**	vSum	**8.02**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load-out being completed on pad adjacent to monitor. While triggers have been received, no exceedance of structural or cosmetic damage criteria.

25 May 2023 **10:45**	vSum	**9.05**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed on adjacent pad. While triggers received, no exceedance of structural or cosmetic damage criteria.

25 May 2023 **14:55**	vSum	**6.22**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed on adjacent pad area. Trigger received however no exceedance of the structural or cosmetic damage criteria.

25 May 2023 **15:24**	vSum	**7.85**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load out activities being completed on adjacent pad/ramp. While trigger received this was not no exceedance of structural or cosmetic damage criteria.

26 May 2023 **09:55**	vSum	**8.99**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load activities being completed on adjacent pad/ramp. While triggers have been received, no triggers of structural or cosmetic damage.

26 May 2023 **10:29**	vSum	**7.86**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load activities being completed on adjacent pad/ramp. While triggers have been received, no triggers of structural or cosmetic damage.

26 May 2023 **10:31**	vSum	**9.06**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load activities being completed on adjacent pad/ramp. While triggers have been received, no triggers of structural or cosmetic damage.

26 May 2023 **12:17**	vSum	**6.64**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load activities being completed on adjacent pad/ramp. While triggers have been received, no triggers of structural or cosmetic damage.

26 May 2023 **12:53**	vSum	**6.08**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load activities being completed on adjacent pad/ramp. While triggers have been received, no triggers of structural or cosmetic damage.

26 May 2023 **12:58**	vSum	**12.84**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load activities being completed on adjacent pad/ramp. While triggers have been received, no triggers of structural or cosmetic damage.

26 May 2023 **12:58**	vSum	**15.37**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load activities being completed on adjacent pad/ramp. While triggers have been received, no triggers of structural or cosmetic damage.

26 May 2023 **14:31**	vSum	**6.03**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load activities being completed on adjacent pad/ramp. While triggers have been received, no triggers of structural or cosmetic damage.

26 May 2023 **14:34**	vSum	**11.04**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load activities being completed on adjacent pad/ramp. While triggers have been received, no triggers of structural or cosmetic damage.

26 May 2023 **14:34**	vSum	**7.76**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load activities being completed on adjacent pad/ramp. While triggers have been received, no triggers of structural or cosmetic damage.

26 May 2023 **14:34**	vSum	**17.01**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load activities being completed on adjacent pad/ramp. While triggers have been received, no triggers of structural or cosmetic damage.

26 May 2023 **14:34**	vSum	**24.32**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load activities being completed on adjacent pad/ramp. While triggers have been received, no triggers of structural or cosmetic damage.

26 May 2023 **14:35**	vSum	**12.04**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil load activities being completed on adjacent pad/ramp. While triggers have been received, no triggers of structural or cosmetic damage.

26 May 2023 **14:39**	vSum	**30.60**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Surveyor working in the area has interacted with monitor

27 May 2023 **12:58**	vSum	**502.17**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Surveyor working in the area has interacted with monitor.

29 May 2023 **09:37**	vSum	**219.90**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human Interaction with device

29 May 2023 **10:14**	vSum	**169.61**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human Interaction with device

29 May 2023 **10:14**	vSum	**113.96**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human Interaction with device

29 May 2023 **10:15**	vSum	**251.01**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human Interaction with device

29 May 2023 **11:40**	vSum	**5.04**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil Loadout Works on western site boundary

29 May 2023 **11:40**	vSum	**5.05**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road

Spoil Loadout Works on western site boundary

29 May 2023 **12:48**	vSum	**109.81**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road

Human Interaction with device

29 May 2023 **12:52**	vSum	**11.46**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road
Spoil Loadout Works on western site boundary					
29 May 2023 **12:52**	vSum	**500.46**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road
Human Interaction with device					
29 May 2023 **14:54**	vSum	**5.67**	Vibration Waveform **mm/s**	Spoil Load Out Activities	Hawkesbury Road
Spoil Loadout Works on western site boundary					
30 May 2023 **16:30**	vSum	**6.23**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of excavator across Pad1					
30 May 2023 **16:30**	vSum	**0.46**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of excavator across Pad1					
30 May 2023 **16:33**	vSum	**5.84**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of excavator across Pad1					
30 May 2023 **16:34**	vSum	**6.72**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of excavator across Pad1					
30 May 2023 **16:34**	vSum	**6.78**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of excavator across Pad1					
30 May 2023 **16:35**	vSum	**6.15**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of excavator across Pad1					
30 May 2023 **16:38**	vSum	**5.52**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of excavator across Pad1					
30 May 2023 **16:40**	vSum	**11.04**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of excavator across Pad1					
31 May 2023 **15:41**	vSum	**7.04**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on Pad1					

31 May 2023 **16:45**	vSum	**6.70**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on Pad1					
01 Jun 2023 **08:27**	vSum	**5.99**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on Pad1					
02 Jun 2023 **08:14**	vSum	**5.01**	Vibration Waveform **mm/s**	Plant movement	Hassall Street
Plant Movement on Pad1					
03 Jun 2023 **14:47**	vSum	**1017.96**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street
Human Interaction with device					
05 Jun 2023 **08:32**	vSum	**5.18**	Vibration Waveform **mm/s**	Plant movement	Hassall Street
Plant Movement next to device for shed cladding works					
05 Jun 2023 **09:59**	vSum	**5.88**	Vibration Waveform **mm/s**	Plant movement	Hassall Street
Plant Movement next to device for shed cladding works					
05 Jun 2023 **14:39**	vSum	**6.62**	Vibration Waveform **mm/s**	Plant movement	Hassall Street
Plant Movement next to device for shed cladding works					
05 Jun 2023 **16:37**	vSum	**5.57**	Vibration Waveform **mm/s**	Plant movement	Hassall Street
Plant Movement next to device for shed cladding works					
06 Jun 2023 **08:21**	vSum	**7.46**	Vibration Waveform **mm/s**	Plant movement	Hassall Street
Plant Movement next to device for shed cladding works					
06 Jun 2023 **08:21**	vSum	**5.61**	Vibration Waveform **mm/s**	Plant movement	Hassall Street
Plant Movement next to device for shed cladding works					
06 Jun 2023 **08:21**	vSum	**6.36**	Vibration Waveform **mm/s**	Plant movement	Hassall Street
Plant Movement next to device for shed cladding works					
06 Jun 2023 **09:11**	vSum	**6.53**	Vibration Waveform **mm/s**	Plant movement	Hassall Street
Plant Movement next to device for shed cladding works					

06 Jun 2023 **10:19**	vSum	**7.50**	Vibration Waveform **mm/s**	Plant movement	Hassall Street

Plant Movement next to device for shed cladding works

06 Jun 2023 **10:20**	vSum	**5.56**	Vibration Waveform **mm/s**	Plant movement	Hassall Street

Plant Movement next to device for shed cladding works

06 Jun 2023 **10:20**	vSum	**6.69**	Vibration Waveform **mm/s**	Plant movement	Hassall Street

Plant Movement next to device for shed cladding works

06 Jun 2023 **13:00**	vSum	**5.42**	Vibration Waveform **mm/s**	Plant movement	Hassall Street

Plant Movement next to device for shed cladding works

06 Jun 2023 **15:26**	vSum	**6.71**	Vibration Waveform **mm/s**	Plant movement	Hassall Street

Plant Movement next to device for shed cladding works

06 Jun 2023 **15:26**	vSum	**7.33**	Vibration Waveform **mm/s**	Plant movement	Hassall Street

Plant Movement next to device for shed cladding works

07 Jun 2023 **09:06**	vSum	**7.17**	Vibration Waveform **mm/s**	Plant movement	Hassall Street

Plant Movement next to device for shed cladding works

07 Jun 2023 **09:06**	vSum	**8.80**	Vibration Waveform **mm/s**	Plant movement	Hassall Street

Plant Movement next to device for shed cladding works

08 Jun 2023 **09:09**	vSum	**8.76**	Vibration Waveform **mm/s**	Plant movement	Hassall Street

Plant Movement next to device for shed cladding works

08 Jun 2023 **12:16**	vSum	**6.36**	Vibration Waveform **mm/s**	Plant movement	Hassall Street

Plant Movement next to device for shed cladding works

08 Jun 2023 **12:36**	vSum	**7.77**	Vibration Waveform **mm/s**	Plant movement	Hassall Street

Plant Movement next to device for shed cladding works

08 Jun 2023 **12:37**	vSum	**6.35**	Vibration Waveform **mm/s**	Plant movement	Hassall Street

Plant Movement next to device for shed cladding works

08 Jun 2023 **13:16**	vSum	**9.93**	Vibration Waveform **mm/s**	Plant movement	Hassall Street
Plant Movement next to device for shed cladding works					
08 Jun 2023 **13:16**	vSum	**5.96**	Vibration Waveform **mm/s**	Plant movement	Hassall Street
Plant Movement next to device for shed cladding works					
09 Jun 2023 **17:59**	vSum	**121.42**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street
Human Interaction with the device					
10 Jun 2023 **12:48**	vSum	**351.66**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street
Human interaction with device					
10 Jun 2023 **12:50**	vSum	**11.27**	Vibration Waveform **mm/s**	Plant movement	Hassall Street
Plant Movement next to device for shed cladding works					
12 Jun 2023 **20:17**	vSum	**149.18**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street
Human Interaction with device					
15 Jun 2023 **12:13**	vSum	**260.76**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road
Human interaction, workers building fencing next to device					
16 Jun 2023 **16:11**	vSum	**6.31**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on Pad 1					
16 Jun 2023 **16:37**	vSum	**9.43**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on Pad 1					
16 Jun 2023 **16:37**	vSum	**8.71**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on Pad 1					
16 Jun 2023 **16:38**	vSum	**6.66**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on Pad 1					
16 Jun 2023 **16:38**	vSum	**7.05**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on Pad 1					

16 Jun 2023 **16:38**	vSum	**7.22**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on Pad 1					
16 Jun 2023 **16:39**	vSum	**11.64**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on Pad 1					
16 Jun 2023 **16:39**	vSum	**9.78**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on Pad 1					
16 Jun 2023 **16:39**	vSum	**12.76**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on Pad 1					
16 Jun 2023 **16:39**	vSum	**11.09**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on Pad 1					
17 Jun 2023 **08:18**	vSum	**15.41**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on pad1					
19 Jun 2023 **08:31**	vSum	**6.79**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on pad1					
19 Jun 2023 **08:32**	vSum	**6.72**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on pad1					
19 Jun 2023 **08:32**	vSum	**6.90**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on pad1					
19 Jun 2023 **16:11**	vSum	**587.79**	Vibration Waveform **mm/s**	Human Interaction	Hawkesbury Road
Human interaction with device					
23 Jun 2023 **10:03**	vSum	**5.10**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on pad1					
23 Jun 2023 **10:29**	vSum	**5.29**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on pad1					

26 Jun 2023 **11:17**	vSum	**5.86**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on Pad1					
26 Jun 2023 **11:18**	vSum	**5.90**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on Pad1					
26 Jun 2023 **11:19**	vSum	**5.45**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement on Pad1					
27 Jun 2023 **14:27**	vSum	**17.04**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street
Human interaction, cladding works on the shed next to device					
27 Jun 2023 **14:27**	vSum	**53.24**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street
Human interaction, cladding works on the shed next to device					
27 Jun 2023 **14:31**	vSum	**2719.42**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street
Human interaction, cladding works on the shed next to device					
27 Jun 2023 **14:31**	vSum	**4005.25**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street
Human interaction, cladding works on the shed next to device					
27 Jun 2023 **14:31**	vSum	**231.22**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street
Human interaction, cladding works on the shed next to device					
27 Jun 2023 **14:31**	vSum	**428.15**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street
Human interaction, cladding works on the shed next to device					
27 Jun 2023 **14:31**	vSum	**1356.46**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street
Human interaction, cladding works on the shed next to device					
27 Jun 2023 **14:31**	vSum	**1265.83**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street
Human interaction, cladding works on the shed next to device					
27 Jun 2023 **14:31**	vSum	**44.83**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street
Human interaction, cladding works on the shed next to device					

27 Jun 2023 **14:32**	vSum	**118.29**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street

Human interaction, cladding works on the shed next to device

27 Jun 2023 **14:32**	vSum	**62.40**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street

Human interaction, cladding works on the shed next to device

27 Jun 2023 **14:32**	vSum	**210.31**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street

Human interaction, cladding works on the shed next to device

27 Jun 2023 **14:32**	vSum	**94.67**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street

Human interaction, cladding works on the shed next to device

27 Jun 2023 **15:13**	vSum	**23.81**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street

Human interaction, cladding works on the shed next to device

27 Jun 2023 **15:14**	vSum	**19.62**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street

Human interaction, cladding works on the shed next to device

27 Jun 2023 **15:14**	vSum	**127.03**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street

Human interaction, cladding works on the shed next to device

28 Jun 2023 **11:22**	vSum	**705.68**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street

Equipment relocation and human interaction with device

28 Jun 2023 **11:22**	vSum	**24.50**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction with device

28 Jun 2023 **11:22**	vSum	**843.72**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction with device

28 Jun 2023 **11:22**	vSum	**1159.97**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction with device

28 Jun 2023 **11:23**	vSum	**254.33**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction with device

28 Jun 2023 **14:30**	vSum	**10.25**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:32**	vSum	**10.81**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:33**	vSum	**10.70**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:33**	vSum	**11.25**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:33**	vSum	**11.55**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:36**	vSum	**10.28**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:36**	vSum	**13.15**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:36**	vSum	**12.34**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:36**	vSum	**11.76**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:36**	vSum	**10.58**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:37**	vSum	**11.38**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:37**	vSum	**10.21**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					

28 Jun 2023 **14:37**	vSum	**11.43**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:37**	vSum	**15.28**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:37**	vSum	**12.26**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:38**	vSum	**10.48**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:38**	vSum	**10.16**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:38**	vSum	**11.41**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:38**	vSum	**13.31**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:38**	vSum	**10.68**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:38**	vSum	**10.19**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:39**	vSum	**10.13**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:39**	vSum	**11.58**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:39**	vSum	**11.46**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					

28 Jun 2023 **14:40**	vSum	**14.31**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:41**	vSum	**12.20**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:41**	vSum	**10.92**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:41**	vSum	**11.17**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:41**	vSum	**10.49**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:42**	vSum	**10.36**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:42**	vSum	**10.44**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:43**	vSum	**11.51**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:43**	vSum	**10.23**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:43**	vSum	**12.17**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:44**	vSum	**12.41**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:47**	vSum	**13.20**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					

28 Jun 2023 **14:47**	vSum	**10.43**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:48**	vSum	**11.50**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:48**	vSum	**10.52**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:48**	vSum	**10.15**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:49**	vSum	**11.86**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:49**	vSum	**10.64**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:50**	vSum	**10.77**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:51**	vSum	**10.06**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:51**	vSum	**13.25**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:52**	vSum	**10.94**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:53**	vSum	**11.53**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:53**	vSum	**12.39**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					

28 Jun 2023 **14:53**	vSum	**10.43**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:53**	vSum	**11.12**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:53**	vSum	**10.28**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:53**	vSum	**10.09**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:54**	vSum	**10.20**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:54**	vSum	**10.02**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **14:55**	vSum	**10.64**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:01**	vSum	**10.86**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:32**	vSum	**10.22**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:32**	vSum	**11.31**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:32**	vSum	**18.54**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:33**	vSum	**12.83**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					

28 Jun 2023 **15:33**	vSum	**11.51**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:33**	vSum	**11.02**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:33**	vSum	**11.62**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:34**	vSum	**10.26**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:35**	vSum	**11.16**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:35**	vSum	**10.88**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:35**	vSum	**11.63**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:35**	vSum	**10.51**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:36**	vSum	**11.79**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:36**	vSum	**10.76**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:36**	vSum	**10.84**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:36**	vSum	**10.15**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					

28 Jun 2023 **15:36**	vSum	**10.29**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:42**	vSum	**10.34**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:44**	vSum	**10.40**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:44**	vSum	**10.78**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:45**	vSum	**10.11**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:45**	vSum	**10.38**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:45**	vSum	**11.63**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:45**	vSum	**10.41**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:45**	vSum	**10.37**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:46**	vSum	**10.12**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:46**	vSum	**11.75**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:46**	vSum	**10.61**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					

28 Jun 2023 **15:47**	vSum	**11.80**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:50**	vSum	**11.83**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:50**	vSum	**10.03**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:58**	vSum	**10.13**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **15:59**	vSum	**10.07**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **16:07**	vSum	**10.95**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **16:07**	vSum	**11.48**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **16:08**	vSum	**10.11**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **16:08**	vSum	**10.73**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **16:08**	vSum	**10.11**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **16:10**	vSum	**10.01**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					
28 Jun 2023 **16:10**	vSum	**11.20**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial
Equipment relocation and human interaction with device					

29 Jun 2023 **08:59**	vSum	**11.60**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **10:33**	vSum	**10.48**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **12:26**	vSum	**10.82**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **12:42**	vSum	**10.33**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **12:42**	vSum	**10.20**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **12:43**	vSum	**10.07**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **12:43**	vSum	**11.75**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **12:43**	vSum	**11.11**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **12:54**	vSum	**10.06**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **12:56**	vSum	**10.96**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **12:58**	vSum	**10.16**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **12:58**	vSum	**11.93**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **12:59**	vSum	**10.79**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **12:59**	vSum	**10.73**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:00**	vSum	**10.96**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:01**	vSum	**10.14**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:05**	vSum	**10.49**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:06**	vSum	**11.79**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:08**	vSum	**10.96**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:08**	vSum	**11.52**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:08**	vSum	**15.27**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:08**	vSum	**11.00**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:08**	vSum	**11.14**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:09**	vSum	**10.04**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:09**	vSum	**12.47**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:09**	vSum	**15.20**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:09**	vSum	**11.56**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:10**	vSum	**10.78**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:10**	vSum	**10.92**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:11**	vSum	**11.51**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:11**	vSum	**10.75**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:11**	vSum	**12.40**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:11**	vSum	**12.19**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:11**	vSum	**10.44**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:11**	vSum	**19.11**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:11**	vSum	**16.07**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:11**	vSum	**12.92**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:11**	vSum	**10.61**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:11**	vSum	**10.68**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:11**	vSum	**10.99**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:11**	vSum	**10.71**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:12**	vSum	**11.79**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:12**	vSum	**10.51**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:12**	vSum	**10.24**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:12**	vSum	**14.41**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:12**	vSum	**15.06**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:12**	vSum	**12.35**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:12**	vSum	**10.20**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:12**	vSum	**10.89**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:12**	vSum	**12.18**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:12**	vSum	**13.18**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:13**	vSum	**11.20**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:13**	vSum	**12.75**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:13**	vSum	**13.47**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:13**	vSum	**10.76**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:13**	vSum	**12.11**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:13**	vSum	**10.14**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:13**	vSum	**10.63**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:13**	vSum	**12.26**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:14**	vSum	**11.70**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:14**	vSum	**12.63**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:14**	vSum	**12.52**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:14**	vSum	**10.69**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:14**	vSum	**12.42**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:15**	vSum	**11.36**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:15**	vSum	**10.06**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:15**	vSum	**10.31**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:15**	vSum	**13.00**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:15**	vSum	**13.62**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:15**	vSum	**10.30**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:15**	vSum	**10.39**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:16**	vSum	**11.02**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:16**	vSum	**11.61**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:16**	vSum	**12.14**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:16**	vSum	**11.77**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:16**	vSum	**11.90**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:16**	vSum	**14.10**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:16**	vSum	**13.27**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:16**	vSum	**13.60**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:16**	vSum	**15.89**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:16**	vSum	**15.58**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:16**	vSum	**10.14**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:17**	vSum	**11.01**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:17**	vSum	**15.29**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:17**	vSum	**15.04**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:17**	vSum	**12.70**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:17**	vSum	**15.72**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:17**	vSum	**10.34**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:17**	vSum	**11.90**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:18**	vSum	**11.07**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:18**	vSum	**10.90**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:18**	vSum	**12.93**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:19**	vSum	**12.26**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:19**	vSum	**12.04**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:19**	vSum	**10.56**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:19**	vSum	**10.89**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:19**	vSum	**11.65**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:20**	vSum	**13.38**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:20**	vSum	**10.75**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:20**	vSum	**12.09**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:20**	vSum	**10.40**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:21**	vSum	**16.22**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:21**	vSum	**13.42**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:21**	vSum	**12.39**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:21**	vSum	**10.21**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:21**	vSum	**12.41**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:22**	vSum	**10.16**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:22**	vSum	**11.91**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:22**	vSum	**12.87**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:23**	vSum	**11.77**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:23**	vSum	**10.67**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:26**	vSum	**10.19**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:28**	vSum	**11.46**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:29**	vSum	**11.93**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:29**	vSum	**10.16**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:31**	vSum	**11.72**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:32**	vSum	**10.21**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:33**	vSum	**10.57**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:33**	vSum	**11.65**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:33**	vSum	**13.29**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:33**	vSum	**10.81**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:34**	vSum	**13.21**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:35**	vSum	**12.80**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:35**	vSum	**12.40**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:35**	vSum	**12.36**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:36**	vSum	**11.75**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:36**	vSum	**12.61**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:36**	vSum	**13.27**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:36**	vSum	**10.20**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:36**	vSum	**11.39**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:37**	vSum	**11.08**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:37**	vSum	**11.06**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:37**	vSum	**10.10**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:38**	vSum	**10.37**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:39**	vSum	**10.74**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:39**	vSum	**10.51**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:39**	vSum	**11.28**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:39**	vSum	**12.95**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:40**	vSum	**10.66**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:40**	vSum	**11.22**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:40**	vSum	**12.34**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:40**	vSum	**13.61**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:40**	vSum	**14.75**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:40**	vSum	**10.80**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:41**	vSum	**10.69**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:41**	vSum	**10.80**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:41**	vSum	**11.96**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:41**	vSum	**10.81**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:41**	vSum	**11.43**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:41**	vSum	**12.68**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:41**	vSum	**11.37**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:42**	vSum	**10.97**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:42**	vSum	**10.41**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:42**	vSum	**12.98**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:42**	vSum	**13.96**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:42**	vSum	**14.18**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:42**	vSum	**10.29**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:42**	vSum	**10.81**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:42**	vSum	**13.80**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:42**	vSum	**10.49**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:44**	vSum	**10.49**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:44**	vSum	**10.58**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:44**	vSum	**10.05**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:44**	vSum	**10.93**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:44**	vSum	**12.60**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:44**	vSum	**13.17**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:44**	vSum	**10.88**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:46**	vSum	**12.23**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:46**	vSum	**10.66**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:46**	vSum	**12.60**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:48**	vSum	**13.33**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:49**	vSum	**10.15**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:50**	vSum	**10.44**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:50**	vSum	**11.15**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:50**	vSum	**10.16**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:50**	vSum	**13.16**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:51**	vSum	**10.93**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **13:51**	vSum	**11.52**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street - trial

Equipment relocation and human interaction trialing new location

29 Jun 2023 **15:58**	vSum	**11.73**	Vibration Waveform **mm/s**	Equipment Relocation	Hassall Street

Equipment relocation and human interaction trialing new location

30 Jun 2023 **13:52**	vSum	**10.67**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial

Human interaction with device during the trial

30 Jun 2023 **13:52**	vSum	**10.93**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial
Human interaction with device during the trial					
30 Jun 2023 **13:53**	vSum	**10.12**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial
Human interaction with device during the trial					
30 Jun 2023 **13:55**	vSum	**11.09**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial
Human interaction with device during the trial					
30 Jun 2023 **13:56**	vSum	**14.12**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial
Human interaction with device during the trial					
30 Jun 2023 **13:57**	vSum	**11.40**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial
Human interaction with device during the trial					
30 Jun 2023 **13:57**	vSum	**10.75**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial
Human interaction with device during the trial					
30 Jun 2023 **14:49**	vSum	**9.40**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street
Human interaction with device during the trial					
30 Jun 2023 **14:49**	vSum	**11.19**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial
Human interaction with device during the trial					
01 Jul 2023 **08:36**	vSum	**12.50**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street
Human interaction installation of scaffold close to monitor					
01 Jul 2023 **09:02**	vSum	**9.61**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street
Human interaction installation of scaffold close to monitor					
03 Jul 2023 **14:12**	vSum	**173.02**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22
Human Interaction with the device after equipment relocation					
03 Jul 2023 **14:17**	vSum	**157.91**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22
Human Interaction with the device after equipment relocation					

03 Jul 2023 **14:17**	vSum	**127.37**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:17**	vSum	**367.97**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:18**	vSum	**225.95**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:18**	vSum	**395.27**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:18**	vSum	**49.31**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:18**	vSum	**23.10**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:19**	vSum	**25.01**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:23**	vSum	**7.75**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:26**	vSum	**25.51**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:26**	vSum	**22.07**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:26**	vSum	**57.75**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:26**	vSum	**9.58**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:49**	vSum	**118.74**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:49**	vSum	**25.77**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:50**	vSum	**639.39**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:50**	vSum	**1478.06**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:50**	vSum	**360.91**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:50**	vSum	**383.70**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:50**	vSum	**338.60**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:50**	vSum	**123.10**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:50**	vSum	**529.14**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:50**	vSum	**409.19**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:50**	vSum	**863.89**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:50**	vSum	**67.82**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:50**	vSum	**1210.37**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:50**	vSum	**53.39**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:50**	vSum	**89.67**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:51**	vSum	**42.99**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:51**	vSum	**15.20**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:51**	vSum	**70.87**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:51**	vSum	**11.97**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:51**	vSum	**75.20**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:52**	vSum	**101.49**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:52**	vSum	**8.96**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:52**	vSum	**18.10**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:52**	vSum	**86.26**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:52**	vSum	**21.04**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:52**	vSum	**113.42**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:52**	vSum	**119.73**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:53**	vSum	**35.73**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:53**	vSum	**24.68**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:53**	vSum	**35.75**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:54**	vSum	**12.07**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction with the device after equipment relocation

03 Jul 2023 **14:56**	vSum	**52.10**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction with the device after equipment relocation

12 Jul 2023 **10:05**	vSum	**17.43**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction with the device after equipment relocation

14 Jul 2023 **07:42**	vSum	**11.48**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22

Human Interaction near device of IDEC team

14 Jul 2023 **07:49**	vSum	**333.79**	Vibration Waveform **mm/s**	Human Interaction	10-12 Hassall Street

Human Interaction near device of IDEC team

14 Jul 2023 **07:50**	vSum	**382.55**	Vibration Waveform **mm/s**	Human Interaction	10-12 Hassall Street

Human Interaction near device of IDEC team

14 Jul 2023 **07:50**	vSum	**296.19**	Vibration Waveform **mm/s**	Human Interaction	10-12 Hassall Street
Human Interaction near device of IDEC team					
14 Jul 2023 **07:50**	vSum	**315.23**	Vibration Waveform **mm/s**	Human Interaction	10-12 Hassall Street
Human Interaction near device of IDEC team					
14 Jul 2023 **07:50**	vSum	**296.72**	Vibration Waveform **mm/s**	Human Interaction	10-12 Hassall Street
Human Interaction near device of IDEC team					
14 Jul 2023 **08:04**	vSum	**15.06**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22
Human Interaction near device of IDEC team					
14 Jul 2023 **08:10**	vSum	**17.47**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22
Human Interaction near device of IDEC team					
14 Jul 2023 **08:10**	vSum	**11.87**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22
Human Interaction near device of IDEC team					
14 Jul 2023 **08:11**	vSum	**19.19**	Vibration Waveform **mm/s**	Human Interaction	Hassall Street - trial
Human Interaction near device of IDEC team					
14 Jul 2023 **08:11**	vSum	**51.65**	Vibration Waveform **mm/s**	Human Interaction	Hassall St - test C22
Human Interaction near device of IDEC team					
17 Jul 2023 **13:11**	vSum	**109.95**	Vibration Waveform **mm/s**	Plant movement	Hassall St - test C22
Plant Movement Tracked Crane on Pad1					
17 Jul 2023 **13:11**	vSum	**83.89**	Vibration Waveform **mm/s**	Plant movement	Hassall Street - trial
Plant Movement Tracked Crane on Pad1					
17 Jul 2023 **13:24**	vSum	**41.51**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement Tracked Crane on Pad1					
17 Jul 2023 **13:25**	vSum	**16.69**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement Tracked Crane on Pad1					

17 Jul 2023 **13:25**	vSum	**59.90**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement Tracked Crane on Pad1					
17 Jul 2023 **13:26**	vSum	**22.59**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement Tracked Crane on Pad1					
17 Jul 2023 **13:26**	vSum	**28.01**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement Tracked Crane on Pad1					
17 Jul 2023 **13:29**	vSum	**38.01**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement Tracked Crane on Pad1					
17 Jul 2023 **13:29**	vSum	**71.42**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement Tracked Crane on Pad1					
18 Jul 2023 **07:42**	vSum	**46.59**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **07:42**	vSum	**169.14**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **07:47**	vSum	**16.27**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **07:47**	vSum	**48.79**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **07:48**	vSum	**64.67**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **07:49**	vSum	**209.26**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **07:56**	vSum	**52.29**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					

18 Jul 2023 **08:30**	vSum	**10.48**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **12:06**	vSum	**185.57**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **12:09**	vSum	**9.98**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **12:12**	vSum	**10.15**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **12:14**	vSum	**21.57**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **12:16**	vSum	**21.90**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **12:28**	vSum	**12.04**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **12:29**	vSum	**64.94**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **12:30**	vSum	**203.58**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **12:30**	vSum	**936.29**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **12:30**	vSum	**320.65**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **13:28**	vSum	**117.66**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					

18 Jul 2023 **16:54**	vSum	**140.11**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **17:08**	vSum	**7.56**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **17:14**	vSum	**119.15**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **17:17**	vSum	**107.15**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **17:22**	vSum	**26.05**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
18 Jul 2023 **17:22**	vSum	**36.45**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant movement of tracked crane on Pad1					
19 Jul 2023 **07:24**	vSum	**113.55**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement of tracked crane and Human Interaction around crane					
19 Jul 2023 **07:27**	vSum	**375.93**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement of tracked crane and Human Interaction around crane					
19 Jul 2023 **07:33**	vSum	**55.26**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement of tracked crane and Human Interaction around crane					
19 Jul 2023 **08:01**	vSum	**302.72**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement of tracked crane and Human Interaction around crane					
19 Jul 2023 **08:01**	vSum	**139.96**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement of tracked crane and Human Interaction around crane					
19 Jul 2023 **08:46**	vSum	**286.90**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road
Plant Movement of tracked crane and Human Interaction around crane					

19 Jul 2023 **08:47**	vSum	**34.01**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **08:47**	vSum	**55.14**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **08:57**	vSum	**340.18**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **09:03**	vSum	**68.60**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **12:55**	vSum	**297.81**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **12:58**	vSum	**198.50**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **12:58**	vSum	**60.72**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **13:21**	vSum	**6.14**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **14:17**	vSum	**13.54**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **14:20**	vSum	**8.79**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **14:27**	vSum	**8.90**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **14:30**	vSum	**40.98**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **14:31**	vSum	**20.30**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **14:35**	vSum	**36.34**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **14:40**	vSum	**10.22**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **14:40**	vSum	**20.23**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **14:41**	vSum	**158.11**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **14:41**	vSum	**40.61**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **14:58**	vSum	**92.31**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **15:00**	vSum	**263.06**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

19 Jul 2023 **17:23**	vSum	**61.03**	Vibration Waveform **mm/s**	Plant movement	Hawkesbury Road

Plant Movement of tracked crane and Human Interaction around crane

Attachment 5 –Calibration Certificates

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Acoustic Research Labs Pty Ltd
Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Calibrator

IEC 60942:2017

Calibration Certificate

Calibration Number C22453

Client Details Gamuda Berhad
Suite 26.01, 100 Miller Street
North Sydney NSW 2060

Equipment Tested/ Model Number : Rion NC-75
Instrument Serial Number : 34324039

Atmospheric Conditions
Ambient Temperature : 23.4°C
Relative Humidity : 58.2%
Barometric Pressure : 100.38kPa

Calibration Technician : Lucky Jaiswal
Secondary Check: Dhanush Bonu
Calibration Date : 04 Jul 2022
Report Issue Date : 5 Jul 2022

Approved Signatory : Ken Williams

Characteristic Tested	Result
Generated Sound Pressure Level	*Pass*
Frequency Generated	*Pass*
Total Distortion	*Pass*

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	94.02	1000.00

The sound calibrator has been shown to conform to the class 1 requirements for periodic testing, described in Annex B of IEC 60942:2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed..

Uncertainties of Measurement -

Specific Tests		Environmental Conditions	
Generated SPL	*±0.10dB*	*Temperature*	*±0.1°C*
Frequency	*±0.13%*	*Relative Humidity*	*±1.9%*
Distortion	*±0.20%*	*Barometric Pressure*	*±0.014kPa*

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

Acoustic Research Labs Pty Ltd
Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Calibrator
IEC 60942:2017
Calibration Test Report

Calibration Number C22453

Client Details Gamuda Berhad
Suite 26.01, 100 Miller Street
North Sydney NSW 2060

Equipment Tested/ Model Number : Rion NC-75
Instrument Serial Number : 34324039

Atmospheric Conditions
Ambient Temperature : 23.4°C
Relative Humidity : 58.2%
Barometric Pressure : 100.38kPa

Calibration Technician : Lucky Jaiswal
Secondary Check: Dhanush Bonu
Calibration Date : 04 Jul 2022
Report Issue Date : 5 Jul 2022

Approved Signatory : Ken Williams

Characteristic Tested	Result
Generated Sound Pressure Level	*Pass*
Frequency Generated	*Pass*
Total Distortion	*Pass*

The sound calibrator has been shown to conform to the class 1 requirements for periodic testing, described in Annex B of IEC 60942:2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed..

Uncertainties of Measurement -

Specific Tests		Environmental Conditions	
Generated SPL	*±0.10dB*	*Temperature*	*±0.1°C*
Frequency	*±0.13%*	*Relative Humidity*	*±1.9%*
Distortion	*±0.20%*	*Barometric Pressure*	*±0.014kPa*

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

This report applies only to the item tested and shall only be reproduced in full, unless approved in writing by Acoustic Research Labs.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

1. OVERVIEW 3

1.1 UNCERTAINTIES 3
1.2 DOCUMENT CONVENTIONS 3

2. GENERAL 4

2.1 ENVIRONMENTAL CONDITIONS DURING TEST 4
2.2 CALIBRATION TESTS 4
2.3 TEST EQUIPMENT USED 4
2.3.1 Multi-function Acoustic Calibrator 4
2.3.2 Sound Level Meter 4
2.3.3 Audio Analyser 4
2.3.4 Environmental Monitoring 4

3. CALIBRATION TEST RESULTS 5

3.1 SOUND PRESSURE LEVEL 5
3.1.1 Generated Sound Pressure Level 5
3.2 FREQUENCY OUTPUT 6
3.3 TOTAL DISTORTION 6

1. OVERVIEW

This report presents the calibration test results of a Rion NC-75 Acoustic Calibrator, and associated equipment. Calibration is carried out in accordance with *IEC 60942-2017, Electroacoustics - Sound Calibrators*.

Relevant clauses from this standard have been used for periodic testing in conjunction with Acoustic Research Labs internal test methods described in Section 2 of the calibration work instruction manual.

1.1 UNCERTAINTIES

For each test performed, the associated measurement uncertainties are derived at the 95% confidence level and are given with a coverage factor of 2.

The uncertainty applies at the time of measurement only, and takes no account of any drift or other effects that may apply afterwards. When estimating uncertainty at any later time, other relevant information should also be considered, including, where possible, the history of the performance of the instrument and the manufacturer's specifications.

1.2 DOCUMENT CONVENTIONS

Test results which highlight non-conformances relative to the standard, and the sound level meter type specified by the manufacturer have been marked with an **F** in the respective tests.

Any tests that are not required, due to sound level meter configuration, are marked N/A.

2. GENERAL

2.1 ENVIRONMENTAL CONDITIONS DURING TEST

No corrections have been applied to any results obtained to compensate for the environmental conditions.

All tolerance limits stated apply to measurements made at and around reference environmental conditions within the following ranges:

80 kPa to 105 kPa

20°C to 26°C

25% to 90% relative humidity

2.2 CALIBRATION TESTS

Where applicable the following tests were performed in accordance with the requirements of *IEC 60942-2017* Annex B.

2.3 TEST EQUIPMENT USED

All test equipment used during periodic testing are calibrated every 12months by an accredited laboratory, traceable to SI units.

The performance of all equipment during these calibrations and the effects of instrument stability are used to determine the measurement uncertainty of each reported result.

2.3.1 Multi-function Acoustic Calibrator

A Bruel & Kjaer 4226 Multi-function calibrator (S/N - 3215300) was used as the reference for the sound pressure level and the signal frequency.

2.3.2 Sound Level Meter

ARL Ngara Class 1 (S/N - 878035). This device was used for converting acoustic signals into voltages which may be measured by the multimeter.

2.3.3 Audio Analyser

Abonet Audio Analyzer AVR-3710 (S/N - V859B9018). This device was used for measuring the AC voltage output of the reference Ngara unit. The AC level is proportional to the sound pressure level and frequency applied to the reference microphone.

2.3.4 Environmental Monitoring

A MHB-382SD (S/N – AH.88227) was used for measuring environmental conditions during device calibration. It is capable of providing temperature, relative humidity and pressure measurements.

3. CALIBRATION TEST RESULTS

3.1 SOUND PRESSURE LEVEL

3.1.1 Generated Sound Pressure Level

The sound pressure level generated by the sound calibrator was measured three times as an average over 20 s of operation. During each measurement the sound calibrator was decoupled and rotated from the microphone to ensure any variations in operation were captured.

Table 1 – Generated Sound Pressure Level Results

Nominal Level (dB)	Measured Level (dB)	Deviation (dB)	Tolerance (dB)	P/F	U95 (dB)	
94	94.02	0.02	±0.25	P	0.10	Measured Output

3.2 FREQUENCY OUTPUT

The frequency generated by the sound calibrator was measured as an average over 20s of operation. The deviation from expected values is calculated as the absolute value of the difference in per cent between the frequency of the sound generated by the sound calibrator and the corresponding specified frequency.

Table 2 – Frequency Output Results

Nominal Level (dB)	Nominal Frequency (Hz)	Measured Frequency (Hz)	Deviation (Hz)	Tolerance (Hz)	P/F	U95 (%)	
94	1000	1000.00	0.00	±7.00	P	0.13	Measured Output

3.3 TOTAL DISTORTION

The total distortion, measured over the frequency range from 22,5 Hz to 20 kHz, was measured as an average over 20s of operation.

Table 3 – Total Distortion Results

Nominal Level (dB)	Distortion (%)	Tolerance (%)	P/F	U95 (%)	
94	0.23	±2.50	P	0.20	Measured Output

Acoustic Research Labs Pty Ltd
Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter
IEC 61672-3:2013
Calibration Certificate

Calibration Number C22380

Client Details	Gamuda Berhad Suite 26.01, 100 Miller Street North Sydney NSW 2060
Equipment Tested/ Model Number :	Rion NL-52
Instrument Serial Number :	01010867
Microphone Serial Number :	20511
Pre-amplifier Serial Number :	11515

Pre-Test Atmospheric Conditions		Post-Test Atmospheric Conditions	
Ambient Temperature :	25.1°C	**Ambient Temperature :**	25°C
Relative Humidity :	35.7%	**Relative Humidity :**	36.2%
Barometric Pressure :	100.28kPa	**Barometric Pressure :**	100.3kPa

Calibration Technician :	Lucky Jaiswal	**Secondary Check:**	Rhys Gravelle
Calibration Date :	8 Jun 2022	**Report Issue Date :**	9 Jun 2022

Approved Signatory :  Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	*Pass*	17: Level linearity incl. the level range control	*N/A*
13: Electrical Sig. tests of frequency weightings	*Pass*	18: Toneburst response	*Pass*
14: Frequency and time weightings at 1 kHz	*Pass*	19: C Weighted Peak Sound Level	*Pass*
15: Long Term Stability	*Pass*	20: Overload Indication	*Pass*
16: Level linearity on the reference level range	*Pass*	21: High Level Stability	*Pass*

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2013.

Uncertainties of Measurement -

Acoustic Tests		Environmental Conditions	
125Hz	*±0.13dB*	*Temperature*	*±0.1°C*
1kHz	*±0.13dB*	*Relative Humidity*	*±1.9%*
8kHz	*±0.14dB*	*Barometric Pressure*	*±0.014kPa*
Electrical Tests	*±0.13dB*		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

Acoustic Research Labs Pty Ltd
Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter
IEC 61672-3:2013
Calibration Test Report

Calibration Number C22380

Client Details Gamuda Berhad
Suite 26.01, 100 Miller Street
North Sydney NSW 2060

Equipment Tested/ Model Number : Rion NL-52
Instrument Serial Number : 01010867
Microphone Serial Number : 20511
Pre-amplifier Serial Number : 11515

Pre-Test Atmospheric Conditions		Post-Test Atmospheric Conditions	
Ambient Temperature :	25.1°C	**Ambient Temperature :**	25°C
Relative Humidity :	35.7%	**Relative Humidity :**	36.2%
Barometric Pressure :	100.28kPa	**Barometric Pressure :**	100.3kPa

Calibration Technician : Lucky Jaiswal
Calibration Date : 8 Jun 2022
Secondary Check: Rhys Gravelle
Report Issue Date : 9 Jun 2022

Approved Signatory : Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	*Pass*	17: Level linearity incl. the level range control	*N/A*
13: Electrical Sig. tests of frequency weightings	*Pass*	18: Toneburst response	*Pass*
14: Frequency and time weightings at 1 kHz	*Pass*	19: C Weighted Peak Sound Level	*Pass*
15: Long Term Stability	*Pass*	20: Overload Indication	*Pass*
16: Level linearity on the reference level range	*Pass*	21: High Level Stability	*Pass*

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2013.

Uncertainties of Measurement -

Acoustic Tests		Environmental Conditions	
125Hz	*±0.13dB*	*Temperature*	*±0.1°C*
1kHz	*±0.13dB*	*Relative Humidity*	*±1.9%*
8kHz	*±0.14dB*	*Barometric Pressure*	*±0.014 kPa*
Electrical Tests	*±0.13dB*		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

This report applies only to the item tested and shall only be reproduced in full, unless approved in writing by Acoustic Research Labs.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

1. OVERVIEW 3

1.1 UNCERTAINTIES 3
1.2 DOCUMENT CONVENTIONS 3

2. GENERAL 4

2.1 ENVIRONMENTAL CONDITIONS DURING TEST 4
2.2 CALIBRATION TESTS 4
2.3 TEST EQUIPMENT USED 4
2.3.1 Multi-function Acoustic Calibrator 4
2.3.2 Microphone Electrical Equivalent Circuit 4
2.3.3 Adjustable Attenuator 5
2.3.4 Arbitrary Function Generator 5
2.3.5 Environmental Monitoring 5

3. CALIBRATION TEST RESULTS 6

3.1 INDICATION AT THE CALIBRATION CHECK FREQUENCY 6
3.2 SELF GENERATED NOISE 6
3.2.1 Microphone Installed 6
3.2.2 Electrical Input Signal Device 7
3.3 ACOUSTICAL SIGNAL TESTS OF A FREQUENCY WEIGHTING 8
3.4 ELECTRICAL SIGNAL TESTS OF FREQUENCY WEIGHTINGS 9
3.5 FREQUENCY AND TIME WEIGHTINGS AT 1KHZ 11
3.6 LONG-TERM STABILITY 11
3.7 LEVEL LINEARITY ON THE REFERENCE LEVEL RANGE 12
3.8 TONEBURST RESPONSE 14
3.9 PEAK C RESPONSE 14
3.10 OVERLOAD INDICATION 15
3.11 HIGH LEVEL STABILITY 15

1. OVERVIEW

This report presents the calibration test results of a Rion NL-52 Sound Level Meter, and associated equipment. Calibration is carried out in accordance with *IEC 61672-3.2013, Electroacoustics - Sound Level Meters - Part 3: Periodic Tests*.

Relevant clauses from this standard have been used for periodic testing in conjunction with Acoustic Research Labs internal test methods described in Section 2 of the calibration work instruction manual.

1.1 UNCERTAINTIES

For each test performed, the associated measurement uncertainties are derived at the 95% confidence level and are given with a coverage factor of 2.

The uncertainty applies at the time of measurement only, and takes no account of any drift or other effects that may apply afterwards. When estimating uncertainty at any later time, other relevant information should also be considered, including, where possible, the history of the performance of the instrument and the manufacturer's specifications.

1.2 DOCUMENT CONVENTIONS

Test results which highlight non-conformances relative to the standard, and the sound level meter type specified by the manufacturer have been marked with an **F** in the respective tests.

Any tests that are not required, due to sound level meter configuration, are marked N/A.

2. GENERAL

2.1 ENVIRONMENTAL CONDITIONS DURING TEST

No corrections have been applied to any results obtained to compensate for the environmental conditions.

2.2 CALIBRATION TESTS

Where applicable the following tests were performed in accordance with the requirements of *IEC 61672-3.2013*. These clauses are used to define the periodic testing of Sound Level Meters.

Clause 10	Indication at the Calibration Check Frequency
Clause 11	Self Generated Noise
Clause 12	Acoustical Signal Tests of Frequency Weighting
Clause 13	Electrical Signal Tests of Frequency Weightings
Clause 14	Frequency and Time Weightings at 1kHz
Clause 15	Long Term Stability
Clause 16	Level Linearity on the Reference Level Range
Clause 17	Level Linearity including the level range control
Clause 18	Toneburst Response
Clause 19	Peak C Sound Level
Clause 20	Overload Indication
Clause 21	High Level Stability

2.3 TEST EQUIPMENT USED

All test equipment used during periodic testing are calibrated every 12months by an accredited laboratory, traceable to SI units.

The performance of all equipment during these calibrations and the effects of instrument stability are used to determine the measurement uncertainty of each reported result.

2.3.1 Multi-function Acoustic Calibrator

A Bruel & Kjaer 4226 Multi-function calibrator (S/N - 3215300) was used for frequency response testing of the entire instrument (including microphone). This instrument was used as a reference calibrator and for frequency response verification.

2.3.2 Microphone Electrical Equivalent Circuit

Calibration of most instrument parameters is carried out using electrical signals fed to the unit via a two-port electrical equivalent circuit of the microphone.

A 13pF capacitance dummy microphone was used during testing.

2.3.3 Adjustable Attenuator

A means for varying the attenuation of electrical signals via the dummy microphone was provided by a JFW Industries dual rotary attenuator (S/N - 792819 2132). The attenuator is switchable in 1dB steps between 0dB and 60dB.

2.3.4 Arbitrary Function Generator

A Hewlett Packard 33120A (S/N - US36047448) was used to generate the required electrical signals.

2.3.5 Environmental Monitoring

A MHB-382SD (S/N – AH.88227) was used for measuring environmental conditions during device calibration. It is capable of providing temperature, relative humidity and pressure measurements.

3. CALIBRATION TEST RESULTS

3.1 INDICATION AT THE CALIBRATION CHECK FREQUENCY

The indication of the sound level meter at the calibration check frequency was checked by application of an acoustic signal at the reference sound pressure level and frequency.

Stated reference conditions as found in manual are

Reference Level : 94.0 dB

Reference Frequency : 1000.0 Hz

Indications before and after adjustments were recorded and are shown in Table 1 (all measurements in dB) -

Table 1 - Check Frequency Calibration Results

Frequency Weighting	Initial Response	B&K 4226 Corrected	FreeField Corrected	Final Corrected Response
A	94.00	94.10	94.10	94.01
C	94.00	94.10	94.10	94.01
Z	94.00	94.10	94.10	94.01

Free field adjustment data as provided by the manufacturer. Windscreen correction factors applied.

3.2 SELF GENERATED NOISE

3.2.1 Microphone Installed

Self generated noise was measured with the microphone installed on the sound level meter, in the configuration submitted for periodic testing. The sound level meter was set to the most-sensitive level range and with frequency weighting A selected.

Ten (10) time weighted observations were made over a period of 60 seconds.

Random Readings dB(A)

14.20	14.20	14.30	14.20	14.40
14.40	14.40	14.20	14.30	14.20

Acoustic Noise Floor : 14.3 dB(A)

3.2.2 Electrical Input Signal Device

With the microphone replaced by the electrical input signal device and terminated as specified, the sound level meter was set to the most-sensitive level range and with frequency weightings Z, C and A selected as provided.

Ten (10) time weighted observations were made over a period of 60 seconds.

Random Readings dB(A)

7.80	7.80	7.80	7.80	7.80
7.80	7.80	7.80	7.80	7.80

Random Readings dB(C)

8.70	8.70	8.70	8.70	8.70
8.70	8.70	8.70	8.70	8.70

Random Readings dB(Z)

13.2	13.4	13.3	13.1	13.2
13.3	13.3	13.4	13.3	13.3

	dB(A)	dB(C)	dB(Z)
Electric Noise Floor :	7.8	8.7	13.3

3.3 ACOUSTICAL SIGNAL TESTS OF A FREQUENCY WEIGHTING

The sound level meter was set to measure frequency weighting C with a FAST response. The test was carried out using a multi-function acoustic calibrator set to pressure mode.

Three (3) readings were made at each test frequency. The average of the readings was then corrected to the multi-function acoustic calibrator.

Table 2 - Frequency Weighting C Response

Freq Hz	Reading 1	Reading 2	Reading 3	U95
125	94.0	94.0	94.0	0.13
1 000	94.1	94.1	94.1	0.13
8 000	88.2	88.2	88.2	0.14

Actual Freq Hz	B&K 4226 Corrections	Corrected Response dB(C)		Uexp
		Actual	re 1kHz	
125.90	-0.03	93.97	-0.04	0.13
1005.10	-0.09	94.01	0.00	0.13
7915.10	-0.08	88.12	-5.89	0.14

Adjustments were then applied to correct for free field and sound level meter body effects with data supplied by the manufacturer as per Table 3. Windscreen correction factors applied.

Table 3 - Correction Data

Actual Freq Hz	FreeField Corrections	U95	BodyEffects Corrections	U95	Windscreen Corrections	U95
125.90	0.00	0.25	0.00	0.25	0.000	0.200
1005.10	0.00	0.25	0.00	0.25	-0.100	0.200
7915.10	3.00	0.35	0.30	0.35	0.000	0.300

Finally, the corrected responses are normalised to the response at 1kHz and compared to the tolerances stated in Table 2 of IEC 61672.1-2013.

Table 4 - Acoustic C Response

Actual Freq (Hz)	Corrected Response dB(C)		Expected Response dB(C)		Deviation	P/F	Uexp
	Actual	re 1kHz	re 1kHz	Tolerance			
125.90	93.97	0.06	-0.2	±1.0	0.26	P	0.43
1005.10	93.91	0.00	0.0	±0.7	0.00	P	0.43
7915.10	91.42	-2.49	-3.0	+1.5 / -2.5	0.51	P	0.60

3.4 ELECTRICAL SIGNAL TESTS OF FREQUENCY WEIGHTINGS

Frequency weighting responses for Z, C and A were determined relative to the response at 1kHz using steady sinusoidal electrical input signals.

On the reference level range, and for each frequency weighting under test, the level of a 1kHz input signal was adjusted to yield 93dB. At test frequencies other than 1kHz, the input signal level was adjusted to compensate for the design goal attenuations as specified in Table 2 of IEC 61672.1-2013.

Table 5 - Measured Electrical Frequency Response

Freq Hz	A Weighting (dB)	C Weighting (dB)	Z Weighting (dB)	U95
63	92.9	93.0	92.9	0.13
125	92.9	93.1	93.0	0.11
250	93.0	93.0	93.0	0.10
500	93.0	93.0	93.0	0.10
1 000	93.0	93.0	93.0	0.10
2 000	93.0	93.0	93.0	0.10
4 000	93.0	93.0	93.0	0.10
8 000	93.1	93.0	93.0	0.10
15 850	91.8	91.8	93.0	0.14

Adjustments were then applied to correct for a uniform free field response and sound level meter body effects with data supplied by the manufacturer as per Table 6. Windscreen correction factors applied.

Table 6 - Correction Data

Freq Hz	Ufreq	U95	Body Effects	U95	WS Effects	U95
63	0.100	0.250	0.000	0.250	0.000	0.200
125	0.100	0.250	0.000	0.250	0.000	0.200
250	0.100	0.250	0.000	0.250	0.000	0.200
500	0.000	0.250	-0.100	0.250	-0.100	0.200
1 000	0.000	0.250	0.000	0.250	-0.100	0.200
2 000	0.000	0.250	0.000	0.250	-0.300	0.200
4 000	0.100	0.250	0.300	0.250	-0.300	0.200
8 000	0.000	0.350	0.300	0.350	0.000	0.300
15 850	-0.800	0.450	0.400	0.350	0.700	0.300

Finally, the corrected responses were referenced to the response at 1kHz and compared to the tolerances stated in Table 2 of IEC 61672.1-2013.

Table 7 - A Weighted Electrical Response

Freq Hz	Response		Tolerance (dB)	P/F	Uexp
	Corrected	re 1kHz			
63	93.00	0.10	±1.0	P	0.43
125	93.00	0.10	±1.0	P	0.42
250	93.10	0.20	±1.0	P	0.42
500	92.80	-0.10	±1.0	P	0.42
1 000	92.90	0.00	±0.7	P	0.42
2 000	92.70	-0.20	±1.0	P	0.42
4 000	93.10	0.20	±1.0	P	0.42
8 000	93.40	0.50	+1.5 / -2.5	P	0.59
15 850	92.10	-0.80	+2.5 / –16	P	0.66

Table 8 - C Weighted Electrical Response

Freq Hz	Response		Tolerance (dB)	P/F	Uexp
	Corrected	re 1kHz			
63	93.10	0.20	±1.0	P	0.43
125	93.20	0.30	±1.0	P	0.42
250	93.10	0.20	±1.0	P	0.42
500	92.80	-0.10	±1.0	P	0.42
1 000	92.90	0.00	±0.7	P	0.42
2 000	92.70	-0.20	±1.0	P	0.42
4 000	93.10	0.20	±1.0	P	0.42
8 000	93.30	0.40	+1.5 / -2.5	P	0.59
15 850	92.10	-0.80	+2.5 / –16	P	0.66

Table 9 - Z Weighted Electrical Response

Freq Hz	Response		Tolerance (dB)	P/F	Uexp
	Corrected	re 1kHz			
63	93.00	0.10	±1.0	P	0.43
125	93.10	0.20	±1.0	P	0.42
250	93.10	0.20	±1.0	P	0.42
500	92.80	-0.10	±1.0	P	0.42
1 000	92.90	0.00	±0.7	P	0.42
2 000	92.70	-0.20	±1.0	P	0.42
4 000	93.10	0.20	±1.0	P	0.42
8 000	93.30	0.40	+1.5 / -2.5	P	0.59
15 850	93.30	0.40	+2.5 / –16	P	0.66

3.5 FREQUENCY AND TIME WEIGHTINGS AT 1KHZ

A steady sinusoidal electrical input signal of 1kHz at the reference sound pressure level was applied to the reference level range.

The deviations of the indicated level of C and Z frequency weightings were recorded, along with the deviations of the indication of A weighted time averaged, and SLOW weighted response.

Table 10 - Frequency and Time Weighting Results

Frequency Weighting	Time Weighting	Response (dB)	Deviation (dB)	P/F	Tolerance (dB)	U95
A	Fast	94.0	0.0	P	±0.2	0.10
	Leq	94.0	0.0	P	±0.2	0.10
	Slow	94.0	0.0	P	±0.2	0.10
C	Fast	94.0	0.0	P	±0.2	0.10
Z	Fast	94.0	0.0	P	±0.2	0.10

3.6 LONG-TERM STABILITY

Long-term stability was tested by comparing a steady sinusoidal electrical signal applied at the start, and at the end of testing. The applied signal level was set to the reference level and frequency and was maintained constant. The difference between the indicated levels was recorded.

Table 11 - Frequency and Time Weighting Results

Signal Level (mV)	Initial Response (dB)	Final Response (dB)	Deviation (dB)	P/F	Tolerance (dB)	U95
70.8	94	94.0	0.0	P	±0.1	0.10

3.7 LEVEL LINEARITY ON THE REFERENCE LEVEL RANGE

Level linearity was tested with a steady sinusoidal electrical signal at a frequency of 8kHz, with the meter set to display frequency weighted A, FAST response.

The starting point for level linearity testing was set to 94.0dB as stated in the instruction manual.

Level linearity was measured in 5dB steps of increasing input signal level from the starting point up to within 5dB of the stated upper limit, then at 1dB steps up to (but not including) the first indication of overload.

Table 12 - Level Linearity - Increasing

Ideal (dB)	Response (dB)	Deviation (dB)	Tolerance (dB)	P/F	U95
94.0	94.0	0.0	±0.8	P	0.1
99.0	99.0	0.0	±0.8	P	0.1
104.0	104.0	0.0	±0.8	P	0.1
109.0	109.0	0.0	±0.8	P	0.1
114.0	114.0	0.0	±0.8	P	0.1
119.0	119.0	0.0	±0.8	P	0.1
124.0	124.0	0.0	±0.8	P	0.1
129.0	129.0	0.0	±0.8	P	0.1
131.0	131.0	0.0	±0.8	P	0.1
132.0	132.0	0.0	±0.8	P	0.1
133.0	133.0	0.0	±0.8	P	0.1
134.0	134.0	0.0	±0.8	P	0.1
135.0	135.0	0.0	±0.8	P	0.1
136.0	136.0	0.0	±0.8	P	0.1
137.0	137.0	0.0	±0.8	P	0.1

Overload indication at 138.0dB.

Level linearity test was the continued in 5dB steps of decreasing input signal level from the starting point up to within 5dB of the stated lower limit, then at 1dB steps up to (but not including) the first indication of under range.

Table 13 - Level Linearity - Decreasing

Ideal (dB)	Response (dB)	Deviation (dB)	Tolerance (dB)	P/F	U95
94.0	94.0	0.0	±0.8	P	0.1
89.0	89.0	0.0	±0.8	P	0.1
84.0	84.0	0.0	±0.8	P	0.1
79.0	79.0	0.0	±0.8	P	0.1
74.0	74.0	0.0	±0.8	P	0.1
69.0	69.0	0.0	±0.8	P	0.1
64.0	64.0	0.0	±0.8	P	0.1
59.0	59.0	0.0	±0.8	P	0.1
54.0	54.0	0.0	±0.8	P	0.1
49.0	49.0	0.0	±0.8	P	0.1
44.0	44.0	0.0	±0.8	P	0.1
39.0	38.9	-0.1	±0.8	P	0.1
34.0	33.9	-0.1	±0.8	P	0.1
30.0	29.9	-0.1	±0.8	P	0.1
29.0	28.9	-0.1	±0.8	P	0.1
28.0	27.9	-0.1	±0.8	P	0.1
27.0	26.8	-0.2	±0.8	P	0.1
26.0	25.8	-0.2	±0.8	P	0.1
25.0	24.8	-0.2	±0.8	P	0.1

Under range indication at 24.0dB.

3.8 TONEBURST RESPONSE

The response of the sound level meter to short-duration signals was tested on the reference range with 4kHz tone bursts.

The tone bursts were generated from a steady sinusoidal signal at a level of 135.0dB.

Table 14 - FAST Weighted Response

Burst Length	Response dB(A)	Deviation (dB)	Tolerance (dB)	P/F	U95
200ms	134.0	0.0	±0.5	P	0.1
2ms	116.9	-0.1	+1.0 / -1.5	P	0.1
0.25ms	107.8	-0.2	+1.0 / -3	P	0.1

Table 15 - SLOW Weighted Response

Burst Length	Response dB(A)	Deviation (dB)	Tolerance (dB)	P/F	U95
200ms	127.5	-0.1	±0.5	P	0.1
2ms	107.9	-0.1	+1.0 / -3	P	0.1

Table 16 - Sound Exposure Level Response

Burst Length	Response dB(A)	Deviation (dB)	Tolerance (dB)	P/F	U95
200ms	128.0	0.0	±0.5	P	0.1
2ms	108.4	0.4	+1.0 / -1.5	P	0.1
0.25ms	98.8	-0.2	+1.0 / -3	P	0.1

3.9 PEAK C RESPONSE

Indication of Peak C sound level was tested on the least sensitive level range. Test signals used were -

- A single complete cycle of an 8kHz sinusoid, starting and stopping at zero crossings
- Positive and negative half cycles of a 500Hz sinusoid, starting and stopping at zero crossings.

The level of the steady 8kHz sinusoid was adjusted to display 133.0dB(C).

Table 17 - Single Cycle Response

Response Peak C	Deviation (dB)	Tolerance (dB)	P/F	U95	Overload Peak C
136.4	0.0	±2.0	P	0.22	N

Table 18 - Half Cycle Response

Signal Orientation	Response Peak C	Deviation (dB)	Tolerance (dB)	P/F	U95
Positive	134.4	-1.0	±1.0	P	0.1
Negative	134.4	-1.0	±1.0	P	0.1

No overload was noted during Peak C testing.

3.10 OVERLOAD INDICATION

The overload indication was tested on the least sensitive level range, with the sound level meter set to display frequency weighted A, time averaged values.

Positive and negative half cycle sinusoidal electrical signals at 4kHz were used. The test began at an indicated time averaged level of137.0dB(A).

Using the positive half cycle signal, the signal level was increased in steps of 0.5dB up to, but not including, the first indication of overload. The level of the input signal was then increased in steps of 0.1dB until the first indication of overload. These steps were repeated using the negative half cycle signal.

Table 19 - Overload Indication

Signal Orientation	Overload Response	Difference	Tolerance	P/F	Uncertainty
Positive	136.5	0.0	±1.5	P	0.1
Negative	136.5				

Overload indication was verified.

Overload latch indication was verified.

3.11 HIGH LEVEL STABILITY

High level stability was tested by measuring the response of the meter to high signal levels. The result was evaluated as the difference between the A-Weighted indicated levels in response to a steady 1kHz signal applied over 5 minutes.

Table 20 - FAST Weighted Response

Time Weighting	Initial Response (dB)	Final Response (dB)	Deviation (dB)	Tolerance (dB)	P/F	U95
Fast	137.0	137.0	0.0	±0.1	P	0.10
Slow	N/A	N/A	N/A	±0.1	N/A	0.10
Leq	137.0	137.0	0.0	±0.1	P	0.10

Acoustic Research Labs Pty Ltd
Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter
IEC 61672-3:2013
Calibration Certificate

Calibration Number C22383

Client Details	Gamuda Berhad Suite 26.01, 100 Miller Street North Sydney NSW 2060
Equipment Tested/ Model Number :	Rion NL-52
Instrument Serial Number :	01010868
Microphone Serial Number :	20512
Pre-amplifier Serial Number :	11516

Pre-Test Atmospheric Conditions		Post-Test Atmospheric Conditions	
Ambient Temperature :	24.7°C	**Ambient Temperature :**	25.1°C
Relative Humidity :	36.7%	**Relative Humidity :**	37.8%
Barometric Pressure :	100.3kPa	**Barometric Pressure :**	100.36kPa

Calibration Technician :	Lucky Jaiswal	**Secondary Check:**	Rhys Gravelle
Calibration Date :	8 Jun 2022	**Report Issue Date :**	9 Jun 2022

Approved Signatory : Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	*Pass*	17: Level linearity incl. the level range control	*N/A*
13: Electrical Sig. tests of frequency weightings	*Pass*	18: Toneburst response	*Pass*
14: Frequency and time weightings at 1 kHz	*Pass*	19: C Weighted Peak Sound Level	*Pass*
15: Long Term Stability	*Pass*	20: Overload Indication	*Pass*
16: Level linearity on the reference level range	*Pass*	21: High Level Stability	*Pass*

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2013.

Uncertainties of Measurement -

Acoustic Tests		Environmental Conditions	
125Hz	*±0.13dB*	*Temperature*	*±0.1°C*
1kHz	*±0.13dB*	*Relative Humidity*	*±1.9%*
8kHz	*±0.14dB*	*Barometric Pressure*	*±0.014kPa*
Electrical Tests	*±0.13dB*		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

Acoustic Research Labs Pty Ltd
Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter
IEC 61672-3:2013
Calibration Test Report

Calibration Number C22383

Client Details Gamuda Berhad
Suite 26.01, 100 Miller Street
North Sydney NSW 2060

Equipment Tested/ Model Number : Rion NL-52
Instrument Serial Number : 01010868
Microphone Serial Number : 20512
Pre-amplifier Serial Number : 11516

Pre-Test Atmospheric Conditions		Post-Test Atmospheric Conditions	
Ambient Temperature :	24.7°C	**Ambient Temperature :**	25.1°C
Relative Humidity :	36.7%	**Relative Humidity :**	37.8%
Barometric Pressure :	100.3kPa	**Barometric Pressure :**	100.36kPa

Calibration Technician : Lucky Jaiswal
Calibration Date : 8 Jun 2022
Secondary Check: Rhys Gravelle
Report Issue Date : 9 Jun 2022

Approved Signatory : Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	*Pass*	17: Level linearity incl. the level range control	*N/A*
13: Electrical Sig. tests of frequency weightings	*Pass*	18: Toneburst response	*Pass*
14: Frequency and time weightings at 1 kHz	*Pass*	19: C Weighted Peak Sound Level	*Pass*
15: Long Term Stability	*Pass*	20: Overload Indication	*Pass*
16: Level linearity on the reference level range	*Pass*	21: High Level Stability	*Pass*

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2013.

Uncertainties of Measurement -

Acoustic Tests		Environmental Conditions	
125Hz	*±0.13dB*	*Temperature*	*±0.1°C*
1kHz	*±0.13dB*	*Relative Humidity*	*±1.9%*
8kHz	*±0.14dB*	*Barometric Pressure*	*±0.014 kPa*
Electrical Tests	*±0.13dB*		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

This report applies only to the item tested and shall only be reproduced in full, unless approved in writing by Acoustic Research Labs.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

1. OVERVIEW 3

1.1 UNCERTAINTIES 3
1.2 DOCUMENT CONVENTIONS 3

2. GENERAL 4

2.1 ENVIRONMENTAL CONDITIONS DURING TEST 4
2.2 CALIBRATION TESTS 4
2.3 TEST EQUIPMENT USED 4
2.3.1 Multi-function Acoustic Calibrator 4
2.3.2 Microphone Electrical Equivalent Circuit 4
2.3.3 Adjustable Attenuator 5
2.3.4 Arbitrary Function Generator 5
2.3.5 Environmental Monitoring 5

3. CALIBRATION TEST RESULTS 6

3.1 INDICATION AT THE CALIBRATION CHECK FREQUENCY 6
3.2 SELF GENERATED NOISE 6
3.2.1 Microphone Installed 6
3.2.2 Electrical Input Signal Device 7
3.3 ACOUSTICAL SIGNAL TESTS OF A FREQUENCY WEIGHTING 8
3.4 ELECTRICAL SIGNAL TESTS OF FREQUENCY WEIGHTINGS 9
3.5 FREQUENCY AND TIME WEIGHTINGS AT 1KHZ 11
3.6 LONG-TERM STABILITY 11
3.7 LEVEL LINEARITY ON THE REFERENCE LEVEL RANGE 12
3.8 TONEBURST RESPONSE 14
3.9 PEAK C RESPONSE 14
3.10 OVERLOAD INDICATION 15
3.11 HIGH LEVEL STABILITY 15

1. OVERVIEW

This report presents the calibration test results of a Rion NL-52 Sound Level Meter, and associated equipment. Calibration is carried out in accordance with *IEC 61672-3.2013, Electroacoustics - Sound Level Meters - Part 3: Periodic Tests*.

Relevant clauses from this standard have been used for periodic testing in conjunction with Acoustic Research Labs internal test methods described in Section 2 of the calibration work instruction manual.

1.1 UNCERTAINTIES

For each test performed, the associated measurement uncertainties are derived at the 95% confidence level and are given with a coverage factor of 2.

The uncertainty applies at the time of measurement only, and takes no account of any drift or other effects that may apply afterwards. When estimating uncertainty at any later time, other relevant information should also be considered, including, where possible, the history of the performance of the instrument and the manufacturer's specifications.

1.2 DOCUMENT CONVENTIONS

Test results which highlight non-conformances relative to the standard, and the sound level meter type specified by the manufacturer have been marked with an **F** in the respective tests.

Any tests that are not required, due to sound level meter configuration, are marked N/A.

2. GENERAL

2.1 ENVIRONMENTAL CONDITIONS DURING TEST

No corrections have been applied to any results obtained to compensate for the environmental conditions.

2.2 CALIBRATION TESTS

Where applicable the following tests were performed in accordance with the requirements of *IEC 61672-3.2013*. These clauses are used to define the periodic testing of Sound Level Meters.

Clause 10	Indication at the Calibration Check Frequency
Clause 11	Self Generated Noise
Clause 12	Acoustical Signal Tests of Frequency Weighting
Clause 13	Electrical Signal Tests of Frequency Weightings
Clause 14	Frequency and Time Weightings at 1kHz
Clause 15	Long Term Stability
Clause 16	Level Linearity on the Reference Level Range
Clause 17	Level Linearity including the level range control
Clause 18	Toneburst Response
Clause 19	Peak C Sound Level
Clause 20	Overload Indication
Clause 21	High Level Stability

2.3 TEST EQUIPMENT USED

All test equipment used during periodic testing are calibrated every 12months by an accredited laboratory, traceable to SI units.

The performance of all equipment during these calibrations and the effects of instrument stability are used to determine the measurement uncertainty of each reported result.

2.3.1 Multi-function Acoustic Calibrator

A Bruel & Kjaer 4226 Multi-function calibrator (S/N - 3215300) was used for frequency response testing of the entire instrument (including microphone). This instrument was used as a reference calibrator and for frequency response verification.

2.3.2 Microphone Electrical Equivalent Circuit

Calibration of most instrument parameters is carried out using electrical signals fed to the unit via a two-port electrical equivalent circuit of the microphone.

A 13pF capacitance dummy microphone was used during testing.

2.3.3 Adjustable Attenuator

A means for varying the attenuation of electrical signals via the dummy microphone was provided by a JFW Industries dual rotary attenuator (S/N - 792819 2132). The attenuator is switchable in 1dB steps between 0dB and 60dB.

2.3.4 Arbitrary Function Generator

A Hewlett Packard 33120A (S/N - US36047448) was used to generate the required electrical signals.

2.3.5 Environmental Monitoring

A MHB-382SD (S/N – AH.88227) was used for measuring environmental conditions during device calibration. It is capable of providing temperature, relative humidity and pressure measurements.

3. CALIBRATION TEST RESULTS

3.1 INDICATION AT THE CALIBRATION CHECK FREQUENCY

The indication of the sound level meter at the calibration check frequency was checked by application of an acoustic signal at the reference sound pressure level and frequency.

Stated reference conditions as found in manual are

Reference Level : 94.0 dB

Reference Frequency : 1000.0 Hz

Indications before and after adjustments were recorded and are shown in Table 1 (all measurements in dB) -

Table 1 - Check Frequency Calibration Results

Frequency Weighting	Initial Response	B&K 4226 Corrected	FreeField Corrected	Final Corrected Response
A	94.00	94.10	94.10	94.01
C	94.00	94.10	94.10	94.01
Z	94.00	94.10	94.10	94.01

Free field adjustment data as provided by the manufacturer. Windscreen correction factors applied.

3.2 SELF GENERATED NOISE

3.2.1 Microphone Installed

Self generated noise was measured with the microphone installed on the sound level meter, in the configuration submitted for periodic testing. The sound level meter was set to the most-sensitive level range and with frequency weighting A selected.

Ten (10) time weighted observations were made over a period of 60 seconds.

Random Readings dB(A)

14.10	14.10	14.10	14.20	14.40
14.20	14.20	14.20	14.40	14.10

Acoustic Noise Floor : 14.2 dB(A)

3.2.2 Electrical Input Signal Device

With the microphone replaced by the electrical input signal device and terminated as specified, the sound level meter was set to the most-sensitive level range and with frequency weightings Z, C and A selected as provided.

Ten (10) time weighted observations were made over a period of 60 seconds.

Random Readings dB(A)

7.10	7.10	7.10	7.10	7.10
7.10	7.10	7.10	7.10	7.10

Random Readings dB(C)

8.70	8.70	8.70	8.70	8.70
8.70	8.70	8.70	8.70	8.70

Random Readings dB(Z)

13.2	13.1	13.2	13.3	13.2
13.3	13.1	13.2	13.2	13.2

	dB(A)	dB(C)	dB(Z)
Electric Noise Floor :	7.1	8.7	13.2

3.3 ACOUSTICAL SIGNAL TESTS OF A FREQUENCY WEIGHTING

The sound level meter was set to measure frequency weighting C with a FAST response. The test was carried out using a multi-function acoustic calibrator set to pressure mode.

Three (3) readings were made at each test frequency. The average of the readings was then corrected to the multi-function acoustic calibrator.

Table 2 - Frequency Weighting C Response

Freq Hz	Reading 1	Reading 2	Reading 3	U95
125	94.1	94.1	94.1	0.13
1 000	94.1	94.1	94.1	0.13
8 000	88.3	88.3	88.3	0.14

Actual Freq Hz	B&K 4226 Corrections	Corrected Response dB(C)		Uexp
		Actual	re 1kHz	
125.90	-0.03	94.07	0.06	0.13
1005.10	-0.09	94.01	0.00	0.13
7915.10	-0.08	88.22	-5.79	0.14

Adjustments were then applied to correct for free field and sound level meter body effects with data supplied by the manufacturer as per Table 3. Windscreen correction factors applied.

Table 3 - Correction Data

Actual Freq Hz	FreeField Corrections	U95	BodyEffects Corrections	U95	Windscreen Corrections	U95
125.90	0.00	0.25	0.00	0.25	0.000	0.200
1005.10	0.00	0.25	0.00	0.25	-0.100	0.200
7915.10	3.00	0.35	0.30	0.35	0.000	0.300

Finally, the corrected responses are normalised to the response at 1kHz and compared to the tolerances stated in Table 2 of IEC 61672.1-2013.

Table 4 - Acoustic C Response

Actual Freq (Hz)	Corrected Response dB(C)		Expected Response dB(C)		Deviation	P/F	Uexp
	Actual	re 1kHz	re 1kHz	Tolerance			
125.90	94.07	0.16	-0.2	±1.0	0.36	P	0.43
1005.10	93.91	0.00	0.0	±0.7	0.00	P	0.43
7915.10	91.52	-2.39	-3.0	+1.5 / -2.5	0.61	P	0.60

3.4 ELECTRICAL SIGNAL TESTS OF FREQUENCY WEIGHTINGS

Frequency weighting responses for Z, C and A were determined relative to the response at 1kHz using steady sinusoidal electrical input signals.

On the reference level range, and for each frequency weighting under test, the level of a 1kHz input signal was adjusted to yield 93dB. At test frequencies other than 1kHz, the input signal level was adjusted to compensate for the design goal attenuations as specified in Table 2 of IEC 61672.1-2013.

Table 5 - Measured Electrical Frequency Response

Freq Hz	A Weighting (dB)	C Weighting (dB)	Z Weighting (dB)	U95
63	92.9	93.0	92.9	0.13
125	92.9	93.0	93.0	0.11
250	92.9	93.0	93.0	0.10
500	93.0	93.0	93.0	0.10
1 000	93.0	93.0	93.0	0.10
2 000	93.0	93.0	93.0	0.10
4 000	93.0	93.0	93.0	0.10
8 000	93.1	93.1	93.0	0.10
15 850	91.8	91.8	93.0	0.14

Adjustments were then applied to correct for a uniform free field response and sound level meter body effects with data supplied by the manufacturer as per Table 6. Windscreen correction factors applied.

Table 6 - Correction Data

Freq Hz	Ufreq	U95	Body Effects	U95	WS Effects	U95
63	0.100	0.250	0.000	0.250	0.000	0.200
125	0.100	0.250	0.000	0.250	0.000	0.200
250	0.100	0.250	0.000	0.250	0.000	0.200
500	0.000	0.250	-0.100	0.250	-0.100	0.200
1 000	0.000	0.250	0.000	0.250	-0.100	0.200
2 000	0.000	0.250	0.000	0.250	-0.300	0.200
4 000	0.100	0.250	0.300	0.250	-0.300	0.200
8 000	0.000	0.350	0.300	0.350	0.000	0.300
15 850	-0.800	0.450	0.400	0.350	0.700	0.300

Finally, the corrected responses were referenced to the response at 1kHz and compared to the tolerances stated in Table 2 of IEC 61672.1-2013.

Table 7 - A Weighted Electrical Response

Freq Hz	Response		Tolerance (dB)	P/F	Uexp
	Corrected	re 1kHz			
63	93.00	0.10	±1.0	P	0.43
125	93.00	0.10	±1.0	P	0.42
250	93.00	0.10	±1.0	P	0.42
500	92.80	-0.10	±1.0	P	0.42
1 000	92.90	0.00	±0.7	P	0.42
2 000	92.70	-0.20	±1.0	P	0.42
4 000	93.10	0.20	±1.0	P	0.42
8 000	93.40	0.50	+1.5 / -2.5	P	0.59
15 850	92.10	-0.80	+2.5 / –16	P	0.66

Table 8 - C Weighted Electrical Response

Freq Hz	Response		Tolerance (dB)	P/F	Uexp
	Corrected	re 1kHz			
63	93.10	0.20	±1.0	P	0.43
125	93.10	0.20	±1.0	P	0.42
250	93.10	0.20	±1.0	P	0.42
500	92.80	-0.10	±1.0	P	0.42
1 000	92.90	0.00	±0.7	P	0.42
2 000	92.70	-0.20	±1.0	P	0.42
4 000	93.10	0.20	±1.0	P	0.42
8 000	93.40	0.50	+1.5 / -2.5	P	0.59
15 850	92.10	-0.80	+2.5 / –16	P	0.66

Table 9 - Z Weighted Electrical Response

Freq Hz	Response		Tolerance (dB)	P/F	Uexp
	Corrected	re 1kHz			
63	93.00	0.10	±1.0	P	0.43
125	93.10	0.20	±1.0	P	0.42
250	93.10	0.20	±1.0	P	0.42
500	92.80	-0.10	±1.0	P	0.42
1 000	92.90	0.00	±0.7	P	0.42
2 000	92.70	-0.20	±1.0	P	0.42
4 000	93.10	0.20	±1.0	P	0.42
8 000	93.30	0.40	+1.5 / -2.5	P	0.59
15 850	93.30	0.40	+2.5 / –16	P	0.66

3.5 FREQUENCY AND TIME WEIGHTINGS AT 1KHZ

A steady sinusoidal electrical input signal of 1kHz at the reference sound pressure level was applied to the reference level range.

The deviations of the indicated level of C and Z frequency weightings were recorded, along with the deviations of the indication of A weighted time averaged, and SLOW weighted response.

Table 10 - Frequency and Time Weighting Results

Frequency Weighting	Time Weighting	Response (dB)	Deviation (dB)	P/F	Tolerance (dB)	U95
A	Fast	94.0	0.0	P	±0.2	0.10
	Leq	94.0	0.0	P	±0.2	0.10
	Slow	94.0	0.0	P	±0.2	0.10
C	Fast	94.0	0.0	P	±0.2	0.10
Z	Fast	94.0	0.0	P	±0.2	0.10

3.6 LONG-TERM STABILITY

Long-term stability was tested by comparing a steady sinusoidal electrical signal applied at the start, and at the end of testing. The applied signal level was set to the reference level and frequency and was maintained constant. The difference between the indicated levels was recorded.

Table 11 - Frequency and Time Weighting Results

Signal Level (mV)	Initial Response (dB)	Final Response (dB)	Deviation (dB)	P/F	Tolerance (dB)	U95
72.2	94	94.0	0.0	P	±0.1	0.10

3.7 LEVEL LINEARITY ON THE REFERENCE LEVEL RANGE

Level linearity was tested with a steady sinusoidal electrical signal at a frequency of 8kHz, with the meter set to display frequency weighted A, FAST response.

The starting point for level linearity testing was set to 94.0dB as stated in the instruction manual.

Level linearity was measured in 5dB steps of increasing input signal level from the starting point up to within 5dB of the stated upper limit, then at 1dB steps up to (but not including) the first indication of overload.

Table 12 - Level Linearity - Increasing

Ideal (dB)	Response (dB)	Deviation (dB)	Tolerance (dB)	P/F	U95
94.0	94.0	0.0	±0.8	P	0.1
99.0	99.0	0.0	±0.8	P	0.1
104.0	104.0	0.0	±0.8	P	0.1
109.0	109.0	0.0	±0.8	P	0.1
114.0	114.0	0.0	±0.8	P	0.1
119.0	119.0	0.0	±0.8	P	0.1
124.0	124.0	0.0	±0.8	P	0.1
129.0	129.0	0.0	±0.8	P	0.1
131.0	131.0	0.0	±0.8	P	0.1
132.0	132.0	0.0	±0.8	P	0.1
133.0	133.0	0.0	±0.8	P	0.1
134.0	134.0	0.0	±0.8	P	0.1
135.0	135.0	0.0	±0.8	P	0.1
136.0	136.0	0.0	±0.8	P	0.1
137.0	137.0	0.0	±0.8	P	0.1

Overload indication at 138.0dB.

Level linearity test was the continued in 5dB steps of decreasing input signal level from the starting point up to within 5dB of the stated lower limit, then at 1dB steps up to (but not including) the first indication of under range.

Table 13 - Level Linearity - Decreasing

Ideal (dB)	Response (dB)	Deviation (dB)	Tolerance (dB)	P/F	U95
94.0	94.0	0.0	±0.8	P	0.1
89.0	89.0	0.0	±0.8	P	0.1
84.0	84.0	0.0	±0.8	P	0.1
79.0	79.0	0.0	±0.8	P	0.1
74.0	74.0	0.0	±0.8	P	0.1
69.0	69.0	0.0	±0.8	P	0.1
64.0	64.0	0.0	±0.8	P	0.1
59.0	59.0	0.0	±0.8	P	0.1
54.0	54.0	0.0	±0.8	P	0.1
49.0	49.0	0.0	±0.8	P	0.1
44.0	44.0	0.0	±0.8	P	0.1
39.0	39.0	0.0	±0.8	P	0.1
34.0	34.0	0.0	±0.8	P	0.1
30.0	29.9	-0.1	±0.8	P	0.1
29.0	28.9	-0.1	±0.8	P	0.1
28.0	27.9	-0.1	±0.8	P	0.1
27.0	26.8	-0.2	±0.8	P	0.1
26.0	25.8	-0.2	±0.8	P	0.1
25.0	24.8	-0.2	±0.8	P	0.1

Under range indication at 24.0dB.

3.8 TONEBURST RESPONSE

The response of the sound level meter to short-duration signals was tested on the reference range with 4kHz tone bursts.

The tone bursts were generated from a steady sinusoidal signal at a level of 135.0dB.

Table 14 - FAST Weighted Response

Burst Length	Response dB(A)	Deviation (dB)	Tolerance (dB)	P/F	U95
200ms	134.0	0.0	±0.5	P	0.1
2ms	116.9	-0.1	+1.0 / -1.5	P	0.1
0.25ms	107.8	-0.2	+1.0 / -3	P	0.1

Table 15 - SLOW Weighted Response

Burst Length	Response dB(A)	Deviation (dB)	Tolerance (dB)	P/F	U95
200ms	127.5	-0.1	±0.5	P	0.1
2ms	107.9	-0.1	+1.0 / -3	P	0.1

Table 16 - Sound Exposure Level Response

Burst Length	Response dB(A)	Deviation (dB)	Tolerance (dB)	P/F	U95
200ms	128.0	0.0	±0.5	P	0.1
2ms	108.4	0.4	+1.0 / -1.5	P	0.1
0.25ms	98.8	-0.2	+1.0 / -3	P	0.1

3.9 PEAK C RESPONSE

Indication of Peak C sound level was tested on the least sensitive level range. Test signals used were -

- A single complete cycle of an 8kHz sinusoid, starting and stopping at zero crossings
- Positive and negative half cycles of a 500Hz sinusoid, starting and stopping at zero crossings.

The level of the steady 8kHz sinusoid was adjusted to display 133.0dB(C).

Table 17 - Single Cycle Response

Response Peak C	Deviation (dB)	Tolerance (dB)	P/F	U95	Overload Peak C
136.3	-0.1	±2.0	P	0.22	N

Table 18 - Half Cycle Response

Signal Orientation	Response Peak C	Deviation (dB)	Tolerance (dB)	P/F	U95
Positive	134.4	-1.0	±1.0	P	0.1
Negative	134.4	-1.0	±1.0	P	0.1

No overload was noted during Peak C testing.

3.10 OVERLOAD INDICATION

The overload indication was tested on the least sensitive level range, with the sound level meter set to display frequency weighted A, time averaged values.

Positive and negative half cycle sinusoidal electrical signals at 4kHz were used. The test began at an indicated time averaged level of137.0dB(A).

Using the positive half cycle signal, the signal level was increased in steps of 0.5dB up to, but not including, the first indication of overload. The level of the input signal was then increased in steps of 0.1dB until the first indication of overload. These steps were repeated using the negative half cycle signal.

Table 19 - Overload Indication

Signal Orientation	Overload Response	Difference	Tolerance	P/F	Uncertainty
Positive	136.5	0.0	±1.5	P	0.1
Negative	136.5				

Overload indication was verified.

Overload latch indication was verified.

3.11 HIGH LEVEL STABILITY

High level stability was tested by measuring the response of the meter to high signal levels. The result was evaluated as the difference between the A-Weighted indicated levels in response to a steady 1kHz signal applied over 5 minutes.

Table 20 - FAST Weighted Response

Time Weighting	Initial Response (dB)	Final Response (dB)	Deviation (dB)	Tolerance (dB)	P/F	U95
Fast	137.0	137.0	0.0	±0.1	P	0.10
Slow	N/A	N/A	N/A	±0.1	N/A	0.10
Leq	137.0	137.0	0.0	±0.1	P	0.10

Attachment B – Surface Water Quality Monitoring Report

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Surface Water Quality Monitoring Report

Sydney Metro West – Western Tunnelling Package

January 2023 to July 2023

ISSUE DATE: 18 SEPTEMBER 2023

Document Details

Document Title	**Surface Water Quality Monitoring Report**
Project Name	**Sydney Metro West – Western Tunnelling Package**
Client	**Sydney Metro**
GA Project No.	**00013/13065**
Document Reference No.	SMWSTWTP-GLO-1NL-EN-RPT-000009
Principal Contractor	**Gamuda Australia**
ABN	**27 632 738 768**
Project Address	**L8, 60 Station Street, Parramatta NSW 2150**

Revision History

Revision	Date	Description of changes	Prepared by	Reviewed by
A	18/09/2023	Revised draft for submission	Josephine Balado	David Windnagel, Stephanie Mifsud

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

TABLE OF CONTENTS

Revision History 2
Terms and Definitions 4

1 INTRODUCTION 5
1.1 Project description 5
1.2 Project requirements 6
1.3 Endorsement and publication 7

2 DESCRIPTION OF WORKS 7
2.1 Environment setting 7
2.2 Project activities undertaken during the reporting period 8

3 MONITORING METHODOLOGY 10
3.1 Methodology 10
3.2 Equipment and analysis 10
3.3 Sampling during the reporting period 10
3.4 Monitoring locations 11
3.5 Parameters and Contaminants of concern 13
3.6 Baseline data (pre-construction) 14

4 RESULTS 16
4.1 Rainfall summary 16
4.2 Monitoring results 17

5 DISCUSSION 17
5.1 Assessment of results 17
5.2 Recommendations 22

6 CONCLUSION 22

ATTACHMENTS 23
Attachment 1 – Tabulated data 23
Attachment 2 – Laboratory Certificates 24

Terms and Definitions

Term	Definition
ANZG	Australian and New-Zealand Guidelines 2018
CBD	City Business District
CEMF	Construction Environmental Management Framework
CSSI	Critical State Significant Infrastructure
DPE	Department of Planning and Environment (NSW)
D-Wall	Diaphragm Wall
EIS	Environmental Impact Assessment
EPA	Environment Protection Authority
ER	Environmental Representative
FRP	Form Reo Pour
GLC	Gamuda Australia – Laing O'Rourke Consortium
MCoA	Ministers' Condition of Approval
MSF	Maintenance and Stabling Facility
REMM	Revised Environmental Mitigation Measures
SM	Sydney Metro
SMW	Sydney Metro West
SSI	State Significant Infrastructure
SWQMoP	Surface Water Quality Monitoring Program
SWMP	Soil and Water Management Plan
WQO	Water Quality Objectives (NSW)
WTP	Sydney Metro West Western Tunnelling Package works

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

1 INTRODUCTION

1.1 Project description

Sydney Metro West (SMW) is a new underground railway connecting Greater Parramatta and the Sydney CBD. It will provide fast connections between greater Sydney's two major business centres as well as providing better access to the growing business and entertainment precincts in Olympic Park and Pyrmont, the health and medical research hub at Westmead and the future business and tourism site at The Bays.

An Environmental Impact Statement (EIS) (Jacobs/Arcadis, 2020) for the Concept and Stage 1 assessed the surface water quality impacts in response to the Secretary Environmental Assessment Requirements issued by the Department of Planning and Environment (DPE). The Project was approved on 11 March 2021 (SSI 10038).

Sydney Metro is delivering the Sydney Metro West project via several different packages, including the Western Tunnelling Package (WTP, the Project). Figure 1 is an overview map outlining the extent of the Project.

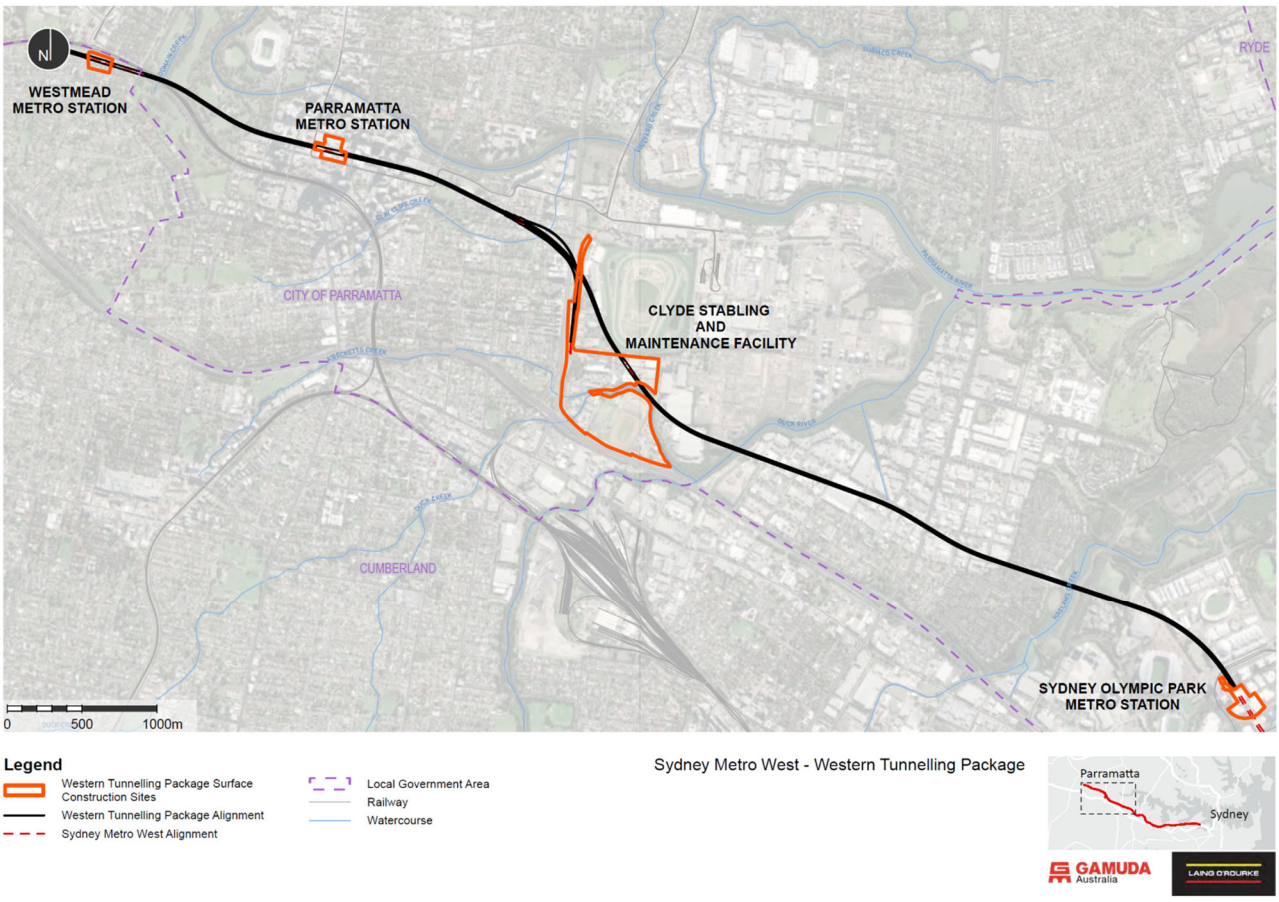


Figure 1: WTP Project Map Overview

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

1.2 Project requirements

The Surface Water Quality Monitoring Program (SWQMoP) for the Project (SMWSTWTP-GLO-1NL-EN-PRG-000001) was developed to meet the requirements of Ministers Condition of Approval (MCoA) C14 and Revised Environmental Mitigation Measures (REMM) SSWQ6. The SWQMoP sets out the requirement to develop and issue a Surface Water Quality Monitoring Report (this report), collating surface water quality monitoring data. This report collates surface water monitoring undertaken during the second six-month period of construction, from 19th January 2023 to 19th July 2023.

The Project requirements relevant to the preparation of this Monitoring Report are identified in Table 1. A document reference is also included to indicate where the requirement is addressed in this Monitoring Report or other documents. Additional monitoring requirements are outlined in the SWQMoP and surface water quality project requirements are outlined in the Soil and Water Management Plan (SWMP).

Table 1: Monitoring Report Compliance Matrix

Reference	Requirement	Document Reference
MCoA C23	The results of the Construction Monitoring Programs must be submitted to the Planning Secretary, ER and relevant regulatory agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program.	This document
MCoA D117	Stage 1 of the CSSI must be designed and constructed so as to maintain the NSW Water Quality Objectives (NSW WQO) where they are being achieved as at the date of this approval, and contribute towards achievement of the NSW WQO over time where they are not being achieved as at the date of this approval, unless an EPL in force in respect of the CSSI contains different requirements in relation to the NSW WQO, in which case those requirements must be complied with.	This document
CEMF 12.2	iii. All water will be tested (and treated if required) prior to discharge from the site in order to determine compliance with relevant approvals and licence requirements. No water will be discharged from the site without written approval of the Contractor's Environmental Manager (or delegate). This is to form a Hold Point.	This document
REMM SWQW6	A surface water monitoring program would be implemented to observe any changes in surface water quality that may be attributable to Stage 1 and inform appropriate management responses. The program would be developed in consultation with the EPA and relevant Councils. The program would consider monitoring being undertaken as part of other infrastructure projects such as the WestConnex M4 East monitoring. Monitoring would occur during pre-construction and during construction at all waterways with the potential to be impacted. Monitoring sites could be located upstream and downstream of the potential	Section 3.4, 3.6 and 4

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Reference	Requirement	Document Reference
	discharges and would include sampling for key indicators of concern.	
SWQMoP	During construction, surface water quality data will be collected, tabulated and assessed against baseline conditions and performance criteria	This report
SWQMoP	The six-monthly monitoring reports will be submitted to the Planning Secretary, the ER, EPA and Sydney Water within 40 days of the reporting period unless otherwise agreed with the Planning Secretary	Section 1.3

1.3 Endorsement and publication

In accordance with the SWQMoP, this report will be issued for information to the Planning Secretary of the DPE, the Environmental Representative (ER), Environment Protection Authority (EPA) and Sydney Water within 40 business days of the reporting period.

In line with MCoA B11(e), a copy of the Construction Monitoring Report will be published on the project website within a week following submission to DPE.

2 DESCRIPTION OF WORKS

2.1 Environment setting

The Project is located within the upper estuary of the Parramatta River Catchment, one of the main tributaries of Sydney Harbour. The Parramatta River catchment and Sydney Harbour includes the Sydney City Business District (CBD) and significant commercial districts of North Sydney and Parramatta. The catchment is highly urbanised and altered from its natural state, with pockets of open spaces and parkland. Most of the catchment is estuarine, up to the tidal limit at Charles Street weir in Parramatta, with freshwater watercourses in the upper catchments of the tributaries of Parramatta River.

Chapter 19 of the Sydney Metro West EIS identifies the water courses listed in Table 2 as being relevant to the WTP's three key surface construction sites.

Table 2: Water Courses relevant to the Sydney Metro West – Western Tunnel Package

Stage 1 Construction Site	Watercourse	Receiving Waters
Westmead Metro Station	• Domain Creek	• Parramatta River
Parramatta Metro Station	• Parramatta River • Clay Cliff Creek	• Parramatta River
Clyde Maintenance and Stabling Facility (MSF)[1]	• Duck River • Duck Creek • A'Becketts Creek	• Parramatta River

[1] The Clyde Maintenance and Stabling Facility (MSF) consists of three sub-sites, specifically the Clyde Maintenance Facility, Clyde Dive Site, and the Rose Hill Site.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Domain Creek is located downstream of the Westmead Site and is the first point of contact for water which drains into the local stormwater system. Water from Domain Creek then drains directly into the Parramatta River and, ultimately, into Sydney Harbour.

Surface water from within the vicinity of the Parramatta site drains into the local stormwater system which drains directly to the Parramatta River, upstream of the Parramatta Wharf. Although the EIS states that Clay Cliff Creek is relevant to the Parramatta site, no water from the project drains into this creek.

Water collected from the activities at Clyde Maintenance and Stabling Facility (MSF) is discharged through a water treatment plant directly into Duck River, avoiding the smaller creek catchments of Duck Creek and A'Becketts Creek as per the requirements of the Water Pollution Impact Assessment provided to the EPA. Stabilised surface water runoff is collected in protected stormwater pits which flow into Duck Creek and A'Becketts Creek which are tributaries of Duck River. Duck River drains into the Parramatta River then eventually the greater Sydney Harbour catchment

During this reporting period, groundwater has been intersected in the shaft excavation at the Clyde Dive Site and within the Rosehill box excavation. Groundwater is being transferred over to the Rosehill long term water treatment plant for treatment and discharged through the licensed discharge point at Duck River (Environment Protection Licence (EPL) discharge Point 2) or taken offsite to be disposed of at a licenced facility.

2.2 Project activities undertaken during the reporting period

Construction activities undertaken during the reporting period are summarised in Table 3 below. Only three sites had minor volumes of water discharged offsite during the reporting period. As part of the Project construction, up to four water treatment plants are currently anticipated to be commissioned as outlined in Table 4.

Table 3: Construction activities undertaken during the reporting period

SITE	CONSTRUCTION ACTIVTIES	OFFSITE DISCHARGE
Westmead	• Tunnelling Works • Protecting and/or relocating utilities • Establishing site amenities • Establishing vehicle access and egress points • Establishing concrete slabs or piling platforms • Delivery of equipment • General operation of ancillary facilities	No
Parramatta	• Site preparatory works • Initial investigation work • Archaeological clearance • Removal and/or relocating utilities. • Establishing vehicle access and egress points • Delivery of equipment • General operation of ancillary facilities • Diaphragm Wall (D-Wall) construction	No

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

SITE	CONSTRUCTION ACTIVTIES	OFFSITE DISCHARGE
Clyde Dive	• Construction site establishment • Piling • Establishing concrete slabs/acoustic shed • Bulk earthworks of the dive structure • Haul road construction • Form Reo Pour (FRP) • General operation of ancillary facilities • Spur Tunnel Excavation • Minor utilities relocations • Remediation of contaminated hotspots	Yes, transfer to Rosehill's Water Treatment Plant
Clyde MSF	• Excavation of the utility service corridor • Remediation of contaminated hotspots • PASS Treatment • Construction of ERSED controls including dewatering system • Bulk earthworks • General operation of ancillary facility • Utility adjustment works. • Construction of the bridging structure abutments • FRP works • Excavation of low flow channels • Excavation of flood relief culvert • Piling and abutments	Yes, transfer to Rosehill's Water Treatment Plant
Rosehill	• Diaphragm wall (D-Wall) construction • Box excavation • FRP works • Delivery of equipment • General operation of ancillary facility • TBM Construction • Water discharge and construction/commissioning of the long term water treatment plant	Yes, transfer to Rosehill's Water Treatment Plant.
Sydney Olympic Park	• No works undertaken	No

Table 4: Water treatment plants to be commissioned for the Project

Water treatment plant	Discharge point	Status during reporting period
Rosehill short term construction water treatment plant	Duck River (Point 2)	Commissioning commenced October 2022. Plant operating at full capacity from 12th Jan 2023. Decommissioned 19th May 2023

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Water treatment plant	Discharge point	Status during reporting period
Rosehill long term construction water treatment plant	Duck River (Point 4)	Plant not operational during reporting period.
Parramatta construction water treatment plant	Parramatta River, downstream of the Charles Street weir (Point 5)	Plant not operational during reporting period.
Westmead construction water treatment plant	Parramatta River, stormwater system on Alexandra Avenue (Point 3)	Plant not operational during reporting period.

3 MONITORING METHODOLOGY

3.1 Methodology

The SWQMoP outlines the methodology to be adopted in monitoring surface water during construction. It outlines the proposed monitoring locations, schedule for monitoring and the methodology including calibration requirements.

Additionally, the SWQMoP outlines a four-step method to assessing the results in construction compliance reports. Due to the highly variable background results, a step-based trigger action approach will be applied when reviewing and responding to the surface water quality monitoring results to determine the significance of the exceedance(s) and possible causes. The assessment of the results obtained during this reporting period is further discussion in Section 4 below.

3.2 Equipment and analysis

Monitoring locations were sampled in general accordance with the SWQMoP. Samples were collected from approximately 150mm below the water surface (where achievable) using national association of testing authorities (NATA) accredited laboratory, Envirolab, supplied water sampling containers. Samples were then placed on ice and held in an insulated container until delivery to the NATA accredited laboratory under chain of custody protocol. The samples were submitted for analysis for all parameters required in the SWQMoP.

WQOs were measured in-situ at each sampling location using a Horiba multi-probe monitoring device and general site conditions were noted. A calibration check was undertaken at the start of each sampling round to ensure that the monitor was reading accurately. In addition, calibration was checked periodically throughout the monitoring events to ensure that the multiprobe device was reading accurately.

3.3 Sampling during the reporting period

In accordance with the SWQMoP, surface water monitoring is required under the scenarios detailed in Table 5.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Table 5: Surface Water Monitoring Schedule

Type	Frequency	Standards	Responsibility
Monthly Water Quality Monitoring	Monthly	WQOs ANZG 2018	Environmental Coordinator/Manager
Wet Weather Water Quality Monitoring	Occur on average once a quarter, within 48 hours (where practical) of a rainfall vent that is > 25 mm of rain over a 24-hour period in the local catchment	WQOs ANZG 2018	Environmental Coordinator/Manager
Incident Response	At any time in response to a complaint or incident	WQOs ANZG 2018	Environmental Coordinator/Manager

Five monthly monitoring rounds were completed during this reporting period as detailed in Table 6 below. Sampling undertaken in January 2023 was covered in the timeframe of the previous monitoring report. Sampling undertaken in July 2023 was after 19th July 2023 and will therefore be covered in the next monitoring report.

No sampling events were undertaken in response to incidents during the reporting period.

Table 6: Surface water sampling events during the reporting period

Date	Sampling Round Type	Parameters Monitored	Comments
21/02/2023	Monthly	WQOs ANZG 2018	All sampling points captured
14/03/2023	Monthly	WQOs ANZG 2018	All sampling points captured
06/04/2023	Monthly	WQOs ANZG 2018	SW02 not accessible, addition of SW10 to monthly monitoring.
08/05/2023	Monthly	WQOs ANZG 2018	All sampling points captured
26/06/2023	Monthly	WQOs ANZG 2018	All sampling points captured, addition of SW11.

3.4 Monitoring locations

The surface water sampling locations are detailed in Table 7 below and shown graphically in Figure 2 and Figure 3. It is noted that sampling locations SW03 and SW08 slightly differ in location to the SWQMoP sampling locations due to access constraints. Surface water monitoring will continue at the locations at the figures below and the SWQMoP will be revised to reflect the changes.

In accordance with the recommendations of the previous monitoring report, two additional sampling locations have been added to the regime, SW10 from April 2023 and SW11 from June 2023. SW10 acts as an upstream sample location for the Westmead Construction Site whilst SW11 acts as a future downstream sampling point for the Parramatta construction site due to the realignment of the Parramatta water treatment plant discharge line that is currently under construction. Sample location SW04 and SW05 were sampled in this monitoring period for

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

consistency with previous monitoring rounds. These sampling locations will be removed from the sampling regime once the Parramatta water treatment plant is commissioned and operating.

Table 7: Sydney Metro West - WTP surface water sampling locations

Sample Name	Waterway	Rationale	Nearest Access Point	Coordinates
SW01-WTP	Duck Creek	Upstream of Clyde SMF Construction sites	Kay Street	33°49'50.82"S 151° 1'19.32"E
SW02-WTP	Duck Creek	Downstream of Clyde SMF Construction sites / before confluence with Duck River	Deniehy Street	33°49'58.58"S 151° 1'41.11"E
SW03-WTP	Duck River	Downstream of Clyde SMF Construction sites / after confluence with Duck Creek	Holker Street, Silverwater	33°82'93.86" S 151° 0'24.68"E
SW04-WTP	Parramatta River	Upstream of potential treatment plant discharge location	Parramatta River Walk (upstream Barry Wilde Bridge)	33°48'42.85"S 151° 0'25.03"E
SW05-WTP	Parramatta River	General streamflow sample	Parramatta River Walk (upstream Elizabeth Street Footbridge)	33°48'45.57"S 151° 0'30.41"E
SW06-WTP	Parramatta River	Targeting saltwater zone below weir	Parramatta River Walk (upstream Ferry Wharf)	33°48'47.83"S 151° 0'35.37"E
SW07-WTP	Domain Creek	Downstream of Westmead Construction Site	West Domain Avenue	33°48'33.46"S 150°59'35.58"E
SW08-WTP	Duck River	Upstream of confluence with Duck Creek	Access from Deniehy Street via cycle path	33°83'52.91"S 151°02'94.05"E
SW09-WTP	A'Becketts Creek	Upstream of Clyde MSF construction sites	Clyde Dive Construction Site	33°49'46.2"S 151°01'12.3"E
SW10-WTP	Domain Creek	Upstream of Westmead Construction Site	Parramatta Park (south of Park Parade)	-33°81'105"S 150°99'175"E
SW11-WTP	Parramatta River	Downstream of Parramatta Discharge Point	Queens Wharf Park (south of Parramatta River)	33°48'54.5"S 151°00'42.1"E



WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Figure 2: Sydney Metro West - WTP western surface water sampling locations (Parramatta and Westmead). New sample locations in yellow.



Figure 3: Sydney Metro West - WTP eastern surface water sampling locations (Clyde MSF)

3.5 Parameters and Contaminants of concern

As outlined in the SWQMoP, the surface water monitoring parameters adopted for the Project are detailed in Table 8. The following toxicant parameters were sampled in accordance with Section 7.4.2 of the SWQMoP:

- Metals (As III, AS V, Cd, Cr III, Cr VI, Cu, Co, Fe, Hg, Pb, Mn, Ni, Zn)
- Benzene, toluene, ethylbenzene, xylene, naphthalene
- Polycyclic aromatic hydrocarbons
- Nutrients and Inorganics – total nitrogen, total phosphorous, total oxidized nitrogen, nitrate, nitrite, total ammonia
- Per- and polyfluoroalkyl substances (PFAS)
- Petroleum hydrocarbons

Table 8: Sydney Metro West - WTP adopted surface water monitoring assessment criteria

Indicator / **Parameter**	Upper Estuary	Lowland Rivers
Turbidity (NTU)	0.5 – 10	6 - 50
Dissolved Oxygen (%)	80 -110%	85 – 110%
Conductivity (µS/cm)	NA	125 - 2200
pH (units)	7.0 – 8.5	6.5 – 8.5
Oil and grease	None visible on surface	None visible on surface
Toxicants (listed below)	ANZG 2018	ANZG 2018

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

3.6 Baseline data (pre-construction)

The Sydney Metro West EIS does not contain any baseline surface water quality data. In lieu of any baseline data, a review of data sourced from surrounding major projects and additional pre-construction surface water quality sampling was undertaken. Surface water monitoring sourced from other projects is detailed in Table 9.

Although these results will give an indication of pre-construction water quality, it should be noted that in most instances not directly comparable to WTP sampling locations sampled in this report and should only be used as a reference point.

Table 9: Baseline Water Quality Data (Source: Sydney Metro West EIS)

Indicator	ANZECC/ARCANZ WQ Guidelines 2000	Duck River	Duck Creek (Kay St)	Parramatta River (Barry Wilde Bridge)	Parramatta River (Elizabeth St Footbridge)	Parramatta River (Upstream of Ferry Wharf)
Turbidity (NTU)	0.5–10	37.1	24.1	14.3	10.05	14
Dissolved Oxygen (mg/L)	N/A	4.9	7.4	8.7	9.0	7.6
Dissolved Oxygen (%)	85-110	49.2	67.3	95.4	98.2	82.4
Conductivity (mS/cm)	Lowland rivers: 125–2200 µS/cm	7.00	1.42	452.5	457	432
Salinity (ppt)	N/A	7.5	0.71	-	-	-
pH	7.0 – 8.5	7.50	7.98	7.97	8.20	7.4

To provide more accurate baseline data for comparison throughout construction of the Project, a total of six pre-construction sampling rounds were undertaken at the nominated sampling points in the SWMP. Laboratory reports containing data from the pre-construction sampling rounds is attached to this report in ***Attachment 1*** and compared against the assessment criteria**.** As the GLC SWQMoP has collected a significant volume of like for like pre-construction baseline data, the data presented in Table 9 will be omitted from further discussion in this report.

The pre-construction baseline monitoring highlights that several parameters are already present in surface water above the adopted trigger levels. This is likely attributed to the highly disturbed nature of the waterways surrounding the Project footprint. Parameters that were recorded above the adopted assessment criteria in pre-construction sampling rounds are detailed in Table 10 and described below:

- Turbidity and dissolved oxygen were consistently recorded outside the adopted criteria across all sample locations. This is indicative that water quality is poor in the sampled catchments.
- Several toxicant parameters including nutrients, heavy metals and PFAS were also consistently recorded outside the adopted assessment criteria. This is likely attributed to the historic large-scale commercial/industrial practices undertaken in the catchments and also upstream.
- All waterways sampled as part of the surface water sampling regime are also part of the local stormwater catchments accepting large flows of stormwater runoff from the greater Parramatta area.

Refer to ***Attachment 1*** for the adopted assessment criteria for each sampling location.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Table 10: Pre-Construction Monitoring Results in Excess of the Adopted Assessment Criteria

Sample Location	Parameter	Max Concentration Recorded	Assessment Criteria
SW01	Turbidity	50.9 NTU	0.5 – 10 NTU
	Dissolved Oxygen	24.3%	80 – 110 %
	Phosphorus	0.3 mg/L	0.03 mg/L
	Total Nitrogen	2.7mg/L	2.4 mg/L
	Copper	6 µg/L	1.3 µg/L
	Manganese	350 µg/L	80 µg/L
	Zinc	45 µg/L	8 µg/L
	PFOS	0.13 µg/L	0.13 µg/L
	TRH C10 – C40	220 µg/L	Presence
SW02	Turbidity	60.5 NTU	0.5 – 10 NTU
	Dissolved Oxygen	13.3%	80 – 110 %
	Phosphorus	0.1 mg/L	0.03 mg/L
	Copper	5 µg/L	1.3 µg/L
	Manganese	230 µg/L	80 µg/L
	Zinc	35 µg/L	8 µg/L
SW03	Turbidity	80.8 NTU	0.5 – 10 NTU
	Dissolved Oxygen	36.3 %	80 – 110 %
	Phosphorus	0.1 mg/L	0.03 mg/L
	Copper	6 µg/L	1.3 µg/L
	Manganese	99 µg/L	80 µg/L
	Zinc	47 µg/L	8 µg/L
SW04	Turbidity	73.6 NTU	6 – 10 NTU
	Dissolved Oxygen	61 %	85 – 110 %
	Phosphorus	0.5 mg/L	0.035 mg/L
	Total Nitrogen	3.6 mg/L	2.4 mg/L
	Copper	3 µg/L	1.4 µg/L
	Zinc	10 µg/L	8 µg/L
SW05	Turbidity	84.6 NTU	6 – 10 NTU
	Dissolved Oxygen	54.5 %	85 – 110 %
	Phosphorus	0.1 mg/L	0.035 mg/L
	Total Nitrogen	3.5 mg/L	2.4 mg/L
	Copper	3 µg/L	1.4 µg/L
	Zinc	9 µg/L	8 µg/L
SW06	Turbidity	114 NTU	6 – 10 NTU
	Dissolved Oxygen	52.9 %	85 – 110 %
	Phosphorus	0.1 mg/L	0.035 mg/L
	Manganese	81 µg/L	80 µg/L
	Zinc	9 µg/L	8 µg/L
SW07	Turbidity	28.3 NTU	6 – 10 NTU
	Dissolved Oxygen	41.1 %	85 – 110 %
	Phosphorus	0.1 mg/L	0.035 mg/L
	Chromium	1 µg/L	0.001 µg/L

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Sample Location	Parameter	Max Concentration Recorded	Assessment Criteria
	Copper	6 µg/L	1.4 µg/L
	Zinc	700 µg/L	8 µg/L
SW08	Turbidity	104 NTU	0.5 – 10 NTU
	Dissolved Oxygen	19.9 %	80 – 110 %
	Phosphorus	0.3 mg/L	0.03 mg/L
	Copper	7 µg/L	1.3 µg/L
	Manganese	110 µg/L	80 µg/L
	Zinc	510 µg/L	8 µg/L
SW09	Turbidity	70.7 NTU	0.5 – 10 NTU
	Dissolved Oxygen	49.7 %	80 – 110 %
	Phosphorus	0.1 mg/L	0.03 mg/L
	Copper	6 µg/L	1.3 µg/L
	Manganese	100 µg/L	80 µg/L
	Zinc	450 µg/L	8 µg/L

4 RESULTS

4.1 Rainfall summary

Rainfall statistics from the monitoring period are displayed in Figure 4. Notably high rainfall was recorded in the months of January 2023 and April 2023. The rest recorded lower than average rainfall. Note that January's Surface Water Monthly Monitoring is not inclusive of this reporting period.

Overall, the monitoring period is considered to be drier than the monthly average rainfall statistics.

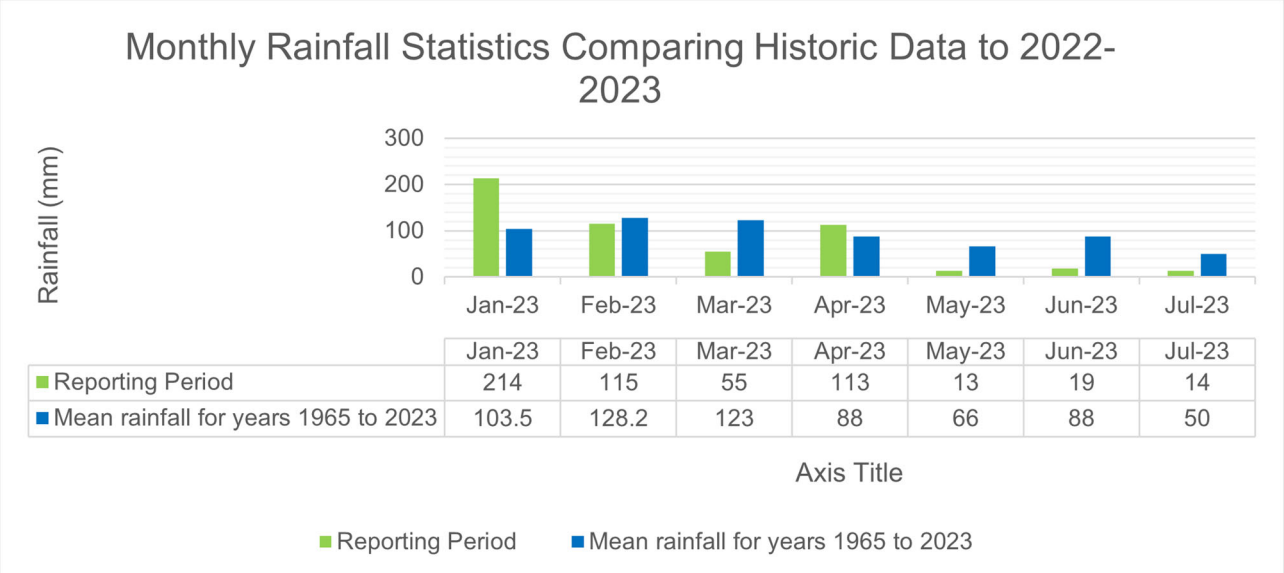


Figure 4: Rainfall statistics recorded during the monitoring period compared against historic averages

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

4.2 Monitoring results

Tabulated monitoring results are attached to this report in ***Attachment 1***. Monitoring data has been compared against the relevant WQOs and ANZG 2018 assessment criteria. Laboratory certificates are attached in ***Attachment 2***.

Consistent with the pre-construction sampling, several parameters were recorded in excess of the assessment criteria in all sampling points. Those results are discussed in detail in Section 5.

5 DISCUSSION

5.1 Assessment of results

Where results were returned outside the performance criteria, they were assessed in accordance with the four-step process detailed in the SWQMoP and discussed below.

5.1.1 Step 1

'In the event of an exceedance of any of the trigger values, a review will be initiated to determine the significance of the exceedance and the possible causes'.

Surface water sampling results were compared against the relevant WQOs and ANZG 2018 assessment criteria. The number of results recorded outside the assessment criteria is listed in Table 11. As such, further analysis of these parameters was undertaken in accordance with Step 2 of the Surface Water Quality Monitoring Program, see below.

Table 11: Number of parameters recorded outside the assessment criteria in each sampling round

Sample Point	Number of Parameters Recorded Outside the Assessment Criteria				
	Feb-23	Mar-23	Apr-23	May-23	Jun-23
SW01	6	6	6	5	6
SW02	6	6	NA[1]	4	3
SW03	3	6	4	3	2
SW04	6	5	5	6	6
SW05	7	3	6	5	6
SW06	5	4	4	2	3
SW07	6	4	6	4	4
SW08	5	7	3	4	2
SW09	4	5	3	4	5

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Sample Point	Number of Parameters Recorded Outside the Assessment Criteria				
	Feb-23	Mar-23	Apr-23	May-23	Jun-23
SW10[2]	NA[2]	NA[2]	5	6	4
SW11[3]	NA[3]	NA[3]	NA[3]	NA[3]	3

[1] SW02 not sampled – location inaccessible.

[2] SW10 included in monitoring program from April 2023

[3] SW11 included in monitoring program from June 2023

5.1.2 Step 2

'A comparison will be undertaken between the upstream and downstream values'.

For the parameters that exceed the adopted assessment criteria, an assessment was undertaken comparing the results of up and down stream sampling locations. Where the downstream concentration of contaminants are consistent with, or less than the upstream contaminant concentrations, no further action would be taken.

Further investigation was deemed necessary under the following circumstances:

1. Where the downstream value is greater than 2x than the upstream value for any parameter that exceeds the adopted trigger criteria upstream of the project site (i.e., ANZG / ANZECC DGVs), steps 3-4 would be followed.
2. Where the downstream value exceeds the adopted trigger criteria (i.e., ANZG / ANZECC DGVs) and upstream value does not steps 3-4 would be followed.

A comparison of upstream and downstream results where there was an exceedance of the assessment criteria. Following the assessment under Step 2, it was identified that there were 30 instances where downstream sampling points recorded concentrations of an analyte more than twice an upstream sampling location, or exceeded the assessment criteria where the upstream sampling location did not as outlined in Table 12 below. This occurred only in samples collected from Clyde MSF and Parramatta sampling locations.

Table 12: Samples where downstream values exceeded upstream values

Sampling Round	Parameter	Assessment Criteria	Upstream Point	Upstream Result	Downstream Point	Downstream Result	Exceedance Unit
Apr-23	DO %	85 – 110 %	SW10	85%	SW07	79.7%	1
Apr-23	Turbidity (Lab)	6.0 – 10.0 (NTU)	SW10	21 NTU	SW07	51 NTU	2
May-23	Copper	1.4 µg/L	SW10	2 µg/L	SW07	4 µg/L	3
Jun-23	Zinc	8 µg/L	SW10	8 µg/L	SW07	35 µg/L	4

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Sampling Round	Parameter	Assessment Criteria	Upstream Point	Upstream Result	Downstream Point	Downstream Result	Exceedance Unit
Feb-23	pH (field)	7.0 – 8.5 (pH Units)	SW04	7.38	SW05	6.97	12
Feb-23	Electrical Conductivity	0.125 – 2.2 (mS)	SW04	0.507 mS	SW05	6.2 mS	13
Mar-23	pH (field)	7.0 – 8.5 (pH Units)	SW04	7	SW05	6.95	14
Feb-23	Phosphorus	0.03 mg/L	SW01	0.3 mg/L	SW02	0.7 mg/L	26
Feb-23	Turbidity (lab)	0.5 – 10 NTU	SW01	6.9 NTU	SW02	45 NTU	27
Apr-23	DO %	80 – 110 %	SW08	92 %	SW03	144 %	29
May-23	DO %	80 – 110 %	SW08	84.5%	SW03	68.2%	30

5.1.3 Step 3

'Where the exceedance of the preliminary trigger value occurs, a review will be initiated to determine the significance of the exceedance and the possible causes'.

As shown in Table 12, exceedances of criteria were investigated and are explained below.

Exceedance one – SW07 – April 2023 – DO (Dissolved Oxygen) %

Dissolved oxygen results from the April 2023 sampling round were compared against baseline data. The results recorded during the April 2023 sampling round were consistent with baseline monitoring results indicating that low dissolved oxygen levels are not in relation to construction activities.

The catchment accepts water from a wide variety of land uses including residential, recreational and commercial/industrial, all of which have the potential to impact water quality.

The Westmead construction site was not discharging water offsite during the reporting period therefore it is unlikely that impacts to water quality are a direct result of construction activities.

Exceedance two – SW07 - April 2023 – Turbidity (lab)

Higher turbidity levels were induced by heavy rainfall previous to the sampling date. Turbidity (field) results on the day were higher than on average, comparatively to SW10 upstream, turbidity levels were on average higher.

Exceedance three – SW07 – May 2023 – Copper (dissolved)

Copper results from the May 2023 sampling round were compared against baseline data. Baseline pre-construction data showed continuous trend in copper (dissolved) levels exceeding the designated guidelines, similarly upstream at SW10, copper exceedances were present. The results

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

of the May 2023 sampling round were consistent with the baseline monitoring results indicating that elevated copper concentrations were not a result of construction activities.

The catchment accepts water from a wide variety of land uses including residential, recreational and commercial/industrial, all of which have the potential to impact water quality.

The Westmead construction site was not discharging water offsite during the reporting period therefore it is unlikely that impacts to water quality are a direct result of construction activities.

Exceedance four – SW07 – June 2023 - Zinc (dissolved)

Zinc concentrations recorded in the June 2023 sampling round were assessed against the baseline data set. Zinc concentrations were consistent with the baseline levels recorded pre-construction and therefore it is unlikely that construction activities are contributing to the elevated concentrations.

The catchment accepts water from a wide variety of land uses including residential, recreational and commercial/industrial, all of which have the potential to impact water quality.

The Westmead construction site was not discharging water offsite during the reporting period therefore it is unlikely that impacts to water quality are a direct result of construction activities.

Exceedance twelve – SW05 – February 2023 – pH (field)

The pH level recorded in SW05 was slightly lower than baseline levels which were slightly alkaline. A water sample was collected at the same time as undertaking field readings and sent to a NATA accredited laboratory. The laboratory sample returned a pH level within the adopted assessment criteria indicating the field probe was recording results lower than expected.

The SW05 sample point is immediately downstream from a live stormwater outlet that accepts water from the Parramatta CBD area including serval construction and commercial/industrial premises. The Parramatta Construction Site water treatment plant was not operational or discharging during the reporting period.

Exceedance thirteen – SW05 – February 2023 – Electrical Conductivity (EC)

Electrical conductivity levels recorded in SW05 were compared against baseline levels. The results recorded in the February 2023 sampling round were abnormally high compared to baseline levels.

The SW05 sample point is immediately downstream from a live stormwater outlet that accepts water from the Parramatta CBD area including serval construction and commercial/industrial premises.

The Parramatta Construction Site water treatment plant was not operational or discharging during the reporting period.

Exceedance fourteen – SW05 – March 2023 – pH (field)

The pH level recorded in SW05 was slightly lower than baseline levels which were slightly alkaline. A water sample was collected at the same time as undertaking field readings and sent to a NATA

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

accredited laboratory. The laboratory sample returned a pH level within the adopted assessment criteria indicating the field probe was recording results lower than expected.

The SW05 sample point is immediately downstream from a live stormwater outlet that accepts water from the Parramatta CBD area including serval construction and commercial/industrial premises. The Parramatta Construction Site water treatment plant was not operational or discharging during the reporting period.

Exceedance twenty-six – SW02 – February 2023 – Phosphorus (dissolved)

The phosphorus results recorded in SW02 were higher than baseline concentrations.

Although water was being discharged from the short term Rosehill water treatment plant, the discharge point was located downstream of sample point SW02 directly into Duck River and avoiding Duck Creek. There was no discharge occurring into Duck Creek during the reporting period.

Elevated phosphorus concentrations returned to baseline levels in the following March 2023 sampling round indicating that there is not an increasing trend in analyte concentrations occurring.

Exceedance twenty-seven – SW02 – February 2023 - Turbidity (lab)

During sampling, it was noted in fieldnotes that the surface water levels were low and there were difficulties to collect from a deeper sampling location, hence yielding higher turbidity levels. This was reflective in the field testing.

Prior to the sampling date, 14mm of rainfall was recorded in the catchment area and all sites had erosion sediment controls installed in accordance with an Erosion Sediment Control Plan. Elevated turbidity readings were noted in both upstream sample points SW01 and SW09 during the February sampling regime indicating that there was a high turbidity load coming from the upstream catchment because of the rainfall event.

The Rosehill short term water treatment plant was discharging downstream of the site directly into Duck River. There was no discharge into Duck and A'Becketts Creeks during the sampling event.

Exceedance twenty-nine – SW03 – April 2023 – DO (Dissolved Oxygen) %

During the April 2023 sampling round, dissolved oxygen levels were recorded higher than baseline levels.

It should be noted that sample points SW08 and SW03 are sampled ex-situ of the environment due to sampling constraints making results inconsistent. It is possible that the action of sampling has caused increased aeration of the water giving higher than normal results.

Dissolved oxygen levels recorded to date have been erratic and do not show any discernible trend up or down in level. It is unlikely that elevated dissolved oxygen levels are in relation to construction activities being undertaken at the Clyde MSF site.

Exceedance thirty – SW03 – May 2023 – DO (Dissolved Oxygen) %

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

The dissolved oxygen levels recorded in the May 2023 sampling round are comparable to the baseline levels recorded prior to construction starting.

Dissolved oxygen levels recorded to date have been erratic and do not show any discernible trend up or down in level. It is unlikely that low dissolved oxygen levels are in relation to construction activities being undertaken at the Clyde MSF site.

5.1.4 Step 4

'If the exceedance is determined to be attributable to Project works, the event will be treated as an environmental incident and managed in accordance with the requirements of Section 3.10 of the CEMP'.

The in-depth review undertaken in Steps 1 – 3 concluded that none of the exceedances could be attributed to GLC construction works. As such, notification of an environmental incident is not required under Section 3.10 of the CEMP.

5.2 Recommendations

Based on the results and findings of the surface water monitoring, it is recommended that monitoring continues to be undertaken in accordance with the SWQMoP.

During this reporting period, the alignment of the Parramatta discharge line was confirmed. The line connects with the Parramatta River below the Charles Street Weir and is situated in the marine environment. The positioning of the discharge line makes sample points SW04 and SW05 redundant. As such, sample locations SW04 and SW05 be removed from the sampling regime moving forward and a new sampling point would be established downstream of the discharge point (SW11).

6 CONCLUSION

Results obtained from this monitoring period indicate that there has not been a degradation of the surrounding surface water network as a result of construction. Results are generally consistent with the adopted assessment criteria and pre-construction baseline water quality data.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

ATTACHMENTS

Attachment 1 – Tabulated data

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

SW01 Sampling Results	Units	ANZG (2018) Toxicant default guidelines for Marine Environments	Sample Round	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Feb-23	Mar-23	Apr-23	May-23	Jun-23
			Sample Date	17/05/2022	27/05/2022	3/06/2022	10/06/2022	24/06/2022	4/07/2022	21/02/2023	14/03/2023	6/04/2023	8/05/2023	26/06/2023
Analyte			Lab Report No.	295817	296605	297165	297794	298951	299608	317005	318633	320491	322611	326566
WQO	pH	pH Units	7.0 - 8.5	7.51	7.99	7.32	7.67	8.08	7.69	6.77	7.17	7.64	7.56	7.75
	Electrical Conductivity milisemiens/cm	mS/cm)	NA	5.06	1.5	20.6	14.6	5.7	0.344	5.55	0.00	3970	2.25	6.56
	Turbidity	NTU	0.5 - 10	7.4	32.5	50.9	3.5	0.5	41	114	60	39.8	59.8	12
	DO %	%	80-110	24.3	42.3	19.7	35.7	33.2	97	20	184	42.5	63.2	24.9
	Oil & Grease	Visual	None Visible	None visible	None visible	None visible	None visible	None visible	None visible	None visible	Visible	Visible	None Visible	None Visible
	pH (Lab)	Units	7.0 - 8.5	7.3	7.9	7	7.5	7.5	7.2	7.1	7.00	7.2	7	7.2
	Electrical Conductivity (Lab)	mS/cm)	NA	4.7	15	18	13	5.7	0.33	5,500	0.90	3,900	2,000	6,100
	Turbidity (Lab)	NTU	0.5 - 10	3	5.6	5.4	3	3.6	15	6.9	5.1	4.7	4.8	4.6
	Observations (Tide/Physical Appearance)			Stagnant; very dirty; rubbish-laden	Clear; no flow; shallow water level; rubbish-laden	Sampled ex-situ; turbid; still; organic odour	Incoming tide	Low tide; outflowing; clear; rubbish	Flowing, turbid					Clear with a cloudy train coming from upstream; a lot of rubbish; low water level
	Nutrients													
	Ammonia (as N)	mg/L	0.91	0.68	0.16	0.73	0.49	0.36	0.48	0.51	0.24	0.17	0.085	0.39
	Nitrate (as N)	mg/L	2.4	0.21	0.57	0.02	0.42	0.038	0.94	0.2	0.32	0.16	0.19	0.47
	Nitrite (as N)	mg/L	-	0.049	0.051	0.044	0.05	0.047	0.025	0.022	0.13	0.051	0.016	0.074
	Total Oxidised Nitrogen	mg/L	2.4	0.259	0.621	0.064	0.47	0.085	0.965	0.04	0.5	0.2	0.2	0.55
	Phosphorus	mg/L	0.03	0.2	0.1	0.3	0.2	0.2	0.3	0.3	0.3	0.2	0.1	0.1
	Total Nitrogen (as N)*	mg/L	2.4	1.5	1.3	1.5	1.3	1	2.7	1.4	1.4	0.8	0.7	1.3
	Heavy Metals													
	Arsenic (dissolved)	ug/L	-	2	1	1	1	<1	2	<1	1	1	<1	<1
	Cadmium (dissolved)	ug/L	0.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chromium (dissolved)	ug/L	4.4	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1
	Chromium (hexavalent Cr6+ Low Level)	mg/L	4.4	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005
	Chromium (trivalent)	mg/L	27	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	Cobalt (dissolved)	ug/L	1	-	-	-	-	-	-	<1	<1	<1	<1	<1
	Copper (dissolved)	ug/L	1.3	2	2	<1	2	<1	6	<1	6	3	3	2
	Iron (dissolved)	ug/L	-	110	80	530	80	110	250	190	270	210	130	280
	Lead (dissolved)	ug/L	4.4	<1	<1	<1	<1	<1	1	<1	2	<1	<1	<1
	Manganese (dissolved)	ug/L	80	270	30	350	120	100	15	190	85	120	37	110
	Mercury (dissolved)	ug/L	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel (dissolved)	ug/L	7	1	2	1	<1	1	1	1	1	2	<1	1
	Zinc (dissolved)	ug/L	8	16	14	35	8	10	45	32	39	31	36	21
	PFAS Parameters													
	8:2 FTSA	ug/L	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	6:2 FTSA	ug/L	-	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctanoic acid (PFOA)	ug/L	220	0.02	0.02	<0.01	<0.01	0.01	<0.01	0.01	0.01	0.01	<0.01	<0.01
	Perfluorohexanesulfonic acid (PFHxS)	ug/L	-	0.03	0.03	0.02	0.03	0.02	<0.01	0.02	<0.01	0.02	<0.01	<0.01
	Perfluorooctanesulfonic acid (PFOS)	ug/L	0.13	0.11	0.13	0.07	0.08	0.06	0.04	0.05	0.01	0.05	0.02	0.02
	Polycyclic Aromatic Hydrocarbons													
	Acenaphthene	ug/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Acenaphthylene	ug/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Anthracene	ug/L	0.01	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Benz(a)anthracene	ug/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
<2	Benzo(a)pyrene	ug/L	0.01	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Benzo(a)pyrene TEQ	ug/L	-	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<0.5
	Benzo(b,j+k)fluoranthene	ug/L	-	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.2
	Benzo(g.h.i)perylene	ug/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Chrysene	ug/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Dibenz(a.h)anthracene	ug/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Fluoranthene	ug/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Fluorene	ug/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Indeno(1.2.3-cd)pyrene	ug/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Naphthalene	ug/L	50	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<0.2
	Phenanthrene	ug/L	0.6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Pyrene	ug/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Total PAH*	ug/L	-	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	<0.1
	Total Recoverable Hydrocarbons													
	Naphthalene	ug/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	TRH >C10-C16	ug/L	-	<50	<50	<50	<50	<50	62	<50	<50	<50	<50	<50
	TRH >C10-C16 less Naphthalene (F2)	ug/L	-	<50	<50	<50	<50	<50	62	<50	<50	<50	<50	<50
	TRH >C10-C40 (total)*	ug/L	-	<50	<50	<50	<50	<50	220	<50	<50	<50	<50	<50
	TRH >C16-C34	ug/L	-	<100	<100	<100	<100	<100	160	<100	<100	<100	<100	<100
	TRH >C34-C40	ug/L	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	TRH C10-C14	ug/L	-	<50	<50	<50	<50	<50	66	<50	<50	<50	<50	<50
	TRH C10-C36 (Total)	ug/L	-	<50	<50	<50	<50	<50	190	<50	<50	<50	<50	<50
	TRH C15-C28	ug/L	-	<100	<100	<100	<100	<100	120	<100	<100	<100	<100	<100
	TRH C29-C36	ug/L	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	TRH C6-C10	ug/L	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	TRH C6-C10 less BTEX (F1)	ug/L	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	TRH C6-C9	ug/L	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	Volatile Organics													
	Benzene	ug/L	500	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Ethylbenzene	ug/L	80	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	m&p-Xylenes	ug/L	75	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	o-Xylene	ug/L	350	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Toluene	ug/L	180	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

	SW02 Sampling Results	Units	ANZG (2018) Toxicant default guidelines for Marine Environments	Sample Round	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Feb-23	Mar-23	Apr-23	May-23	Jun-23
				Sample Date	17/05/2022	27/05/2022	3/06/2022	10/06/2022	24/06/2022	4/07/2023	21/02/2023	14/03/2023	6/04/2023 Sample location was not accessible	8/05/2023	26/06/2023
Analyte				**Lab Report No.**	295817	296605	297165	297794	298951	299608	317005	318633		322611	326566
WQO	pH	pH Units	7.0 - 8.5		7.31	7.23	7.45	7.55	7.73	7.79	7.56	7.31		7.53	7.59
	Electrical Conductivity	mS/cm)	NA		14.2	32.4	38	38.8	42.9	0.329	13.3	4.4		6.32	36.7
	Turbidity	NTU	0.5 - 10		3.4	13.3	3.3	0	0	60.5	20.4	59.2		70.5	0.8
	DO%	%	80-110		13.3	18.5	28.3	43.7	52.3	70.9	20.4	206.5		84.6	26
	Oil & Grease	Visual	None Visible		None Visible	None Visible	None Visible	None Visible	None Visible	None Visible	None Visible	None visible		None Visible	None Visible
	pH (lab)	Units	7.0 - 8.5		7.2	7.6	7.3	7.3	7.3	7.5	7.2	7		7.1	7
	Electrical Conductivity (lab)	ug/L	NA		12000	5500	21000	30000	30000	350	12,000	14,000		5700	34,000
	Turbidity (lab)	NTU	0.5 - 10		3	3.3	1.6	4	1.8	46	45	7.8		6	2.6
	Observations (Tide/Physical Appearance)				Low flow; relatively clear; fish present	Clear; high water level; slow flow; cloudy tinge on surface	Slow flow; clear; odourless	Outflowing; clear water	Low tide; outflowing; clear	Flowing, turbid					Green; slow flow; tide running out; cloudy film on-top
Toxicants	**Nutrients**														
	Ammonia (as N)	mg/L	0.91		0.38	0.09	0.37	0.11	0.22	0.22	0.12	0.21		0.13	0.095
	Nitrate (as N)	mg/L	2.4*		0.4	0.5	0.16	0.24	0.17	0.89	0.03	0.13		0.29	0.19
	Nitrite (as N)	mg/L	-		0.055	0.047	0.041	0.028	0.024	0.025	0.007	<0.005		0.022	0.023
	Total Oxidised Nitrogen (NOx)	mg/L	2.4*		0.455	0.547	0.201	0.268	0.194	0.915	0.03	0.1		0.3	0.2
	Phosphorus	mg/L	0.03		0.1	0.08	0.1	0.08	0.09	0.2	0.7	0.3		0.1	0.07
	Total Nitrogen (as N)*	mg/L	2.4*		1	1.3	1	0.6	0.6	1.7	1	1.1		0.7	0.5
	Heavy Metals														
	Arsenic (dissolved)	ug/L	-		2	1	<1	1	1	2	<1	1		<1	<1
	Cadmium (dissolved)	ug/L	0.7		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1
	Chromium (dissolved)	ug/L	4.4		<1	<1	<1	1	<1	<1	<1	<1		<1	<1
	Chromium (hexavalent Cr6+ Low Level)	mg/L	4.4		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005		<0.005	<0.005
	Chromium (trivalent)	mg/L	27		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005
	Cobalt (dissolved)	ug/L	1								<1	<1		<1	<1
	Copper (dissolved)	ug/L	1.3		1	2	<1	1	<1	5	1	3		3	1
	Iron (dissolved)	ug/L	-		70	100	90	50	60	200	50	350		90	70
	Lead (dissolved)	ug/L	4.4		<1	<1	<1	<1	<1	1	<1	1		<1	<1
	Manganese (dissolved)	ug/L	80		140	47	230	67	84	11	87	100		33	62
	Mercury (dissolved)	ug/L	0.1		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
	Nickel (dissolved)	ug/L	7		<1	2	1	<1	1	<1	1	1		<1	1
	Zinc (dissolved)	ug/L	8		18	20	28	11	22	35	23	23		32	26
	PFAS Parameters														
	8:2 FTSA	ug/L	-		<0.02	<0.02	<0.02	<0.04	<0.02	<0.02	<0.02	<0.02		<0.02	<0.02
	6:2 FTSA	ug/L	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01
	Perfluorooctanoic acid (PFOA)	ug/L	220		0.02	0.01	0.01	<0.01	<0.01	0.01	0.01	0.01		<0.01	<0.01
	Perfluorohexanesulfonic acid (PFHxS)	ug/L	-		0.02	0.02	0.02	0.02	0.02	<0.01	0.02	<0.01		<0.01	<0.01
	Perfluorooctanesulfonic acid (PFOS)	ug/L	0.13		0.07	0.08	0.04	0.03	0.03	0.03	0.05	0.01		0.02	<0.01
	Polycyclic Aromatic Hydrocarbons														
	Acenaphthene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1		<1	<0.1
	Acenaphthylene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1		<1	<0.1
	Anthracene	ug/L	0.01		<1	<1	<1	<1	<1	<1	<1	<1		<1	<0.1
	Benz(a)anthracene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1		<1	<0.1
	Benzo(a)pyrene	ug/L	0.01		<1	<1	<1	<1	<1	<1	<1	<1		<1	<0.1
	Benzo(a)pyrene TEQ	ug/L	-		<5	<5	<5	<5	<5	<5	<5	<5		<5	<0.5
	Benzo(b&j)fluoranthene	ug/L	-		<2	<2	<2	<2	<2	<2	<2	<2		<2	<0.2
	Benzo(g.h.i)perylene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1		<1	<0.1
	Chrysene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1		<1	<0.1
	Dibenz(a.h)anthracene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1		<1	<0.1
	Fluoranthene	ug/L	1		<1	<1	<1	<1	<1	<1	<1	<1		<1	<0.1
	Fluorene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1		<1	<0.1
	Indeno(1.2.3-cd)pyrene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1		<1	<0.1
	Naphthalene	ug/L	50		<1	<1	<1	<1	<1	<1	<1	<2		<1	<0.2
	Phenanthrene	ug/L	0.6		<1	<1	<1	<1	<1	<1	<1	<1		<1	<0.1
	Pyrene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1		<1	<0.1
	Total PAH*	ug/L	-		Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil		Nil	<0.1
	Total Recoverable Hydrocarbons														
	Naphthalene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1		<1	<1
	TRH >C10-C16	ug/L	-		<50	<50	<50	<50	<50	<50	<50	<50		<50	<50
	TRH >C10-C16 less Naphthalene (F2)	ug/L	-		<50	<50	<50	<50	<50	<50	<50	<50		<50	<50
	TRH >C10-C40 (total)*	ug/L	-		<50	<50	<50	<50	<50	<50	<50	<50		<50	<50
	TRH >C16-C34	ug/L	-		<100	<100	<100	<100	<100	<100	<100	<100		<100	<100
	TRH >C34-C40	ug/L	-		<100	<100	<100	<100	<100	<100	<100	<100		<100	<100
	TRH C10-C14	ug/L	-		<50	<50	<50	<50	<50	<50	<50	<50		<50	<50
	TRH C10-C36 (Total)	ug/L	-		<50	<50	<50	<50	<50	<50	<50	<50		<50	<50
	TRH C15-C28	ug/L	-		<100	<100	<100	<100	<100	<100	<100	<100		<100	<100
	TRH C29-C36	ug/L	-		<100	<100	<100	<100	<100	<100	<100	<100		<100	<100
	TRH C6-C10	ug/L	-		<10	<10	<10	<10	<10	<10	<10	<10		<10	<10
	TRH C6-C10 less BTEX (F1)	ug/L	-		<10	<10	<10	<10	<10	<10	<10	<10		<10	<10
	TRH C6-C9	ug/L	-		<10	<10	<10	<10	<10	<10	<10	<10		<10	<10
	Volatile Organics														
	Benzene	ug/L	500		<1	<1	<1	<1	<1	<1	<1	<1		<1	<1
	Ethylbenzene	ug/L	80		<1	<1	<1	<1	<1	<1	<1	<1		<1	<1
	m&p-Xylenes	ug/L	75		<2	<2	<2	<2	<2	<2	<2	<2		<2	<2
	o-Xylene	ug/L	350		<1	<1	<1	<1	<1	<1	<1	<1		<1	<1
	Toluene	ug/L	180		<1	<1	<1	<1	<1	<1	<1	<1		<1	<1

	SW03 Sampling Results	Units	ANZG (2018) Toxicant default guidelines for Marine Environments	Sample Round	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Feb-23	Mar-23	Apr-23	May-23	Jun-23
				Sample Date	17/05/2022	27/05/2022	3/06/2022	10/06/2022	24/06/2022	4/07/2022	21/02/2023	14/03/2023	6/04/2023	8/05/2023	26/06/2023
	Analyte			Lab Report No.	295817	296605	297165	297794	298951	299608	317005	318633	320491	322611	326566
WQO	pH	pH Units	7.0 - 8.5		7.45	7.48	7.44	7.8	8	7.74	7.65	7.36	7.38	7.3	8.21
	Electrical Conductivity	mS/cm)	NA		29.2	12.8	35.2	38.5	31.4	0.538	40.1	3.2	27.3	23.1	42.1
	Turbidity	NTU	0.5 - 10		6.4	48.3	4.7	2.9	1.6	80.8	77.6	64.4	34	37.9	1.7
	DO%	%	80-110		45.6	47.3	36.3	61.5	57.4	108.8	46	147.4	144	68.2	73.5
	Oil & Grease	Visual	None Visible		None Visible	Slight sheen	Slight sheen	Slight sheen	None Visible	None Visible	None Visible	None visible	biofilm.	None Visible	None Visible
	pH (lab)	Units	7.0 - 8.5		7.2	7.5	7.3	7.6	7.3	7.4	7.5	7.3	7.2	7.1	7.4
	Electrical Conductivity (lab)	mS/cm)	NA		26	12	26	35	25	0.55	38	12	27	22	38
	Turbidity (lab)	NTU	0.5 - 10		5.7	15	2.4	4.1	2.5	26	3.5	6.9	2.7	5.2	1.8
	Observations (Tide/Physical Appearance)		-		Steady flow; clear; low tide	Cloudy; flowing; slight sheen; low tide	Flowing; falling tide; slight sheen; sediment	Outflowing; clear	Scum; rising tide; flowing	Fast flowing, slightly turbid					Clear; low tide; slow flow
Toxicants	**Nutrients**														
	Ammonia (as N)	mg/L	0.91		0.25	0.13	0.24	0.066	0.42	0.49	<0.005	0.12	0.22	0.11	0.009
	Nitrate (as N)	mg/L	2.4*		0.22	0.39	0.19	0.13	0.29	1	0.009	0.13	0.061	0.22	0.11
	Nitrite (as N)	mg/L	-		0.023	0.025	0.026	0.011	0.028	0.031	<0.005	0.04	0.016	0.017	0.006
	Total Oxidised Nitrogen (NOx)	mg/L	2.4*		0.243	0.415	0.216	0.141	0.318	1.031	0.01	0.2	0.08	0.2	0.1
	Phosphorus	mg/L	0.03		0.1	0.09	0.07	0.07	0.08	0.3	0.2	0.2	0.1	0.08	<0.1
	Total Nitrogen (as N)*	mg/L	2.4*		0.8	1	0.7	0.5	0.8	2.4	0.3	0.8	0.6	0.7	0.3
	Heavy Metals														
	Arsenic (dissolved)	ug/L	-		2	2	1	1	<1	2	2	1	2	<1	1
	Cadmium (dissolved)	ug/L	0.7		<0.1	<0.1	<.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1
	Chromium (dissolved)	ug/L	4.4		<1	<1	<1	1	<1	2	2	<1	<1	<1	2
	Chromium (hexavalent Cr6+ Low Level)	mg/L	4.4		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005
	Chromium (trivalent)	mg/L	27		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	Cobalt (dissolved)	ug/L	1		-	-	-	-	-	-	<1	<1	<1	<1	<1
	Copper (dissolved)	ug/L	1.3		<1	2	<1	1	<1	6	1	2	1	<1	1
	Iron (dissolved)	ug/L	-		20	80	30	<10	20	300	<10	90	20	40	20
	Lead (dissolved)	ug/L	4.4		<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1
	Manganese (dissolved)	ug/L	80		67	61	82	40	99	19	24	90	59	52	40
	Mercury (dissolved)	ug/L	0.1		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel (dissolved)	ug/L	7		<1	1	1	<1	<1	1	<1	1	<1	1	1
	Zinc (dissolved)	ug/L	8		12	24	30	7	13	47	8	23	15	17	24
	PFAS Parameters														
	8:2 FTSA	ug/L	-		<0.02	<0.02	<0.02	<0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	6:2 FTSA	ug/L	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctanoic acid (PFOA)	ug/L	220		<0.01	0.02	<0.01	<0.01	0.01	0.02	<0.01	0.02	0.01	<0.01	<0.01
	Perfluorohexanesulfonic acid (PFHxS)	ug/L	-		0.02	0.02	0.02	0.01	0.02	0.01	<0.01	0.01	0.02	<0.01	<0.01
	Perfluorooctanesulfonic acid (PFOS)	ug/L	0.13		0.03	0.05	0.03	0.03	0.02	0.03	<0.01	0.03	0.05	0.02	<0.01
	Polycyclic Aromatic Hydrocarbons														
	Acenaphthene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Acenaphthylene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Anthracene	ug/L	0.01		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Benz(a)anthracene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Benzo(a)pyrene	ug/L	0.01		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Benzo(a)pyrene TEQ	ug/L	-		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<0.5
	Benzo(b&j)fluoranthene	ug/L	-		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.2
	Benzo(g.h.i)perylene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Chrysene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Dibenz(a.h)anthracene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Fluoranthene	ug/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Fluorene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Indeno(1.2.3-cd)pyrene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Naphthalene	ug/L	50		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.2
	Phenanthrene	ug/L	0.6		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Pyrene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Total PAH*	ug/L	-		Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	<0.1
	Total Recoverable Hydrocarbons														
	Naphthalene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	TRH >C10-C16	ug/L	-		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	TRH >C10-C16 less Naphthalene (F2)	ug/L	-		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	TRH >C10-C40 (total)*	ug/L	-		<50	<50	<50	<50	<50	100	<50	<50	<50	<50	<50
	TRH >C16-C34	ug/L	-		<100	<100	<100	<100	<100	100	<100	<100	<100	<100	<100
	TRH >C34-C40	ug/L	-		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	TRH C10-C14	ug/L	-		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	TRH C10-C36 (Total)	ug/L	-		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	TRH C15-C28	ug/L	-		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	TRH C29-C36	ug/L	-		<50	<50	<50	<50	<50	<100	<100	<100	<100	<100	<100
	TRH C6-C10	ug/L	-		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	TRH C6-C10 less BTEX (F1)	ug/L	-		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	TRH C6-C9	ug/L	-		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	Volatile Organics														
	Benzene	ug/L	500		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Ethylbenzene	ug/L	80		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	m&p-Xylenes	ug/L	75		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	o-Xylene	ug/L	350		<1	<1	<1	<1	<1	<!	<1	<1	<1	<1	<1
	Toluene	ug/L	180		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

	SW04 Sampling Results	Units	ANZG (2018) Toxicant default guidelines for Frfeshwater Environments	Sample Round	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Feb-23	Mar-23	Apr-23	May-23	Jun-23
	Analyte			Sample Date	17/05/2022	27/05/2022	3/06/2022	10/06/2022	24/06/2022	4/07/2022	21/02/2023	14/03/2023	6/04/2023	8/05/2023	26/06/2023
				Lab Report No.	295817	296605	297165	297794	298951	Not Tested	317005	318633	320491	322611	326566
QUOM	pH	pH Units	7.0 - 8.5		7.79	8.03	7.7	8.01	8.18	-	7.38	7	7.94	7.66	9.07
	Electrical Conductivity	mS/cm	0.125 - 2.2		0.468	0.564	0.879	0.788	1.89	-	0.507	0	0.227	0.314	1.13
	Turbidity	NTU	6.0-10.0		29	73.6	38.1	43.5	16.2	-	75.7	61.2	134	75.4	12.5
	DO%	%	85-110		112.4	63.6	61	64.4	67.4	-	43	351.4	180	121.8	59.9
	Oil & Grease	Visual	None Visible		None Visible	None Visible	None Visible	None Visible	None Visible	-	None Visible	None visible		None Visible	None Visible
	pH (Lab)	Units	7.0 - 8.5		7.9	7.9	8	7.9	7.8	-	7.6	7.6	7.6	7.8	7.9
	Electrical Conductivity (Lab)	mS/cm	0.125 - 2.2		0.43	0.41	0.88	0.66	1.8	-	870	0.5	0.24	0.3	1
	Turbidity (lab)	NTU	6.0-10.0		8.6	15	7.8	13	5	-	2.6	11	46	21	5.1
	Observations (Tide/Physical Appearance)		-		Steady flow; brown; murky	Slightly tubid; flowing; plume from pipe	Flowing; odourless; visible sediment in the water	Sediment plume coming from stormwater drain	Flowing; brown; sediment coming from drain	Sample not collected, area flooded					Medium flow; clear with greenish tinge; deep water
Toxicants	**Nutrients**														
	Ammonia (as N)	mg/L	0.9		0.19	0.058	0.51	0.5	0.045	-	0.063	<0.005	0.09	0.034	0.026
	Nitrate (as N)	mg/L	2.4		0.66	0.63	0.54	0.78	0.44	-	0.24	<0.005	0.39	0.49	0.46
	Nitrite (as N)	mg/L	-		0.028	0.023	0.054	0.1	0.022	-	0.019	<0.005	0.021	0.014	0.02
	Total Oxidised Nitrogen (NOx)	mg/L	2.4		0.688	0.653	0.594	0.88	0.462	-	0.3	<0.005	0.4	0.5	0.5
	Phosphorus	mg/L	0.035		0.08	<0.05	<0.05	0.08	0.5	-	0.06	0.09	0.1	0.08	0.09
	Total Nitrogen (as N)*	mg/L	2.4		1	1	3.6	2.3	0.7	-	0.7	0.4	0.7	0.9	0.8
	Heavy Metals														
	Arsenic (dissolved)	ug/L	13		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
	Cadmium (dissolved)	ug/L	0.2		<0.1	<0.1	<0.1	<0.1	0.2	-	<0.1	<0.1	<0.1	<0.01	<0.1
	Chromium (dissolved)	ug/L	0.001		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
	Chromium (hexavalent Cr6+ Low Level)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.005	<0.005	<0.005	<0.005	<0.005
	Chromium (trivalent)	mg/L	0.0033		<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005
	Cobalt (dissolved)	ug/L	1.4							-	<1	<1	<1	<1	<1
	Copper (dissolved)	ug/L	1.4		2	3	2	3	<1	-	3	1	5	2	2
	Iron (dissolved)	ug/L	-		540	310	200	210	50	-	90	160	150	310	90
	Lead (dissolved)	ug/L	3.4		1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
	Manganese (dissolved)	ug/L	1900		89	35	26	59	53	-	<5	31	5	45	23
	Mercury (dissolved)	ug/L	0.06		<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel (dissolved)	ug/L	11		1	1	<1	<1	<1	-	<1	<1	<1	1	<1
	Zinc (dissolved)	ug/L	8		10	9	8	7	5	-	6	4	20	6	11
	PFAS Parameters														
	1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	-		<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
	1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/L	-		<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctanoic acid (PFOA)	ug/L	220		0.01	0.01	0.01	0.01	0.02	-	0.01	0.01	0.01	<0.01	<0.01
	Perfluorohexanesulfonic acid (PFHxS)	ug/L	-		0.02	0.01	0.02	0.02	0.02	-	<0.01	0.02	0.02	<0.01	0.01
	Perfluorooctanesulfonic acid (PFOS)	ug/L	0.13		0.03	0.02	0.03	0.05	0.03	-	0.01	0.04	0.05	0.02	0.02
	Polycyclic Aromatic Hydrocarbons														
	Acenaphthene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Acenaphthylene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Anthracene	ug/L	0.01		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Benz(a)anthracene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Benzo(a)pyrene	ug/L	0.1		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Benzo(a)pyrene TEQ	ug/L	-		<5	<5	<5	<5	<5	-	<5	<5	<5	<5	<0.5
	Benzo(b&j)fluoranthene	ug/L	-		<2	<2	<2	<2	<2	-	<2	<2	<2	<2	<0.2
	Benzo(g.h.i)perylene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Chrysene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Dibenz(a.h)anthracene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Fluoranthene	ug/L	1		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Fluorene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Indeno(1.2.3-cd)pyrene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Naphthalene	ug/L	16		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.2
	Phenanthrene	ug/L	0.6		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Pyrene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Total PAH*	ug/L	-		Nil	Nil	Nil	Nil	Nil	-	Nil	Nil	Nil	Nil	<0.1
	Total Recoverable Hydrocarbons														
	Naphthalene	ug/L	16		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
	TRH >C10-C16	ug/L	-		<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50
	TRH >C10-C16 less Naphthalene (F2)	ug/L	-		<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50
	TRH >C10-C40 (total)*	ug/L	-		<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50
	TRH >C16-C34	ug/L	-		<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100
	TRH >C34-C40	ug/L	-		<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100
	TRH C10-C14	ug/L	-		<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50
	TRH C10-C36 (Total)	ug/L	-		<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50
	TRH C15-C28	ug/L	-		<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100
	TRH C29-C36	ug/L	-		<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100
	TRH C6-C10	ug/L	-		<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10
	TRH C6-C10 less BTEX (F1)	ug/L	-		<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10
	TRH C6-C9	ug/L	-		<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10
	Volatile Organics														
	Benzene	ug/L	950		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
	Ethylbenzene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
	m&p-Xylenes	ug/L	200		<2	<2	<2	<2	<2	-	<2	<2	<2	<2	<2
	o-Xylene	ug/L	350		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
	Toluene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1

SW05 Sampling Results		Units	ANZG (2018) Toxicant default guidelines for Freshwater Environments	Sample Round	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Feb-23	Mar-23	Apr-23	May-23	Jun-23
Analyte				Sample Date	17/05/2022	27/05/2022	3/06/2022	10/06/2022	24/06/2022	4/07/2022	21/02/2023	14/03/2023	6/04/2023	8/05/2023	26/06/2023
				Lab Report No.	295817	296605	297165	297794	298951	Not Tested	317005	318633	320491	322611	326566
WQO	pH	pH Units	7.0 - 8.5		7.78	7.81	7.77	7.79	8.4	-	6.97	6.95	7.92	7.54	9.09
	Electrical Conductivity	mS/cm)	0.125 - 2.2		0.461	0.427	0.872	0.729	2	-	6.2	0	0.227	0.311	1.23
	Turbidity	NTU	6.0-10.0		22	84.6	39.8	15.2	9.4	-	89.4	68.1	134	72.8	7.6
	DO%	%	85-110		59	63.1	54.5	55.6	82.1	-	28.5	219.9	91.9	116.9	60.7
	Oil & Grease	Visual	None Visible		None visible	None visible	None visible	None visible	None visible	-	None Visible	None visible		None Visible	None Visible
	pH	Units	7.0 - 8.5		7.8	7.8	7.9	7.8	7.9	-	7.6	7.6	7.6	7.8	7.8
	Electrical Conductivity	ug/L	0.125 - 2.2		0.44	0.41	0.88	0.67	1.9	-	0.7	0.48	0.14	0.3	1.1
	Turbidity	NTU	6.0-10.0		16	13	3.6	4.9	4.2	-	3.2	6.7	8	15	4.7
	Observations (Tide/Physical Appearance)		-		Steady flow; brown; murky	Slightly turbid; flowing; brown colour	Flowng; brown odourless; visible sediment	Brown; flowing slow; rubbish	Flowing; brown; sediment coming from drain	-					Medium flow; clear/green; slight brown tinge; deep water
Toxicants	**Nutrients**														
	Ammonia (as N)	mg/L	0.9		0.17	0.085	0.51	0.6	0.048	-	0.085	<0.005	0.12	0.038	0.068
	Nitrate (as N)	mg/L	2.4		0.65	0.47	0.54	0.85	0.44	-	0.25	<0.005	0.39	0.47	0.36
	Nitrite (as N)	mg/L	-		0.026	0.018	0.053	0.11	0.023	-	0.02	<0.005	0.024	<0.005	0.017
	Total Oxidised Nitrogen (NOx)	mg/L	2.4		0.676	0.488	0.593	0.96	0.463	-	0.3	<0.006	0.4	0.5	0.4
	Phosphorus	mg/L	0.035		0.08	0.07	0.06	0.09	0.1	-	0.06	0.1	0.09	0.07	0.05
	Total Nitrogen (as N)*	mg/L	2.4		1	0.9	3.5	2.4	0.7	-	0.7	0.4	0.8	0.9	0.7
	Heavy Metals														
	Arsenic (dissolved)	ug/L	13*		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
	Cadmium (dissolved)	ug/L	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1
	Chromium (dissolved)	ug/L	0.001		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
	Chromium (hexavalent Cr6+ Low Level)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.005	<0.005	<0.005	<0.005	<0.005
	Chromium (trivalent)	mg/L	0.0033		<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005
	Cobalt (dissolved)	ug/L	1.4		-	-	-	-	-	-	<1	<1	<1	<1	<1
	Copper (dissolved)	ug/L	1.4		3	2	2	3	<1	-	3	2	6	4	3
	Iron (dissolved)	ug/L	-		480	310	190	190	40	-	80	140	80	340	90
	Lead (dissolved)	ug/L	3.4		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
	Manganese (dissolved)	ug/L	1900		77	34	54	52	40	-	<5	25	<5	46	24
	Mercury (dissolved)	ug/L	0.06		<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel (dissolved)	ug/L	11		<1	<1	<1	<1	<1	-	<1	<1	<1	1	<1
	Zinc (dissolved)	ug/L	8		9	7	8	3	<1	-	7	4	25	5	10
	PFAS Parameters														
	8:2 FTSA	ug/L	-		<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
	6:2 FTSA	ug/L	-		<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctanoic acid (PFOA)	ug/L	220		0.02	0.01	0.02	0.01	0.02	-	0.01	0.01	0.01	<0.01	0.01
	Perfluorohexanesulfonic acid (PFHxS)	ug/L	-		0.02	<0.01	0.02	0.02	0.02	-	<0.01	0.02	0.02	<0.01	0.01
	Perfluorooctanesulfonic acid (PFOS)	ug/L	0.13		0.04	0.03	0.03	0.05	0.04	-	0.02	0.03	0.05	0.02	0.02
	Polycyclic Aromatic Hydrocarbons														
	Acenaphthene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Acenaphthylene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Anthracene	ug/L	0.01		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Benz(a)anthracene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Benzo(a)pyrene	ug/L	0.1		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Benzo(a)pyrene TEQ	ug/L	-		<5	<5	<5	<5	<5	-	<5	<5	<5	<5	<0.5
	Benzo(b&j)fluoranthene	ug/L	-		<2	<2	<2	<2	<2	-	<2	<2	<2	<2	<0.2
	Benzo(g.h.i)perylene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Chrysene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Dibenz(a.h)anthracene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Fluoranthene	ug/L	1		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Fluorene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Indeno(1.2.3-cd)pyrene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Naphthalene	ug/L	16		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.2
	Phenanthrene	ug/L	0.6		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Pyrene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
	Total PAH*	ug/L	-		Nil	Nil	Nil	Nil	Nil	-	Nil	Nil	Nil	Nil	<0.1
	Total Recoverable Hydrocarbons														
	Naphthalene	ug/L	16		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
	TRH >C10-C16	ug/L	-		<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50
	TRH >C10-C16 less Naphthalene (F2)	ug/L	-		<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50
	TRH >C10-C40 (total)*	ug/L	-		<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50
	TRH >C16-C34	ug/L	-		<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100
	TRH >C34-C40	ug/L	-		<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100
	TRH C10-C14	ug/L	-		<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50
	TRH C10-C36 (Total)	ug/L	-		<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50
	TRH C15-C28	ug/L	-		<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100
	TRH C29-C36	ug/L	-		<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100
	TRH C6-C10	ug/L	-		<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10
	TRH C6-C10 less BTEX (F1)	ug/L	-		<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10
	TRH C6-C9	ug/L	-		<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10
	Volatile Organics														
	Benzene	ug/L	950		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
	Ethylbenzene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
	m&p-Xylenes	ug/L	200		<2	<2	<2	<2	<2	-	<2	<2	<2	<2	<2
	o-Xylene	ug/L	350		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
	Toluene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1

	SW06 Sampling Results	Units	ANZG (2018) Toxicant default guidelines for Marine Environments	Sample Round	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Feb-23	Mar-23	Apr-23	May-23	Jun-23
	Analyte			Sample Date	17/05/2022	27/05/2022	3/06/2022	10/06/2022	24/06/2022	4/07/2022	21/02/2023	14/03/2023	6/04/2023	8/05/2023	26/06/2023
	Analyte			Lab Report No.	295817	296605	297165	297794	298951	Not Tested	317005	318633	320491	322611	326566
WQO	pH	pH Units	7.0 - 8.5		7.39	7.38	7.64	7.8	8.06	-	7.47	7.29	7.18	7.18	8.7
WQO	Electrical Conductivity	mS/cm	NA		18.9	24.8	31.6	38.7	37.2	-	28.8	7.8	8.43	22.9	31.5
WQO	Turbidity	NTU	0.5 - 10		9.4	114	18.6	4.8	5.7	-	70.8	45	66.1	70.4	4.4
WQO	DO	%	80-110		52.9	58.9	69	55.8	72	-	66.7	23.52	90.8	96.8	50.9
WQO	Oil & Grease	Visual	None Visible		None visible	None visible	Slight sheen	None visible	None visible	-	None Visible	None visible	None visible	None Visible	None Visible
WQO	pH	Units	7.0 - 8.5		7.3	7.4	7.5	7.5	7.6	-	7.4	7.2	7.3	7.2	7.5
WQO	Electrical Conductivity	mS/cm	NA		15	23	25	35	36	-	17,000	19	8.8	16	3
WQO	Turbidity	NTU	0.5 - 10		5.4	4.9	2.2	11	4.4	-	2.8	4.1	9.5	9.7	2.7
WQO	Observations (Tide/Physical Appearance)	-	-		Steady flow; brown; murky; tide falling; ferry arrived during monitoring stirring up water	Slightly turbid; brown; low tide	Ferry docking at wharf; clear; odourless; small amount of oil visible	Low tide, readings taken ex-situ; turbid	Low tide; brown; scum on upstream side of weir	Sample not collected, area flooded					Low tide; slow flow; clear/green in colour
Toxicants	**Nutrients**														
Toxicants	Ammonia (as N)	mg/L	0.91		0.29	0.27	0.25	0.2	0.13	-	0.014	0.1	0.15	0.064	0.06
Toxicants	Nitrate (as N)	mg/L	2.4*		0.37	0.21	0.19	0.17	0.063	-	0.09	0.01	0.15	0.28	0.11
Toxicants	Nitrite (as N)	mg/L	-		0.023	0.02	0.025	0.021	<0.005	-	0.01	<0.005	0.016	0.012	0.008
Toxicants	Total Oxidised Nitrogen (NOx)	mg/L	2.4*		0.393	0.23	0.215	0.191	0.063	-	0.1	0.02	0.2	0.3	0.1
Toxicants	Phosphorus	mg/L	0.03		0.09	0.07	0.08	0.1	0.09	-	0.1	0.2	0.1	0.06	<0.05
Toxicants	Total Nitrogen (as N)*	mg/L	2.4*		0.8	0.7	1.2	0.6	0.5	-	0.5	0.5	0.5	0.7	0.4
Toxicants	**Heavy Metals**														
Toxicants	Arsenic (dissolved)	ug/L	-		1	1	<1	1	1	-	<1	1	<1	<1	<1
Toxicants	Cadmium (dissolved)	ug/L	0.7		<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1
Toxicants	Chromium (dissolved)	ug/L	4.4		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	1
Toxicants	Chromium (hexavalent Cr6+ Low Level)	mg/L	4.4		<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.005	<0.005	<0.005	<0.005	<0.005
Toxicants	Chromium (trivalent)	mg/L	27		<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005
Toxicants	Cobalt (dissolved)	ug/L	1		-	-	-	-	-	-	<1	<1	<1	<1	<1
Toxicants	Copper (dissolved)	ug/L	1.3		1	<1	1	<1	<1	-	2	1	3	<1	1
Toxicants	Iron (dissolved)	ug/L	-		110	70	40	<10	<10	-	10	50	40	150	30
Toxicants	Lead (dissolved)	ug/L	4.4		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
Toxicants	Manganese (dissolved)	ug/L	80		81	56	45	36	42	-	61	61	31	60	37
Toxicants	Mercury (dissolved)	ug/L	0.1		<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05
Toxicants	Nickel (dissolved)	ug/L	7		<1	1	<1	<1	<1	-	<1	<1	<1	<1	1
Toxicants	Zinc (dissolved)	ug/L	8		8	7	9	5	<1	-	9	8	25	5	18
Toxicants	**PFAS Parameters**														
Toxicants	8:2 FTSA	ug/L	-		<0.02	<0.02	<0.02	<0.04	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
Toxicants	6:2 FTSA	ug/L	-		<0.01	<0.01	<0.01	<0.02	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01
Toxicants	Perfluorooctanoic acid (PFOA)	ug/L	220		<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	0.01	<0.01	<0.01
Toxicants	Perfluorohexanesulfonic acid (PFHxS)	ug/L	-		0.01	<0.01	0.01	0.01	<0.01	-	<0.01	0.01	0.02	<0.01	<0.01
Toxicants	Perfluorooctanesulfonic acid (PFOS)	ug/L	0.13		0.02	0.02	0.01	0.01	<0.01	-	0.01	0.02	0.05	0.03	<0.01
Toxicants	**Polycyclic Aromatic Hydrocarbons**														
Toxicants	Acenaphthene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
Toxicants	Acenaphthylene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
Toxicants	Anthracene	ug/L	0.01		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
Toxicants	Benz(a)anthracene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
Toxicants	Benzo(a)pyrene	ug/L	0.01		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
Toxicants	Benzo(a)pyrene TEQ	ug/L	-		<5	<5	<5	<5	<5	-	<5	<5	<5	<5	<0.5
Toxicants	Benzo(b&j)fluoranthene	ug/L	-		<2	<2	<2	<2	<2	-	<2	<2	<2	<2	<0.2
Toxicants	Benzo(g.h.i)perylene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
Toxicants	Chrysene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
Toxicants	Dibenz(a.h)anthracene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
Toxicants	Fluoranthene	ug/L	1		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
Toxicants	Fluorene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
Toxicants	Indeno(1.2.3-cd)pyrene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
Toxicants	Naphthalene	ug/L	50		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.2
Toxicants	Phenanthrene	ug/L	0.6		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
Toxicants	Pyrene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<0.1
Toxicants	Total PAH*	ug/L	-		Nil	Nil	Nil	Nil	Nil	-	Nil	Nil	Nil	Nil	<0.1
Toxicants	**Total Recoverable Hydrocarbons**														
Toxicants	Naphthalene	ug/L	-		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
Toxicants	TRH >C10-C16	ug/L	-		<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50
Toxicants	TRH >C10-C16 less Naphthalene (F2)	ug/L	-		<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50
Toxicants	TRH >C10-C40 (total)*	ug/L	-		<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50
Toxicants	TRH >C16-C34	ug/L	-		<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100
Toxicants	TRH >C34-C40	ug/L	-		<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100
Toxicants	TRH C10-C14	ug/L	-		<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50
Toxicants	TRH C10-C36 (Total)	ug/L	-		<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50
Toxicants	TRH C15-C28	ug/L	-		<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100
Toxicants	TRH C29-C36	ug/L	-		<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100
Toxicants	TRH C6-C10	ug/L	-		<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10
Toxicants	TRH C6-C10 less BTEX (F1)	ug/L	-		<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10
Toxicants	TRH C6-C9	ug/L	-		<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10
Toxicants	**Volatile Organics**														
Toxicants	Benzene	ug/L	500		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
Toxicants	Ethylbenzene	ug/L	80		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
Toxicants	m&p-Xylenes	ug/L	75		<2	<2	<2	<2	<2	-	<2	<2	<2	<2	<2
Toxicants	o-Xylene	ug/L	350		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
Toxicants	Toluene	ug/L	180		<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1

	SW07 Sampling Results	Units	ANZG (2018) Toxicant default guidelines for Marine Environments	Sample Round	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Feb-23	Mar-23	Apr-23	May-23	Jun-23
	Analyte			Sample Date	17/05/2022	27/05/2022	3/06/2022	10/06/2022	24/06/2022	4/07/2022	21/02/2023	14/03/2023	6/04/2023	8/05/2023	26/06/2023
				Lab Report No.	295817	296605	297165	297794	298951	299608	317005	318633	320491	322611	326566
WQO	pH	pH Units	7.0 - 8.5		7.62	7.69	7.19	7.82	7.95	7.08	7.4	7.08	7.95	7.75	7.48
WQO	Electrical Conductivity	mS/cm	0.125 - 2.2		0.875	0.86	0.821	0.967	0.934	0.344	0.407	0.55	0.215	0.223	0.495
WQO	Turbidity	NTU	6.0-10.0		2.8	28.3	3.3	6.7	5.2	23.6	66.2	66.1	164	333	52.2
WQO	DO	%	85-110		46.7	52.4	41.1	53.1	63.7	73	51.2	140.2	79.7	112.3	35.3
WQO	Oil & Grease	Visual	None Visible		None visible	None visible	None visible	None visible	None visible	None visible	None Visible	None visible	None visible	None visible	None visible
WQO	pH (Lab)	Units	7.0 - 8.5		7.8	8	7.9	7.8	7.9	7.6	7.4	7.5	7.3	7.8	7.7
WQO	Electrical Conductivity (Lab)	mS/cm	0.125 - 2.2		0.82	0.8	0.84	0.98	1.1	0.35	0.27	0.29	0	0.2	0.47
WQO	Turbidity (Lab)	NTU	6.0-10.0		3.4	3.7	4.3	2.8	2.1	21	2.2	6.9	51	150	7.4
	Observations (Tide/Physical Appearance)		-		Very low flow; floating debris; water relatively clear	Clear; slow flow; alot of rubbish downstream	Still, clear and odourless	Still; clear	Still; clear; odourless; rubbish in water	Flowing, turbid					No flow; geen scum; cloudy; low depth
	Nutrients														
	Ammonia (as N)	mg/L	0.9		0.12	0.034	0.057	0.053	0.036	0.033	0.098	0.087	0.16	0.12	0.3
	Nitrate (as N)	mg/L	2.4		0.35	0.33	0.26	0.34	0.24	1.2	0.29	0.45	0.26	0.56	0.27
	Nitrite (as N)	mg/L	-		0.02	0.022	0.015	0.011	0.006	0.013	0.025	0.1	0.041	0.085	0.036
	Total Oxidised Nitrogen (NOx)	mg/L	2.4		0.37	0.352	0.275	0.351	0.246	1.213	0.3	0.55	0.3	0.64	0.3
	Phosphorus	mg/L	0.035		0.1	0.09	0.09	0.07	0.1	0.1	0.1	0.05	0.1	<0.05	0.2
	Total Nitrogen (as N)*	mg/L	2.4		0.7	0.8	0.7	0.6	0.5	1.5	0.7	0.7	0.9	0.8	1.1
	Heavy Metals														
	Arsenic (dissolved)	ug/L	13*		1	1	<1	<1	<1	2	<1	<1	<1	<1	<1
	Cadmium (dissolved)	ug/L	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chromium (dissolved)	ug/L	0.001		<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1
	Chromium (hexavalent Cr6+ Low Level)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005
	Chromium (trivalent)	mg/L	0.0033		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	Cobalt (dissolved)	ug/L	1.4		-	-	-	-	-	-	<1	<1	<1	<1	<1
	Copper (dissolved)	ug/L	1.4		2	1	<1	1	<1	6	3	2	5	4	1
	Iron (dissolved)	ug/L	-		150	200	240	150	240	440	190	230	270	350	640
	Lead (dissolved)	ug/L	3.4		<1	<1	<1	<1	<1	2	<1	<1	1	<1	<1
	Manganese (dissolved)	ug/L	1900		110	100	61	48	30	13	5	33	45	24	55
	Mercury (dissolved)	ug/L	0.06		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel (dissolved)	ug/L	11		<1	1	<1	<1	<1	1	1	<1	<1	1	1
	Zinc (dissolved)	ug/L	8		9	9	7	<1	<1	700	11	6	23	3	35
	PFAS Parameters														
	8:2 FTSA	ug/L	-		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	6:2 FTSA	ug/L	-		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctanoic acid (PFOA)	ug/L	220		0.02	0.01	0.01	0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.01
	Perfluorohexanesulfonic acid (PFHxS)	ug/L	-		0.02	0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
	Perfluorooctanesulfonic acid (PFOS)	ug/L	0.13		0.03	0.02	0.02	0.02	0.01	0.01	0.02	<0.01	0.05	<0.01	0.01
Toxicants	**Polycyclic Aromatic Hydrocarbons**														
Toxicants	Acenaphthene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Acenaphthylene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Anthracene	ug/L	0.01		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Benz(a)anthracene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Benzo(a)pyrene	ug/L	0.1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Benzo(a)pyrene TEQ	ug/L	-		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<0.5
Toxicants	Benzo(b&j)fluoranthene	ug/L	-		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.2
Toxicants	Benzo(g.h.i)perylene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Chrysene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Dibenz(a.h)anthracene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Fluoranthene	ug/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Fluorene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Indeno(1.2.3-cd)pyrene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Naphthalene	ug/L	16		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.2
Toxicants	Phenanthrene	ug/L	0.6		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Pyrene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Total PAH*	ug/L	-		Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	<0.1
Toxicants	**Total Recoverable Hydrocarbons**														
Toxicants	Naphthalene	ug/L	16		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toxicants	TRH >C10-C16	ug/L	-		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Toxicants	TRH >C10-C16 less Naphthalene (F2)	ug/L	-		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Toxicants	TRH >C10-C40 (total)*	ug/L	-		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Toxicants	TRH >C16-C34	ug/L	-		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Toxicants	TRH >C34-C40	ug/L	-		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Toxicants	TRH C10-C14	ug/L	-		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Toxicants	TRH C10-C36 (Total)	ug/L	-		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Toxicants	TRH C15-C28	ug/L	-		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Toxicants	TRH C29-C36	ug/L	-		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Toxicants	TRH C6-C10	ug/L	-		<10	<10	<10	<10	<10	<10	<10	19	<10	<10	<10
Toxicants	TRH C6-C10 less BTEX (F1)	ug/L	-		<10	<10	<10	<10	<10	<10	<10	19	<10	<10	<10
Toxicants	TRH C6-C9	ug/L	-		<10	<10	<10	<10	<10	<10	<10	19	<10	<10	<10
Toxicants	**Volatile Organics**														
Toxicants	Benzene	ug/L	950		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toxicants	Ethylbenzene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toxicants	m&p-Xylenes	ug/L	200		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Toxicants	o-Xylene	ug/L	350		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toxicants	Toluene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

	SW08 Sampling Results	Units	ANZG (2018) Toxicant default guidelines for Marine Environments	Sample Round	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Feb-23	Mar-23	Apr-23	May-23	Jun-23
	Analyte			Sample Date	17/05/2022	27/05/2022	3/06/2022	10/06/2022	24/06/2022	4/07/2022	21/02/2023	14/03/2023	6/04/2023	8/05/2023	26/06/2023
	Analyte			Lab Report No.	295817	296605	297165	297794	298951	299608	317005	318633	320491	322611	326566
WQO	pH	pH Units	7.0 - 8.5		7.1	7.26	7.55	7.52	7.64	7.72	7.41	7.23	7.51	7.45	7.61
WQO	Electrical Conductivity	mS/cm)	NA		19	12.8	27.8	36.7	25.9	0.384	19.4	2.5	0.0184	4.77	39.6
WQO	Turbidity	NTU	0.5 - 10		4	50.5	7.9	-	0.2	104	104	45.2	36.7	62	1.8
WQO	DO	%	80-110		19.9	38	33.7	42.1	39.1	74.7	28.7	148	92	84.5	31
WQO	Oil & Grease	Visual	None Visible		None Visible	None Visible	None Visible	None Visible	None Visible	None Visible	None Visible	None visible	None visible	None Visible	None Visible
WQO	pH (Lab)	Units	7.0 - 8.5		7.2	7.4	7.2	7.3	7.3	7.4	7.2	7.3	7	7.3	7.1
WQO	Electrical Conductivity (Lab)	ug/L	NA		9800	12000	25000	28000	31000	360	20,000	9,300	19,000	4500	37
WQO	Turbidity (Lab)	NTU	0.5 - 10		7.4	19	3	2.6	3.1	35	9.5	12	3.1	18	1.8
WQO	Observations (Tide/Physical Appearance)		-		Slow flow; green; murky	Cloudy; steady flow; medium water level	Flowing; man fishing at location; clear; odourless	Outflowing; clear	Low tide; flowing; clear	Flowing, turbid					Low tide; dark green; slow flow; very clear
Toxicants	**Nutrients**														
Toxicants	Ammonia (as N)	mg/L	0.91		0.25	0.17	0.22	0.15	0.24	0.3	0.066	0.11	0.23	0.17	0.12
Toxicants	Nitrate (as N)	mg/L	2.4*		0.45	0.39	0.23	0.22	0.21	1	0.05	0.12	0.12	0.62	0.14
Toxicants	Nitrite (as N)	mg/L	-		0.033	0.021	0.024	0.015	0.018	0.022	0.009	0.025	0.018	0.03	0.009
Toxicants	Total Oxidised Nitrogen (NOx)	mg/L	2.4*		0.483	0.411	0.254	0.235	0.228	1.022	0.06	0.1	0.1	0.65	0.2
Toxicants	Phosphorus	mg/L	0.03		0.09	0.09	0.09	0.09	0.07	0.3	0.2	0.2	0.1	0.07	<0.05
Toxicants	Total Nitrogen (as N)*	mg/L	2.4*		0.9	1	0.8	0.6	0.7	2.4	0.6	0.7	0.6	1.2	0.4
Toxicants	**Heavy Metals**														
Toxicants	Arsenic (dissolved)	ug/L	-		2	2	1	1	1	2	<1	2	1	1	1
Toxicants	Cadmium (dissolved)	ug/L	0.7		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toxicants	Chromium (dissolved)	ug/L	4.4		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1
Toxicants	Chromium (hexavalent Cr6+ Low Level)	mg/L	4.4		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005
Toxicants	Chromium (trivalent)	mg/L	27		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Toxicants	Cobalt (dissolved)	ug/L	1		-	-	-	-	-	-	<1	<1	<1	<1	<1
Toxicants	Copper (dissolved)	ug/L	1.3		2	2	1	1	<1	7	1	2	<1	1	1
Toxicants	Iron (dissolved)	ug/L	-		180	260	20	50	20	370	20	120	30	290	150
Toxicants	Lead (dissolved)	ug/L	4.4		1	2	<1	<1	<1	2	<1	<1	<1	2	<1
Toxicants	Manganese (dissolved)	ug/L	80		110	64	74	70	77	13	110	100	77	72	62
Toxicants	Mercury (dissolved)	ug/L	0.1		<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Toxicants	Nickel (dissolved)	ug/L	7		1	1	1	<1	1	1	1	1	<1	1	1
Toxicants	Zinc (dissolved)	ug/L	8		26	28	26	13	18	510	21	23	22	17	35
Toxicants	**PFAS Parameters**														
Toxicants	8:2 FTSA	ug/L	-		<0.02	<0.02	<0.02	<0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toxicants	6:2 FTSA	ug/L	-		<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Toxicants	Perfluorooctanoic acid (PFOA)	ug/L	220		0.02	<0.01	0.01	<0.01	0.01	0.01	<0.01	0.01	0.01	<0.01	<0.01
Toxicants	Perfluorohexanesulfonic acid (PFHxS)	ug/L	-		0.03	0.01	0.02	0.02	0.01	<0.01	0.01	0.02	0.02	<0.01	<0.01
Toxicants	Perfluorooctanesulfonic acid (PFOS)	ug/L	0.13		0.07	0.04	0.04	0.03	0.02	0.02	0.03	0.04	0.05	0.02	<0.01
Toxicants	**Polycyclic Aromatic Hydrocarbons**														
Toxicants	Acenaphthene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Acenaphthylene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Anthracene	ug/L	0.01		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Benz(a)anthracene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Benzo(a)pyrene	ug/L	0.01		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Benzo(a)pyrene TEQ	ug/L	-		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<0.5
Toxicants	Benzo(b&j)fluoranthene	ug/L	-		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.2
Toxicants	Benzo(g.h.i)perylene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Chrysene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Dibenz(a.h)anthracene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Fluoranthene	ug/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Fluorene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Indeno(1.2.3-cd)pyrene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Naphthalene	ug/L	50		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.2
Toxicants	Phenanthrene	ug/L	0.6		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Pyrene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Toxicants	Total PAH*	ug/L	-		Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	<0.1
Toxicants	**Total Recoverable Hydrocarbons**														
Toxicants	Naphthalene	ug/L	-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toxicants	TRH >C10-C16	ug/L	-		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Toxicants	TRH >C10-C16 less Naphthalene (F2)	ug/L	-		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Toxicants	TRH >C10-C40 (total)*	ug/L	-		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Toxicants	TRH >C16-C34	ug/L	-		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Toxicants	TRH >C34-C40	ug/L	-		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Toxicants	TRH C10-C14	ug/L	-		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Toxicants	TRH C10-C36 (Total)	ug/L	-		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Toxicants	TRH C15-C28	ug/L	-		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Toxicants	TRH C29-C36	ug/L	-		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Toxicants	TRH C6-C10	ug/L	-		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Toxicants	TRH C6-C10 less BTEX (F1)	ug/L	-		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Toxicants	TRH C6-C9	ug/L	-		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Toxicants	**Volatile Organics**														
Toxicants	Benzene	ug/L	500		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toxicants	Ethylbenzene	ug/L	80		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toxicants	m&p-Xylenes	ug/L	75		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Toxicants	o-Xylene	ug/L	350		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toxicants	Toluene	ug/L	180		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

SW09 Sampling Results		Units	ANZG (2018) Toxicant default guidelines for Marine Environments	Sample Round	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Pre-Construction	Feb-23	Mar-23	Apr-23	May-23	Jun-23
Analyte				Sample Date	17/05/2022	27/05/2022	3/06/2022	10/06/2022	24/06/2022	4/07/2022	21/02/2023	14/03/2023	6/04/2023	8/05/2023	26/06/2023
				Lab Report No.	295817	296605	297165	297794	298951	299608	317005	318633	320491	322611	326566
WQO	pH	pH Units	7.0 - 8.5		N/A	8.16	8.19	8.08	8.22	7.8	7.77	7.12	7.51	7.8	7.77
	Electrical Conductivity	mS/cm	NA		N/A	1.88	3.02	5.78	4.31	0.417	4.38	0.55	0.0184	0.955	10.3
	Turbidity	NTU	0.5 - 10		N/A	27.1	14.8	1.7	0.9	70.7	82.1	66.1	36.7	56.3	23
	DO	%	80-110		N/A	63.1	49.7	60.7	53.3	103.8	49	140.2	92	77.2	19
	Oil & Grease	Visual	None Visible		N/A	Sheen visible	Sheen visible	Sheen visible	Sheen visible	None Visible	None Visible	None visible	None visible	None Visible	None Visible
	pH lab	Units	7.0 - 8.5		N/A	8.1	8.1	8	7.9	7.6	7.6	7.1	7.4	7.5	7.2
	Electrical Conductivity lab	mS/cm	NA		N/A	1.6	2.9	5.1	3.6	0.35	4,200	1.1	1	0.83	9.7
	Turbidity lab	NTU	0.5 - 10		N/A	2.1	3.5	2.7	2.6	23	4.2	<0.1	4.3	8	4.6
	Observations (Tide/Physical Appearance)				N/A	Clear; sheen visible; organic odour	Oil slick visible; still; organic odour	Flowing; sheen; fairly clear	Scum; sheen on water; lots of rubbish	flowing, turbid					Cloudy; green; low flow; odourless; cormorant and koi carp in waterway nearby; Sydney Water dredging/cleaning out canal upstream
Toxicants	**Nutrients**														
	Ammonia (as N)	mg/L	0.91		N/A	0.039	0.17	0.26	0.33	0.057	0.15	0.14	0.2	0.066	0.47
	Nitrate (as N)	mg/L	2.4*		N/A	0.77	1.2	1.9	1.1	1.1	0.38	0.6	0.5	0.28	0.61
	Nitrite (as N)	mg/L	-		N/A	0.051	0.068	0.094	0.077	0.019	0.029	0.36	0.073	0.012	0.075
	Total Oxidised Nitrogen (NOx)	mg/L	2.4*		N/A	0.821	1.268	1.994	1.177	1.119	0.4	0.96	0.56	0.3	0.68
	Phosphorus	mg/L	0.03		N/A	0.05	0.09	0.06	0.07	0.1	0.1	0.3	0.1	0.1	0.2
	Total Nitrogen (as N)*	mg/L	2.4*		N/A	1.3	2	2.3	1.6	1.5	0.9	2.1	0.9	0.7	1.7
	Heavy Metals														
	Arsenic (dissolved)	ug/L	-		N/A	1	<1	<1	<1	2	<1	<1	1	1	1
	Cadmium (dissolved)	ug/L	0.7		N/A	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chromium (dissolved)	ug/L	4.4		N/A	<1	<1	<1	<1	2	<1	<1	<1	<1	1
	Chromium (hexavalent Cr6+ Low Level)	mg/L	4.4		N/A	<0.001	0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005
	Chromium (trivalent)	mg/L	27		N/A	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	Cobalt (dissolved)	ug/L	1		N/A	-	-	-	-	-	<1	<1	<1	<1	<1
	Copper (dissolved)	ug/L	1.3		N/A	2	2	3	1	6	3	11	3	3	2
	Iron (dissolved)	ug/L	-		N/A	60	20	20	60	250	30	200	180	80	230
	Lead (dissolved)	ug/L	4.4		N/A	<1	<1	<1	<1	1	<1	3	<1	<1	<1
	Manganese (dissolved)	ug/L	80		N/A	100	62	76	74	10	56	120	68	19	180
	Mercury (dissolved)	ug/L	0.1		N/A	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nickel (dissolved)	ug/L	7		N/A	2	2	<1	2	<1	1	2	<1	<1	1
	Zinc (dissolved)	ug/L	8		N/A	16	18	11	16	450	17	60	16	23	20
	PFAS Parameters														
	8:2 FTSA	ug/L	-		N/A	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	6:2 FTSA	ug/L	-		N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctanoic acid (PFOA)	ug/L	220		N/A	0.02	0.02	0.02	0.02	<0.01	0.01	0.02	0.01	<0.01	<0.01
	Perfluorohexanesulfonic acid (PFHxS)	ug/L	-		N/A	0.02	0.04	0.04	0.02	<0.01	0.01	<0.01	0.02	<0.01	<0.01
	Perfluorooctanesulfonic acid (PFOS)	ug/L	0.13		N/A	0.04	0.08	0.06	0.05	0.02	0.02	0.01	0.05	<0.01	0.01
	Polycyclic Aromatic Hydrocarbons														
	Acenaphthene	ug/L	-		N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Acenaphthylene	ug/L	-		N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Anthracene	ug/L	0.01		N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Benz(a)anthracene	ug/L	-		N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Benzo(a)pyrene	ug/L	0.01		N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Benzo(a)pyrene TEQ	ug/L	-		N/A	<5	<5	<5	<5	<5	<5	<5	<5	<5	<0.5
	Benzo(b&j)fluoranthene	ug/L	-		N/A	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.2
	Benzo(g.h.i)perylene	ug/L	-		N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Chrysene	ug/L	-		N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Dibenz(a.h)anthracene	ug/L	-		N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Fluoranthene	ug/L	1		N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Fluorene	ug/L	-		N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Indeno(1.2.3-cd)pyrene	ug/L	-		N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Naphthalene	ug/L	50		N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.2
	Phenanthrene	ug/L	0.6		N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Pyrene	ug/L	-		N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
	Total PAH*	ug/L	-		N/A	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	<0.1
	Total Recoverable Hydrocarbons														
	Naphthalene	ug/L	-		N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	TRH >C10-C16	ug/L	-		N/A	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	TRH >C10-C16 less Naphthalene (F2)	ug/L	-		N/A	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	TRH >C10-C40 (total)*	ug/L	-		N/A	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	TRH >C16-C34	ug/L	-		N/A	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	TRH >C34-C40	ug/L	-		N/A	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	TRH C10-C14	ug/L	-		N/A	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	TRH C10-C36 (Total)	ug/L	-		N/A	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	TRH C15-C28	ug/L	-		N/A	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	TRH C29-C36	ug/L	-		N/A	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	TRH C6-C10	ug/L	-		N/A	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	TRH C6-C10 less BTEX (F1)	ug/L	-		N/A	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	TRH C6-C9	ug/L	-		N/A	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	Volatile Organics														
	Benzene	ug/L	500		N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Ethylbenzene	ug/L	80		N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	m&p-Xylenes	ug/L	75		N/A	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	o-Xylene	ug/L	350		N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Toluene	ug/L	180		N/A	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

SW10 Sampling Results		Units	ANZG (2018) Toxicant default guidelines for Marine Environments	Sample Round	Apr-23	May-23	Jun-23
				Sample Date	6/04/2023	8/05/2023	26/06/2023
Analyte				Lab Report No.	320491	322611	326566
WQO	pH	pH Units	7.0 - 8.5		7.83	7.75	7.66
	Electrical Conductivity	mS/cm	0.125 - 2.2		0.367	0.628	0.472
	Turbidity	NTU	6.0-10.0		102	215	5.6
	DO	%	85-110		85	80.5	23.2
	Oil & Grease	Visual	None Visible		None visible	None visible	None visible
	pH lab	Units	7.0 - 8.5		7.1	7.5	7.4
	Electrical Conductivity lab	mS/cm	0.125 - 2.2		0.27	0.22	0.45
	Turbidity lab	NTU	6.0-10.0		21	90	4.5
	Observations (Tide/Physical Appearance)		-			Brown, turbid, medium inflow of turbid water from park, slow flow.	Low inflow, green scum on top, cludy, medium depth
Toxicants	**Nutrients**						
	Ammonia (as N)	mg/L	0.9		0.19	0.24	0.71
	Nitrate (as N)	mg/L	2.4		0.18	0.33	0.04
	Nitrite (as N)	mg/L	-		0.036	0.063	0.02
	Total Oxidised Nitrogen (NOx)	mg/L	2.4		0.2	0.4	0.06
	Phosphorus	mg/L	0.035		0.2	0.09	0.3
	Total Nitrogen (as N)*	mg/L	2.4		0.8	0.9	1.1
	Heavy Metals						
	Arsenic (dissolved)	ug/L	13*		<1	1	<1
	Cadmium (dissolved)	ug/L	0.2		<0.1	<0.1	<0.1
	Chromium (dissolved)	ug/L	0.001		<1	<1	<1
	Chromium (hexavalent Cr6+ Low Level)	mg/L	0.001		<0.005	<0.005	<0.005
	Chromium (trivalent)	mg/L	0.0033		<0.005	<0.005	<0.005
	Cobalt (dissolved)	ug/L	1.4		<1	<1	<1
	Copper (dissolved)	ug/L	1.4		3	2	1
	Iron (dissolved)	ug/L	-		430	300	470
	Lead (dissolved)	ug/L	3.4		1	<1	<1
	Manganese (dissolved)	ug/L	1900		76	47	130
	Mercury (dissolved)	ug/L	0.06		<0.05	<0.05	<0.05
	Nickel (dissolved)	ug/L	11		<1	1	<1
	Zinc (dissolved)	ug/L	8		20	9	8
	PFAS Parameters						
	8:2 FTSA	ug/L	-		<0.02	<0.02	<0.02
	6:2 FTSA	ug/L	-		<0.01	<0.01	<0.01
	Perfluorooctanoic acid (PFOA)	ug/L	220		<0.01	<0.01	<0.01
	Perfluorohexanesulfonic acid (PFHxS)	ug/L	-		<0.01	<0.01	<0.01
	Perfluorooctanesulfonic acid (PFOS)	ug/L	0.13		<0.01	<0.01	0.01
	Polycyclic Aromatic Hydrocarbons						
	Acenaphthene	ug/L	-		<1	<1	<0.1
	Acenaphthylene	ug/L	-		<1	<1	<0.1
	Anthracene	ug/L	0.01		<1	<1	<0.1
	Benz(a)anthracene	ug/L	-		<1	<1	<0.1
	Benzo(a)pyrene	ug/L	0.1		<1	<1	<0.1
	Benzo(a)pyrene TEQ	ug/L	-		<5	<5	<0.5
	Benzo(b&j)fluoranthene	ug/L	-		<2	<2	<0.2
	Benzo(g.h.i)perylene	ug/L	-		<1	<1	<0.1
	Chrysene	ug/L	-		<1	<1	<0.1
	Dibenz(a.h)anthracene	ug/L	-		<1	<1	<0.1
	Fluoranthene	ug/L	1		<1	<1	<0.1
	Fluorene	ug/L	-		<1	<1	<0.1
	Indeno(1.2.3-cd)pyrene	ug/L	-		<1	<1	<0.1
	Naphthalene	ug/L	16		<2	<1	<0.2
	Phenanthrene	ug/L	0.6		<1	<1	<0.1
	Pyrene	ug/L	-		<1	<1	<0.1
	Total PAH*	ug/L	-		Nil	Nil	<0.1
	Total Recoverable Hydrocarbons						
	Naphthalene	ug/L	16		<2	<1	<1
	TRH >C10-C16	ug/L	-		<50	<50	<50
	TRH >C10-C16 less Naphthalene (F2)	ug/L	-		<50	<50	<50
	TRH >C10-C40 (total)*	ug/L	-		<50	<50	<50
	TRH >C16-C34	ug/L	-		<100	<100	<100
	TRH >C34-C40	ug/L	-		<100	<100	<100
	TRH C10-C14	ug/L	-		<50	<50	<50
	TRH C10-C36 (Total)	ug/L	-		<50	<50	<50
	TRH C15-C28	ug/L	-		<100	<100	<100
	TRH C29-C36	ug/L	-		<100	<100	<100
	TRH C6-C10	ug/L	-		<10	<10	<10
	TRH C6-C10 less BTEX (F1)	ug/L	-		<10	<10	<10
	TRH C6-C9	ug/L	-		<10	<10	<10
	Volatile Organics						
	Benzene	ug/L	950		<1	<1	<1
	Ethylbenzene	ug/L	-		<1	<1	<1
	m&p-Xylenes	ug/L	200		<2	<2	<2
	o-Xylene	ug/L	350		<1	<1	<1
	Toluene	ug/L	-		2	<1	<1

SW11 Sampling Results		Units	ANZG (2018) Toxicant default guidelines for Marine Environments	Sample Round	Jun-23
				Sample Date	26/06/2023
Analyte				Lab Report No.	326566
WQO	pH	pH Units	7.0 - 8.5		8.04
	Electrical Conductivity	mS/cm	NA		33.2
	Turbidity	NTU	0.5 - 10		3.9
	DO	%	80-110		53.3
	Oil & Grease	Visual	None Visible		None Visible
	pH lab	Units	7.0 - 8.5		
	Electrical Conductivity lab	mS/cm	NA		30
	Turbidity lab	NTU	0.5 - 10		4.0
	Observations (Tide/Physical Appearance)		-		Low tide; slow flow; fery passed location during sampling
Toxicants	**Nutrients**				
	Ammonia (as N)	mg/L	0.9		0.065
	Nitrate (as N)	mg/L	2.4		0.1
	Nitrite (as N)	mg/L	-		<0.005
	Total Oxidised Nitrogen (NOx)	mg/L	2.4		0.1
	Phosphorus	mg/L	0.035		0.06
	Total Nitrogen (as N)*	mg/L	2.4		0.3
	Heavy Metals				
	Arsenic (dissolved)	ug/L	13*		<1
	Cadmium (dissolved)	ug/L	0.2		<0.1
	Chromium (dissolved)	ug/L	0.001		<1
	Chromium (hexavalent Cr6+ Low Level)	mg/L	0.001		<0.005
	Chromium (trivalent)	mg/L	0.0033		<0.005
	Cobalt (dissolved)	ug/L	1.4		<1
	Copper (dissolved)	ug/L	1.4		1
	Iron (dissolved)	ug/L	-		20
	Lead (dissolved)	ug/L	3.4		<1
	Manganese (dissolved)	ug/L	1900		32
	Mercury (dissolved)	ug/L	0.06		<0.05
	Nickel (dissolved)	ug/L	11		<1
	Zinc (dissolved)	ug/L	8		24
	PFAS Parameters				
	8:2 FTSA	ug/L	-		<0.02
	6:2 FTSA	ug/L	-		<0.01
	Perfluorooctanoic acid (PFOA)	ug/L	220		<0.01
	Perfluorohexanesulfonic acid (PFHxS)	ug/L	-		<0.01
	Perfluorooctanesulfonic acid (PFOS)	ug/L	0.13		<0.01
	Polycyclic Aromatic Hydrocarbons				
	Acenaphthene	ug/L	-		<0.1
	Acenaphthylene	ug/L	-		<0.1
	Anthracene	ug/L	0.01		<0.1
	Benz(a)anthracene	ug/L	-		<0.1
	Benzo(a)pyrene	ug/L	0.1		<0.1
	Benzo(a)pyrene TEQ	ug/L	-		<0.5
	Benzo(b&j)fluoranthene	ug/L	-		<0.2
	Benzo(g.h.i)perylene	ug/L	-		<0.1
	Chrysene	ug/L	-		<0.1
	Dibenz(a.h)anthracene	ug/L	-		<0.1
	Fluoranthene	ug/L	1		<0.1
	Fluorene	ug/L	-		<0.1
	Indeno(1.2.3-cd)pyrene	ug/L	-		<0.1
	Naphthalene	ug/L	16		<0.2
	Phenanthrene	ug/L	0.6		<0.1
	Pyrene	ug/L	-		<0.1
	Total PAH*	ug/L	-		<0.1
	Total Recoverable Hydrocarbons				
	Naphthalene	ug/L	16		<1
	TRH >C10-C16	ug/L	-		<50
	TRH >C10-C16 less Naphthalene (F2)	ug/L	-		<50
	TRH >C10-C40 (total)*	ug/L	-		<50
	TRH >C16-C34	ug/L	-		<100
	TRH >C34-C40	ug/L	-		<100
	TRH C10-C14	ug/L	-		<50
	TRH C10-C36 (Total)	ug/L	-		<50
	TRH C15-C28	ug/L	-		<100
	TRH C29-C36	ug/L	-		<100
	TRH C6-C10	ug/L	-		<10
	TRH C6-C10 less BTEX (F1)	ug/L	-		<10
	TRH C6-C9	ug/L	-		<10
	Volatile Organics				
	Benzene	ug/L	950		<1
	Ethylbenzene	ug/L	-		<1
	m&p-Xylenes	ug/L	200		<2
	o-Xylene	ug/L	350		<1
	Toluene	ug/L	-		<1

Attachment 2 – Laboratory Certificates

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 317005

Client Details

Client	Gamuda Australia (t/a Gamuda Berhad)
Attention	Kellie Hunt
Address	Suite 26.01, 100 Miller Street, NORTH SYDNEY, NSW, 2060

Sample Details

Your Reference	**WTP - Surface Water Monitoring**
Number of Samples	11 Water
Date samples received	21/02/2023
Date completed instructions received	21/02/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

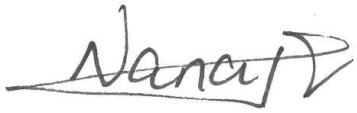
Date results requested by	22/02/2023
Date of Issue	22/02/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Alexander Mitchell Maclean, Senior Chemist
Diego Bigolin, Inorganics Supervisor
Hannah Nguyen, Metals Supervisor
Josh Williams, Organics Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water						
Our Reference		317005-1	317005-2	317005-3	317005-4	317005-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023
Date analysed	-	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	106	114	116	113	114
Surrogate toluene-d8	%	94	99	101	100	101
Surrogate 4-BFB	%	100	104	107	106	107

vTRH(C6-C10)/BTEXN in Water						
Our Reference		317005-6	317005-7	317005-8	317005-9	317005-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	UNDER01
Date Sampled		21/02/2023	21/02/2023	21/02/2023	21/02/2023	17/02/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023
Date analysed	-	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	113	114	118	115	111
Surrogate toluene-d8	%	101	102	103	102	100
Surrogate 4-BFB	%	105	106	106	105	105

vTRH(C6-C10)/BTEXN in Water		
Our Reference		317005-11
Your Reference	UNITS	UNDER02
Date Sampled		20/02/2023
Type of sample		Water
Date extracted	-	21/02/2023
Date analysed	-	22/02/2023
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	110
Surrogate toluene-d8	%	101
Surrogate 4-BFB	%	104

svTRH (C10-C40) in Water						
Our Reference		317005-1	317005-2	317005-3	317005-4	317005-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023
Date analysed	-	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	76	61	75	77	78

svTRH (C10-C40) in Water						
Our Reference		317005-6	317005-7	317005-8	317005-9	317005-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	UNDER01
Date Sampled		21/02/2023	21/02/2023	21/02/2023	21/02/2023	17/02/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023
Date analysed	-	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	77	79	76	73	81

svTRH (C10-C40) in Water		
Our Reference		317005-11
Your Reference	UNITS	UNDER02
Date Sampled		20/02/2023
Type of sample		Water
Date extracted	-	22/02/2023
Date analysed	-	22/02/2023
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
Total +ve TRH (C10-C36)	µg/L	<50
TRH >C_{10} - C_{16}	µg/L	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Total +ve TRH (>C10-C40)	µg/L	<50
Surrogate o-Terphenyl	%	83

PAHs in Water						
Our Reference		317005-1	317005-2	317005-3	317005-4	317005-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023
Date analysed	-	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023
Naphthalene	µg/L	<2	<2	<2	<2	<2
Acenaphthylene	µg/L	<1	<1	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1	<1	<1
Fluorene	µg/L	<1	<1	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1	<1	<1
Anthracene	µg/L	<1	<1	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1	<1	<1
Pyrene	µg/L	<1	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1	<1	<1
Chrysene	µg/L	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	90	85	94	95	97

PAHs in Water						
Our Reference		317005-6	317005-7	317005-8	317005-9	317005-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	UNDER01
Date Sampled		21/02/2023	21/02/2023	21/02/2023	21/02/2023	17/02/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023
Date analysed	-	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023
Naphthalene	µg/L	<2	<2	<2	<2	<2
Acenaphthylene	µg/L	<1	<1	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1	<1	<1
Fluorene	µg/L	<1	<1	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1	<1	<1
Anthracene	µg/L	<1	<1	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1	<1	<1
Pyrene	µg/L	<1	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1	<1	<1
Chrysene	µg/L	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	89	97	91	94	95

PAHs in Water		
Our Reference		317005-11
Your Reference	UNITS	UNDER02
Date Sampled		20/02/2023
Type of sample		Water
Date extracted	-	22/02/2023
Date analysed	-	22/02/2023
Naphthalene	µg/L	<2
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b,j+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	98

Miscellaneous Inorganics						
Our Reference	UNITS	317005-1	317005-2	317005-3	317005-4	317005-5
Your Reference		SW01	SW02	SW03	SW04	SW05
Date Sampled		21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023
Date analysed	-	21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023
pH	pH Units	7.1	7.2	7.5	7.6	7.6
Electrical Conductivity	µS/cm	5,500	12,000	38,000	870	700
Turbidity	NTU	6.9	45	3.5	2.6	3.2
Total Suspended Solids	mg/L	6	90	10	10	10
Salinity as NaCl *	mg/L	3,500	7,600	24,000	550	440
Total Nitrogen in water	mg/L	1.4	1.0	0.3	0.7	0.7
NOx as N in water	mg/L	0.04	0.03	0.01	0.3	0.3
Ammonia as N in water	mg/L	0.51	0.12	<0.005	0.063	0.085
Phosphate as P in water	mg/L	0.11	0.060	0.057	0.008	0.01
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trivalent Chromium, Cr^{3+}	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
TKN in water	mg/L	1.4	0.99	0.3	0.4	0.4
Nitrate as N in water	mg/L	0.02	0.03	0.009	0.24	0.25
Nitrite as N in water	mg/L	0.022	0.007	<0.005	0.019	0.020

Miscellaneous Inorganics						
Our Reference		317005-6	317005-7	317005-8	317005-9	317005-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	UNDER01
Date Sampled		21/02/2023	21/02/2023	21/02/2023	21/02/2023	17/02/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023
Date analysed	-	21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023
pH	pH Units	7.4	7.4	7.2	7.6	7.5
Electrical Conductivity	µS/cm	17,000	270	20,000	4,200	360
Turbidity	NTU	2.8	2.2	9.5	4.2	9.4
Total Suspended Solids	mg/L	5	<5	18	8	23
Salinity as NaCl *	mg/L	11,000	170	12,000	2,700	230
Total Nitrogen in water	mg/L	0.5	0.7	0.6	0.9	0.9
NOx as N in water	mg/L	0.1	0.3	0.06	0.4	0.1
Ammonia as N in water	mg/L	0.014	0.098	0.066	0.15	0.29
Phosphate as P in water	mg/L	0.051	0.072	0.076	0.03	0.11
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trivalent Chromium, Cr^{3+}	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
TKN in water	mg/L	0.4	0.4	0.5	0.5	0.8
Nitrate as N in water	mg/L	0.090	0.29	0.05	0.38	0.088
Nitrite as N in water	mg/L	0.01	0.025	0.009	0.029	0.007

Miscellaneous Inorganics		
Our Reference		317005-11
Your Reference	UNITS	UNDER02
Date Sampled		20/02/2023
Type of sample		Water
Date prepared	-	21/02/2023
Date analysed	-	21/02/2023
pH	pH Units	7.3
Electrical Conductivity	µS/cm	260
Turbidity	NTU	18
Total Suspended Solids	mg/L	22
Salinity as NaCl *	mg/L	160
Total Nitrogen in water	mg/L	0.9
NOx as N in water	mg/L	0.3
Ammonia as N in water	mg/L	0.19
Phosphate as P in water	mg/L	0.077
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005
Trivalent Chromium, Cr^{3+}	mg/L	<0.005
TKN in water	mg/L	0.6
Nitrate as N in water	mg/L	0.28
Nitrite as N in water	mg/L	0.028

All metals in water-dissolved						
Our Reference		317005-1	317005-2	317005-3	317005-4	317005-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023
Date analysed	-	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023
Aluminium-Dissolved	µg/L	<10	<10	<10	<10	10
Arsenic-Dissolved	µg/L	<1	<1	2	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	2	<1	<1
Cobalt-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	1	1	3	3
Iron-Dissolved	µg/L	190	50	<10	90	80
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	µg/L	190	87	24	<5	<5
Nickel-Dissolved	µg/L	1	1	<1	<1	<1
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Zinc-Dissolved	µg/L	32	23	8	6	7

All metals in water-dissolved						
Our Reference		317005-6	317005-7	317005-8	317005-9	317005-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	UNDER01
Date Sampled		21/02/2023	21/02/2023	21/02/2023	21/02/2023	17/02/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023
Date analysed	-	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023
Aluminium-Dissolved	µg/L	<10	10	<10	<10	<10
Arsenic-Dissolved	µg/L	<1	<1	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Cobalt-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	2	3	1	3	1
Iron-Dissolved	µg/L	10	190	20	30	370
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	µg/L	61	5	110	56	<5
Nickel-Dissolved	µg/L	<1	1	1	1	1
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Zinc-Dissolved	µg/L	9	11	21	17	4

All metals in water-dissolved		
Our Reference		317005-11
Your Reference	UNITS	UNDER02
Date Sampled		20/02/2023
Type of sample		Water
Date prepared	-	22/02/2023
Date analysed	-	22/02/2023
Aluminium-Dissolved	µg/L	20
Arsenic-Dissolved	µg/L	<1
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Cobalt-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	5
Iron-Dissolved	µg/L	190
Mercury-Dissolved	µg/L	<0.05
Manganese-Dissolved	µg/L	13
Nickel-Dissolved	µg/L	2
Lead-Dissolved	µg/L	<1
Zinc-Dissolved	µg/L	18

Metals in Waters - Acid extractable						
Our Reference		317005-1	317005-2	317005-3	317005-4	317005-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023
Date analysed	-	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023
Phosphorus - Total	mg/L	0.3	0.7	0.2	0.06	0.06

Metals in Waters - Acid extractable						
Our Reference		317005-6	317005-7	317005-8	317005-9	317005-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	UNDER01
Date Sampled		21/02/2023	21/02/2023	21/02/2023	21/02/2023	17/02/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023
Date analysed	-	22/02/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023
Phosphorus - Total	mg/L	0.1	0.1	0.2	0.1	0.5

Metals in Waters - Acid extractable		
Our Reference		317005-11
Your Reference	UNITS	UNDER02
Date Sampled		20/02/2023
Type of sample		Water
Date prepared	-	22/02/2023
Date analysed	-	22/02/2023
Phosphorus - Total	mg/L	0.2

PFAS in Waters Extended						
Our Reference		317005-1	317005-2	317005-3	317005-4	317005-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023
Date analysed	-	21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.02	0.02	<0.01	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.05	0.05	<0.01	0.01	0.02
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.02	0.02	<0.01	0.02	0.02
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	0.01	0.01	<0.01	0.01	0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	97	98	98	99	98
Surrogate $^{13}C_2$ *PFOA*	%	101	107	104	103	103
Extracted ISTD $^{13}C_3$ *PFBS*	%	109	108	105	108	109
Extracted ISTD $^{18}O_2$ *PFHxS*	%	108	106	103	108	110
Extracted ISTD $^{13}C_4$ *PFOS*	%	108	110	107	112	104
Extracted ISTD $^{13}C_4$ *PFBA*	%	100	98	90	100	105

PFAS in Waters Extended						
Our Reference	UNITS	317005-1	317005-2	317005-3	317005-4	317005-5
Your Reference		SW01	SW02	SW03	SW04	SW05
Date Sampled		21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	110	104	92	108	111
Extracted ISTD $^{13}C_2$ *PFHxA*	%	107	103	91	106	109
Extracted ISTD $^{13}C_4$ *PFHpA*	%	104	99	86	102	105
Extracted ISTD $^{13}C_4$ *PFOA*	%	108	102	89	110	112
Extracted ISTD $^{13}C_5$ *PFNA*	%	112	108	95	112	112
Extracted ISTD $^{13}C_2$ *PFDA*	%	108	103	91	108	98
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	115	111	97	112	95
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	110	111	99	108	90
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	95	101	90	80	65
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	102	84	58	105	115
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	91	70	44	91	102
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	108	87	59	98	108
Extracted ISTD $^{13}C_8$ *FOSA*	%	103	99	95	109	98
Extracted ISTD d_3 *N MeFOSA*	%	106	106	101	109	103
Extracted ISTD d_5 *N EtFOSA*	%	108	109	102	108	108
Extracted ISTD d_7 *N MeFOSE*	%	108	111	106	120	106
Extracted ISTD d_9 *N EtFOSE*	%	109	111	103	113	102
Extracted ISTD d_3 *N MeFOSAA*	%	98	78	50	97	102
Extracted ISTD d_5 *N EtFOSAA*	%	96	79	49	98	94
Total Positive PFHxS & PFOS	µg/L	0.06	0.07	<0.01	0.01	0.02
Total Positive PFOA & PFOS	µg/L	0.06	0.06	<0.01	0.02	0.03
Total Positive PFAS	µg/L	0.1	0.10	<0.01	0.05	0.05

PFAS in Waters Extended						
Our Reference		317005-6	317005-7	317005-8	317005-9	317005-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	UNDER01
Date Sampled		21/02/2023	21/02/2023	21/02/2023	21/02/2023	17/02/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023
Date analysed	-	21/02/2023	21/02/2023	21/02/2023	21/02/2023	21/02/2023
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	0.01	0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.02	0.03	0.02	0.03
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.01	<0.01	0.01	0.02	0.02
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	0.01	0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	98	100	101	98	96
Surrogate $^{13}C_2$ *PFOA*	%	104	101	106	105	105
Extracted ISTD $^{13}C_3$ *PFBS*	%	105	104	108	109	107
Extracted ISTD $^{18}O_2$ *PFHxS*	%	108	109	108	109	107
Extracted ISTD $^{13}C_4$ *PFOS*	%	108	108	108	111	112
Extracted ISTD $^{13}C_4$ *PFBA*	%	98	96	95	98	100

PFAS in Waters Extended						
Our Reference		317005-6	317005-7	317005-8	317005-9	317005-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	UNDER01
Date Sampled		21/02/2023	21/02/2023	21/02/2023	21/02/2023	17/02/2023
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	100	109	101	107	112
Extracted ISTD $^{13}C_2$ *PFHxA*	%	101	109	100	107	107
Extracted ISTD $^{13}C_4$ *PFHpA*	%	94	103	92	103	106
Extracted ISTD $^{13}C_4$ *PFOA*	%	100	115	97	108	112
Extracted ISTD $^{13}C_5$ *PFNA*	%	105	115	102	112	120
Extracted ISTD $^{13}C_2$ *PFDA*	%	102	108	99	105	112
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	109	115	106	106	114
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	106	112	106	103	112
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	91	96	95	79	88
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	79	109	74	98	122
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	59	104	57	84	117
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	82	115	74	99	129
Extracted ISTD $^{13}C_8$ *FOSA*	%	100	110	101	105	111
Extracted ISTD d_3 *N MeFOSA*	%	104	109	106	107	110
Extracted ISTD d_5 *N EtFOSA*	%	106	110	105	107	110
Extracted ISTD d_7 *N MeFOSE*	%	113	117	110	113	119
Extracted ISTD d_9 *N EtFOSE*	%	115	113	113	115	117
Extracted ISTD d_3 *N MeFOSAA*	%	71	110	65	91	116
Extracted ISTD d_5 *N EtFOSAA*	%	68	107	67	89	110
Total Positive PFHxS & PFOS	µg/L	0.01	0.02	0.04	0.04	0.03
Total Positive PFOA & PFOS	µg/L	0.01	0.02	0.03	0.04	0.04
Total Positive PFAS	µg/L	0.02	0.02	0.05	0.07	0.06

PFAS in Waters Extended		
Our Reference		317005-11
Your Reference	UNITS	UNDER02
Date Sampled		20/02/2023
Type of sample		Water
Date prepared	-	21/02/2023
Date analysed	-	21/02/2023
Perfluorobutanesulfonic acid	µg/L	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.06
Perfluorodecanesulfonic acid	µg/L	<0.02
Perfluorobutanoic acid	µg/L	<0.02
Perfluoropentanoic acid	µg/L	<0.02
Perfluorohexanoic acid	µg/L	<0.01
Perfluoroheptanoic acid	µg/L	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01
Perfluorononanoic acid	µg/L	<0.01
Perfluorodecanoic acid	µg/L	<0.02
Perfluoroundecanoic acid	µg/L	<0.02
Perfluorododecanoic acid	µg/L	<0.05
Perfluorotridecanoic acid	µg/L	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5
4:2 FTS	µg/L	<0.01
6:2 FTS	µg/L	<0.01
8:2 FTS	µg/L	<0.02
10:2 FTS	µg/L	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	102
Surrogate $^{13}C_2$ *PFOA*	%	103
Extracted ISTD $^{13}C_3$ *PFBS*	%	110
Extracted ISTD $^{18}O_2$ *PFHxS*	%	109
Extracted ISTD $^{13}C_4$ *PFOS*	%	107
Extracted ISTD $^{13}C_4$ *PFBA*	%	96

PFAS in Waters Extended		
Our Reference		317005-11
Your Reference	UNITS	UNDER02
Date Sampled		20/02/2023
Type of sample		Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	110
Extracted ISTD $^{13}C_2$ *PFHxA*	%	109
Extracted ISTD $^{13}C_4$ *PFHpA*	%	105
Extracted ISTD $^{13}C_4$ *PFOA*	%	115
Extracted ISTD $^{13}C_5$ *PFNA*	%	118
Extracted ISTD $^{13}C_2$ *PFDA*	%	110
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	110
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	106
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	71
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	117
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	119
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	135
Extracted ISTD $^{13}C_8$ *FOSA*	%	109
Extracted ISTD d_3 *N MeFOSA*	%	108
Extracted ISTD d_5 *N EtFOSA*	%	111
Extracted ISTD d_7 *N MeFOSE*	%	116
Extracted ISTD d_9 *N EtFOSE*	%	116
Extracted ISTD d_3 *N MeFOSAA*	%	121
Extracted ISTD d_5 *N EtFOSAA*	%	115
Total Positive PFHxS & PFOS	µg/L	0.06
Total Positive PFOA & PFOS	µg/L	0.06
Total Positive PFAS	µg/L	0.06

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-019	Suspended Solids - determined gravimetricially by filtration of the sample. The samples are dried at 104+/-5°C.
Inorg-022	Turbidity - measured nephelometrically using a turbidimeter, in accordance with APHA latest edition, 2130-B.
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

Method ID	Methodology Summary
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			21/02/2023	1	21/02/2023	21/02/2023		21/02/2023	[NT]
Date analysed	-			22/02/2023	1	22/02/2023	22/02/2023		22/02/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	<10	<10	0	102	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	<10	<10	0	102	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	100	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	103	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	105	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	100	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	103	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	110	1	106	108	2	97	[NT]
Surrogate toluene-d8	%		Org-023	103	1	94	93	1	101	[NT]
Surrogate 4-BFB	%		Org-023	103	1	100	101	1	100	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	21/02/2023	21/02/2023		[NT]	[NT]
Date analysed	-			[NT]	11	22/02/2023	22/02/2023		[NT]	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	[NT]	11	<10	<10	0	[NT]	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	[NT]	11	<10	<10	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	[NT]	11	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	[NT]	11	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	[NT]	11	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	[NT]	11	<2	<2	0	[NT]	[NT]
o-xylene	µg/L	1	Org-023	[NT]	11	<1	<1	0	[NT]	[NT]
Naphthalene	µg/L	1	Org-023	[NT]	11	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	[NT]	11	110	118	7	[NT]	[NT]
Surrogate toluene-d8	%		Org-023	[NT]	11	101	103	2	[NT]	[NT]
Surrogate 4-BFB	%		Org-023	[NT]	11	104	104	0	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			22/02/2023	1	22/02/2023	22/02/2023		22/02/2023	[NT]
Date analysed	-			22/02/2023	1	22/02/2023	22/02/2023		22/02/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	85	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	<100	0	115	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	114	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	<50	<50	0	85	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	115	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	114	[NT]
Surrogate o-Terphenyl	%		Org-020	77	1	76	79	4	88	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	22/02/2023	22/02/2023		[NT]	[NT]
Date analysed	-			[NT]	11	22/02/2023	22/02/2023		[NT]	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	[NT]	11	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	[NT]	11	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	[NT]	11	<100	<100	0	[NT]	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	[NT]	11	<50	<50	0	[NT]	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	[NT]	11	<100	<100	0	[NT]	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	[NT]	11	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	11	83	76	9	[NT]	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	317005-2
Date extracted	-			22/02/2023	1	22/02/2023	22/02/2023		22/02/2023	22/02/2023
Date analysed	-			22/02/2023	1	22/02/2023	22/02/2023		22/02/2023	22/02/2023
Naphthalene	µg/L	2	Org-022/025	<2	1	<2	<2	0	103	84
Acenaphthylene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	1	<1	<1	0	107	87
Fluorene	µg/L	1	Org-022/025	<1	1	<1	<1	0	113	90
Phenanthrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	114	92
Anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	1	<1	<1	0	114	90
Pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	115	91
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	1	<1	<1	0	97	77
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	108	92
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	98	1	90	94	4	100	92

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	22/02/2023	22/02/2023		[NT]	[NT]
Date analysed	-			[NT]	11	22/02/2023	22/02/2023		[NT]	[NT]
Naphthalene	µg/L	2	Org-022/025	[NT]	11	<2	<2	0	[NT]	[NT]
Acenaphthylene	µg/L	1	Org-022/025	[NT]	11	<1	<1	0	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	[NT]	11	<1	<1	0	[NT]	[NT]
Fluorene	µg/L	1	Org-022/025	[NT]	11	<1	<1	0	[NT]	[NT]
Phenanthrene	µg/L	1	Org-022/025	[NT]	11	<1	<1	0	[NT]	[NT]
Anthracene	µg/L	1	Org-022/025	[NT]	11	<1	<1	0	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	[NT]	11	<1	<1	0	[NT]	[NT]
Pyrene	µg/L	1	Org-022/025	[NT]	11	<1	<1	0	[NT]	[NT]
Benzo(a)anthracene	µg/L	1	Org-022/025	[NT]	11	<1	<1	0	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	[NT]	11	<1	<1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	[NT]	11	<2	<2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	[NT]	11	<1	<1	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	[NT]	11	<1	<1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	[NT]	11	<1	<1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	[NT]	11	<1	<1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	11	98	91	7	[NT]	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	317005-2
Date prepared	-			21/02/2023	1	21/02/2023	21/02/2023		21/02/2023	21/02/2023
Date analysed	-			21/02/2023	1	21/02/2023	21/02/2023		21/02/2023	21/02/2023
pH	pH Units		Inorg-001	[NT]	1	7.1	7.1	0	100	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	1	5500	5600	2	106	[NT]
Turbidity	NTU	0.1	Inorg-022	<0.1	1	6.9	6.8	1	110	[NT]
Total Suspended Solids	mg/L	5	Inorg-019	<5	1	6	[NT]		92	[NT]
Salinity as NaCl *	mg/L	1	Inorg-002	<1	1	3500	3500	0	[NT]	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	1.4	1.4	0	104	103
NOx as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.04	0.04	0	99	85
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	0.51	0.51	0	116	102
Phosphate as P in water	mg/L	0.005	Inorg-060	<0.005	1	0.11	0.10	10	102	111
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	<0.005	0	115	116
Trivalent Chromium, Cr^{3+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	<0.005	0	[NT]	[NT]
TKN in water	mg/L	0.1	Inorg-062	<0.1	1	1.4	1.3	7	[NT]	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.02	0.02	0	99	85
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.022	0.022	0	98	106

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	2	21/02/2023	21/02/2023		[NT]	[NT]
Date analysed	-			[NT]	2	21/02/2023	21/02/2023		[NT]	[NT]
pH	pH Units		Inorg-001	[NT]	2	7.2	[NT]		[NT]	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	[NT]	2	12000	[NT]		[NT]	[NT]
Turbidity	NTU	0.1	Inorg-022	[NT]	2	45	[NT]		[NT]	[NT]
Total Suspended Solids	mg/L	5	Inorg-019	[NT]	2	90	[NT]		[NT]	[NT]
Salinity as NaCl *	mg/L	1	Inorg-002	[NT]	2	7600	[NT]		[NT]	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	[NT]	2	1.0	[NT]		[NT]	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	[NT]	2	0.03	0.03	0	[NT]	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	[NT]	2	0.12	0.12	0	[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	[NT]	2	0.060	0.058	3	[NT]	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	[NT]	2	<0.005	[NT]		[NT]	[NT]
Trivalent Chromium, Cr^{3+}	mg/L	0.005	Inorg-024	[NT]	2	<0.005	[NT]		[NT]	[NT]
TKN in water	mg/L	0.1	Inorg-062	[NT]	2	0.99	[NT]		[NT]	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	[NT]	2	0.03	0.03	0	[NT]	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	[NT]	2	0.007	0.007	0	[NT]	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	10	21/02/2023	21/02/2023		[NT]	[NT]
Date analysed	-			[NT]	10	21/02/2023	21/02/2023		[NT]	[NT]
pH	pH Units		Inorg-001	[NT]	10	7.5	[NT]		[NT]	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	[NT]	10	360	[NT]		[NT]	[NT]
Turbidity	NTU	0.1	Inorg-022	[NT]	10	9.4	[NT]		[NT]	[NT]
Total Suspended Solids	mg/L	5	Inorg-019	[NT]	10	23	24	4	[NT]	[NT]
Salinity as NaCl *	mg/L	1	Inorg-002	[NT]	10	230	[NT]		[NT]	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	[NT]	10	0.9	[NT]		[NT]	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	[NT]	10	0.1	[NT]		[NT]	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	[NT]	10	0.29	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	[NT]	10	0.11	[NT]		[NT]	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	[NT]	10	<0.005	[NT]		[NT]	[NT]
Trivalent Chromium, Cr^{3+}	mg/L	0.005	Inorg-024	[NT]	10	<0.005	[NT]		[NT]	[NT]
TKN in water	mg/L	0.1	Inorg-062	[NT]	10	0.8	[NT]		[NT]	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	[NT]	10	0.088	[NT]		[NT]	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	[NT]	10	0.007	[NT]		[NT]	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	21/02/2023	21/02/2023		[NT]	[NT]
Date analysed	-			[NT]	11	21/02/2023	21/02/2023		[NT]	[NT]
pH	pH Units		Inorg-001	[NT]	11	7.3	[NT]		[NT]	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	[NT]	11	260	[NT]		[NT]	[NT]
Turbidity	NTU	0.1	Inorg-022	[NT]	11	18	[NT]		[NT]	[NT]
Total Suspended Solids	mg/L	5	Inorg-019	[NT]	11	22	[NT]		[NT]	[NT]
Salinity as NaCl *	mg/L	1	Inorg-002	[NT]	11	160	[NT]		[NT]	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	[NT]	11	0.9	[NT]		[NT]	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	[NT]	11	0.3	[NT]		[NT]	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	[NT]	11	0.19	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	[NT]	11	0.077	[NT]		[NT]	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	[NT]	11	<0.005	<0.005	0	[NT]	[NT]
Trivalent Chromium, Cr^{3+}	mg/L	0.005	Inorg-024	[NT]	11	<0.005	[NT]		[NT]	[NT]
TKN in water	mg/L	0.1	Inorg-062	[NT]	11	0.6	[NT]		[NT]	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	[NT]	11	0.28	[NT]		[NT]	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	[NT]	11	0.028	[NT]		[NT]	[NT]

QUALITY CONTROL: All metals in water-dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	317005-4
Date prepared	-			22/02/2023	1	22/02/2023	22/02/2023		22/02/2023	22/02/2023
Date analysed	-			22/02/2023	1	22/02/2023	22/02/2023		22/02/2023	22/02/2023
Aluminium-Dissolved	µg/L	10	Metals-022	<10	1	<10	[NT]		92	91
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		94	96
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	[NT]		95	100
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		97	98
Cobalt-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		94	94
Copper-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		99	96
Iron-Dissolved	µg/L	10	Metals-022	<10	1	190	[NT]		98	96
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	97	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	1	190	[NT]		100	100
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	1	[NT]		98	95
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		103	98
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	32	[NT]		98	97

QUALITY CONTROL: All metals in water-dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	317005-6
Date prepared	-			[NT]	3	22/02/2023	22/02/2023		[NT]	22/02/2023
Date analysed	-			[NT]	3	22/02/2023	22/02/2023		[NT]	22/02/2023
Aluminium-Dissolved	µg/L	10	Metals-022	[NT]	3	<10	<10	0	[NT]	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	[NT]	3	2	1	67	[NT]	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	[NT]	3	<0.1	<0.1	0	[NT]	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	[NT]	3	2	2	0	[NT]	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	<1	0	[NT]	[NT]
Copper-Dissolved	µg/L	1	Metals-022	[NT]	3	1	1	0	[NT]	[NT]
Iron-Dissolved	µg/L	10	Metals-022	[NT]	3	<10	<10	0	[NT]	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	[NT]	3	<0.05	[NT]		[NT]	91
Manganese-Dissolved	µg/L	5	Metals-022	[NT]	3	24	23	4	[NT]	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	<1	0	[NT]	[NT]
Lead-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	<1	0	[NT]	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	[NT]	3	8	8	0	[NT]	[NT]

QUALITY CONTROL: All metals in water-dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	22/02/2023	22/02/2023		[NT]	[NT]
Date analysed	-			[NT]	11	22/02/2023	22/02/2023		[NT]	[NT]
Aluminium-Dissolved	µg/L	10	Metals-022	[NT]	11	20	[NT]		[NT]	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	[NT]	11	<1	[NT]		[NT]	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	[NT]	11	<0.1	[NT]		[NT]	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	[NT]	11	<1	[NT]		[NT]	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	[NT]	11	<1	[NT]		[NT]	[NT]
Copper-Dissolved	µg/L	1	Metals-022	[NT]	11	5	[NT]		[NT]	[NT]
Iron-Dissolved	µg/L	10	Metals-022	[NT]	11	190	[NT]		[NT]	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	[NT]	11	<0.05	<0.05	0	[NT]	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	[NT]	11	13	[NT]		[NT]	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	[NT]	11	2	[NT]		[NT]	[NT]
Lead-Dissolved	µg/L	1	Metals-022	[NT]	11	<1	[NT]		[NT]	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	[NT]	11	18	[NT]		[NT]	[NT]

QUALITY CONTROL: Metals in Waters - Acid extractable						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	317005-11
Date prepared	-			22/02/2023	3	22/02/2023	22/02/2023		22/02/2023	22/02/2023
Date analysed	-			22/02/2023	3	22/02/2023	22/02/2023		22/02/2023	22/02/2023
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	3	0.2	0.1	67	105	103

QUALITY CONTROL: Metals in Waters - Acid extractable						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	10	22/02/2023	22/02/2023		[NT]	[NT]
Date analysed	-			[NT]	10	22/02/2023	22/02/2023		[NT]	[NT]
Phosphorus - Total	mg/L	0.05	Metals-020	[NT]	10	0.5	0.6	18	[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	317005-2
Date prepared	-			21/02/2023	1	21/02/2023	21/02/2023		21/02/2023	21/02/2023
Date analysed	-			21/02/2023	1	21/02/2023	21/02/2023		21/02/2023	21/02/2023
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	107	107
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	107	108
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	0.02	0.01	67	105	104
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	109	108
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	0.05	0.05	0	104	103
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	87	96
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	105	102
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	102	101
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	1	0.02	0.02	0	105	103
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	104	100
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	0.01	0.01	0	108	104
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	105	102
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	106	109
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	102	104
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	111	109
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	98	105
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	105	104
4:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	100	105
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	103	104
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	107	106
10:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	121	129
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	109	109
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	112	109
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	107	104
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	106	99
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	105	96
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	105	104
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	105	101
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	96	1	97	95	2	100	101
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	99	1	101	102	1	101	99

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	317005-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	106	1	109	107	2	100	102
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	107	1	108	107	1	104	104
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	113	1	108	114	5	106	106
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	110	1	100	98	2	105	94
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	110	1	110	109	1	106	102
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	107	1	107	107	0	102	100
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	104	1	104	108	4	102	102
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	111	1	108	108	0	105	101
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	114	1	112	110	2	107	103
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	108	1	108	103	5	107	97
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	113	1	115	110	4	111	104
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	113	1	110	109	1	107	100
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	95	1	95	98	3	84	92
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	114	1	102	99	3	109	77
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	123	1	91	89	2	112	61
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	134	1	108	97	11	125	72
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	110	1	103	104	1	102	96
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	108	1	106	106	0	102	101
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	106	1	108	106	2	103	103
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	112	1	108	110	2	106	105

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	317005-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	109	1	109	109	0	103	106
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	126	1	98	93	5	116	70
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	123	1	96	91	5	117	74

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	21/02/2023	21/02/2023		[NT]	[NT]
Date analysed	-			[NT]	11	21/02/2023	21/02/2023		[NT]	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	[NT]	11	0.06	0.06	0	[NT]	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	[NT]	11	<0.05	<0.05	0	[NT]	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
4:2 FTS	µg/L	0.01	Org-029	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
6:2 FTS	µg/L	0.01	Org-029	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
8:2 FTS	µg/L	0.02	Org-029	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
10:2 FTS	µg/L	0.02	Org-029	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	[NT]	11	<0.05	<0.05	0	[NT]	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	[NT]	11	<0.05	<0.05	0	[NT]	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	[NT]	11	102	96	6	[NT]	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	[NT]	11	103	104	1	[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	[NT]	11	110	107	3	[NT]	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	[NT]	11	109	108	1	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	[NT]	11	107	110	3	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	[NT]	11	96	97	1	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	[NT]	11	110	112	2	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	[NT]	11	109	108	1	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	[NT]	11	105	111	6	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	[NT]	11	115	113	2	[NT]	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	[NT]	11	118	118	0	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	[NT]	11	110	110	0	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	[NT]	11	110	118	7	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	[NT]	11	106	112	6	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	[NT]	11	71	97	31	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	[NT]	11	117	120	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	[NT]	11	119	123	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	[NT]	11	135	133	1	[NT]	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	[NT]	11	109	109	0	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	[NT]	11	108	109	1	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	[NT]	11	111	110	1	[NT]	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	[NT]	11	116	114	2	[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	[NT]	11	116	110	5	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	[NT]	11	121	118	3	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	[NT]	11	115	123	7	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

Dissolved Metals: no filtered, preserved sample was received, therefore the unpreserved sample was filtered through 0.45µm filter at the lab.
Note: there is a possibility some elements may be underestimated.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 318633

Client Details

Client	Gamuda Australia (t/a Gamuda Berhad)
Attention	Jobeth Teves
Address	Suite 26.01, 100 Miller Street, NORTH SYDNEY, NSW, 2060

Sample Details

Your Reference	**WTP - Surface Water Monitoring**
Number of Samples	9 Water
Date samples received	14/03/2023
Date completed instructions received	14/03/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	22/03/2023
Date of Issue	22/03/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Diego Bigolin, Inorganics Supervisor
Dragana Tomas, Senior Chemist
Greta Petzold, Assistant Operation Manager
Kyle Gavrily, Senior Chemist
Liam Timmins, Organics Supervisor
Loren Bardwell, Development Chemist
Phalak Inthakesone, Organics Development Manager, Sydney

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water						
Our Reference		318633-1	318633-2	318633-3	318633-4	318633-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		14/03/2023	14/03/2023	14/03/2023	14/03/2023	14/03/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	94	100	99	100	98
Surrogate toluene-d8	%	98	102	100	101	101
Surrogate 4-BFB	%	86	88	88	87	86

vTRH(C6-C10)/BTEXN in Water					
Our Reference		318633-6	318633-7	318633-8	318633-9
Your Reference	UNITS	SW06	SW07	SW08	SW09
Date Sampled		14/03/2023	14/03/2023	14/03/2023	14/03/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023
TRH C_6 - C_9	µg/L	<10	19	<10	<10
TRH C_6 - C_{10}	µg/L	<10	19	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	19	<10	<10
Benzene	µg/L	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	96	101	93	94
Surrogate toluene-d8	%	98	102	97	98
Surrogate 4-BFB	%	88	86	87	86

svTRH (C10-C40) in Water						
Our Reference		318633-1	318633-2	318633-3	318633-4	318633-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		14/03/2023	14/03/2023	14/03/2023	14/03/2023	14/03/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Date analysed	-	19/03/2023	19/03/2023	19/03/2023	19/03/2023	19/03/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	75	87	81	81	76

svTRH (C10-C40) in Water					
Our Reference		318633-6	318633-7	318633-8	318633-9
Your Reference	UNITS	SW06	SW07	SW08	SW09
Date Sampled		14/03/2023	14/03/2023	14/03/2023	14/03/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Date analysed	-	19/03/2023	19/03/2023	19/03/2023	19/03/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50
Surrogate o-Terphenyl	%	82	76	85	81

PAHs in Water						
Our Reference		318633-1	318633-2	318633-3	318633-4	318633-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		14/03/2023	14/03/2023	14/03/2023	14/03/2023	14/03/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Date analysed	-	20/03/2023	20/03/2023	20/03/2023	20/03/2023	20/03/2023
Naphthalene	µg/L	<2	<2	<2	<2	<2
Acenaphthylene	µg/L	<1	<1	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1	<1	<1
Fluorene	µg/L	<1	<1	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1	<1	<1
Anthracene	µg/L	<1	<1	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1	<1	<1
Pyrene	µg/L	<1	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1	<1	<1
Chrysene	µg/L	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	86	95	98	97	86

PAHs in Water					
Our Reference	UNITS	318633-6	318633-7	318633-8	318633-9
Your Reference		SW06	SW07	SW08	SW09
Date Sampled		14/03/2023	14/03/2023	14/03/2023	14/03/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Date analysed	-	20/03/2023	20/03/2023	20/03/2023	20/03/2023
Naphthalene	µg/L	<2	<2	<2	<2
Acenaphthylene	µg/L	<1	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1	<1
Fluorene	µg/L	<1	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1	<1
Anthracene	µg/L	<1	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1	<1
Pyrene	µg/L	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1	<1
Chrysene	µg/L	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	101	94	96	92

Miscellaneous Inorganics						
Our Reference	UNITS	318633-1	318633-2	318633-3	318633-4	318633-5
Your Reference		SW01	SW02	SW03	SW04	SW05
Date Sampled		14/03/2023	14/03/2023	14/03/2023	14/03/2023	14/03/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	14/03/2023	14/03/2023	14/03/2023	14/03/2023	14/03/2023
Date analysed	-	14/03/2023	14/03/2023	14/03/2023	14/03/2023	14/03/2023
pH	pH Units	7.0	7.0	7.3	7.6	7.6
Electrical Conductivity	µS/cm	900	14,000	12,000	500	480
Turbidity	NTU	5.1	7.8	6.9	11	6.7
Total Suspended Solids	mg/L	8	11	12	20	24
Salinity as NaCl *	mg/L	560	9,100	7,400	320	300
Total Nitrogen in water	mg/L	1.4	1.1	0.8	0.4	0.4
NOx as N in water	mg/L	0.5	0.1	0.2	<0.005	0.006
Ammonia as N in water	mg/L	0.24	0.21	0.12	<0.005	<0.005
Phosphate as P in water	mg/L	0.10	0.095	0.053	<0.005	<0.005
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trivalent Chromium, Cr^{3+}	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
TKN in water	mg/L	1	0.9	0.6	0.4	0.4
Nitrate as N in water	mg/L	0.32	0.13	0.13	<0.005	<0.005
Nitrite as N in water	mg/L	0.13	<0.005	0.040	<0.005	<0.005

Miscellaneous Inorganics					
Our Reference		318633-6	318633-7	318633-8	318633-9
Your Reference	UNITS	SW06	SW07	SW08	SW09
Date Sampled		14/03/2023	14/03/2023	14/03/2023	14/03/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	14/03/2023	14/03/2023	14/03/2023	14/03/2023
Date analysed	-	14/03/2023	14/03/2023	14/03/2023	14/03/2023
pH	pH Units	7.2	7.5	7.3	7.1
Electrical Conductivity	µS/cm	19,000	290	9,300	1,100
Turbidity	NTU	4.1	6.9	12	<0.1
Total Suspended Solids	mg/L	10	6	10	17
Salinity as NaCl *	mg/L	12,000	180	5,800	680
Total Nitrogen in water	mg/L	0.5	0.7	0.7	2.1
NOx as N in water	mg/L	0.02	0.55	0.1	0.96
Ammonia as N in water	mg/L	0.10	0.087	0.11	0.14
Phosphate as P in water	mg/L	0.05	0.02	0.05	0.087
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005	<0.005
Trivalent Chromium, Cr^{3+}	mg/L	<0.005	<0.005	<0.005	<0.005
TKN in water	mg/L	0.5	0.2	0.6	1.1
Nitrate as N in water	mg/L	0.01	0.45	0.12	0.60
Nitrite as N in water	mg/L	<0.005	0.10	0.025	0.36

All metals in water-dissolved						
Our Reference		318633-1	318633-2	318633-3	318633-4	318633-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		14/03/2023	14/03/2023	14/03/2023	14/03/2023	14/03/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	20/03/2023	20/03/2023	20/03/2023	20/03/2023	20/03/2023
Date analysed	-	20/03/2023	20/03/2023	20/03/2023	20/03/2023	20/03/2023
Aluminium-Dissolved	µg/L	50	30	20	20	30
Arsenic-Dissolved	µg/L	1	1	1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Cobalt-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	6	3	2	1	2
Iron-Dissolved	µg/L	270	350	90	160	140
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	µg/L	85	100	90	31	25
Nickel-Dissolved	µg/L	1	1	1	<1	<1
Lead-Dissolved	µg/L	2	1	<1	<1	<1
Zinc-Dissolved	µg/L	39	23	23	4	4

All metals in water-dissolved					
Our Reference		318633-6	318633-7	318633-8	318633-9
Your Reference	UNITS	SW06	SW07	SW08	SW09
Date Sampled		14/03/2023	14/03/2023	14/03/2023	14/03/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	20/03/2023	20/03/2023	20/03/2023	20/03/2023
Date analysed	-	20/03/2023	20/03/2023	20/03/2023	20/03/2023
Aluminium-Dissolved	µg/L	10	50	20	90
Arsenic-Dissolved	µg/L	1	<1	2	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1
Cobalt-Dissolved	µg/L	<1	<1	<1	<1
Copper-Dissolved	µg/L	1	2	2	11
Iron-Dissolved	µg/L	50	230	120	200
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	µg/L	61	33	100	120
Nickel-Dissolved	µg/L	<1	<1	1	2
Lead-Dissolved	µg/L	<1	<1	<1	3
Zinc-Dissolved	µg/L	8	6	23	60

Metals in Waters - Acid extractable						
Our Reference		318633-1	318633-2	318633-3	318633-4	318633-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		14/03/2023	14/03/2023	14/03/2023	14/03/2023	14/03/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Phosphorus - Total	mg/L	0.3	0.3	0.2	0.09	0.1

Metals in Waters - Acid extractable					
Our Reference		318633-6	318633-7	318633-8	318633-9
Your Reference	UNITS	SW06	SW07	SW08	SW09
Date Sampled		14/03/2023	14/03/2023	14/03/2023	14/03/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Phosphorus - Total	mg/L	0.2	0.05	0.2	0.3

PFAS in Waters Extended						
Our Reference		318633-1	318633-2	318633-3	318633-4	318633-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		14/03/2023	14/03/2023	14/03/2023	14/03/2023	14/03/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	0.01	0.02	0.02
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.02	0.03	0.04	0.03
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.02	0.02	0.02	0.03	0.03
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	0.01	0.01	0.02	0.01	0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	98	98	98	99	98
Surrogate $^{13}C_2$ *PFOA*	%	104	103	101	104	103
Extracted ISTD $^{13}C_3$ *PFBS*	%	106	107	106	106	105
Extracted ISTD $^{18}O_2$ *PFHxS*	%	109	106	105	107	104
Extracted ISTD $^{13}C_4$ *PFOS*	%	112	106	92	103	106
Extracted ISTD $^{13}C_4$ *PFBA*	%	95	93	94	94	95

PFAS in Waters Extended						
Our Reference		318633-1	318633-2	318633-3	318633-4	318633-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		14/03/2023	14/03/2023	14/03/2023	14/03/2023	14/03/2023
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	109	108	103	104	105
Extracted ISTD $^{13}C_2$ *PFHxA*	%	107	106	104	100	103
Extracted ISTD $^{13}C_4$ *PFHpA*	%	105	102	98	102	99
Extracted ISTD $^{13}C_4$ *PFOA*	%	113	110	102	107	109
Extracted ISTD $^{13}C_5$ *PFNA*	%	120	115	99	111	110
Extracted ISTD $^{13}C_2$ *PFDA*	%	107	106	83	94	96
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	104	98	79	90	88
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	107	102	81	81	79
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	82	79	60	46	49
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	123	111	105	107	110
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	132	116	106	111	113
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	134	112	94	113	106
Extracted ISTD $^{13}C_8$ *FOSA*	%	106	104	84	97	98
Extracted ISTD d_3 *N MeFOSA*	%	106	101	83	97	97
Extracted ISTD d_5 *N EtFOSA*	%	108	104	81	94	97
Extracted ISTD d_7 *N MeFOSE*	%	106	105	85	98	97
Extracted ISTD d_9 *N EtFOSE*	%	106	104	85	94	98
Extracted ISTD d_3 *N MeFOSAA*	%	131	117	98	115	114
Extracted ISTD d_5 *N EtFOSAA*	%	119	105	87	103	103
Total Positive PFHxS & PFOS	µg/L	0.01	0.02	0.04	0.06	0.05
Total Positive PFOA & PFOS	µg/L	0.02	0.03	0.05	0.06	0.05
Total Positive PFAS	µg/L	0.04	0.05	0.08	0.10	0.09

PFAS in Waters Extended					
Our Reference		318633-6	318633-7	318633-8	318633-9
Your Reference	UNITS	SW06	SW07	SW08	SW09
Date Sampled		14/03/2023	14/03/2023	14/03/2023	14/03/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	<0.01	0.02	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.02	<0.01	0.04	0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.02	<0.01	0.02	0.03
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	0.01	0.02
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	101	98	97	99
Surrogate $^{13}C_2$ *PFOA*	%	100	103	102	105
Extracted ISTD $^{13}C_3$ *PFBS*	%	108	106	107	107
Extracted ISTD $^{18}O_2$ *PFHxS*	%	105	103	105	103
Extracted ISTD $^{13}C_4$ *PFOS*	%	105	101	102	106
Extracted ISTD $^{13}C_4$ *PFBA*	%	97	93	96	88

PFAS in Waters Extended					
Our Reference		318633-6	318633-7	318633-8	318633-9
Your Reference	UNITS	SW06	SW07	SW08	SW09
Date Sampled		14/03/2023	14/03/2023	14/03/2023	14/03/2023
Type of sample		Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	104	106	105	112
Extracted ISTD $^{13}C_2$ *PFHxA*	%	102	103	103	106
Extracted ISTD $^{13}C_4$ *PFHpA*	%	101	99	101	103
Extracted ISTD $^{13}C_4$ *PFOA*	%	109	105	103	112
Extracted ISTD $^{13}C_5$ *PFNA*	%	113	110	110	114
Extracted ISTD $^{13}C_2$ *PFDA*	%	103	87	100	108
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	104	85	97	98
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	103	77	97	101
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	84	57	77	73
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	98	101	106	129
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	105	105	112	139
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	110	103	109	133
Extracted ISTD $^{13}C_8$ *FOSA*	%	103	96	101	102
Extracted ISTD d_3 *N MeFOSA*	%	100	93	96	97
Extracted ISTD d_5 *N EtFOSA*	%	102	93	97	101
Extracted ISTD d_7 *N MeFOSE*	%	103	93	98	102
Extracted ISTD d_9 *N EtFOSE*	%	103	91	99	101
Extracted ISTD d_3 *N MeFOSAA*	%	113	110	113	130
Extracted ISTD d_5 *N EtFOSAA*	%	104	95	101	113
Total Positive PFHxS & PFOS	µg/L	0.03	<0.01	0.05	0.01
Total Positive PFOA & PFOS	µg/L	0.02	<0.01	0.05	0.03
Total Positive PFAS	µg/L	0.05	<0.01	0.08	0.06

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-019	Suspended Solids - determined gravimetricially by filtration of the sample. The samples are dried at 104+/-5°C.
Inorg-022	Turbidity - measured nephelometrically using a turbidimeter, in accordance with APHA latest edition, 2130-B.
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

Method ID	Methodology Summary
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			16/03/2023	1	16/03/2023	17/03/2023		16/03/2023	[NT]
Date analysed	-			17/03/2023	1	17/03/2023	18/03/2023		17/03/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	<10	<10	0	108	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	<10	<10	0	108	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	106	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	116	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	107	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	105	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	104	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	97	1	94	128	31	93	[NT]
Surrogate toluene-d8	%		Org-023	102	1	98	115	16	98	[NT]
Surrogate 4-BFB	%		Org-023	89	1	86	102	17	90	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	7	16/03/2023	17/03/2023		[NT]	[NT]
Date analysed	-			[NT]	7	17/03/2023	18/03/2023		[NT]	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	[NT]	7	19	22	15	[NT]	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	[NT]	7	19	22	15	[NT]	[NT]
Benzene	µg/L	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	[NT]	7	<2	<2	0	[NT]	[NT]
o-xylene	µg/L	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
Naphthalene	µg/L	1	Org-023	[NT]	7	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	[NT]	7	101	125	21	[NT]	[NT]
Surrogate toluene-d8	%		Org-023	[NT]	7	102	114	11	[NT]	[NT]
Surrogate 4-BFB	%		Org-023	[NT]	7	86	101	16	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			17/03/2023	1	17/03/2023	17/03/2023		17/03/2023	[NT]
Date analysed	-			19/03/2023	1	19/03/2023	19/03/2023		19/03/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	112	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	<100	0	128	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	86	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	<50	<50	0	112	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	128	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	86	[NT]
Surrogate o-Terphenyl	%		Org-020	83	1	75	81	8	82	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	318633-2
Date extracted	-			17/03/2023	1	17/03/2023	17/03/2023		17/03/2023	17/03/2023
Date analysed	-			20/03/2023	1	20/03/2023	20/03/2023		20/03/2023	20/03/2023
Naphthalene	µg/L	2	Org-022/025	<2	1	<2	<2	0	65	71
Acenaphthylene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	1	<1	<1	0	69	73
Fluorene	µg/L	1	Org-022/025	<1	1	<1	<1	0	66	80
Phenanthrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	95	101
Anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	1	<1	<1	0	79	88
Pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	86	93
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	1	<1	<1	0	68	62
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	76	81
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	95	1	86	98	13	92	94

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	318633-2
Date prepared	-			14/03/2023	1	14/03/2023	14/03/2023		14/03/2023	14/03/2023
Date analysed	-			14/03/2023	1	14/03/2023	14/03/2023		14/03/2023	14/03/2023
pH	pH Units		Inorg-001	[NT]	1	7.0	7.0	0	99	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	1	900	890	1	104	[NT]
Turbidity	NTU	0.1	Inorg-022	<0.1	1	5.1	5.1	0	84	[NT]
Total Suspended Solids	mg/L	5	Inorg-019	<5	1	8	7	13	103	[NT]
Salinity as NaCl *	mg/L	1	Inorg-002	<1	1	560	560	0	[NT]	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	1.4	1.4	0	99	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.5	[NT]		103	84
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	0.24	[NT]		98	101
Phosphate as P in water	mg/L	0.005	Inorg-060	<0.005	1	0.10	[NT]		114	105
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	[NT]		104	111
Trivalent Chromium, Cr^{3+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	[NT]		[NT]	[NT]
TKN in water	mg/L	0.1	Inorg-062	<0.1	1	1	[NT]		[NT]	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.32	[NT]		103	84
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.13	[NT]		103	108

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	3	14/03/2023	14/03/2023		[NT]	[NT]
Date analysed	-			[NT]	3	14/03/2023	14/03/2023		[NT]	[NT]
pH	pH Units		Inorg-001	[NT]	3	7.3	[NT]		[NT]	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	[NT]	3	12000	[NT]		[NT]	[NT]
Turbidity	NTU	0.1	Inorg-022	[NT]	3	6.9	[NT]		[NT]	[NT]
Total Suspended Solids	mg/L	5	Inorg-019	[NT]	3	12	[NT]		[NT]	[NT]
Salinity as NaCl *	mg/L	1	Inorg-002	[NT]	3	7400	[NT]		[NT]	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	[NT]	3	0.8	[NT]		[NT]	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	[NT]	3	0.2	0.2	0	[NT]	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	[NT]	3	0.12	0.12	0	[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	[NT]	3	0.053	0.054	2	[NT]	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	[NT]	3	<0.005	<0.005	0	[NT]	[NT]
Trivalent Chromium, Cr^{3+}	mg/L	0.005	Inorg-024	[NT]	3	<0.005	<0.005	0	[NT]	[NT]
TKN in water	mg/L	0.1	Inorg-062	[NT]	3	0.6	[NT]		[NT]	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	[NT]	3	0.13	0.13	0	[NT]	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	[NT]	3	0.040	0.039	3	[NT]	[NT]

QUALITY CONTROL: All metals in water-dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	318633-2
Date prepared	-			20/03/2023	1	20/03/2023	20/03/2023		20/03/2023	20/03/2023
Date analysed	-			20/03/2023	1	20/03/2023	20/03/2023		20/03/2023	20/03/2023
Aluminium-Dissolved	µg/L	10	Metals-022	<10	1	50	60	18	90	102
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	1	<1	0	93	93
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	94	99
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	96	93
Cobalt-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	92	87
Copper-Dissolved	µg/L	1	Metals-022	<1	1	6	6	0	92	83
Iron-Dissolved	µg/L	10	Metals-022	<10	1	270	240	12	95	#
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	112	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	1	85	83	2	97	92
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	1	1	0	93	84
Lead-Dissolved	µg/L	1	Metals-022	<1	1	2	2	0	88	82
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	39	38	3	93	89

QUALITY CONTROL: Metals in Waters - Acid extractable						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	318633-2
Date prepared	-			16/03/2023	1	16/03/2023	16/03/2023		16/03/2023	16/03/2023
Date analysed	-			16/03/2023	1	16/03/2023	16/03/2023		16/03/2023	16/03/2023
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	1	0.3	0.3	0	117	108

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	318633-2
Date prepared	-			16/03/2023	1	16/03/2023	16/03/2023		16/03/2023	16/03/2023
Date analysed	-			16/03/2023	1	16/03/2023	16/03/2023		16/03/2023	16/03/2023
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	96	99
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	103	107
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	106	106
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	107	111
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	0.01	0.01	0	106	109
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	86	90
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	105	102
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	104	103
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	1	0.02	0.02	0	106	106
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	107	107
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	0.01	0.01	0	107	112
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	99	100
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	103	108
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	94	91
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	99	101
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	91	90
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	104	102
4:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	103	104
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	100	102
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	105	101
10:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	122	103
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	105	104
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	103	106
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	103	101
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	99	89
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	95	91
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	99	96
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	110	109
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	101	1	98	100	2	99	99
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	99	1	104	104	0	99	105

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	318633-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	100	1	106	109	3	101	105
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	103	1	109	108	1	102	107
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	99	1	112	108	4	101	106
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	104	1	95	94	1	100	94
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	101	1	109	111	2	101	106
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	102	1	107	107	0	102	105
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	101	1	105	103	2	97	100
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	106	1	113	113	0	104	109
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	109	1	120	116	3	105	114
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	97	1	107	107	0	100	99
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	102	1	104	105	1	101	105
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	99	1	107	108	1	103	102
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	82	1	82	79	4	81	73
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	105	1	123	124	1	100	108
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	115	1	132	136	3	108	113
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	111	1	134	135	1	107	116
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	99	1	106	104	2	97	99
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	101	1	106	101	5	102	101
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	100	1	108	105	3	100	104
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	97	1	106	107	1	97	101

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	318633-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	97	1	106	103	3	99	102
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	117	1	131	136	4	107	110
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	106	1	119	118	1	106	109

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

All metals in water-dissolved - # Percent recovery is not applicable due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 320491

Client Details

Client	Gamuda Australia (t/a Gamuda Berhad)
Attention	Josephine Balado
Address	Suite 26.01, 100 Miller Street, NORTH SYDNEY, NSW, 2060

Sample Details

Your Reference	**WTP - Surface Water Monitoring**
Number of Samples	9 Water
Date samples received	06/04/2023
Date completed instructions received	06/04/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

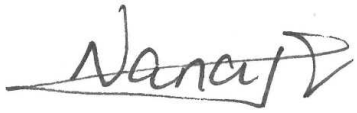
Date results requested by	17/04/2023
Date of Issue	17/04/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Ashley Miller, Development Chemist
Diego Bigolin, Inorganics Supervisor
Kyle Gavrily, Senior Chemist
Liam Timmins, Organics Supervisor
Loren Bardwell, Development Chemist

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water						
Our Reference		320491-1	320491-2	320491-3	320491-4	320491-5
Your Reference	UNITS	SW01	SW03	SW04	SW05	SW06
Date Sampled		06/04/2023	06/04/2023	06/04/2023	06/04/2023	06/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023
Date analysed	-	12/04/2023	12/04/2023	12/04/2023	12/04/2023	12/04/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	107	110	110	110	113
Surrogate toluene-d8	%	98	100	98	101	101
Surrogate 4-BFB	%	103	104	103	104	106

vTRH(C6-C10)/BTEXN in Water					
Our Reference		320491-6	320491-7	320491-8	320491-9
Your Reference	UNITS	SW07	SW08	SW09	SW10
Date Sampled		06/04/2023	06/04/2023	06/04/2023	06/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	11/04/2023	11/04/2023	11/04/2023	11/04/2023
Date analysed	-	12/04/2023	12/04/2023	12/04/2023	12/04/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	2
Ethylbenzene	µg/L	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	110	112	114	111
Surrogate toluene-d8	%	100	96	105	99
Surrogate 4-BFB	%	102	102	97	103

svTRH (C10-C40) in Water						
Our Reference		320491-1	320491-2	320491-3	320491-4	320491-5
Your Reference	UNITS	SW01	SW03	SW04	SW05	SW06
Date Sampled		06/04/2023	06/04/2023	06/04/2023	06/04/2023	06/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023
Date analysed	-	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	89	86	88	81	86

svTRH (C10-C40) in Water					
Our Reference		320491-6	320491-7	320491-8	320491-9
Your Reference	UNITS	SW07	SW08	SW09	SW10
Date Sampled		06/04/2023	06/04/2023	06/04/2023	06/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	11/04/2023	11/04/2023	11/04/2023	11/04/2023
Date analysed	-	11/04/2023	11/04/2023	11/04/2023	11/04/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50
Surrogate o-Terphenyl	%	68	83	90	73

PAHs in Water						
Our Reference		320491-1	320491-2	320491-3	320491-4	320491-5
Your Reference	UNITS	SW01	SW03	SW04	SW05	SW06
Date Sampled		06/04/2023	06/04/2023	06/04/2023	06/04/2023	06/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023
Date analysed	-	12/04/2023	12/04/2023	12/04/2023	12/04/2023	12/04/2023
Naphthalene	µg/L	<2	<2	<2	<2	<2
Acenaphthylene	µg/L	<1	<1	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1	<1	<1
Fluorene	µg/L	<1	<1	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1	<1	<1
Anthracene	µg/L	<1	<1	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1	<1	<1
Pyrene	µg/L	<1	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1	<1	<1
Chrysene	µg/L	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	107	111	106	98	107

PAHs in Water					
Our Reference		320491-6	320491-7	320491-8	320491-9
Your Reference	UNITS	SW07	SW08	SW09	SW10
Date Sampled		06/04/2023	06/04/2023	06/04/2023	06/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	11/04/2023	11/04/2023	11/04/2023	11/04/2023
Date analysed	-	12/04/2023	12/04/2023	12/04/2023	12/04/2023
Naphthalene	µg/L	<2	<2	<2	<2
Acenaphthylene	µg/L	<1	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1	<1
Fluorene	µg/L	<1	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1	<1
Anthracene	µg/L	<1	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1	<1
Pyrene	µg/L	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1	<1
Chrysene	µg/L	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	91	108	90	106

Miscellaneous Inorganics						
Our Reference		320491-1	320491-2	320491-3	320491-4	320491-5
Your Reference	UNITS	SW01	SW03	SW04	SW05	SW06
Date Sampled		06/04/2023	06/04/2023	06/04/2023	06/04/2023	06/04/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	06/04/2023	06/04/2023	06/04/2023	06/04/2023	06/04/2023
Date analysed	-	06/04/2023	06/04/2023	06/04/2023	06/04/2023	06/04/2023
pH	pH Units	7.2	7.2	7.6	7.6	7.3
Electrical Conductivity	µS/cm	3,900	27,000	240	140	8,800
Turbidity	NTU	4.7	2.7	46	8.0	9.5
Total Suspended Solids	mg/L	20	9	36	18	22
Salinity as NaCl *	mg/L	2,400	17,000	150	91	5,500
Total Nitrogen in water	mg/L	0.8	0.6	0.7	0.8	0.5
NOx as N in water	mg/L	0.2	0.08	0.4	0.4	0.2
Ammonia as N in water	mg/L	0.17	0.22	0.090	0.12	0.15
Phosphate as P in water	mg/L	0.062	0.073	0.05	0.056	0.057
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trivalent Chromium, Cr^{3+}	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
TKN in water	mg/L	0.5	0.5	0.3	0.4	0.4
Nitrate as N in water	mg/L	0.16	0.061	0.39	0.39	0.15
Nitrite as N in water	mg/L	0.051	0.016	0.021	0.024	0.016

Miscellaneous Inorganics					
Our Reference		320491-6	320491-7	320491-8	320491-9
Your Reference	UNITS	SW07	SW08	SW09	SW10
Date Sampled		06/04/2023	06/04/2023	06/04/2023	06/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	06/04/2023	06/04/2023	06/04/2023	06/04/2023
Date analysed	-	06/04/2023	06/04/2023	06/04/2023	06/04/2023
pH	pH Units	7.3	7.0	7.4	7.1
Electrical Conductivity	µS/cm	210	19,000	640	270
Turbidity	NTU	51	3.1	4.3	21
Total Suspended Solids	mg/L	56	6	16	30
Salinity as NaCl *	mg/L	130	12,000	400	170
Total Nitrogen in water	mg/L	0.9	0.6	0.9	0.8
NOx as N in water	mg/L	0.3	0.1	0.56	0.2
Ammonia as N in water	mg/L	0.16	0.23	0.20	0.19
Phosphate as P in water	mg/L	0.085	0.052	0.062	0.091
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005	<0.005
Trivalent Chromium, Cr^{3+}	mg/L	<0.005	<0.005	<0.005	<0.005
TKN in water	mg/L	0.6	0.5	0.4	0.6
Nitrate as N in water	mg/L	0.26	0.12	0.50	0.18
Nitrite as N in water	mg/L	0.041	0.018	0.073	0.036

All metals in water-dissolved						
Our Reference		320491-1	320491-2	320491-3	320491-4	320491-5
Your Reference	UNITS	SW01	SW03	SW04	SW05	SW06
Date Sampled		06/04/2023	06/04/2023	06/04/2023	06/04/2023	06/04/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023
Date analysed	-	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023
Aluminium-Dissolved	µg/L	30	<10	40	20	60
Arsenic-Dissolved	µg/L	1	2	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Cobalt-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	3	1	5	6	3
Iron-Dissolved	µg/L	210	20	150	80	40
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	µg/L	120	59	5	<5	31
Nickel-Dissolved	µg/L	2	<1	<1	<1	<1
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Zinc-Dissolved	µg/L	31	15	20	25	25

All metals in water-dissolved					
Our Reference		320491-6	320491-7	320491-8	320491-9
Your Reference	UNITS	SW07	SW08	SW09	SW10
Date Sampled		06/04/2023	06/04/2023	06/04/2023	06/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	11/04/2023	11/04/2023	11/04/2023	11/04/2023
Date analysed	-	11/04/2023	11/04/2023	11/04/2023	11/04/2023
Aluminium-Dissolved	µg/L	110	50	40	190
Arsenic-Dissolved	µg/L	<1	1	1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1
Cobalt-Dissolved	µg/L	<1	<1	<1	<1
Copper-Dissolved	µg/L	5	1	3	3
Iron-Dissolved	µg/L	270	30	180	430
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	µg/L	45	77	68	76
Nickel-Dissolved	µg/L	<1	<1	<1	<1
Lead-Dissolved	µg/L	1	<1	<1	1
Zinc-Dissolved	µg/L	23	22	16	20

Metals in Waters - Acid extractable						
Our Reference		320491-1	320491-2	320491-3	320491-4	320491-5
Your Reference	UNITS	SW01	SW03	SW04	SW05	SW06
Date Sampled		06/04/2023	06/04/2023	06/04/2023	06/04/2023	06/04/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023
Date analysed	-	12/04/2023	12/04/2023	12/04/2023	12/04/2023	12/04/2023
Phosphorus - Total	mg/L	0.2	0.1	0.1	0.09	0.1

Metals in Waters - Acid extractable					
Our Reference		320491-6	320491-7	320491-8	320491-9
Your Reference	UNITS	SW07	SW08	SW09	SW10
Date Sampled		06/04/2023	06/04/2023	06/04/2023	06/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	11/04/2023	11/04/2023	11/04/2023	11/04/2023
Date analysed	-	12/04/2023	12/04/2023	12/04/2023	12/04/2023
Phosphorus - Total	mg/L	0.2	0.1	0.1	0.2

PFAS in Waters Extended						
Our Reference		320491-1	320491-2	320491-3	320491-4	320491-5
Your Reference	UNITS	SW01	SW03	SW04	SW05	SW06
Date Sampled		06/04/2023	06/04/2023	06/04/2023	06/04/2023	06/04/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023
Date analysed	-	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023
Perfluorobutanesulfonic acid	µg/L	0.02	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	0.01	<0.01	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.05	0.01	0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	0.03	<0.02	0.03	0.03	<0.02
Perfluorohexanoic acid	µg/L	0.03	0.01	0.04	0.06	0.02
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	0.01	0.02	<0.01
Perfluorooctanoic acid PFOA	µg/L	0.01	<0.01	0.02	0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	101	99	100	100	98
Surrogate $^{13}C_2$ *PFOA*	%	101	101	103	103	103
Extracted ISTD $^{13}C_3$ *PFBS*	%	105	104	103	106	105
Extracted ISTD $^{18}O_2$ *PFHxS*	%	103	104	101	104	105
Extracted ISTD $^{13}C_4$ *PFOS*	%	83	103	88	100	99
Extracted ISTD $^{13}C_4$ *PFBA*	%	96	100	101	103	102

PFAS in Waters Extended						
Our Reference		320491-1	320491-2	320491-3	320491-4	320491-5
Your Reference	UNITS	SW01	SW03	SW04	SW05	SW06
Date Sampled		06/04/2023	06/04/2023	06/04/2023	06/04/2023	06/04/2023
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	110	109	113	110	110
Extracted ISTD $^{13}C_2$ *PFHxA*	%	108	101	106	105	106
Extracted ISTD $^{13}C_4$ *PFHpA*	%	103	101	106	104	103
Extracted ISTD $^{13}C_4$ *PFOA*	%	103	105	103	105	105
Extracted ISTD $^{13}C_5$ *PFNA*	%	104	116	106	113	114
Extracted ISTD $^{13}C_2$ *PFDA*	%	82	105	85	99	95
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	76	108	74	98	92
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	60	102	56	88	78
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	36	81	28	61	51
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	118	95	121	114	110
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	113	98	117	111	111
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	116	114	125	125	117
Extracted ISTD $^{13}C_8$ *FOSA*	%	74	99	77	93	91
Extracted ISTD d_3 *N MeFOSA*	%	83	101	80	98	95
Extracted ISTD d_5 *N EtFOSA*	%	81	103	78	97	96
Extracted ISTD d_7 *N MeFOSE*	%	76	96	77	92	91
Extracted ISTD d_9 *N EtFOSE*	%	75	101	77	96	93
Extracted ISTD d_3 *N MeFOSAA*	%	87	96	93	106	100
Extracted ISTD d_5 *N EtFOSAA*	%	94	105	99	109	99
Total Positive PFHxS & PFOS	µg/L	0.06	0.02	0.01	<0.01	<0.01
Total Positive PFOA & PFOS	µg/L	0.06	0.01	0.04	0.01	<0.01
Total Positive PFAS	µg/L	0.14	0.04	0.12	0.12	0.02

PFAS in Waters Extended					
Our Reference		320491-6	320491-7	320491-8	320491-9
Your Reference	UNITS	SW07	SW08	SW09	SW10
Date Sampled		06/04/2023	06/04/2023	06/04/2023	06/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	11/04/2023	11/04/2023	11/04/2023	11/04/2023
Date analysed	-	11/04/2023	11/04/2023	11/04/2023	11/04/2023
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	0.01	0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	0.02	0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	0.01	0.02	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	0.01	0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	103	100	98	94
Surrogate $^{13}C_2$ *PFOA*	%	101	102	104	101
Extracted ISTD $^{13}C_3$ *PFBS*	%	107	107	109	106
Extracted ISTD $^{18}O_2$ *PFHxS*	%	103	103	104	106
Extracted ISTD $^{13}C_4$ *PFOS*	%	103	97	100	106
Extracted ISTD $^{13}C_4$ *PFBA*	%	99	99	99	100

PFAS in Waters Extended					
Our Reference		320491-6	320491-7	320491-8	320491-9
Your Reference	UNITS	SW07	SW08	SW09	SW10
Date Sampled		06/04/2023	06/04/2023	06/04/2023	06/04/2023
Type of sample		Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	110	108	109	112
Extracted ISTD $^{13}C_2$ *PFHxA*	%	111	103	103	110
Extracted ISTD $^{13}C_4$ *PFHpA*	%	107	103	103	106
Extracted ISTD $^{13}C_4$ *PFOA*	%	112	103	107	115
Extracted ISTD $^{13}C_5$ *PFNA*	%	121	107	115	126
Extracted ISTD $^{13}C_2$ *PFDA*	%	113	94	102	110
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	117	89	103	115
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	108	79	94	109
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	89	57	58	81
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	126	104	121	127
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	115	98	109	120
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	153	107	118	158
Extracted ISTD $^{13}C_8$ *FOSA*	%	100	87	94	98
Extracted ISTD d_3 *N MeFOSA*	%	102	86	97	101
Extracted ISTD d_5 *N EtFOSA*	%	107	84	97	105
Extracted ISTD d_7 *N MeFOSE*	%	104	86	96	101
Extracted ISTD d_9 *N EtFOSE*	%	103	88	96	101
Extracted ISTD d_3 *N MeFOSAA*	%	118	94	112	117
Extracted ISTD d_5 *N EtFOSAA*	%	120	96	111	123
Total Positive PFHxS & PFOS	µg/L	<0.01	0.03	0.02	<0.01
Total Positive PFOA & PFOS	µg/L	<0.01	0.03	0.03	<0.01
Total Positive PFAS	µg/L	<0.01	0.06	0.06	<0.01

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-019	Suspended Solids - determined gravimetricially by filtration of the sample. The samples are dried at 104+/-5°C.
Inorg-022	Turbidity - measured nephelometrically using a turbidimeter, in accordance with APHA latest edition, 2130-B.
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

Method ID	Methodology Summary
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			11/04/2023	[NT]	[NT]	[NT]	[NT]	11/04/2023	[NT]
Date analysed	-			12/04/2023	[NT]	[NT]	[NT]	[NT]	12/04/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	105	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	105	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	106	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	110	[NT]	[NT]	[NT]	[NT]	105	[NT]
Surrogate toluene-d8	%		Org-023	101	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate 4-BFB	%		Org-023	104	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			11/04/2023	1	11/04/2023	11/04/2023		11/04/2023	[NT]
Date analysed	-			11/04/2023	1	11/04/2023	11/04/2023		11/04/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	105	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	<100	0	110	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	86	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	<50	<50	0	105	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	110	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	86	[NT]
Surrogate o-Terphenyl	%		Org-020	82	1	89	77	14	80	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	320491-2
Date extracted	-			11/04/2023	1	11/04/2023	11/04/2023		11/04/2023	11/04/2023
Date analysed	-			12/04/2023	1	12/04/2023	12/04/2023		12/04/2023	12/04/2023
Naphthalene	µg/L	2	Org-022/025	<2	1	<2	<2	0	65	84
Acenaphthylene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	1	<1	<1	0	76	96
Fluorene	µg/L	1	Org-022/025	<1	1	<1	<1	0	77	101
Phenanthrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	84	105
Anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	1	<1	<1	0	74	89
Pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	78	93
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	1	<1	<1	0	68	75
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	85	89
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	97	1	107	109	2	86	107

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	320491-2
Date prepared	-			06/04/2023	1	06/04/2023	06/04/2023		06/04/2023	06/04/2023
Date analysed	-			06/04/2023	1	06/04/2023	06/04/2023		06/04/2023	06/04/2023
pH	pH Units		Inorg-001	[NT]	1	7.2	7.3	1	99	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	1	3900	3800	3	107	[NT]
Turbidity	NTU	0.1	Inorg-022	<0.1	1	4.7	4.8	2	96	[NT]
Total Suspended Solids	mg/L	5	Inorg-019	<5	1	20	[NT]		102	[NT]
Salinity as NaCl *	mg/L	1	Inorg-002	<1	1	2400	2400	0	[NT]	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	0.8	0.7	13	104	92
NOx as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.2	0.2	0	99	95
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	0.17	0.18	6	115	125
Phosphate as P in water	mg/L	0.005	Inorg-060	<0.005	1	0.062	0.064	3	110	107
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	<0.005	0	104	[NT]
Trivalent Chromium, Cr^{3+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	<0.005	0	[NT]	[NT]
TKN in water	mg/L	0.1	Inorg-062	<0.1	1	0.5	0.5	0	[NT]	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.16	0.16	0	99	95
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.051	0.050	2	109	107

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	9	06/04/2023	06/04/2023		[NT]	[NT]
Date analysed	-			[NT]	9	06/04/2023	06/04/2023		[NT]	[NT]
pH	pH Units		Inorg-001	[NT]	9	7.1	[NT]		[NT]	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	[NT]	9	270	[NT]		[NT]	[NT]
Turbidity	NTU	0.1	Inorg-022	[NT]	9	21	[NT]		[NT]	[NT]
Total Suspended Solids	mg/L	5	Inorg-019	[NT]	9	30	31	3	[NT]	[NT]
Salinity as NaCl *	mg/L	1	Inorg-002	[NT]	9	170	[NT]		[NT]	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	[NT]	9	0.8	[NT]		[NT]	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	[NT]	9	0.2	[NT]		[NT]	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	[NT]	9	0.19	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	[NT]	9	0.091	[NT]		[NT]	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	[NT]	9	<0.005	[NT]		[NT]	[NT]
Trivalent Chromium, Cr^{3+}	mg/L	0.005	Inorg-024	[NT]	9	<0.005	[NT]		[NT]	[NT]
TKN in water	mg/L	0.1	Inorg-062	[NT]	9	0.6	[NT]		[NT]	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	[NT]	9	0.18	[NT]		[NT]	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	[NT]	9	0.036	[NT]		[NT]	[NT]

QUALITY CONTROL: All metals in water-dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W7	320491-2
Date prepared	-			11/04/2023	1	11/04/2023	11/04/2023		11/04/2023	11/04/2023
Date analysed	-			11/04/2023	1	11/04/2023	11/04/2023		11/04/2023	11/04/2023
Aluminium-Dissolved	µg/L	10	Metals-022	<10	1	30	20	40	108	105
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	1	1	0	108	103
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	103	103
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	112	104
Cobalt-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	109	98
Copper-Dissolved	µg/L	1	Metals-022	<1	1	3	2	40	108	93
Iron-Dissolved	µg/L	10	Metals-022	<10	1	210	200	5	110	98
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	108	111
Manganese-Dissolved	µg/L	5	Metals-022	<5	1	120	110	9	115	96
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	2	1	67	108	96
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	102	95
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	31	27	14	111	100

QUALITY CONTROL: Metals in Waters - Acid extractable						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	320491-2
Date prepared	-			11/04/2023	1	11/04/2023	11/04/2023		11/04/2023	11/04/2023
Date analysed	-			12/04/2023	1	12/04/2023	12/04/2023		12/04/2023	12/04/2023
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	1	0.2	0.2	0	111	103

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			11/04/2023	1	11/04/2023	11/04/2023		11/04/2023	[NT]
Date analysed	-			11/04/2023	1	11/04/2023	11/04/2023		11/04/2023	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	0.02	0.01	67	100	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	101	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	0.01	0.02	67	101	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	103	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	0.05	0.05	0	104	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	85	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	100	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	1	0.03	0.02	40	100	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	1	0.03	0.03	0	100	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	101	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	0.01	0.01	0	104	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	98	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	105	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	103	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	104	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	84	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	102	[NT]
4:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	115	[NT]
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	106	[NT]
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	106	[NT]
10:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	108	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	110	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	109	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	108	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	112	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	98	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	109	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	106	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	97	1	101	100	1	96	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	99	1	101	105	4	101	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	103	1	105	105	0	100	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	100	1	103	100	3	101	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	95	1	83	102	21	98	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	103	1	96	98	2	104	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	106	1	110	107	3	104	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	103	1	108	111	3	102	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	99	1	103	106	3	99	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	105	1	103	105	2	103	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	103	1	104	119	13	105	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	97	1	82	106	26	99	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	95	1	76	109	36	92	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	94	1	60	104	54	92	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	61	1	36	82	78	62	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	106	1	118	113	4	94	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	107	1	113	112	1	110	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	121	1	116	128	10	125	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	93	1	74	99	29	89	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	98	1	83	102	21	96	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	92	1	81	105	26	92	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	94	1	76	99	26	90	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	98	1	75	103	31	97	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	111	1	87	107	21	103	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	104	1	94	114	19	100	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

Dissolved Metals: no filtered, preserved sample was received for samples #3, 4 & 5, therefore the unpreserved sample was filtered through 0.45µm filter at the lab.
Note: there is a possibility some elements may be underestimated.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 322611

Client Details

Client	Gamuda Australia (t/a Gamuda Berhad)
Attention	Kellie Hunt
Address	Suite 26.01, 100 Miller Street, NORTH SYDNEY, NSW, 2060

Sample Details

Your Reference	**WTP - Surface Water Monitoring**
Number of Samples	10 Water
Date samples received	08/05/2023
Date completed instructions received	08/05/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

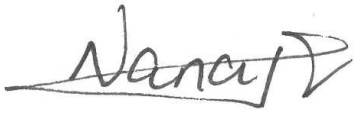
Date results requested by	15/05/2023
Date of Issue	15/05/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Alexander Mitchell Maclean, Senior Chemist
Dragana Tomas, Senior Chemist
Liam Timmins, Organics Supervisor
Loren Bardwell, Development Chemist
Nick Sarlamis, Assistant Operation Manager

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water						
Our Reference		322611-1	322611-2	322611-3	322611-4	322611-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	09/05/2023	09/05/2023	09/05/2023	09/05/2023	09/05/2023
Date analysed	-	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	101	100	100	100	100
Surrogate toluene-d8	%	99	99	99	99	99
Surrogate 4-BFB	%	106	107	109	108	109

vTRH(C6-C10)/BTEXN in Water						
Our Reference		322611-6	322611-7	322611-8	322611-9	322611-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	SW10
Date Sampled		08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	09/05/2023	09/05/2023	09/05/2023	09/05/2023	09/05/2023
Date analysed	-	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
TRH C_6 - C_9	µg/L	<10	39	<10	<10	25
TRH C_6 - C_{10}	µg/L	<10	43	<10	<10	28
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	43	<10	<10	28
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	101	98	100	101	99
Surrogate toluene-d8	%	100	99	99	99	99
Surrogate 4-BFB	%	108	108	108	108	109

svTRH (C10-C40) in Water						
Our Reference		322611-1	322611-2	322611-3	322611-4	322611-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	12/05/2023	12/05/2023	12/05/2023	12/05/2023	12/05/2023
Date analysed	-	13/05/2023	13/05/2023	13/05/2023	13/05/2023	13/05/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	1,200	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	1,000	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	2,300	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	2,100	100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	250	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	2,400	100	<50	<50	<50
Surrogate o-Terphenyl	%	96	88	78	92	81

svTRH (C10-C40) in Water						
Our Reference		322611-6	322611-7	322611-8	322611-9	322611-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	SW10
Date Sampled		08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	12/05/2023	12/05/2023	12/05/2023	12/05/2023	12/05/2023
Date analysed	-	13/05/2023	13/05/2023	13/05/2023	13/05/2023	13/05/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	81	87	90	63	75

PAHs in Water						
Our Reference	UNITS	322611-1	322611-2	322611-3	322611-4	322611-5
Your Reference		SW01	SW02	SW03	SW04	SW05
Date Sampled		08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	12/05/2023	12/05/2023	12/05/2023	12/05/2023	12/05/2023
Date analysed	-	12/05/2023	12/05/2023	12/05/2023	12/05/2023	12/05/2023
Naphthalene	µg/L	<2	<2	<2	<2	<2
Acenaphthylene	µg/L	<1	<1	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1	<1	<1
Fluorene	µg/L	<1	<1	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1	<1	<1
Anthracene	µg/L	<1	<1	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1	<1	<1
Pyrene	µg/L	<1	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1	<1	<1
Chrysene	µg/L	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	84	76	64	77	67

PAHs in Water						
Our Reference		322611-6	322611-7	322611-8	322611-9	322611-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	SW10
Date Sampled		08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	12/05/2023	12/05/2023	12/05/2023	12/05/2023	12/05/2023
Date analysed	-	12/05/2023	12/05/2023	12/05/2023	12/05/2023	12/05/2023
Naphthalene	µg/L	<2	<2	<2	<2	<2
Acenaphthylene	µg/L	<1	<1	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1	<1	<1
Fluorene	µg/L	<1	<1	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1	<1	<1
Anthracene	µg/L	<1	<1	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1	<1	<1
Pyrene	µg/L	<1	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1	<1	<1
Chrysene	µg/L	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	66	67	75	63	70

Miscellaneous Inorganics						
Our Reference		322611-1	322611-2	322611-3	322611-4	322611-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
Date analysed	-	08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
pH	pH Units	7.0	7.1	7.1	7.8	7.8
Electrical Conductivity	µS/cm	2,000	5,700	22,000	300	300
Turbidity	NTU	4.8	6.0	5.2	21	15
Total Suspended Solids	mg/L	11	11	9	23	21
Salinity as NaCl *	mg/L	1,300	3,700	14,000	200	190
Total Nitrogen in water	mg/L	0.7	0.7	0.7	0.9	0.9
NOx as N in water	mg/L	0.2	0.3	0.2	0.5	0.5
Ammonia as N in water	mg/L	0.085	0.13	0.11	0.034	0.038
Phosphate as P in water	mg/L	0.03	0.04	0.03	0.01	0.007
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trivalent Chromium, Cr^{3+}	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
TKN in water	mg/L	0.5	0.4	0.5	0.4	0.4
Nitrate as N in water	mg/L	0.19	0.29	0.22	0.49	0.47
Nitrite as N in water	mg/L	0.016	0.022	0.017	0.014	<0.005

Miscellaneous Inorganics						
Our Reference		322611-6	322611-7	322611-8	322611-9	322611-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	SW10
Date Sampled		08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
Date analysed	-	08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
pH	pH Units	7.2	7.8	7.3	7.5	7.5
Electrical Conductivity	µS/cm	16,000	200	4,500	830	220
Turbidity	NTU	9.7	150	18	8.0	90
Total Suspended Solids	mg/L	15	110	25	8	59
Salinity as NaCl *	mg/L	10,000	130	2,900	540	140
Total Nitrogen in water	mg/L	0.7	0.8	1.2	0.7	0.9
NOx as N in water	mg/L	0.3	0.64	0.65	0.3	0.4
Ammonia as N in water	mg/L	0.064	0.12	0.17	0.066	0.24
Phosphate as P in water	mg/L	0.01	0.009	0.007	0.04	0.03
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trivalent Chromium, Cr^{3+}	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
TKN in water	mg/L	0.4	0.2	0.5	0.5	0.6
Nitrate as N in water	mg/L	0.28	0.56	0.62	0.28	0.33
Nitrite as N in water	mg/L	0.012	0.085	0.030	0.012	0.063

All metals in water-dissolved						
Our Reference		322611-1	322611-2	322611-3	322611-4	322611-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Date analysed	-	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Aluminium-Dissolved	µg/L	20	20	20	90	70
Arsenic-Dissolved	µg/L	<1	<1	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Cobalt-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	3	3	<1	2	4
Iron-Dissolved	µg/L	130	90	40	310	340
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	µg/L	37	33	52	45	46
Nickel-Dissolved	µg/L	<1	<1	1	1	1
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Zinc-Dissolved	µg/L	36	32	17	6	5

All metals in water-dissolved						
Our Reference		322611-6	322611-7	322611-8	322611-9	322611-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	SW10
Date Sampled		08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Date analysed	-	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Aluminium-Dissolved	µg/L	40	470	50	70	320
Arsenic-Dissolved	µg/L	<1	<1	1	1	1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Cobalt-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	4	1	3	2
Iron-Dissolved	µg/L	150	350	290	80	300
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	µg/L	60	24	72	19	47
Nickel-Dissolved	µg/L	<1	1	1	<1	1
Lead-Dissolved	µg/L	<1	<1	2	<1	<1
Zinc-Dissolved	µg/L	5	3	17	23	9

Metals in Waters - Acid extractable						
Our Reference		322611-1	322611-2	322611-3	322611-4	322611-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	09/05/2023	09/05/2023	09/05/2023	09/05/2023	09/05/2023
Date analysed	-	09/05/2023	09/05/2023	09/05/2023	09/05/2023	09/05/2023
Phosphorus - Total	mg/L	0.1	0.1	0.08	0.08	0.07

Metals in Waters - Acid extractable						
Our Reference		322611-6	322611-7	322611-8	322611-9	322611-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	SW10
Date Sampled		08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	09/05/2023	09/05/2023	09/05/2023	09/05/2023	09/05/2023
Date analysed	-	09/05/2023	09/05/2023	09/05/2023	09/05/2023	09/05/2023
Phosphorus - Total	mg/L	0.06	<0.05	0.07	0.1	0.09

PFAS in Waters Extended						
Our Reference		322611-1	322611-2	322611-3	322611-4	322611-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	09/05/2023	09/05/2023	09/05/2023	09/05/2023	09/05/2023
Date analysed	-	09/05/2023	09/05/2023	09/05/2023	09/05/2023	10/05/2023
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	<0.01	<0.01	0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.02	0.02	0.02	0.02	0.02
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	0.03	0.02
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	100	98	101	99	99
Surrogate $^{13}C_2$ *PFOA*	%	100	102	99	100	96
Extracted ISTD $^{13}C_3$ *PFBS*	%	101	107	102	106	97
Extracted ISTD $^{18}O_2$ *PFHxS*	%	102	106	101	99	95
Extracted ISTD $^{13}C_4$ *PFOS*	%	102	104	101	100	91
Extracted ISTD $^{13}C_4$ *PFBA*	%	100	102	99	98	93

PFAS in Waters Extended						
Our Reference		322611-1	322611-2	322611-3	322611-4	322611-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	108	108	106	108	104
Extracted ISTD $^{13}C_2$ *PFHxA*	%	106	105	104	105	92
Extracted ISTD $^{13}C_4$ *PFHpA*	%	107	104	102	104	103
Extracted ISTD $^{13}C_4$ *PFOA*	%	108	111	107	109	109
Extracted ISTD $^{13}C_5$ *PFNA*	%	104	106	102	106	94
Extracted ISTD $^{13}C_2$ *PFDA*	%	105	108	109	109	106
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	120	125	119	121	121
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	112	115	113	111	106
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	100	94	93	82	79
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	131	128	106	124	119
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	115	115	106	109	116
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	127	129	120	133	142
Extracted ISTD $^{13}C_8$ *FOSA*	%	109	114	112	110	101
Extracted ISTD d_3 *N MeFOSA*	%	106	104	106	102	95
Extracted ISTD d_5 *N EtFOSA*	%	107	106	106	101	92
Extracted ISTD d_7 *N MeFOSE*	%	108	109	106	105	91
Extracted ISTD d_9 *N EtFOSE*	%	116	115	112	103	87
Extracted ISTD d_3 *N MeFOSAA*	%	109	114	101	113	102
Extracted ISTD d_5 *N EtFOSAA*	%	114	118	109	116	114
Total Positive PFHxS & PFOS	µg/L	0.02	0.02	0.02	0.02	0.03
Total Positive PFOA & PFOS	µg/L	0.02	0.02	0.02	0.03	0.02
Total Positive PFAS	µg/L	0.02	0.02	0.02	0.06	0.05

PFAS in Waters Extended						
Our Reference		322611-6	322611-7	322611-8	322611-9	322611-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	SW10
Date Sampled		08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	09/05/2023	09/05/2023	09/05/2023	09/05/2023	09/05/2023
Date analysed	-	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	<0.01	0.01	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.03	<0.01	0.02	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.01	<0.01	0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	101	97	98	98	101
Surrogate $^{13}C_2$ *PFOA*	%	98	102	101	103	98
Extracted ISTD $^{13}C_3$ *PFBS*	%	92	94	92	98	98
Extracted ISTD $^{18}O_2$ *PFHxS*	%	95	96	99	100	94
Extracted ISTD $^{13}C_4$ *PFOS*	%	90	93	95	95	91
Extracted ISTD $^{13}C_4$ *PFBA*	%	92	97	97	103	96

PFAS in Waters Extended						
Our Reference		322611-6	322611-7	322611-8	322611-9	322611-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	SW10
Date Sampled		08/05/2023	08/05/2023	08/05/2023	08/05/2023	08/05/2023
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	95	105	102	106	105
Extracted ISTD $^{13}C_2$ *PFHxA*	%	90	103	98	102	99
Extracted ISTD $^{13}C_4$ *PFHpA*	%	99	100	103	104	105
Extracted ISTD $^{13}C_4$ *PFOA*	%	103	105	107	107	110
Extracted ISTD $^{13}C_5$ *PFNA*	%	95	97	98	98	96
Extracted ISTD $^{13}C_2$ *PFDA*	%	101	104	104	104	104
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	119	120	119	126	120
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	103	105	102	108	105
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	88	90	92	92	79
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	93	115	107	109	119
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	95	113	113	119	120
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	117	131	122	136	137
Extracted ISTD $^{13}C_8$ *FOSA*	%	105	107	107	107	102
Extracted ISTD d_3 *N MeFOSA*	%	99	100	103	102	99
Extracted ISTD d_5 *N EtFOSA*	%	95	101	99	101	96
Extracted ISTD d_7 *N MeFOSE*	%	93	96	96	95	92
Extracted ISTD d_9 *N EtFOSE*	%	91	94	92	94	85
Extracted ISTD d_3 *N MeFOSAA*	%	94	106	102	109	106
Extracted ISTD d_5 *N EtFOSAA*	%	103	114	109	113	114
Total Positive PFHxS & PFOS	µg/L	0.04	<0.01	0.03	<0.01	<0.01
Total Positive PFOA & PFOS	µg/L	0.04	<0.01	0.02	<0.01	<0.01
Total Positive PFAS	µg/L	0.06	<0.01	0.04	<0.01	<0.01

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-019	Suspended Solids - determined gravimetricially by filtration of the sample. The samples are dried at 104+/-5°C.
Inorg-022	Turbidity - measured nephelometrically using a turbidimeter, in accordance with APHA latest edition, 2130-B.
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

Method ID	Methodology Summary
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			09/05/2023	2	09/05/2023	09/05/2023		09/05/2023	[NT]
Date analysed	-			10/05/2023	2	10/05/2023	10/05/2023		10/05/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	2	<10	<10	0	117	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	2	<10	<10	0	117	[NT]
Benzene	µg/L	1	Org-023	<1	2	<1	<1	0	113	[NT]
Toluene	µg/L	1	Org-023	<1	2	<1	<1	0	115	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	2	<1	<1	0	116	[NT]
m+p-xylene	µg/L	2	Org-023	<2	2	<2	<2	0	120	[NT]
o-xylene	µg/L	1	Org-023	<1	2	<1	<1	0	118	[NT]
Naphthalene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	99	2	100	97	3	98	[NT]
Surrogate toluene-d8	%		Org-023	98	2	99	99	0	100	[NT]
Surrogate 4-BFB	%		Org-023	106	2	107	119	11	102	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	09/05/2023	12/05/2023		[NT]	[NT]
Date analysed	-			[NT]	10	10/05/2023	12/05/2023		[NT]	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	[NT]	10	25	29	15	[NT]	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	[NT]	10	28	33	16	[NT]	[NT]
Benzene	µg/L	1	Org-023	[NT]	10	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	[NT]	10	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	[NT]	10	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	[NT]	10	<2	<2	0	[NT]	[NT]
o-xylene	µg/L	1	Org-023	[NT]	10	<1	<1	0	[NT]	[NT]
Naphthalene	µg/L	1	Org-023	[NT]	10	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	[NT]	10	99	101	2	[NT]	[NT]
Surrogate toluene-d8	%		Org-023	[NT]	10	99	105	6	[NT]	[NT]
Surrogate 4-BFB	%		Org-023	[NT]	10	109	107	2	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			12/05/2023	[NT]	[NT]	[NT]	[NT]	12/05/2023	[NT]
Date analysed	-			13/05/2023	[NT]	[NT]	[NT]	[NT]	13/05/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	104	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	114	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	104	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	114	[NT]
Surrogate o-Terphenyl	%		Org-020	74	[NT]	[NT]	[NT]	[NT]	89	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			12/05/2023	[NT]	[NT]	[NT]	[NT]	12/05/2023	[NT]
Date analysed	-			12/05/2023	[NT]	[NT]	[NT]	[NT]	12/05/2023	[NT]
Naphthalene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	117	[NT]
Acenaphthylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	113	[NT]
Fluorene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	123	[NT]
Phenanthrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	115	[NT]
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	75	[NT]	[NT]	[NT]	[NT]	121	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	322611-2
Date prepared	-			08/05/2023	1	08/05/2023	08/05/2023		08/05/2023	08/05/2023
Date analysed	-			08/05/2023	1	08/05/2023	08/05/2023		08/05/2023	08/05/2023
pH	pH Units		Inorg-001	[NT]	1	7.0	7.0	0	99	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	1	2000	2000	0	98	[NT]
Turbidity	NTU	0.1	Inorg-022	<0.1	1	4.8	4.7	2	102	[NT]
Total Suspended Solids	mg/L	5	Inorg-019	<5	1	11	[NT]		102	[NT]
Salinity as NaCl *	mg/L	1	Inorg-002	<1	1	1300	1300	0	[NT]	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	0.7	[NT]		87	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.2	0.2	0	100	93
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	0.085	0.082	4	107	100
Phosphate as P in water	mg/L	0.005	Inorg-060	<0.005	1	0.03	0.03	0	102	90
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	<0.005	0	101	[NT]
Trivalent Chromium, Cr^{3+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	<0.005	0	[NT]	[NT]
TKN in water	mg/L	0.1	Inorg-062	<0.1	1	0.5	[NT]		[NT]	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.19	0.19	0	100	93
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.016	0.016	0	93	91

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	322611-4
Date prepared	-			[NT]	7	08/05/2023	08/05/2023		[NT]	08/05/2023
Date analysed	-			[NT]	7	08/05/2023	08/05/2023		[NT]	08/05/2023
pH	pH Units		Inorg-001	[NT]	7	7.8	[NT]		[NT]	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	[NT]	7	200	[NT]		[NT]	[NT]
Turbidity	NTU	0.1	Inorg-022	[NT]	7	150	[NT]		[NT]	[NT]
Total Suspended Solids	mg/L	5	Inorg-019	[NT]	7	110	[NT]		[NT]	[NT]
Salinity as NaCl *	mg/L	1	Inorg-002	[NT]	7	130	[NT]		[NT]	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	[NT]	7	0.8	0.8	0	[NT]	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	[NT]	7	0.64	[NT]		[NT]	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	[NT]	7	0.12	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	[NT]	7	0.009	[NT]		[NT]	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	[NT]	7	<0.005	[NT]		[NT]	100
Trivalent Chromium, Cr^{3+}	mg/L	0.005	Inorg-024	[NT]	7	<0.005	[NT]		[NT]	[NT]
TKN in water	mg/L	0.1	Inorg-062	[NT]	7	0.2	[NT]		[NT]	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	[NT]	7	0.56	[NT]		[NT]	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	[NT]	7	0.085	[NT]		[NT]	[NT]

QUALITY CONTROL: All metals in water-dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	322611-2
Date prepared	-			10/05/2023	1	10/05/2023	10/05/2023		10/05/2023	10/05/2023
Date analysed	-			10/05/2023	1	10/05/2023	10/05/2023		10/05/2023	10/05/2023
Aluminium-Dissolved	µg/L	10	Metals-022	<10	1	20	20	0	103	104
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	93	94
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	95	98
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	97	106
Cobalt-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	97	103
Copper-Dissolved	µg/L	1	Metals-022	<1	1	3	3	0	96	100
Iron-Dissolved	µg/L	10	Metals-022	<10	1	130	130	0	93	95
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	[NT]		92	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	1	37	37	0	96	106
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	97	101
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	100	93
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	36	34	6	95	103

QUALITY CONTROL: All metals in water-dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	3	10/05/2023	10/05/2023		[NT]	[NT]
Date analysed	-			[NT]	3	10/05/2023	10/05/2023		[NT]	[NT]
Aluminium-Dissolved	µg/L	10	Metals-022	[NT]	3	20	[NT]		[NT]	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	[NT]	3	<0.1	[NT]		[NT]	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Copper-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Iron-Dissolved	µg/L	10	Metals-022	[NT]	3	40	[NT]		[NT]	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	[NT]	3	<0.05	<0.05	0	[NT]	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	[NT]	3	52	[NT]		[NT]	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	[NT]	3	1	[NT]		[NT]	[NT]
Lead-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	[NT]	3	17	[NT]		[NT]	[NT]

QUALITY CONTROL: Metals in Waters - Acid extractable						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	322611-2
Date prepared	-			09/05/2023	1	09/05/2023	09/05/2023		09/05/2023	09/05/2023
Date analysed	-			09/05/2023	1	09/05/2023	09/05/2023		09/05/2023	09/05/2023
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	1	0.1	0.1	0	109	107

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	322611-2
Date prepared	-			09/05/2023	1	09/05/2023	09/05/2023		09/05/2023	09/05/2023
Date analysed	-			09/05/2023	1	09/05/2023	09/05/2023		09/05/2023	09/05/2023
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	102	106
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	105	107
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	104	102
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	106	106
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	0.02	0.01	67	105	103
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	86	82
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	107	103
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	105	105
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	103	105
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	101	105
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	107	109
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	108	109
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	107	107
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	100	102
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	102	101
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	95	92
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	109	107
4:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	110	109
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	105	107
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	105	107
10:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	109	113
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	112	112
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	111	111
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	109	109
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	95	92
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	102	104
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	112	109
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	105	113
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	97	1	100	100	0	99	98
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	102	1	100	102	2	104	106

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	322611-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	96	1	101	99	2	100	102
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	104	1	102	103	1	102	104
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	101	1	102	101	1	100	104
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	104	1	100	102	2	102	98
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	106	1	108	107	1	104	104
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	103	1	106	105	1	100	102
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	104	1	107	105	2	102	103
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	105	1	108	110	2	101	105
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	106	1	104	107	3	99	107
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	106	1	105	107	2	103	108
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	122	1	120	123	2	110	116
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	113	1	112	118	5	106	112
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	95	1	100	96	4	89	91
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	114	1	131	127	3	107	120
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	111	1	115	117	2	106	114
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	124	1	127	132	4	120	129
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	112	1	109	115	5	104	105
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	105	1	106	108	2	102	102
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	105	1	107	110	3	103	103
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	105	1	108	109	1	106	106

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	322611-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	112	1	116	120	3	110	109
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	111	1	109	111	2	103	110
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	116	1	114	114	0	111	113

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 326566

Client Details

Client	Gamuda Australia (t/a Gamuda Berhad)
Attention	Kellie Hunt
Address	Suite 26.01, 100 Miller Street, NORTH SYDNEY, NSW, 2060

Sample Details

Your Reference	**WTP - Surface Water Monitoring**
Number of Samples	11 Water
Date samples received	27/06/2023
Date completed instructions received	27/06/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	04/07/2023
Date of Issue	04/07/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Diego Bigolin, Inorganics Supervisor
Dragana Tomas, Senior Chemist
Loren Bardwell, Development Chemist
Phalak Inthakesone, Organics Development Manager, Sydney

Authorised By
Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water						
Our Reference		326566-1	326566-2	326566-3	326566-4	326566-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	29/06/2023	29/06/2023	29/06/2023	29/06/2023	29/06/2023
Date analysed	-	30/06/2023	30/06/2023	30/06/2023	30/06/2023	30/06/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	109	111	111	109	112
Surrogate toluene-d8	%	99	100	98	99	97
Surrogate 4-BFB	%	106	105	106	105	106

vTRH(C6-C10)/BTEXN in Water						
Our Reference		326566-6	326566-7	326566-8	326566-9	326566-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	SW10
Date Sampled		26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	29/06/2023	29/06/2023	29/06/2023	29/06/2023	29/06/2023
Date analysed	-	30/06/2023	30/06/2023	30/06/2023	30/06/2023	30/06/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	114	111	112	111	112
Surrogate toluene-d8	%	97	96	98	94	99
Surrogate 4-BFB	%	104	106	106	105	106

svTRH (C10-C40) in Water						
Our Reference		326566-1	326566-2	326566-3	326566-4	326566-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	28/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Date analysed	-	29/06/2023	29/06/2023	29/06/2023	29/06/2023	29/06/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	72	83	80	79	83

svTRH (C10-C40) in Water						
Our Reference		326566-6	326566-7	326566-8	326566-9	326566-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	SW10
Date Sampled		26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	28/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Date analysed	-	29/06/2023	29/06/2023	29/06/2023	29/06/2023	29/06/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	81	81	79	83	78

PAHs in Water						
Our Reference	UNITS	326566-1	326566-2	326566-3	326566-4	326566-5
Your Reference		SW01	SW02	SW03	SW04	SW05
Date Sampled		26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	28/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Date analysed	-	01/07/2023	01/07/2023	01/07/2023	01/07/2023	01/07/2023
Naphthalene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	90	108	99	103	107

PAHs in Water						
Our Reference		326566-6	326566-7	326566-8	326566-9	326566-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	SW10
Date Sampled		26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	28/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Date analysed	-	01/07/2023	01/07/2023	01/07/2023	01/07/2023	01/07/2023
Naphthalene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	105	105	104	102	101

Miscellaneous Inorganics						
Our Reference		326566-1	326566-2	326566-3	326566-4	326566-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Date analysed	-	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
pH	pH Units	7.2	7.0	7.4	7.9	7.8
Electrical Conductivity	µS/cm	6,100	34,000	38,000	1,000	1,100
Turbidity	NTU	4.6	2.6	1.8	5.1	4.7
Total Suspended Solids	mg/L	6	<5	12	5	<5
Salinity as NaCl *	mg/L	3,900	21,000	24,000	640	690
Total Nitrogen in water	mg/L	1.3	0.5	0.3	0.8	0.7
NOx as N in water	mg/L	0.55	0.2	0.1	0.5	0.4
Ammonia as N in water	mg/L	0.39	0.095	0.009	0.026	0.068
Phosphate as P in water	mg/L	0.070	0.05	0.01	<0.005	0.006
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trivalent Chromium, Cr^{3+}	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
TKN in water	mg/L	0.7	0.3	0.2	0.3	0.3
Nitrate as N in water	mg/L	0.47	0.19	0.11	0.46	0.36
Nitrite as N in water	mg/L	0.074	0.023	0.006	0.020	0.017

Miscellaneous Inorganics						
Our Reference		326566-6	326566-7	326566-8	326566-9	326566-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	SW10
Date Sampled		26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Date analysed	-	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
pH	pH Units	7.5	7.7	7.1	7.2	7.4
Electrical Conductivity	µS/cm	27,000	470	37,000	9,700	450
Turbidity	NTU	2.7	7.4	1.8	4.6	4.5
Total Suspended Solids	mg/L	10	6	<5	13	<5
Salinity as NaCl *	mg/L	17,000	300	23,000	6,100	280
Total Nitrogen in water	mg/L	0.4	1.1	0.4	1.7	1.1
NOx as N in water	mg/L	0.1	0.3	0.2	0.68	0.06
Ammonia as N in water	mg/L	0.060	0.30	0.12	0.47	0.71
Phosphate as P in water	mg/L	0.02	0.096	0.04	0.13	0.27
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trivalent Chromium, Cr^{3+}	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
TKN in water	mg/L	0.2	0.8	0.2	1.0	1.1
Nitrate as N in water	mg/L	0.11	0.27	0.14	0.61	0.04
Nitrite as N in water	mg/L	0.008	0.036	0.009	0.075	0.020

Miscellaneous Inorganics		
Our Reference		326566-11
Your Reference	UNITS	SW11
Date Sampled		26/06/2023
Type of sample		Water
Date prepared	-	27/06/2023
Date analysed	-	27/06/2023
Electrical Conductivity	µS/cm	30,000
Turbidity	NTU	4.0
Salinity as NaCl *	mg/L	19,000

All metals in water-dissolved						
Our Reference		326566-1	326566-2	326566-3	326566-4	326566-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	28/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Date analysed	-	29/06/2023	29/06/2023	29/06/2023	29/06/2023	29/06/2023
Aluminium-Dissolved	µg/L	20	<10	<10	10	10
Arsenic-Dissolved	µg/L	<1	<1	1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	2	<1	<1
Cobalt-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	2	1	1	2	3
Iron-Dissolved	µg/L	280	70	20	90	90
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	µg/L	110	62	40	23	24
Nickel-Dissolved	µg/L	1	1	1	<1	<1
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Zinc-Dissolved	µg/L	21	26	24	11	10

All metals in water-dissolved						
Our Reference		326566-6	326566-7	326566-8	326566-9	326566-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	SW10
Date Sampled		26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	28/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Date analysed	-	29/06/2023	29/06/2023	29/06/2023	29/06/2023	29/06/2023
Aluminium-Dissolved	µg/L	30	20	20	50	20
Arsenic-Dissolved	µg/L	<1	<1	1	1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	1	<1	1	1	<1
Cobalt-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	1	1	1	2	1
Iron-Dissolved	µg/L	30	640	150	230	470
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	µg/L	37	55	62	180	130
Nickel-Dissolved	µg/L	1	1	1	1	<1
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Zinc-Dissolved	µg/L	18	9	35	20	8

Metals in Waters - Acid extractable						
Our Reference		326566-1	326566-2	326566-3	326566-4	326566-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	28/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Date analysed	-	01/07/2023	01/07/2023	01/07/2023	01/07/2023	01/07/2023
Phosphorus - Total	mg/L	0.1	0.07	<0.1	0.09	0.05

Metals in Waters - Acid extractable						
Our Reference		326566-6	326566-7	326566-8	326566-9	326566-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	SW10
Date Sampled		26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	28/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Date analysed	-	01/07/2023	01/07/2023	01/07/2023	01/07/2023	01/07/2023
Phosphorus - Total	mg/L	<0.05	0.2	<0.05	0.2	0.3

PFAS in Waters Extended						
Our Reference		326566-1	326566-2	326566-3	326566-4	326566-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	28/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Date analysed	-	28/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	<0.01	0.01	0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.02	<0.01	<0.01	0.02	0.02
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.02	<0.01	<0.01	0.02	0.02
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	101	100	95	97	99
Surrogate $^{13}C_2$ *PFOA*	%	102	105	101	105	101
Extracted ISTD $^{13}C_3$ *PFBS*	%	99	102	100	100	99
Extracted ISTD $^{18}O_2$ *PFHxS*	%	97	101	101	98	99
Extracted ISTD $^{13}C_4$ *PFOS*	%	98	103	103	101	99
Extracted ISTD $^{13}C_4$ *PFBA*	%	96	99	103	103	101

PFAS in Waters Extended						
Our Reference		326566-1	326566-2	326566-3	326566-4	326566-5
Your Reference	UNITS	SW01	SW02	SW03	SW04	SW05
Date Sampled		26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	106	105	103	111	108
Extracted ISTD $^{13}C_2$ *PFHxA*	%	102	102	102	107	103
Extracted ISTD $^{13}C_4$ *PFHpA*	%	103	99	100	101	102
Extracted ISTD $^{13}C_4$ *PFOA*	%	105	103	103	107	108
Extracted ISTD $^{13}C_5$ *PFNA*	%	105	103	100	104	103
Extracted ISTD $^{13}C_2$ *PFDA*	%	106	108	105	108	111
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	114	114	109	114	114
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	106	109	101	106	107
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	89	90	84	88	90
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	139	92	84	118	122
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	109	87	80	100	105
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	125	104	96	117	123
Extracted ISTD $^{13}C_8$ *FOSA*	%	95	95	94	94	96
Extracted ISTD d_3 *N MeFOSA*	%	99	100	98	103	101
Extracted ISTD d_5 *N EtFOSA*	%	105	107	102	104	107
Extracted ISTD d_7 *N MeFOSE*	%	100	101	104	103	101
Extracted ISTD d_9 *N EtFOSE*	%	94	99	100	94	97
Extracted ISTD d_3 *N MeFOSAA*	%	112	98	92	101	107
Extracted ISTD d_5 *N EtFOSAA*	%	106	100	93	104	101
Total Positive PFHxS & PFOS	µg/L	0.02	<0.01	<0.01	0.03	0.03
Total Positive PFOA & PFOS	µg/L	0.02	<0.01	<0.01	0.02	0.03
Total Positive PFAS	µg/L	0.03	<0.01	<0.01	0.05	0.06

PFAS in Waters Extended						
Our Reference		326566-6	326566-7	326566-8	326566-9	326566-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	SW10
Date Sampled		26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	28/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Date analysed	-	28/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	0.01	<0.01	0.01	0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	0.01	0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	101	101	102	98	99
Surrogate $^{13}C_2$ *PFOA*	%	100	106	106	101	102
Extracted ISTD $^{13}C_3$ *PFBS*	%	98	105	97	98	102
Extracted ISTD $^{18}O_2$ *PFHxS*	%	101	106	102	105	103
Extracted ISTD $^{13}C_4$ *PFOS*	%	102	102	101	104	103
Extracted ISTD $^{13}C_4$ *PFBA*	%	96	100	91	98	98

PFAS in Waters Extended						
Our Reference		326566-6	326566-7	326566-8	326566-9	326566-10
Your Reference	UNITS	SW06	SW07	SW08	SW09	SW10
Date Sampled		26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	101	110	99	106	108
Extracted ISTD $^{13}C_2$ *PFHxA*	%	99	106	103	107	104
Extracted ISTD $^{13}C_4$ *PFHpA*	%	100	106	95	96	104
Extracted ISTD $^{13}C_4$ *PFOA*	%	104	108	99	108	109
Extracted ISTD $^{13}C_5$ *PFNA*	%	104	111	104	107	110
Extracted ISTD $^{13}C_2$ *PFDA*	%	107	115	103	105	108
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	111	116	109	114	114
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	108	116	106	109	109
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	87	91	84	83	86
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	89	119	81	110	122
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	89	125	82	101	111
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	103	120	98	108	109
Extracted ISTD $^{13}C_8$ *FOSA*	%	100	102	98	100	97
Extracted ISTD d_3 *N MeFOSA*	%	100	104	99	100	97
Extracted ISTD d_5 *N EtFOSA*	%	102	104	102	102	102
Extracted ISTD d_7 *N MeFOSE*	%	103	106	104	101	102
Extracted ISTD d_9 *N EtFOSE*	%	102	103	100	98	100
Extracted ISTD d_3 *N MeFOSAA*	%	100	116	94	99	107
Extracted ISTD d_5 *N EtFOSAA*	%	98	113	93	100	107
Total Positive PFHxS & PFOS	µg/L	<0.01	0.01	<0.01	0.01	0.01
Total Positive PFOA & PFOS	µg/L	<0.01	0.03	<0.01	0.01	0.01
Total Positive PFAS	µg/L	<0.01	0.03	<0.01	0.02	0.02

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-019	Suspended Solids - determined gravimetricially by filtration of the sample. The samples are dried at 104+/-5°C.
Inorg-022	Turbidity - measured nephelometrically using a turbidimeter, in accordance with APHA latest edition, 2130-B.
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS. Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

Method ID	Methodology Summary
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			29/06/2023	1	29/06/2023	29/06/2023		29/06/2023	[NT]
Date analysed	-			30/06/2023	1	30/06/2023	30/06/2023		30/06/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	<10	<10	0	107	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	<10	<10	0	107	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	107	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	107	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	115	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	103	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	114	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	110	1	109	113	4	99	[NT]
Surrogate toluene-d8	%		Org-023	97	1	99	97	2	101	[NT]
Surrogate 4-BFB	%		Org-023	105	1	106	105	1	97	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	29/06/2023	29/06/2023		[NT]	[NT]
Date analysed	-			[NT]	10	30/06/2023	30/06/2023		[NT]	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	[NT]	10	<10	<10	0	[NT]	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	[NT]	10	<10	<10	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	[NT]	10	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	[NT]	10	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	[NT]	10	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	[NT]	10	<2	<2	0	[NT]	[NT]
o-xylene	µg/L	1	Org-023	[NT]	10	<1	<1	0	[NT]	[NT]
Naphthalene	µg/L	1	Org-023	[NT]	10	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	[NT]	10	112	112	0	[NT]	[NT]
Surrogate toluene-d8	%		Org-023	[NT]	10	99	99	0	[NT]	[NT]
Surrogate 4-BFB	%		Org-023	[NT]	10	106	104	2	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	326566-2
Date extracted	-			28/06/2023	1	28/06/2023	28/06/2023		28/06/2023	28/06/2023
Date analysed	-			29/06/2023	1	29/06/2023	29/06/2023		29/06/2023	29/06/2023
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	106	111
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	<100	0	110	121
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	71	101
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	<50	<50	0	106	111
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	110	121
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	71	101
Surrogate o-Terphenyl	%		Org-020	88	1	72	76	5	80	83

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	
Date extracted	-			28/06/2023	1	28/06/2023	28/06/2023		28/06/2023	[NT]
Date analysed	-			01/07/2023	1	01/07/2023	01/07/2023		01/07/2023	[NT]
Naphthalene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	111	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	110	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	104	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	112	[NT]
Anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	112	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	108	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	113	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	99	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	106	1	90	94	4	113	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	326566-2
Date extracted	-			[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	28/06/2023
Date analysed	-			[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	01/07/2023
Naphthalene	µg/L	0.2	Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	105
Acenaphthene	µg/L	0.1	Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	93
Fluorene	µg/L	0.1	Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	93
Phenanthrene	µg/L	0.1	Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	95
Fluoranthene	µg/L	0.1	Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	98
Pyrene	µg/L	0.1	Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	106
Chrysene	µg/L	0.1	Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	93
Benzo(a)pyrene	µg/L	0.1	Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	122
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	116

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	326566-1
Date prepared	-			27/06/2023	1	27/06/2023	27/06/2023		27/06/2023	27/06/2023
Date analysed	-			27/06/2023	1	27/06/2023	27/06/2023		27/06/2023	27/06/2023
pH	pH Units		Inorg-001	[NT]	1	7.2	7.3	1	100	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	1	6100	6100	0	100	[NT]
Turbidity	NTU	0.1	Inorg-022	<0.1	1	4.6	4.6	0	87	[NT]
Total Suspended Solids	mg/L	5	Inorg-019	<5	1	6	[NT]		105	[NT]
Salinity as NaCl *	mg/L	1	Inorg-002	<1	1	3900	3800	3	[NT]	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	1.3	1.3	0	87	94
NOx as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.55	0.55	0	101	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	0.39	0.39	0	102	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	<0.005	1	0.070	0.072	3	92	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	<0.005	0	99	[NT]
Trivalent Chromium, Cr^{3+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	<0.005	0	[NT]	[NT]
TKN in water	mg/L	0.1	Inorg-062	<0.1	1	0.7	0.7	0	[NT]	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.47	0.48	2	101	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.074	0.074	0	102	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	326566-2
Date prepared	-			[NT]	2	27/06/2023	27/06/2023		[NT]	27/06/2023
Date analysed	-			[NT]	2	27/06/2023	27/06/2023		[NT]	27/06/2023
pH	pH Units		Inorg-001	[NT]	2	7.0	[NT]		[NT]	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	[NT]	2	34000	[NT]		[NT]	[NT]
Turbidity	NTU	0.1	Inorg-022	[NT]	2	2.6	[NT]		[NT]	[NT]
Total Suspended Solids	mg/L	5	Inorg-019	[NT]	2	<5	[NT]		[NT]	[NT]
Salinity as NaCl *	mg/L	1	Inorg-002	[NT]	2	21000	[NT]		[NT]	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	[NT]	2	0.5	[NT]		[NT]	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	[NT]	2	0.2	[NT]		[NT]	114
Ammonia as N in water	mg/L	0.005	Inorg-057	[NT]	2	0.095	[NT]		[NT]	95
Phosphate as P in water	mg/L	0.005	Inorg-060	[NT]	2	0.05	[NT]		[NT]	116
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	[NT]	2	<0.005	[NT]		[NT]	102
Trivalent Chromium, Cr^{3+}	mg/L	0.005	Inorg-024	[NT]	2	<0.005	[NT]		[NT]	[NT]
TKN in water	mg/L	0.1	Inorg-062	[NT]	2	0.3	[NT]		[NT]	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	[NT]	2	0.19	[NT]		[NT]	114
Nitrite as N in water	mg/L	0.005	Inorg-055	[NT]	2	0.023	[NT]		[NT]	94

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	10	27/06/2023	27/06/2023		[NT]	[NT]
Date analysed	-			[NT]	10	27/06/2023	27/06/2023		[NT]	[NT]
pH	pH Units		Inorg-001	[NT]	10	7.4	[NT]		[NT]	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	[NT]	10	450	[NT]		[NT]	[NT]
Turbidity	NTU	0.1	Inorg-022	[NT]	10	4.5	[NT]		[NT]	[NT]
Total Suspended Solids	mg/L	5	Inorg-019	[NT]	10	<5	<5	0	[NT]	[NT]
Salinity as NaCl *	mg/L	1	Inorg-002	[NT]	10	280	[NT]		[NT]	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	[NT]	10	1.1	[NT]		[NT]	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	[NT]	10	0.06	[NT]		[NT]	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	[NT]	10	0.71	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	[NT]	10	0.27	[NT]		[NT]	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	[NT]	10	<0.005	[NT]		[NT]	[NT]
Trivalent Chromium, Cr^{3+}	mg/L	0.005	Inorg-024	[NT]	10	<0.005	[NT]		[NT]	[NT]
TKN in water	mg/L	0.1	Inorg-062	[NT]	10	1.1	[NT]		[NT]	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	[NT]	10	0.04	[NT]		[NT]	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	[NT]	10	0.020	[NT]		[NT]	[NT]

QUALITY CONTROL: All metals in water-dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	326566-2
Date prepared	-			28/06/2023	1	28/06/2023	28/06/2023		28/06/2023	28/06/2023
Date analysed	-			29/06/2023	1	29/06/2023	29/06/2023		29/06/2023	29/06/2023
Aluminium-Dissolved	µg/L	10	Metals-022	<10	1	20	20	0	107	107
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	97	97
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	98	100
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	90	124
Cobalt-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	102	115
Copper-Dissolved	µg/L	1	Metals-022	<1	1	2	2	0	91	102
Iron-Dissolved	µg/L	10	Metals-022	<10	1	280	270	4	92	118
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	[NT]		88	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	1	110	110	0	93	110
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	1	1	0	94	112
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	97	91
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	21	21	0	84	99

QUALITY CONTROL: All metals in water-dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	326566-4
Date prepared	-			[NT]	3	28/06/2023	28/06/2023		[NT]	28/06/2023
Date analysed	-			[NT]	3	29/06/2023	29/06/2023		[NT]	29/06/2023
Aluminium-Dissolved	µg/L	10	Metals-022	[NT]	3	<10	[NT]		[NT]	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	[NT]	3	1	[NT]		[NT]	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	[NT]	3	<0.1	[NT]		[NT]	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	[NT]	3	2	[NT]		[NT]	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Copper-Dissolved	µg/L	1	Metals-022	[NT]	3	1	[NT]		[NT]	[NT]
Iron-Dissolved	µg/L	10	Metals-022	[NT]	3	20	[NT]		[NT]	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	[NT]	3	<0.05	<0.05	0	[NT]	89
Manganese-Dissolved	µg/L	5	Metals-022	[NT]	3	40	[NT]		[NT]	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	[NT]	3	1	[NT]		[NT]	[NT]
Lead-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	[NT]	3	24	[NT]		[NT]	[NT]

QUALITY CONTROL: All metals in water-dissolved					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	10	28/06/2023	28/06/2023		[NT]	[NT]
Date analysed	-			[NT]	10	29/06/2023	29/06/2023		[NT]	[NT]
Aluminium-Dissolved	µg/L	10	Metals-022	[NT]	10	20	20	0	[NT]	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	[NT]	10	<1	<1	0	[NT]	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	[NT]	10	<1	<1	0	[NT]	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	[NT]	10	<1	<1	0	[NT]	[NT]
Copper-Dissolved	µg/L	1	Metals-022	[NT]	10	1	1	0	[NT]	[NT]
Iron-Dissolved	µg/L	10	Metals-022	[NT]	10	470	450	4	[NT]	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	[NT]	10	<0.05	<0.05	0	[NT]	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	[NT]	10	130	120	8	[NT]	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	[NT]	10	<1	<1	0	[NT]	[NT]
Lead-Dissolved	µg/L	1	Metals-022	[NT]	10	<1	<1	0	[NT]	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	[NT]	10	8	9	12	[NT]	[NT]

QUALITY CONTROL: Metals in Waters - Acid extractable						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	326566-3
Date prepared	-			28/06/2023	2	28/06/2023	28/06/2023		28/06/2023	28/06/2023
Date analysed	-			01/07/2023	2	01/07/2023	01/07/2023		01/07/2023	01/07/2023
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	2	0.07	0.07	0	94	108

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			28/06/2023	1	28/06/2023	28/06/2023		28/06/2023	[NT]
Date analysed	-			28/06/2023	1	28/06/2023	28/06/2023		28/06/2023	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	100	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	105	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	101	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	104	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	0.02	0.02	0	103	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	85	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	99	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	99	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	1	0.02	0.01	67	102	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	103	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	105	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	102	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	97	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	99	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	101	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	92	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	104	[NT]
4:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	100	[NT]
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	103	[NT]
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	98	[NT]
10:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	97	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	114	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	109	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	102	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	105	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	100	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	102	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	99	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	102	1	101	101	0	101	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	99	1	102	99	3	103	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	100	1	99	102	3	98	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	100	1	97	98	1	95	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	100	1	98	100	2	98	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	104	1	96	98	2	101	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	104	1	106	105	1	101	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	102	1	102	102	0	98	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	102	1	103	100	3	101	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	104	1	105	109	4	100	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	105	1	105	105	0	101	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	107	1	106	107	1	106	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	114	1	114	114	0	115	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	109	1	106	111	5	104	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	89	1	89	88	1	87	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	108	1	139	129	7	108	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	104	1	109	107	2	102	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	118	1	125	119	5	122	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	99	1	95	95	0	94	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	101	1	99	101	2	99	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	106	1	105	104	1	103	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	99	1	100	100	0	101	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	99	1	94	96	2	94	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	109	1	112	107	5	108	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	109	1	106	104	2	113	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

8 Metals in Waters - total - The PQL has been raised for #3, due to the sample matrix requiring dilution.

Attachment C – Groundwater Monitoring Report

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Groundwater Monitoring Six Monthly Report 2

Sydney Metro West – Western Tunnelling Package

January 2023 to July 2023

ISSUE DATE: 26 SEPTEMBER 2023

Document Details

Document Title	**Groundwater Monitoring Six Monthly Report 2**
Project Name	**Sydney Metro West – Western Tunnelling Package**
Client	**Sydney Metro**
GA Project No.	**00013/13065**
Document Reference No.	**SMWSTWTP-GLO-1NL-EN-RPT-000008**
Principal Contractor	**Gamuda Australia**
ABN	**27 632 738 768**
Project Address	**L8, 60 Station Street, Parramatta NSW 2150**

Document Authorisation

Revision	Date	Description of changes	Prepared by	Reviewed by
Rev A	26/09/23	Revised draft for submission	J. Pickerden	Todd O'Brien, Mirelle Gouws & Candice Somerville

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

TABLE OF CONTENTS

Terms and Definitions 4

1 INTRODUCTION 5
1.1 Background 5
1.2 Groundwater Monitoring Objective 5
1.3 Project Description 5
1.4 Project Requirements 7

2 DESCRIPTION OF WORKS 9

3 MONITORING METHODOLOGY 11
3.1 Groundwater Monitoring 11
3.2 Water Treatment Plant Testing 33

4 PERFORMANCE CRITERIA 34
4.1 Groundwater Level Monitoring 34
4.2 Groundwater Quality Monitoring 35
4.3 Water Treatment Plant Sampling Criteria 36

5 RESULTS 37
5.1 Registered Groundwater Bores 37
5.2 Groundwater Levels 39
5.3 Groundwater Quality 44
5.4 Water Treatment Plant Sampling Results and Discussion 51

6 CONCLUSIONS 56

7 REFERENCES 57

APPENDIX A – FIGURES 58

APPENDIX B – TABLES 59

APPENDIX C – HYDROGRAPHS 61

APPENDIX D – FIELD DATA SHEETS 62

APPENDIX E – LABORATORY DOCUMENTATION 64

APPENDIX F – CALIBRATION CERTIFICATES 66

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Terms and Definitions

Term	Definition
CEMF	Construction Environmental Management Framework
CEMP	Construction Environmental Management Plan
COC	Chain of Custody
CoPC	Contaminants of Potential Concern
CTD	Conductivity, Temperature and Depth
DO	Dissolved Oxygen
DPE	Department of Planning and Environment
EC	Electrical Conductivity
EIS	Environmental Impact Statement
GIL	Groundwater Investigation Level
GLC	Gamuda Australia – Laing O'Rourke Consortium
GMP	Groundwater Monitoring Program
GWMW	Groundwater Monitoring Well
mAHD	Meters Australian Height Datum
mBTOC	Meters Below Top of Casing
MSF	Maintenance and Stabling Facility
NEPM	National Environmental Protection Measure
ORP	Oxidation Redox Potential
RPD	Relative Percent Difference
SMW	Sydney Metro West
SWL	Standing Water Level
TDS	Total Dissolved Solids
TOC	Top of Casing
WHS	Work Health and Safety Management
WTP	Sydney Metro West Western Tunnelling Package works

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

1 INTRODUCTION

1.1 Background

Sydney Metro West (SMW) is a new underground railway connecting Greater Parramatta and the Sydney CBD. It will provide fast connections between greater Sydney's two major business centres as well as providing better access to the growing business and entertainment precincts in Olympic Park and Pyrmont, the health and medical research hub at Westmead and the future business and tourism site at The Bays.

An Environmental Impact Statement (EIS) (Jacobs/Arcadis, 2020) for the Concept and Stage 1 assessed the potential groundwater impacts in response to the Secretary Environmental Assessment Requirements issued by the Department of Planning and Environment (DPE). The Project was approved on 11 March 2021 (SSI 10038).

1.2 Groundwater Monitoring Objective

The objective of groundwater monitoring is to ensure that impacts to groundwater are minimised during construction of the Western Tunnelling Package (WTP) and that all works are undertaken in compliance with the project requirements, detailed in the Groundwater Monitoring Program (SMWSTWTP-GLO-1NL-EN-PRG-000002, Rev. B) and Groundwater Management Plan (SMWSTWTP-GLO-1NL-EN-PLN-000002, Rev. B).

This report combines results from the groundwater monitoring and sampling events, completed by Epic Environmental (Epic) and results from the Water Treatment Plant testing, completed by Gamuda Australia – Laing O'Rourke Consortium (GLC), during the reporting period 19 January 2023 to 19 July 2023.

1.3 Project Description

Sydney Metro is delivering the Sydney Metro West project via several different packages, including the Western Tunnelling Package (the project).

The WTP project location is from Westmead to Sydney Olympic Park. **Figure 1** is an overview map outlining the extent of the Project.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

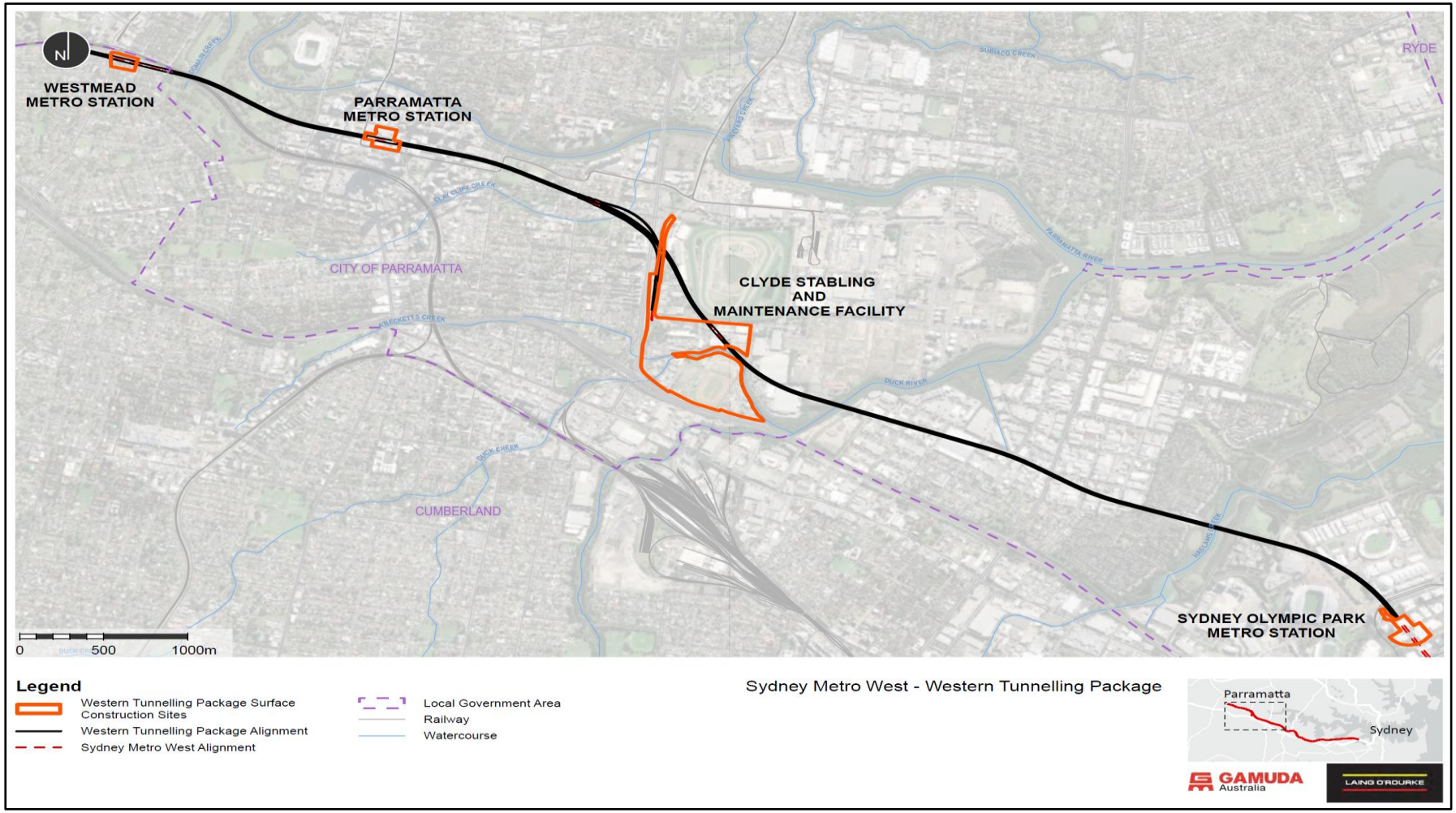


Figure 1 WTP Project Map Overview

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

1.4 Project Requirements

The Groundwater Monitoring Program (GMP) sets out the requirement to develop and issue a Groundwater Monitoring Report (this report), collating groundwater monitoring data. This report collates groundwater monitoring undertaken during the previous six months of construction, from 19th January 2023 to 19th July 2023. Groundwater monitoring event (GME) data from January 2023 and April 2023 are included within this report.

The Project requirements relevant to the preparation of this Groundwater Monitoring Report are identified in Table 1. A document reference is also included to indicate where the requirement is addressed in this Groundwater Monitoring Report or other documents. Additional monitoring requirements are outlined in the GMP and in the Groundwater Management Plan (GWMP) are also listed in Table 1.

Table 1 Monitoring Report and Compliance Matrix

Reference	Requirement	Document Reference
Condition of Approval C23	The results of the Construction Monitoring Programs must be submitted to the Planning Secretary, ER and relevant regulatory agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program.	This document
Revised Environmental Mitigation Measure (REMM) GW3	Additional site investigations would be carried out at creeks or surface water bodies where the additional data review in GW2 shows there is a likely surface water/groundwater interaction. This would involve baseline monitoring of creek flows (streamflow gauging) prior to construction, and baseflow streamflow analysis to confirm the existing groundwater baseflow contribution to streamflow for each creek. Where a significant reduction in baseflow is predicted due to Stage 1, design responses would be implemented at station and shaft excavations to reduce potential baseflow loss.	Surface water monitoring report
REMM GW4	Monitoring of groundwater levels and quality at the site area would occur before, during and after construction. This would also include monitoring of potential contaminants of concern. Groundwater level data would be regularly reviewed during and after construction by a qualified hydrogeologist. Groundwater monitoring data would be provided to the NSW Environment Protection Authority and Department of Planning, Industry, Environment, Water and the Natural Resources Access Regulator for information.	This document (Section 5)
Groundwater Monitoring Program (SMWSTWTP-GLO-1NL-EN-PRG-000002)	Pressure transducers with digital dataloggers will be installed (or maintained from the baseline monitoring phase) in selected standpipe piezometers within and around the predicted radius of drawdown for the project to provide continuous data collection. The dataloggers will be programmed to record at hourly intervals.	Section 5.2
	Selected standpipe piezometers will include transducers with fitted with EC sensors to record groundwater salinity for monitoring of potential saline intrusion where potential risks exist.	Section 3.1.1.1 and 5.2.2

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Reference	Requirement	Document Reference
	All pressure transducers will be set at a depth lower than the predicted minimum water table elevation, accounting for natural variations and artificially induced drawdown. Any transducers with EC sensors shall be set within the screened interval for accurate assessment of groundwater salinity. Data loggers will be checked and maintained as necessary before being re-calibrated, decontaminated and then returned to the monitoring bore at a known depth below the top of casing.	Section 5.2 and Appendix C – Hydrographs
	The static groundwater level will be measured and recorded at each standpipe piezometer each month using an oil/water interface probe to verify the continuous data recorded by dataloggers and identify any non-aqueous phase liquid (NAPL) contamination.	Section 5.2.1
	Recorded data will be compensated for barometric pressure and converted to a groundwater level measurement. Measurements will be recorded in metres below top of casing (mbTOC) and converted to metres below ground level (mBGL) and metres Australian Height Datum (mAHD).	Appendix C – Hydrographs
	Groundwater monitoring will be overseen by personnel with appropriate qualifications and experience. Trained field personnel will complete monitoring rounds using appropriate personal protective equipment (PPE) and calibrated monitoring equipment.	Section 3
	All groundwater level data will be compared to local rainfall records to assess recharge response and identify any potential adverse effects from construction activities.	Appendix C – Hydrographs
	In accordance with the Aquifer Interference Policy (AIP) minimal impact considerations, groundwater level and pore pressures will be assessed against the following criteria where appropriate (DPI-Water, 2012): • Less than or equal to 10 % cumulative variation in the water table, allowing for typical climatic "post-water sharing plan" variations, 40 m from any: – high priority groundwater dependent ecosystem; or – high priority culturally significant site listed in the schedule of the relevant water sharing plan. A cumulative maximum of 2 m decline in water level or pore pressure at any water supply bore	Section 5.2.2
	Groundwater quality monitoring will be undertaken as an initial event prior to construction and on a quarterly (3 month) basis thereafter.	Section 3
	The quarterly sampling will test for all parameters tested in the baseline monitoring report, to provide ongoing monitoring of groundwater conditions and assess any potential changes in groundwater quality which may have occurred as a result of the construction activities or other local events.	Section 3

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Reference	Requirement	Document Reference
	Sampling frequencies for water quality parameters will be increased to monthly sampling in the event that laboratory testing results identify any exceedances of the trigger values from the initial baseline monitoring event or during quarterly sampling round. The NEPM (2013) GILs and ANZG (2018) DGVs for 95% and 99% species protection have been adopted as trigger values on which monthly sampling requirements will be based.	Section 5.3.1
	Dedicated dataloggers with specifications allowing the measurement of pressure, temperature, and electrical conductivity (EC) will be installed in selected monitoring bores. Electrical conductivity (EC) results will be assessed to detect changes in water quality that may indicate the intrusion of saline water towards the station boxes and shafts.	Section 3.1.1.1
	All data from construction water treatment plants will be reported in the six-monthly water monitoring report.	Section 5.4
	Grab samples will be collected manually from the water treatment plant locations once a month to verify that water from the treatment plants remain below the trigger values for parameters.	Section 3.2

	Water quality results from the water treatment plants will be analysed monthly, along with an overview of corrective actions. The monitoring results will be compared against the requirements for discharge from the EPL and ANZECC (2000) 95% or 99% (for toxicants that bioaccumulate) species protection level. If water quality monitoring from water treatment plants identifies a potential compliance issue, the following actions will be taken:
	• Higher frequency monitoring will be undertaken to verify the compliance issue is persistent and not a result of a transient event or reporting error.
	• If compliance issues persist, then
	  ○ A pollution incident will be reported to NSW EPA
	  ○ Appropriate management actions will be taken, including but not limited to discharge to sewer under a trade waste agreement, and/or transport of effluent by tanker to an offsite licenced liquid waste disposal facility
		Section 4.3 and 5.4

	Where in-line sensors or monitoring identify treatment plant performance drift outside of the required criteria, the treatment plant may be shut down (if necessary) and/or measures will be implemented to return the plant performance back into the required range. In these instances, water will be discharged to trade waste (where permitted), recycled or disposed offsite at an appropriate licenced liquid waste facility.	Section 5.4

2 DESCRIPTION OF WORKS

The construction activities that took place during the reporting period are outlined in Table 2**.**

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Table 2 Construction Activities undertaken during the reporting period

Site	Construction activities
Westmead	General operation of ancillary facilities Bulk excavation work.
Parramatta	Removal and/or relocating utilities Establishing vehicle access and egress points General operation of ancillary facilities Initial diaphragm wall (D-Wall) excavation Archaeological clearance
Clyde Dive[1]	Construction site establishment/haul roads Establishing piling platforms Shaft excavation and piling Establishing concrete slabs/acoustic shed Bulk earthworks Haul road FRP and hoarding installation General operation of ancillary facilities
Clyde MSF[1]	Traffic adjustment Haul roads and site amenities Earthworks Utility trench and services corridor Water conveyance structure – construction Unwin Street Diversion – construction General operation of ancillary facility Utility adjustment works Vegetation removal Spoil haulage
Rosehill[1]	D-Wall construction Box excavation FRP concrete work Delivery of equipment General operation of ancillary facility Water treatment plant installation
Sydney Olympic Park	No works undertaken

[1] The Clyde Maintenance Stabling Facility consists of three sub-sites, specifically the Clyde Dive, Clyde MSF and Rosehill construction sites.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

3 MONITORING METHODOLOGY

3.1 Groundwater Monitoring

The following was undertaken during the January 2023 and April 2023 Quarterly Groundwater Monitoring Events:

- Preparation of relevant Work Health and Safety Management (WHS) documentation and management of site access
- Mobilisation to site to undertake groundwater level monitoring and groundwater quality sampling at selected accessible GWMWs
- Laboratory analysis of collected samples for Contaminants of Potential Concern (CoPC)
- Assessment of analytical results against performance criteria/guideline values
- Preparation of factual groundwater monitoring reports (January 2023 and April 2023)

3.1.1 Groundwater Monitoring Network

The original proposed groundwater monitoring network consisted of a total of 75 monitoring locations including 8 vibrating wire piezometers (VWPs). This network would allow for continued monitoring of shallow and deep groundwater levels during both the construction and post-construction phases of the project and would allow the assessment of any changes in groundwater levels resulting from tunnel and shaft drainage.

During the January 2023 and April 2023 monitoring events, a number of the proposed GWMWs from the July 2022 baseline monitoring were either inaccessible and/or destroyed as a result of construction works. Alternative GWMWs, installed as part of the Detailed Site Investigations (undertaken by Epic Environmental), were used as replacement GWMWs. These alternative GWMWs were assessed as being appropriate to meet the monitoring program objectives due to their location and geology of the screened interval.

The groundwater monitoring network accessed during January 2023 and April 2023 monitoring events is presented in **Table 3** and shown in **Appendix A – Figures**. It should be noted that a number of the January 2023 sampling event monitoring dates falls out of the monitoring period stipulated by this report (19 Jan 2023 – 19 Jul 2023). However, the results of these monitoring dates were received within the monitoring period stipulated by this report and are therefore detailed here.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Table 3 Groundwater Monitoring Well Network

Round	Monitoring Zone	GWMW ID	July 2022 baseline GWMW?	Monitoring Date	Water Quality	Manual Water Level	Level logger	Access issue/ destroyed
January 2023	Clyde dive	CZ3b_MW01	N	-	-	-	-	X
January 2023	Clyde dive	CZ3b_MW02	N	-	-	-	-	X
January 2023	Clyde dive	CZ3b_MW03	N	-	-	-	-	X
January 2023	Clyde dive	SMW_ADD_BH02	Y	19/01/23	X	X	X	-
January 2023	Clyde dive	SMW_BH057_s	Y	19/01/23	-	X	X	-
January 2023	Clyde dive	SMW_BH057_w	Y	19/01/23	-	X	X	-
January 2023	Clyde dive	SMW_ENV009	Y	19/01/23	X	X	X	-
January 2023	Clyde dive	SMW_ENV010	Y	19/01/23	-	X	-	-

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Round	Monitoring Zone	GWMW ID	July 2022 baseline GWMW?	Monitoring Date	Water Quality	Manual Water Level	Level logger	Access issue/ destroyed
January 2023	Clyde dive	GALC-MW16	N	19/01/23	-	X	-	-
January 2023	Clyde dive	GALC-MW17	N	19/01/23	X	X	-	-
January 2023	Clyde dive	GALC-MW17a	N	19/01/23	-	X	-	-
January 2023	Clyde dive	GALC-MW18	N	19/01/23	X	X	-	-
January 2023	Clyde – MSF	CZ1_BH13	N	17/01/23	X	X	-	-
January 2023	Clyde – MSF	SMW_ENV045	Y	N/A	-	-	-	X
January 2023	Clyde – MSF	SMW_ENV148	N	17/01/23	-	X	-	-
January 2023	Clyde – MSF	SMW_ENV149	Y	N/A	-	-	-	X
January 2023	Clyde – MSF	SMW_ENV224	N	17/01/23	X	X	-	-

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Round	Monitoring Zone	GWMW ID	July 2022 baseline GWMW?	Monitoring Date	Water Quality	Manual Water Level	Level logger	Access issue/ destroyed
January 2023	Clyde – MSF	SMW_ENV234	N	17/01/23	X	X	-	-
January 2023	Clyde – MSF	SMW_WTP_BH25	N	17/01/23	-	X	X	-
January 2023	Clyde – MSF	SMW_WTP_BH25_s	N	17/01/23	X	X	-	-
January 2023	Clyde – MSF	SMW_WTP_BH26	N	17/01/23	-	X	-	-
January 2023	Clyde – MSF	SMW_WTP_BH27	N	17/01/23	-	X	X	-
January 2023	Clyde – MSF	SMW_WTP_BH30	N	N/A	-	-	-	X
January 2023	Clyde – MSF	SMW_WTP_BH30_s	N	N/A	-	-	-	X
January 2023	Clyde – MSF	SMW_ENV300	N	N/A	-	-	-	X
January 2023	Clyde – MSF	SMW_ENV300_s	N	N/A	-	-	-	X

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Round	Monitoring Zone	GWMW ID	July 2022 baseline GWMW?	Monitoring Date	Water Quality	Manual Water Level	Level logger	Access issue/ destroyed
January 2023	Clyde – MSF	CZ5_MW16	N	16/01/23	X	X	-	-
January 2023	Clyde – MSF	CZ5_MW23	N	N/A	-	-	-	X
January 2023	Clyde – MSF	CZ5_MW26	N	16/01/23	-	X	-	-
January 2023	Clyde – MSF	SMW_ENV088	Y	16/01/23	-	X	-	-
January 2023	Clyde – MSF	SMW_ENV089	Y	N/A	-	-	-	X
January 2023	Clyde – MSF	SMW_ENV219	N	17/01/23	-	X	-	-
January 2023	Clyde – MSF	SMW_WTP_BH29	N	N/A	-	-	-	X
January 2023	Clyde – MSF	GALC-MW12	N	16/01/23	-	X	-	-
January 2023	Clyde – MSF	CZ6_MW06	N	N/A	-	-	-	X

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Round	Monitoring Zone	GWMW ID	July 2022 baseline GWMW?	Monitoring Date	Water Quality	Manual Water Level	Level logger	Access issue/ destroyed
January 2023	Parramatta	PM_BH14	N	23/01/23	X	X	-	-
January 2023	Parramatta	PM_BH15	N	23/01/23	X	X	-	-
January 2023	Parramatta	PM_BH16	N	N/A	-	-	-	X
January 2023	Parramatta	PM_BH18	N	23/01/23	-	X	-	-
January 2023	Parramatta	PM_BH19	N	N/A	--	-	-	X
January 2023	Parramatta	PM_BH21	N	23/01/23	-	X	-	-
January 2023	Parramatta	SMW_BH002_w	Y	N/A	-	-	-	X
January 2023	Parramatta	SMW_BH003_s	Y	23/01/23	-	X	-	-
January 2023	Parramatta	SMW_BH003_w	Y	N/A	-	-	-	X

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Round	Monitoring Zone	GWMW ID	July 2022 baseline GWMW?	Monitoring Date	Water Quality	Manual Water Level	Level logger	Access issue/ destroyed
January 2023	Parramatta	SMW_BH004_s	Y	23/01/23	X	X	X	-
January 2023	Parramatta	SMW_BH004_w	Y	N/A	-	-	X	X
January 2023	Parramatta	SMW_BH049_s	Y	N/A	-	-	-	X
January 2023	Parramatta	SMW_BH049_w	Y	N/A	-	-	-	X
January 2023	Parramatta	SMW_WTP_BH018	N	N/A	-	-	-	X
January 2023	Parramatta	GALC-MW26	N	N/A	-	-	-	X
January 2023	Parramatta	GALC-MW32	N	23/01/23	-	X	-	-
January 2023	Parramatta	GALC-MW33	N	23/01/23	-	X	-	-
January 2023	Clyde – Rosehill	CZ2b_BH52	N	N/A	-	-	-	X

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Round	Monitoring Zone	GWMW ID	July 2022 baseline GWMW?	Monitoring Date	Water Quality	Manual Water Level	Level logger	Access issue/ destroyed
January 2023	Clyde – Rosehill	SMW_BH010	Y	18/01/23	-	X	X	-
January 2023	Clyde – Rosehill	SMW_ENV042	Y	18/01/23	X	X	X	-
January 2023	Clyde – Rosehill	SMW_ENV145	Y	N/A	-	-	X	X
January 2023	Clyde – Rosehill	SMW_WTP_BH13	N	20/01/23	X	X	-	-
January 2023	Clyde – Rosehill	CZ4e_MW01	N	18/01/23	X	X	-	-
January 2023	Clyde – Rosehill	CZ4e_MW02	N	18/01/23	-	X	-	-
January 2023	Clyde – Rosehill	CZ4e_MW03	N	18/01/23	X	X	-	-
January 2023	Clyde – Rosehill	GALC_MW76	N	16/01/23	-	X	-	-
January 2023	Clyde – Rosehill	SMW_ENV039	Y	19/01/23	X	X	-	-

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Round	Monitoring Zone	GWMW ID	July 2022 baseline GWMW?	Monitoring Date	Water Quality	Manual Water Level	Level logger	Access issue/ destroyed
January 2023	Clyde – Rosehill	CZ4w_MW08	N	N/A	-	-	-	X
January 2023	Clyde – Rosehill	CZ6_MW01	N	N/A	-	-	-	X
January 2023	Clyde – Rosehill	CZ6_MW03	N	N/A	-	-	-	X
January 2023	Clyde – Rosehill	CZ6_MW04	N	N/A	-	-	-	X
January 2023	Clyde – Rosehill	CZ6_MW05	N	20/01/23	X	X	-	-
January 2023	Clyde – Rosehill	CZ6_MW07	N	N/A	-	-	-	X
January 2023	Clyde – Rosehill	SMW_ENV083	Y	16/01/23	X	X	-	-
January 2023	Clyde – Rosehill	SMW_ENV283	Y	N/A	-	-	-	X
January 2023	Clyde – Rosehill	SMW_ENV283_s	Y	N/A	-	-	-	X

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Round	Monitoring Zone	GWMW ID	July 2022 baseline GWMW?	Monitoring Date	Water Quality	Manual Water Level	Level logger	Access issue/ destroyed
January 2023	Clyde – Rosehill	SMW_ENV284	N	16/01/23	-	X	-	-
January 2023	Clyde – Rosehill	SMW_WTP_BH19	N	18/01/23	-	X	-	-
January 2023	Clyde – Rosehill	CZ2b_BH39	N	N/A	-	-	-	X
January 2023	Clyde – Rosehill	CZ2b_MW53	N	N/A	-	-	-	X
January 2023	Clyde – Rosehill	CZ4e_MW02	N	N/A	-	-	-	X
January 2023	Clyde – Rosehill	SMW-WTP-BH17	N	N/A	-	-	-	X
January 2023	Clyde – Rosehill	SMW-WTP-BH18	Y	N/A	-	-	-	X
January 2023	Sydney Olympic Park	SMW_WTP_BH22	N	03/02/23	-	X	X	-

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Round	Monitoring Zone	GWMW ID	July 2022 baseline GWMW?	Monitoring Date	Water Quality	Manual Water Level	Level logger	Access issue/ destroyed
January 2023	Sydney Olympic Park	SMW_WTP_BH23	N	03/02/23	-	X	-	X
January 2023	Tunnel	SMW_BH709	Y	N/A	-	-	-	X
January 2023	Tunnel	SMW_BH709_s	Y	N/A	-	-	-	X
January 2023	Tunnel	SWM_WTP_BH11	N	N/A	-	-	-	X
January 2023	Tunnel	SMW_WTP_BH121	Y	N/A	-	-	-	X
January 2023	Westmead	SMW_WTP_BH02	Y	03/02/23	-	X	X	-
January 2023	Westmead	SMW_WTP_BH03A	N	03/02/23	-	X	X	-
January 2023	Westmead	SMW_BH701	Y	03/02/23	-	X	X	-

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Round	Monitoring Zone	GWMW ID	July 2022 baseline GWMW?	Monitoring Date	Water Quality	Manual Water Level	Level logger	Access issue/ destroyed
January 2023	Westmead	SMW_BH001_w	Y	N/A	-	-	-	X
January 2023	Westmead	SMW_BH001_s	Y	N/A	-	-	-	X
January 2023	Westmead	SMW_BH008_w	Y	20/01/23	X	X	X	-
January 2023	Westmead	SMW_BH018	N	N/A	-	-	-	X
January 2023	Westmead	SMW_WTP_BH31A	N	N/A	-	-	-	X
January 2023	Westmead	SMW_WTP_BH32A	Y	N/A	-	-	-	X
January 2023	Westmead	WM_BH01	N	N/A	-	-	-	X
January 2023	Westmead	WM_BH04	N	N/A	-	-	-	X
January 2023	Westmead	GALC-MW38	N	20/01/23	-	X	X	-

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Round	Monitoring Zone	GWMW ID	July 2022 baseline GWMW?	Monitoring Date	Water Quality	Manual Water Level	Level logger	Access issue/ destroyed
January 2023	Westmead	GALC_MW47	N	20/01/23	-	X	-	-
January 2023	Westmead	GALC_MW79	N	20/01/23	-	X	-	-
April 2023	Clyde dive	SMW_ADD_BH02	Y	24/04/2023	X	X	X	-
April 2023	Clyde dive	SMW_BH057_s	Y	24/04/2023	-	X	X	-
April 2023	Clyde dive	SMW_BH057_w	Y	24/04/2023	-	X	X	-
April 2023	Clyde dive	SMW_ENV009	Y	24/04/2023	X	X	X	-
April 2023	Clyde dive	SMW_ENV010	Y	24/04/2023	-	X	-	-
April 2023	Clyde dive	GALC-MW16	N	19/04/2023	-	X	-	-
April 2023	Clyde dive	GALC-MW18	N	19/04/2023	X	X	-	-

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Round	Monitoring Zone	GWMW ID	July 2022 baseline GWMW?	Monitoring Date	Water Quality	Manual Water Level	Level logger	Access issue/ destroyed
April 2023	Clyde – MSF	CZ1_BH13	N	17/04/2023	X	X	-	-
April 2023	Clyde – MSF	SMW_ENV148	N	17/04/2023	-	X	-	-
April 2023	Clyde – MSF	SMW_ENV224	N	17/04/2023	X	X	-	-
April 2023	Clyde – MSF	SMW_ENV234	N	17/04/2023	X	X	-	-
April 2023	Clyde – MSF	SMW_WTP_BH25_w	N	17/04/2023	-	X	X	-
April 2023	Clyde – MSF	SMW_WTP_BH25_s	N	17/04/2023	X	X	-	-
April 2023	Clyde – MSF	CZ5_MW16	N	17/04/2023	X	X	-	-
April 2023	Clyde – MSF	GALC-MW12	N	17/04/2023	-	X	-	-
April 2023	Clyde – MSF	SMW_WTP_BH26	N	N/A	-	-	-	X

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Round	Monitoring Zone	GWMW ID	July 2022 baseline GWMW?	Monitoring Date	Water Quality	Manual Water Level	Level logger	Access issue/ destroyed
April 2023	Clyde – MSF	SMW_WTP_BH27	N	N/A	-	-	-	X
April 2023	Clyde – MSF	GALC_MW38	N	N/A	-	-	-	X
April 2023	Parramatta	PM_BH14	N	20/04/2023	X	X	-	-
April 2023	Parramatta	PM_BH18	N	20/04/2023	-	X	-	-
April 2023	Parramatta	PM_BH21	N	20/04/2023	X	X	-	-
April 2023	Parramatta	SMW_BH004_s	Y	21/04/2023	X	X	X	-
April 2023	Parramatta	SMW_BH004_w	Y	21/04/2023	X	X	X	-
April 2023	Parramatta	GALC-MW26	N	20/04/2023	-	X	-	-
April 2023	Parramatta	GALC-MW32	N	20/04/2023	-	X	-	-

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Round	Monitoring Zone	GWMW ID	July 2022 baseline GWMW?	Monitoring Date	Water Quality	Manual Water Level	Level logger	Access issue/ destroyed
April 2023	Parramatta	GALC-MW33	N	20/04/2023	-	X	-	-
April 2023	Parramatta	SMW_BH002	Y	17/04/2023	-	X	X	-
April 2023	Parramatta	PM_BH015	N	N/A	-	-	-	X
April 2023	Parramatta	SMW_BH003_s	Y	N/A	-	-	-	X
April 2023	Clyde – Rosehill	SMW_BH010	Y	18/04/2023	-	X	X	-
April 2023	Clyde – Rosehill	SMW_ENV042	Y	18/04/2023	X	X	X	-
April 2023	Clyde – Rosehill	SMW_WTP_BH13	N	19/04/2023	X	X	-	-
April 2023	Clyde – Rosehill	CZ4e_MW01	N	18/04/2023	X	X	-	-
April 2023	Clyde – Rosehill	CZ4e_MW03	N	18/04/2023	X	X	-	-

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Round	Monitoring Zone	GWMW ID	July 2022 baseline GWMW?	Monitoring Date	Water Quality	Manual Water Level	Level logger	Access issue/ destroyed
April 2023	Clyde – Rosehill	SMW_ENV039	Y	18/04/2023	X	X	X	-
April 2023	Clyde – Rosehill	CZ6_MW05	N	19/04/2023	X	X	-	-
April 2023	Clyde – Rosehill	SMW_ENV088	Y	N/A	-	-	-	X
April 2023	Clyde – Rosehill	CZ5_MW26	N	N/A	-	-	-	X
April 2023	Clyde – Rosehill	CZ2b_MW02	N	N/A	-	-	-	X
April 2023	Clyde – Rosehill	SMW_ENV083	Y	N/A	-	-	-	X
April 2023	Clyde – Rosehill	GALC-MW76	N	N/A	-	-	-	X
April 2023	Clyde – Rosehill	SMW_WTP_BH18	Y	N/A	-	-	-	X
April 2023	Clyde – Rosehill	SMW_ENV284	N	N/A	-	-	-	X

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Round	Monitoring Zone	GWMW ID	July 2022 baseline GWMW?	Monitoring Date	Water Quality	Manual Water Level	Level logger	Access issue/ destroyed
April 2023	Westmead	SMW_WTP_BH02	Y	21/04/2023	X	X	X	-
April 2023	Westmead	SMW_WTP_BH03A	N	21/04/2023	X	X	X	-
April 2023	Westmead	SMW_BH008_w	Y	24/04/2023	X	X	-	-
April 2023	Westmead	GALC-MW47	N	24/04/2023	-	X	-	-
April 2023	Westmead	GALC-MW79	N	20/04/2023	-	X	-	-
April 2023	Sydney Olympic Park	SMW_WTP_BH22	N	21/04/2023	-	X	X	-
April 2023	Sydney Olympic Park	SMW_WTP_BH23	N	N/A	-	-	-	X

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

3.1.1.1 Salinity Monitoring Network

Saline intrusion monitoring is achieved by:

- Groundwater sample analysis
- Installation of continuous conductivity, temperature and depth (CTD) loggers

Presented in Table 4 are the locations of where salinity loggers have been installed, these were installed in the January 2023 monitoring event

Table 4 Saline intrusion Groundwater Monitoring Wells

Site	GWMW ID	Screened depth	Justification
Parramatta	SMW_BH004_w	20.6 – 23.6	Located north of the station box, to address potential salinity ingress from the Parramatta River
Clyde Dive	SMW_BH057_w	23.3 – 26.3	To address potential salinity ingress from dewatering for the dive structure
Clyde MSF	SMW_BH010	23.5 – 26.5	To address potential salinity ingress from dewatering for the box structure

3.1.2 Gauging and Sampling Methodology

Water levels were gauged using a 30 m electronic interface probe (IP) during inspection and/or groundwater sampling. Selected monitoring bores, as specified in **Table 3**, were equipped with water level loggers (Solinst, InSitu Troll 100, or InSitu Troll 400) to collect continuous groundwater measurements.

The details of the groundwater quality and level monitoring are presented in **Table 5**.

Table 5 Groundwater Quality and Level Monitoring Methodology

Action	Description/details
Sample collection objectives	Groundwater quality sampling was undertaken by suitably qualified personnel, in accordance with AS/NZS 5667.11:1998 (Water quality – sampling), with the chosen methodology achieving the following objectives: • Sampling equipment should not change the water quality in any way; particular effort was made to avoid cross contamination between GWMWs and appropriate decontamination methods were adopted where reusable equipment was utilised.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Action	Description/details
	• Sufficient water should be removed to ensure the sample is obtained from the aquifer itself rather than from water that is potentially stagnant in the GWMW. • Methods of collection, storage bottles and transportation to the laboratory should suit the type of analysis required.
Gauging and water levels	Water levels were gauged using a 30 m IP. Selected monitoring bores were equipped with water level loggers (Solinst, In Situ Troll 100, or In Situ Troll 400) to collect continuous groundwater measurements. Where GWMWs were sampled, the standing water level (SWL) and total depth (TD) were gauged manually prior to purging, using a cleaned/decontaminated IP.
Sampling equipment	Samples were collected using the following equipment: • Peristaltic pump and GWMW specific tubing (HDPE and silicon), or • Hydrasleeve, or • Disposable bailer. The predominant method for sampling was via peristaltic pump. Hydrasleeves and disposable bailers were used for deep GWMWs (where the SWL was beyond the working range of the peristaltic pump).
Purging, field measurements and observations	A low-flow standard operating procedure compliant with AS/NZ 5667.11.1998 was developed for the project to ensure that samples are taken consistently in the same way and at the same depth. Field measurements for physical groundwater parameters were taken using a flow cell and calibrated water quality meter (WQM) fitted with a multi-sensor probe (pH, electrical conductivity (EC), dissolved oxygen (DO), temperature, and oxidation reduction potential (ORP)) during purging. A physical description of the sample, including colour, turbidity (visual), odour, and presence of film, sheen or foam were recorded on standardised field sheets. Field parameters were measured in a flow cell to avoid contact between the groundwater and the atmosphere. Readings of field parameters were recorded at a minimum of every three (3) minutes (where the sampling rate was 100 mL/minute or more) or five minutes (if flow rate was less than 100 mL/minute) until parameters stabilised. Stabilisation is defined as three successive stable parameter readings within the limits defined below: • Dissolved Oxygen (DO) ± 10% of reading or ± 0.2 mg/L • Temperature ± 0.2 °C • pH ± 0.2 pH units • EC ± 3% of reading

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Action	Description/details
	• ORP ± 20 mV
Sample containers	Groundwater samples were stored in clean laboratory prepared bottles containing the appropriate preservatives.
Sample filtration	Samples for dissolved metal analysis were filtered through a 0.45 µm in-line filter and stored in laboratory prepared bottles containing nitric acid preservative.
Sampling records	Field sampling records were recorded on Survey123 (digital) using unique sampling identification nomenclature consisting of the sample identification, sample date, location, and sampler details. Daily field sheets are presented in **Appendix D – Field Data Sheets** Details of all water quality samples were recorded on the field sheets and laboratory chain of custody (COC) documents.
Decontamination	Equipment was cleaned periodically and between sampling locations to prevent a build-up of sediment and prevent cross-contamination. The following methodology was followed: • Rinse the equipment in tap water • Clean with a 1:100 ratio of Liquinox (PFAS free decontamination detergent concentrate) to deionised water • Rinse with tap water • Thorough rinse with laboratory supplied deionised water • Allow to dry away from dust and direct sunlight
Sample Labelling, Storage and Transport	All samples were clearly labelled with unique identification numbers consisting of the date, sample location and samplers' initials. All samples were bagged and kept in an ice filled Esky prior to dispatch and during transport to a NATA registered laboratory, under chain-of-custody procedures.

3.1.3 Laboratory Analysis

Groundwater samples were sent to NATA accredited laboratories for analysis of selected CoPC as listed below:

- General water quality parameters – EC, Total dissolved solids (TDS), Alkalinity, Hardness
- Major Ions – Calcium, Magnesium, Potassium, Bicarbonate, Sodium, Chloride, Sulfate
- Extended Heavy Metals Suite – Aluminium (Al), Arsenic (As), Cadmium (Cd), Chromium III (Cr(III)), Chromium VI (Cr(VI)), Copper (Cu), Mercury (Hg), Lead (Pb), Nickel (Ni), Zinc (Zn), Manganese (Mn), Iron (Fe)
- Nutrients – Total Nitrogen, Total Oxidized Nitrogen, Nitrate, Nitrite, Total Ammonia, Ammonium, Total Phosphorous, Total Reactive Phosphorous, Total Reactive Phosphorous, Total Kjeldahl Nitrogen
- Total petroleum hydrocarbons (TPH) – C6 - C10, >C10 - C16, etc.
- Aromatic Hydrocarbons (BTEXN) – Benzene, Toluene, Ethylbenzene, Xylene, Naphthalene
- Polycyclic Aromatic Hydrocarbons (PAHs)

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

- Volatile Organic Compounds (VOC)
- Per- and Poly-Fluoroalkyl Substances (PFAS)

3.1.4 Quality Assurance/Quality Control Plan

The following quality assurance (QA) and quality control (QC) protocols were proposed for the monitoring program in accordance with protocols outlined in the Project Construction Groundwater Monitoring Program (GLC, 2022a) which references the following guidelines/standards.

- Australian/New Zealand Standards (1998). Water Quality – Sampling Part 1: Guidance on the Design of Sampling Programs, Sampling Techniques and the Preservation and Handling of Samples. AS/NZS 5667.1:1998, Reconfirmed 2016. Standards Australia, NSW.
- Australian/New Zealand Standards (1998). Water Quality – Sampling Part 11: Guidance on Sampling of Groundwater. AS/NZS 5667.11.1998, Reconfirmed 2016. Standards Australia, NSW.
- HEPA (2020) PFAS National Environmental Management Plan Version 2.0

Details of QA/QC procedures are presented in **Table 6**.

Table 6 QA/QC procedures

Action	Description/details
Rinsate samples	Rinsate blanks were collected from the IP during each day of sampling Rinsate blank samples were collected at a rate of one per day of sampling or where uncertainty regarding the potential for contamination was noted.
Duplicate samples	Intra- and inter-laboratory duplicate samples were analysed at a rate of greater than one per ten primary samples (10%), respectively. The results on the duplicate sampling (RPDs) are presented in **Appendix B – Tables**
Trip blank and trip spikes	A sample of laboratory supplied deionised water accompanied the primary samples over the course of the fieldworks and was submitted to the laboratory for analysis. A laboratory prepared trip blank and trip spike sample was included at a rate of one per laboratory batch.
Equipment calibration	Equipment used during monitoring was calibrated prior to use. Calibration records are presented in **Appendix F – Calibration Certificates**
Laboratory QA/QC	Laboratory analysis was conducted in accordance with the standard test methods outlined in Schedule B(3) of the NEPM (NEPC, 2013), US EPA, APHA or equivalent modified methods supported by adequate quality control. Laboratory analysis was undertaken by NATA accredited laboratories, Envirolab Services and ALS Laboratory Group. As part of Epic's internal quality control, all the information collected

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Action	Description/details
	from the laboratory was checked. The results of both laboratories have been assessed and validated progressively using recognised QA procedures and the analytical data is considered of sufficient quality to allow environmental interpretive use. Data validation sheets for each laboratory batch are presented in **Appendix E – Laboratory Documentation**

3.2 Water Treatment Plant Testing

During the reporting period (January 2023 to July 2023), the Rosehill temporary Water Treatment Plant was the only operational plant across the project. Inflow to the Rosehill temporary Water Treatment Plant comprised of groundwater, stormwater runoff collecting in excavation areas, and washdown water. Commissioning of the Rosehill temporary Water Treatment Plant occurred prior to 19 January 2023 and only post-commissioning sampling results are reported in this document. Twelve sampling events occurred during the reporting period.

The following was undertaken as part of the Rosehill temporary Water Treatment Plant post-commissioning sampling:

- Conduct pre- and post-treatment water sampling.
- Laboratory analysis of collected samples.
- Assessment of analytical results against performance criteria/guideline values.
- Preparation of Water Treatment Plant performance reports in accordance with condition E2.1 of the EPL 21676.

3.2.1 Water sampling methodology

A pre- and post-treatment grab sample was collected for each sampling event, at least once a month. The pre-treatment sample was collected from the pre-treatment storage tank, and the post-treatment sample was collected from an in-line valve located between the final filter pod and discharge tank. Dedicated sampling containers were provided by a NATA accredited laboratory and were filled by a trained GLC Environmental Representative in accordance with laboratory specified requirements. Samples were delivered to the laboratory under chain of custody protocols and submitted for analysis for the list of analytes stipulated in condition L2, point 2, in the EPL 21676.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

4 PERFORMANCE CRITERIA

4.1 Groundwater Level Monitoring

Seasonal fluctuation considered within the EIS and supplementary reports will facilitate the assessment and comparison between groundwater level decrease and the predicted drawdown from the project.

In accordance with the Aquifer Interference Policy (AIP) minimal impact considerations, groundwater level and pore pressures will be assessed against the following criteria where appropriate (DPI-Water, 2012):

- Less than or equal to 10 % cumulative variation in the water table, allowing for typical climatic "post-water sharing plan" variations, 40 m from any:
  - high priority groundwater dependent ecosystem; or
  - high priority culturally significant site listed in the schedule of the relevant water sharing plan.
- A cumulative maximum of 2 m decline in water level or pore pressure at any water supply bore (DPI-Water, 2012)

The nearest high priority groundwater dependent ecosystems (GDEs) and water supply bores are presented below in Table 7, identified in Jacobs (2020) Technical Paper 7 (Hydrogeology).

Table 7: Groundwater Sensitive Receptors

Site	High priority GDE	Nearest water supply bore
Westmead	Grey Box - Cumberland Plain Woodland 220m E	GW108378 780m NNW
Parramatta	Grey Box - Cumberland Plain Woodland 590m WNW	GW108661 565m NNW
Clyde Dive	Salt Marsh Estuaries of the Sydney Basin Bioregion 1.4 km SE	GW107659 1.9 km WNW
Clyde - rosehill	Salt Marsh Estuaries of the Sydney Basin Bioregion 800m SE	GW107659 1.8 km NW
Sydney Olympic Park	Salt Marsh Estuaries of the Sydney Basin Bioregion 1.3 km NNE	GW305646 3.3 km WSW

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

4.2 Groundwater Quality Monitoring

The following criteria were adopted as the indicator values for the performance criteria for groundwater quality. Any changes in groundwater quality will be measured relative to these performance criteria:

- ANZG (2018) 95% Species Protection Criteria for marine water, with criteria for toxicants known to bioaccumulate (mercury and cadmium) assessed based on the 99% species protection criteria. The National Institute of Water and Atmospheric Research (NIWA 2013) value for nitrate toxicity in freshwater is adopted for both fresh and marine water systems.
- NEPM (2013) Groundwater Investigation Levels for marine water and freshwater (Parramatta and Westmead).
- ANZECC (2000) Default Guideline Values for estuaries (Clyde and Clyde – rosehill) and freshwater (Parramatta and Westmead), with criteria for total nitrogen of 0.3 mg/L, and total phosphorus of 0.03 mg/L.
- PFAS NEMP 2.0 (2020) Interim Marine Water 95th percentile Level of Protection for perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA).

Additional investigation and monitoring will be triggered when significant reportable changes in groundwater concentrations or levels are identified in accordance with the triggers identified in Table 8.

Table 8 Groundwater Triggers

Trigger No.	Details
1	A parameter exceeding trigger values, which has been recorded during baseline monitoring as non-detect or below trigger value criteria
2	A parameter increasing in concentration over a sustained period (i.e., for at least 2 events) to more than 2x its baseline value in any GWMW, where the baseline value exceeds the NEPM GIL trigger values
3	A parameter increasing in concentration over a sustained period (i.e., for at least 2 events) to more than 2x its baseline value in GWMWs adjacent to excavations, where the baseline value exceeds the ANZECC (2000) or ANZG (2018) trigger value

4.2.1 Salinity

To assess for the potential of saline intrusion, the following is defined as reportable changes in salinity:

- An increase of salinity (as electrical conductivity, EC) to more than 2x the recorded 95th percentile value prior to construction

Salinity measurements will be assessed from stabilised in-situ EC readings (i.e., the last reading taken before sampling).

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

4.2.2 Acid sulfate soils

To assess for the activation of acid sulfate soils (ASS), a Schoeller diagram will be generated. A Schoeller diagram will plot major anion, cation and pH values to identify deviations in the concentrations of base anion/cations from baseline conditions to construction works. Total alkalinity, measured in groundwater, decreasing below 30 mg/l as $CaCO_3$ is considered to represent a reduction in the acid buffering capacity of the soil.

If the pH reduces by one (1) unit as compared to the baseline pH range prior to excavation, this indicates that ASS has been activated.

4.3 Water Treatment Plant Sampling Criteria

In the Project EPL (21676) condition L2, point 2, stipulates the concentration limits i.e., discharge criteria for the Rosehill temporary Water Treatment Plant to Duck River. The concentration limits can be found in Table 9. Total Suspended Solids (TSS) is not listed as a discharge criterion for the Rosehill temporary Water Treatment Plant however the Soil and Water Management Plan (SMWSTWTP-GLO-1NL-EN-PLN-000001) stipulates a criterion of 50 mg/L, which is additionally analysed for.

Table 9 Concentration limit for discharge at the Rosehill temporary Water Treatment Plant

Pollutant	Units of Measure	100 percentile concentration limit
Total Suspended Solids (TSS)*	milligrams per litre	50
Ammonia	micrograms per litre	910
Chromium (hexavalent)	micrograms per litre	15
Cobalt	micrograms per litre	5
Copper	micrograms per litre	3
Nitrate + nitrite (oxidised nitrogen)	micrograms per litre	2400
Nitrogen (total)	micrograms per litre	2400
Oil and Grease	Visible	none visible
pH	pH	6.5-8.5
Phosphorous (total)	micrograms per litre	200
Turbidity	Nephelometric turbidity units (NTU)	20
Zinc	micrograms per litre	12

*Not specified as part of condition L2, point 2, in the EPL (21676).

Where the abovementioned discharge criteria are not achievable, groundwater will be removed from site as liquid waste in accordance with NSW EPA's Waste Classification Guidelines.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

5 RESULTS

5.1 Registered Groundwater Bores

A review of the registered groundwater bores in the 3 km data buffer of the Project alignment was undertaken during the July 2022 baseline factual monitoring report, which detailed the existing registered groundwater bores. The condition assessment of the GWMWs across the entire groundwater monitoring network (refer to **Table 3**) was carried out during the January 2023 and April 2023 monitoring rounds. The assessment was unable to locate several GWMWs as detailed in **Table 10**. GWMWs listed below were not sampled, and were presumed to be destroyed, were inaccessible due to construction activities on site, or were inaccessible due to other access constraints. GWMWs that were assessed as being suitable for sampling and/or gauging are detailed in **Table 3.**

Table 10 GWMW Condition Assessment

GWMW ID	Details
January 2023 monitoring Event	
CZ6_MW04	Unable to locate GWMW due to construction activities
CZ6_MW07	Unable to locate GWMW due to construction activities
CZ6_MW01	Unable to locate GWMW due to construction activities
CZ6_MW06	Unable to locate GWMW due to construction activities
CZ5_MW23	Unable to locate GWMW due to construction activities
CZ6_MW03	Unable to locate GWMW due to stockpiles
SMW_WTP_BH18	Unable to access GWMW due to broken bolts
SMW_ENV283	Destroyed
SMW_ENV283_s	Destroyed
SMW_WTP_BH29	Unable to locate GWMW due to construction activities
SMW_ENV149	Unable to access GWMW due to broken bolts
CZ4e_MW02	Unable to locate GWMW, under stockpiles
CZ2b_BH52	Unable to locate GWMW, covered by haul road
CZ2b_MW53	Unable to locate GWMW, covered by haul road
SMW_WTP_BH23	Level logger had detached from the string
SMW_WTP_BH17	Unable to locate GWMW, covered by haul road
CZ2b_BH39	Unable to locate GWMW, under stockpiles
CZ3b_MW02	Unable to locate GWMW due to construction activities
CZ3b_MW01	Unable to locate GWMW, covered by haul road
SMW_BH001_w/s	Unable to access GWMW due to GWMW being situated under vehicle
PM_BH16	Destroyed
SMW_BH002_w	Unable to access GWMW due to GWMW being situated under vehicle
SMW_BH004_w	Unable to access GWMW due to GWMW being situated under vehicle
CZ3b_MW03	Unable to access GWMW due to construction activities
CZ4w_MW08	Unable to access GWMW due to construction activities
GALC-MW26	Unable to access GWMW due to locked screws on gatic cover

GWMW ID	Details
PM_BH19	Unable to access GWMW due to construction activities
SMW_BH003_w	Unable to access GWMW due to construction activities
SMW_BH018	Unable to access GWMW due to GWMW under parked vehicle
SMW_BH049_s	Unable to locate GWMW based on co-ordinates provided
SMW_BH049_w	Unable to locate GWMW based on co-ordinates provided
SMW_BH709	Unable to access GWMW due to construction activities
SMW_BH709_s	Unable to access GWMW due to construction activities
SMW_ENV045	Unable to access GWMW due to construction activities
SMW_ENV089	Unable to access GWMW due to construction activities
SMW_ENV145	Unable to access GWMW due to GWMW under parked vehicle
SMW_ENV300	Destroyed
SMW_ENV300_s	Destroyed
SMW_WTP_BH018	Unable to access GWMW due to broken bolts on the gatic cover
SMW_WTP_BH121	Unable to locate GWMW based on co-ordinates provided
SMW_WTP_BH30	Unable to access GWMW due to construction activities
SMW_WTP_BH30_s	Unable to access GWMW due to construction activities
SMW_WTP_BH31A	Unable to access GWMW due to construction activities
SMW_WTP_BH32A	Unable to access GWMW due to construction activities
SWM_WTP_BH11	Unable to locate GWMW based on co-ordinates provided
WM_BH01	Destroyed
WM_BH04	Destroyed
April 2023 monitoring Event	
SMW_WTP_BH26	Unable to locate GWMW due to construction activities
SMW_WTP_BH27	Unable to locate GWMW due to construction activities
SMW_ENV088	Unable to locate GWMW due to construction activities
CZ5_MW26	Unable to locate GWMW due to construction activities
CZ2b_MW02	Unable to locate GWMW due to construction activities
SMW_ENV083	Unable to locate GWMW due to stockpiles
GALC-MW76	Destroyed
SMW_WTP_BH18	Unable to access GWMW due to broken bolts
SMW_ENV284	Unable to access GWMW due to broken bolts
PM_BH015	Destroyed
SMW_BH003_s	Unable to locate GWMW due to construction activities
SMW_WTP_BH23	Unable to access GWMW due to bore under vehicle
GALC_MW38	Unable to locate GWMW due to construction activities

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

5.2 Groundwater Levels

5.2.1 Manual Groundwater Level Monitoring

Water levels were manually measured at GWMWs during the January 2023 and April 2023 monitoring events. The results are presented in **Table 11**.

Table 11 Manual Groundwater Level Monitoring

GWMW ID	Date	TOC (mAHD)	Total Depth (mbTOC)	SWL (mbTOC)	SWL (mAHD)
SMW_ENV083	16/01/2023 8:00	4.93	5.95	0.36	4.57
CZ6_MW05	16/01/2023 10:20	Not surveyed	4.80	1.38	Not surveyed
SMW_ENV088	16/01/2023 11:36	4.65	5.95	2.55	2.10
GALC-MW15	16/01/2023 11:48	Not surveyed	11.30	2.92	Not surveyed
GALC-MW75	16/01/2023 12:18	Not surveyed	13.11	3.93	Not surveyed
CZ5_MW26	16/01/2023 12:49	4.53	4.75	2.43	2.10
SMW_ENV284	16/01/2023 14:17	5.01	6.95	0.64	4.37
GALC-MW76	16/01/2023 14:52	Not surveyed	13.30	3.42	Not surveyed
CZ5_MW16	16/01/2023 15:28	4.07	6.95	1.88	2.19
GALC-MW12	16/01/2023 16:24	Not surveyed	10.64	1.98	Not surveyed
SMW_WTP_BH27	17/01/2023 6:45	4.72	5.95	0.46	4.26
SMW_WTP_BH26	17/01/2023 8:09	4.81	9.56	0.68	4.13
SMW_ENV224	17/01/2023 8:51	4.85	4.45	2.70	2.15
CZ5_MW19	17/01/2023 10:27	Not surveyed	5.13	2.90	Not surveyed
CZ1_BH13	17/01/2023 11:30	Not surveyed	10.60	2.88	Not surveyed
SMW_ENV148	17/01/2023 12:07	3.47	6.35	1.76	1.71
SMW_ENV236	17/01/2023 12:36	3.80	7.70	1.58	2.22

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

GWMW ID	Date	TOC (mAHD)	Total Depth (mbTOC)	SWL (mbTOC)	SWL (mAHD)
SMW_ENV234	17/01/2023 13:30	2.06	5.20	0.56	1.50
SMW_WTP_BH25	17/01/2023 15:10	5.36	10.29	2.62	2.74
SMW_WTP_BH25_s	17/01/2023 15:16	5.55	5.70	2.13	3.42
CZ4e_MW03	18/01/2023 8:56	Not surveyed	4.26	1.36	Not surveyed
CZ4e_MW01	18/01/2023 10:41	5.04	5.94	0.52	4.52
SMW_ENV042	18/01/2023 12:45	4.43	10.30	1.97	2.46
SMW_BH010	18/01/2023 13:26	4.35	27.60	1.27	3.08
SMW_WTP_BH19	18/01/2023 15:58	5.72	30.20	4.33	1.39
GALC-MW18	19/01/2023 7:43	Not surveyed	6.02	1.42	Not surveyed
GALC-MW17	19/01/2023 7:52	Not surveyed	21.90	12.41	Not surveyed
GALC-MW17	19/01/2023 7:58	Not surveyed	22.50	13.90	Not surveyed
GALC-MW16	19/01/2023 8:06	Not surveyed	22.98	10.12	Not surveyed
SMW_ADD_BH02	19/01/2023 9:14	13.46	30.60	11.54	1.92
SMW_ENV009	19/01/2023 10:42	4.30	7.12	1.87	2.43
SMW_BH057_w	19/01/2023 11:43	3.64	27.65	1.95	1.69
SMW_BH057_s	19/01/2023 11:54	4.04	4.60	1.75	2.29
SMW_ENV010	19/01/2023 12:03	4.28	7.05	1.66	2.62
SMW_ENV039	19/01/2023 16:14	6.41	10.32	4.22	2.19
GALC-MW38	20/01/2023 7:41	Not surveyed		8.77	Not surveyed
SMW_BH008_w	20/01/2023 8:43	21.08	18.00	5.08	16.00

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

GWMW ID	Date	TOC (mAHD)	Total Depth (mbTOC)	SWL (mbTOC)	SWL (mAHD)
GALC-MW47	20/01/2023 10:22	Not surveyed	17.10	7.80	Not surveyed
CZ6_MW05	20/01/2023 12:20	Not surveyed	6.95	1.40	Not surveyed
SMW_WTP_BH13	20/01/2023 13:48	5.09	7.30	0.98	4.11
PM_BH021	23/01/2023 8:42	Not surveyed	6.94	1.10	Not surveyed
PM_BH015	23/01/2023 8:59	Not surveyed	10.10	5.60	Not surveyed
GALC-MW79	23/01/2023 9:07	Not surveyed	13.58	5.78	Not surveyed
GALC-MW32	23/01/2023 9:14	Not surveyed	2.03	2.03	Not surveyed
PM_BH018	23/01/2023 9:23	Not surveyed	30.00	10.41	Not surveyed
GALC-MW33	23/01/2023 9:33	Not surveyed	30.00	8.74	Not surveyed
GALC-MW32	23/01/2023 9:40	Not surveyed	29.13	7.20	Not surveyed
GDP_s	23/01/2023 9:46	Not surveyed	10.39	7.15	Not surveyed
GDP_n	23/01/2023 10:01	Not surveyed	12.90	7.19	Not surveyed
SMW_BH003_s	23/01/2023 10:09	10.57	10.52	6.52	4.05
PM_BH014	23/01/2023 11:52	10.31	5.95	4.59	5.72
SMW_BH004_s	23/01/2023 14:51	8.62	11.40	4.75	3.87
SMW_WTP_BH02	3/02/2023 8:40	35.46	21.10	6.70	28.76
SMW_BH701	3/02/2023 9:48	29.08	10.10	9.40	19.68
SMW_WTP_BH03A	3/02/2023 11:26	36.07	22.13	6.04	30.03
SMW_WTP_BH22	3/02/2023 13:57	2.74	25.40	1.70	1.04
SMW_WTP_BH23	3/02/2023 14:33	10.06	30.50	6.04	4.02

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

GWMW ID	Date	TOC (mAHD)	Total Depth (mbTOC)	SWL (mbTOC)	SWL (mAHD)
CZ1_BH13	17/4/2023 09:18	NA	9.655	2.12	-
SMW_ENV148	17/4/2023 10:57	3.47	6.286	1.73	1.74
CZ5_MW16	17/4/2023 11:28	4.07	6.862	1.89	2.18
GALC-MW12	17/4/2023 12:00	NA	10.322	2.455	-
SMW_ENV224	17/4/2023 12:22	4.85	4.425	2.665	2.185
SMW_ENV234	17/4/2023 14:36	2.06	5.12	0.588	1.472
SMW_WTP_BH25_s	17/4/2023 15:36	5.55	5.665	2.212	3.338
SMW_WTP_BH25_w	17/4/2023 16:18	5.55	10.09	4.592	0.958
CZ4e_MW01	18/4/2023 10:38	5.04	5.892	0.661	4.379
CZ4e_MW03	18/4/2023 12:29	NA	4.26	1.35	-
SMW_BH010	18/4/2023 14:41	4.35	27.195	5.138	-0.788
SMW_ENV039	18/4/2023 15:31	6.41	10.32	4.812	1.598
SMW_WTP_BH13	19/4/2023 07:44	5.09	7.278	1.055	4.035
CZ6_MW05	19/4/2023 10:30	4.85	6.92	1.945	2.905
GALC-MW18	19/4/2023 13:49	NA	5.9	1.765	-
GALC-MW17	19/4/2023 14:49	NA	21.6	13.458	-
GALC-MW16	19/4/2023 15:06	NA	22.6	13.397	-
SMW_BH002	20/4/2023 11:15	8.98	33.97	10.43	-1.45
GALC-MW26	20/4/2023 11:51	NA	31.26	9.48	-
GALC-MW33	20/4/2023 12:27	NA	33.34	8.64	-

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

GWMW ID	Date	TOC (mAHD)	Total Depth (mbTOC)	SWL (mbTOC)	SWL (mAHD)
GALC-MW32	20/4/2023 12:35	NA	29.05	7.1	-
PM_BH14	20/4/2023 08:49	10.31	5.96	4.13	6.18
PM_BH21	20/4/2023 14:15	9.454	6.94	1.22	8.234
PM_BH18	20/4/2023 15:09	10.253	2.02	2	8.253
GALC-MW79	20/4/2023 15:18	NA	12.76	4.97	-
SMW_BH004_s	21/4/2023 07:14	8.62	11.23	4.72	3.9
SMW_BH004_w	21/4/2023 07:54	8.67	23.627	9.3	-0.63
SMW_WTP_BH02	21/4/2023 09:20	35.75	20.681	6.104	29.646
SMW_WTP_BH03A	21/4/2023 10:12	36.07	21.765	3.627	32.443
SMW_WTP_BH22_w	21/4/2023 11:18	2.89	24.845	1.4	1.49
SMW_BH008_w	24/4/2023 07:08	21.08	18.05	4.85	16.23
GALC-MW47	24/4/2023 10:16	NA	14.87	9.04	-
SMW_BH057_w	24/4/2023 11:06	3.64	27.51	4.33	-0.69
SMW_BH057_s	24/4/2023 11:23	4.04	4.58	1.9	2.14
SMW_ADD_BH02	24/4/2023 11:57	13.46	30.54	20.92	-7.46
SMW_ENV009	24/4/2023 12:37	4.3	7.11	1.97	2.33
SMW_ENV010	24/4/2023 13:43	4.28	7.08	1.87	2.41

5.2.2 Automatic Groundwater Level Trends/Performance Criteria Assessment

Selected GWMWs have been equipped with water level probes. These GWMWs have provided continuous groundwater level measurements and have been accessed quarterly by Epic Environmental. Hydrographs showing the continuous groundwater level monitoring for the GWMWs are presented in **Appendix C – Hydrographs**. Salinity trends for the GWMWs, detailed in **Table 4,** are presented in **Appendix C – Hydrographs**.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Measured water levels at selected monitoring locations are presented in **Table 12**.

Table 12: Groundwater Drawdown at Select Locations (data from April 2023 monitoring event)

Site	GWMW ID	Latest Monitoring Round	Pre-construction average SWL (mAHD)	Historical SWL variance (mAHD)	Monitoring period SWL variance (mAHD)
Westmead	GALC_MW38	Jan 2023	19.5	18.5 – 19.5	18.0 – 20.0
	SMW_WTP_BH03A	Apr 2023	25.0	24.2 – 25.4	24.9 – 25.4
	SMW_WTP_BH02	Apr 2023	29.0	28.1 – 29.5	28.1 – 29.5
Parramatta	SMW_BH004_s	Apr 2023	3.5	2.4 – 4.2	3.8 – 4.4
	SMW_BH004_w	Apr 2023	-2.2	-3.9 – -0.3	-1.0 – 0.2
Clyde Dive	SMW_ADD_BH02	Apr 2023	1.7	1.7 – 3.1	-7.3 – 1.3
	SMW_BH057_s	Apr 2023	2.2	2.0 – 3.0	2.2 – 2.6
	SMW_BH057_w*	Apr 2023	2.3	2.0 – 2.6	0.1 – 0.5*
Rosehill	SMW_ENV145	Jan 2023	3.6	3.2 – 4.0	3.4 – 4.0
	SMW_ENV042	Apr 2023	2.5	1.6 – 3.1	0.9 – 2.7
	SMW_BH010	Apr 2023	3.6	3.1 – 4.0	3.7 – 4.2

* Data from CTD logger deployed during February

Groundwater trends observed are summarised as follows:

- Groundwater levels at location SMW_ADD_BH02 decreased to -7.3 mAHD, 9.0 m less than the historical long term minimum groundwater elevation.
- Groundwater levels at locations SMW_BH057_w decreased to 0.1 mAHD, 1.9 m less than the historical long term minimum groundwater elevation.
- Groundwater levels at locations SMW_ENV042 decreased to 0.9 mAHD, 0.7 m less than the historical long term minimum groundwater elevation.

Groundwater drawdown observed at GWMWs SMW_ADD_BH02, SMW_ENV042 and SMW_BH057_w does not indicate potential drawdown trigger level exceedances (Section 4.2) as:

- GWMWs SMW_ADD_BH02 and SMW_BH057_w were screened in Ashfield Shale, however, drawdown has declined less than 2 m (SMW_BH057_w) in the direction of identified groundwater receptors (extraction bore GW107659, 1.9 km WNW)
- Drawdown observed at SMW_ENV042 (screened within unconsolidated alluvial sediments) is not within the immediate vicinity of an identified high priority GDE as defined by Jacobs (2020).

Salinity and conductivity trends are consistent across the monitoring period.

5.3 Groundwater Quality

A summary of groundwater exceedances against the generic water quality criteria is provided in Table 13 (January 2023 event) and Table 14 (April 2023 event).

Table 13 Adopted criteria exceedances (January 2023)

GWMW ID	Parameter	Criteria	Unit	Threshold	Result
CZ1_BH13	Ammonia as N	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.91	2
	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.005

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

GWMW ID	Parameter	Criteria	Unit	Threshold	Result
	Nitrogen (Total)	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.3	2.2
	Phosphorous	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.03	0.2
CZ4e_MW01	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.016
	Zinc	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	8	27
CZ4e_MW03	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.03
	Phosphorous	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.03	0.1
	Zinc	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	8	34
CZ5_MW16	Ammonia as N	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.91	3.2
	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.014
	Nitrogen (Total)	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.3	3.4
	Phosphorous	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.03	0.1
	Zinc	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	8	22
CZ6_MW05	Nitrogen (Total)	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.3	0.6
	Phosphorous	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.03	0.1
GALC-MW17	Chromium (hexavalent)	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.0044	0.02
	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.007
	Copper	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	1.3	14
	Nitrogen (Total Oxidised)	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.015	0.7
	Nitrogen (Total)	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.3	1.4
	Phosphorous	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.03	0.1
GALC-MW18	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.005
PM_BH014	Perfluorooctanesulfonic acid (PFOS)	PFAS NEMP 2020 Freshwater 95%	µg/L	0.13	0.14
PM_BH014 (QC05)	Perfluorooctanesulfonic acid (PFOS)	PFAS NEMP 2020 Freshwater 95%	µg/L	0.13	0.15
PM_BH014 (QC06)	Perfluorooctanesulfonic acid (PFOS)	PFAS NEMP 2020 Freshwater 95%	µg/L	0.13	0.15
PM_BH015	Zinc	ANZG (2018) Freshwater 95% LOSP	µg/L	8	20
SMW_BH004_s	Copper	ANZG (2018) Freshwater 95% LOSP	µg/L	1.4	32
	Zinc	ANZG (2018) Freshwater 95% LOSP	µg/L	8	18
SMW_BH083	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.021
	Nitrogen (Total)	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.3	0.4
	Zinc	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	8	21

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

GWMW ID	Parameter	Criteria	Unit	Threshold	Result
SMW_BH083 (QC01)	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.02
	Nickel	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	70	8
	Nitrogen (Total)	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.3	0.4
	Zinc	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	8	21
SMW_BH083 (QC02)	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.021
	Nickel	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	70	8.9
	Nitrogen (Total)	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.3	0.6
	PFOS	PFAS NEMP 2020 Interim Marine 95%	µg/L	0.13	0.15
	Zinc	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	8	20
SMW_ENV042	Ammonia as N	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.91	1.5
	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.011
	Copper	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	1.3	950
	Nitrogen (Total)	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.3	1.5
	Zinc	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	8	21
SMW_ENV224	Ammonia as N	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.91	0.96
	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.004
	Nitrogen (Total)	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.3	1.3
SMW_ENV234	Ammonia as N	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.91	1.9
	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.007
	Nitrogen (Total)	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.3	1.8
SMW_ENV236	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.069
	Zinc	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	8	39
SMW_WTP_BH13	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.012
	Zinc	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	8	100
SMW_ADD_BH02	Copper	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	1.3	9
	Nitrogen (Total Oxidised)	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.015	0.4
	Nitrogen (Total)	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.3	0.6
	Phosphorous	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.03	0.1
	Zinc	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	8	82
SMW-ENV009	Ammonia as N	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.91	9.6

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

GWMW ID	Parameter	Criteria	Unit	Threshold	Result
	Nitrogen (Total)	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.3	12
	Phosphorous	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.03	0.3
SMW_ENV009	Ammonia as N	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.91	10
	Nitrogen (Total)	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.3	11
	Phosphorous	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.03	0.4
SMW_ENV009	Ammonia as N	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.91	9.5
	Nitrogen (Total)	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.3	11
SMW-ENV039	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.026
	Copper	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	1.3	2
	Nitrogen (Total)	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.3	0.7
	Phosphorous	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.03	0.06
SMW-WTP-BH02	Copper	ANZG (2018) Freshwater 95% LOSP	µg/L	1.4	70
	Zinc	ANZG (2018) Freshwater 95% LOSP	µg/L	8	11
SMW-WTP-BH03a	Copper	ANZG (2018) Freshwater 95% LOSP	µg/L	1.4	3
	Zinc	ANZG (2018) Freshwater 95% LOSP	µg/L	8	15
SMW-WTP-BH25_s	Ammonia as N	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.91	1.7
	Chlorobenzene	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	55	810
	Nitrogen (Total Oxidised)	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.015	0.02
	Nitrogen (Total)	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.3	17
	Phosphorous	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.03	0.1

Table 14 Adopted criteria exceedances (April 2023)

GWMW ID	Analyte	Guideline	Unit	Criteria	Value
PM-BH14	Copper	ANZG (2018) Freshwater 95% - NEPM (2013) GILS	ug/L	1.4	2
	Nitrate as N	ANZG (2018) Freshwater 95% (NIWA 2014) - NEPM (2013) GILS	mg/L	2.4	3.1
	Perfluorooctane sulfonic acid (PFOS)	PFAS NEMP 2020 Freshwater 95%	µg/L	0.13	0.23
PM-BH21	Zinc	ANZG (2018) Freshwater 95% - NEPM (2013) GILS	µg/L	8	10
SMW_BH004_S	Copper	ANZG (2018) Freshwater 95% - NEPM (2013) GILS	µg/L	1.4	7
	Nitrate as N	ANZG (2018) Freshwater 95% (NIWA 2014) - NEPM (2013) GILS	mg/L	2.4	2.9
	Zinc	ANZG (2018) Freshwater 95% - NEPM (2013) GILS	µg/L	8	30

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

GWMW ID	Analyte	Guideline	Unit	Criteria	Value
SMW_BH004_W	Copper	ANZG (2018) Freshwater 95% - NEPM (2013) GILS	µg/L	1.4	9
	Nickel	ANZG (2018) Freshwater 95% - NEPM (2013) GILS	µg/L	11	27
	Zinc	ANZG (2018) Freshwater 95% - NEPM (2013) GILS	µg/L	8	9
SMW_WTP-BH02	Copper	ANZG (2018) Freshwater 95% - NEPM (2013) GILS	µg/L	1.4	90
	Zinc	ANZG (2018) Freshwater 95% - NEPM (2013) GILS	µg/L	8	13
SMW_WTP-BH03A	Copper	ANZG (2018) Freshwater 95% - NEPM (2013) GILS	µg/L	1.4	5
	Zinc	ANZG (2018) Freshwater 95% - NEPM (2013) GILS	µg/L	8	24
CZ1_BH13	Ammonia as N	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.91	1.4
	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.007
	Nitrogen total	ANZECC (2000) - Estuaries	mg/L	0.3	1.4
	Phosphorus	ANZECC (2000) - Estuaries	mg/L	0.03	0.1
	Zinc	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	8	9
CZ4e-MW01	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.036
	Zinc	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	8	48
CZ4e-MW03	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.044
	Phosphorus	ANZECC (2000) - Estuaries	mg/L	0.03	0.06
	Zinc	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	8	34
CZ5_MW16	Ammonia as N	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.91	2.2
	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.01
	Nitrogen total	ANZECC (2000) - Estuaries	mg/L	0.3	2.6
	Zinc	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	8	12
CZ6-MW05	Nitrogen (total oxidised)	ANZECC (2000) - Estuaries	mg/L	0.15	0.2
	Nitrogen total	ANZECC (2000) - Estuaries	mg/L	0.3	0.8
	Phosphorus	ANZECC (2000) - Estuaries	mg/L	0.03	0.08
GALC-MW18	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.004
SMW_ADD_BH02	Ammonia as N	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.91	2.7
	Copper	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	1.3	32
	Nitrogen total	ANZECC (2000) - Estuaries	mg/L	0.3	2.7
	Zinc	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	8	12
SMW_ENV009	Ammonia as N	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.91	7.8
	Nitrogen total	ANZECC (2000) - Estuaries	mg/L	0.3	10
	Phosphorus	ANZECC (2000) - Estuaries	mg/L	0.03	0.4

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

GWMW ID	Analyte	Guideline	Unit	Criteria	Value
SMW_ENV039	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.026
	Copper	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	1.3	350
	Nitrogen total	ANZECC (2000) - Estuaries	mg/L	0.3	0.8
	Zinc	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	8	9
SMW_ENV042	Ammonia as N	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.91	1.2
	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.014
	Copper	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	1.3	570
	Nitrogen total	ANZECC (2000) - Estuaries	mg/L	0.3	1.4
	Zinc	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	8	21
SMW_ENV224	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.006
	Nitrogen total	ANZECC (2000) - Estuaries	mg/L	0.3	1.4
	Phosphorus	ANZECC (2000) - Estuaries	mg/L	0.03	0.05
SMW_ENV234	Ammonia as N	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.91	2.2
	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.004
	Nitrogen total	ANZECC (2000) - Estuaries	mg/L	0.3	3.1
SMW_WTP_BH13	Cobalt	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.001	0.015
SMW-WTP-BH25_s	Ammonia as N	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	mg/L	0.91	15
	Chlorobenzene	ANZG (2018) Marine Water 95% - NEPM (2013) GILS	µg/L	55	710
	Nitrogen total	ANZECC (2000) - Estuaries	mg/L	0.3	19
	Phosphorus	ANZECC (2000) - Estuaries	mg/L	0.03	0.1

5.3.1 Performance Criteria Assessment

The trigger value exceedances are identified as increases in concentrations when compared with baseline values (defined by baseline monitoring from when the borehole was initially sampled). Additional investigation and monitoring are triggered when significant reportable changes in groundwater concentrations or levels are identified as per the groundwater triggers presented in **Table 8.**

Presented in **Table 15** are locations where a potential upward trend in concentration from the January 2023 monitoring event were identified. The results from the April 2023 monitoring event are also shown.

Table 15 Potential increasing trends (January 2023) – Triger No. 1 and 2 (Refer to Table 8)

GWMW ID	Analyte	Guideline	Unit	Criteria	July 22 (baseline)	Oct 22	Jan 23	Apr 23	Comment
SMW_ENV042	Copper	ANZG (2018) Marine Water 95% -	µg/L	1.3	290	410	950	570	Apr 23 concentration less than twice baseline value

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

GWMW ID	Analyte	Guideline	Unit	Criteria	July 22 (baseline)	Oct 22	Jan 23	Apr 23	Comment
SMW_WTP_BH13	Zinc	NEPM (2013) GILs	µg/L	8	8	8	100	1	Apr 23 concentration lower than baseline value

Previously unidentified exceedances of adopted criteria identified in the January 2023 monitoring event presented below in **Table 16**, along with their corresponding concentration in the April 2023 monitoring event.

Table 16: New exceedances (January 2023) – Trigger No. 3 (Refer to Table 8)

GWMW ID	Analyte	Guideline	Unit	Criteria	July 2022 (baseline)	Oct 22	Jan 23	Apr 23	Comment
CZ4e_MW03	Phosphorus	ANZECC 2000 SE Aust Triggers - Estuaries	mg/L	0.03	-	<0.05	0.1	0.05	Concentration returned to Oct 22 concentration
CZ5_MW16	Phosphorus		mg/L	0.03	-	<0.05	0.1	<0.05	Concentration returned to reportable limit
SMW_ENV039	Phosphorus		mg/L	0.03	<0.05	<0.05	0.06	<0.05	Concentration returned to reportable limit
SMW_ENV224	Ammonia as N	ANZG (2018) Marine Water 95%	mg/L	0.91	-	0.53	0.96	0.91	Concentration returned to guideline value and less than twice baseline value

Presented below in **Table 17** are locations where a concentration has increased to 2x its baseline value during the April 2023 monitoring event. The reported increases are to be monitored during the July 2023 monitoring event to identify if increases in concentration are present over a sustained period of time (i.e. for at least 2 events) which may trigger additional monitoring, as per the GMP. Previously unidentified exceedances of adopted criteria are presented below in **Table 18.**

Table 17 Potential increasing trends (April 2023) – Triger No. 1 and 2 (Refer to Table 8)

GWMW ID	Analyte	Guideline	Unit	Criteria	July 2022 (baseline)	October 2022	January 2023	April 2023
SMW_ENV039 Clyde – Rosehill	Copper	ANZG (2018) Marine Water 95% - NEPM (2013) GILs	µg/L	1.3	1	<1	2	350
SMW_ADD_BH02 Clyde Dive	Ammonia		mg/L	0.91	0.43	0.023	0.028	2.7

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Table 18: New exceedances (April 2023) – Trigger No. 3 (refer to Table 8)

GWMW ID	Analyte	Guideline	Unit	Criteria	July 2022 (baseline)	October 2022	January 2023	April 2023
SMW_ENV224 Clyde – MSF	Phosphorus	ANZECC (2000) - Estuaries	mg/L	0.03	-	<0.05	<0.05	0.05
CZ6_MW05 Clyde – Rosehill	Nitrogen (Total Oxidised)		mg/L	0.015	-	-	<0.005	0.2
PM_BH14 Parramatta	Copper	ANZG (2018) Freshwater 95% - NEPM (2013) GILs	µg/L	1.3	-	<1	1	2

For SMW_ENV039 copper exceedances, it was deemed prudent to wait until the July 2023 monitoring event to determine whether to go to monthly monitoring due to:

- The January 2023 monitoring event copper concentration was exactly double the baseline concentration, not greater than twice the baseline concentration.
- The January 2023 monitoring event copper concentration was marginally above the guideline value (1.3 mg/L compared to 2 mg/L)

5.3.2 Salinity

An assessment of ongoing salinity has been completed for the January 2023 and April 2023 monitoring events, with an increasing trend shown in **Table 19.** The results will be monitored in July 2023 to determine whether 2 x the baseline EC values are observed for these GWMWs.

Table 19: Increases in salinity (µS/cm)

Zone	GWMW ID	July 2022 (baseline)	October 2022	January 2023	April 2023
Clyde – MSF	SMW-WTP-BH13	-	950	7,049	11,206
Clyde dive	SMW_ADD_BH02	2,814*	66	158	17,069
Westmead	SMW_WTP_BH02	-	-	707	1,468

*EC = TDS * 0.67

5.3.3 Acid sulfate soils

An assessment of in-situ pH has been completed for the January 2023 and April 2023 monitoring events. No GWMWs identified a drop of one (1) pH unit for these monitoring events.

5.4 Water Treatment Plant Sampling Results and Discussion

During the reporting period, twelve sampling events occurred at the Rosehill temporary Water Treatment Plant. Each sampling event consisted of a sample collected pre-treatment and a sample collected post-treatment. The results are specified in Table 20.

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

Table 20: Rosehill Water Treatment Plant sampling results for the reporting period (19 January to 19 July)

		Sample Date	27/01/2023		3/02/2023		10/02/2023		14/02/2023		21/02/2023	
		Sample Type	Pre-treatment	Post-Treatment	Pre-treatment	Post-Treatment	Pre-treatment	Post-Treatment	Pre-treatment	Post-Treatment	Pre-treatment	Post-Treatment
Parameter	**Units**	**Criteria**										
TSS	mg/L	50	6,700	<5	84	<5	610	6	260	<5	30,000	11
Ammonia	µg/L	910	47	91	63	<5	44	210	54	220	340	68
Chromium	µg/L	15	<5	<5	30	5	30	<5	20	<5	30	6
Cobalt	µg/L	5	<1	<1	<1	<1	<1	<1	4	<1	<1	<1
Copper	µg/L	3	6	2	11	2	8	<1	32	<1	3	2
Nitrate	µg/L	2,400	710	620	1,300	800	2,600	1,400	2,500	1,400	1,100	840
Nitrite	µg/L	2,400	270	210	380	17	740	320	740	330	470	110
Nitrogen	µg/L	2,400	1,800	1,000	1,900	1,000	5,100	1,800	5,100	1,900	4,100	900
Oil and Grease	Visible	none visible	none visible	none visible	none visible	none visible	none visible	none visible	none visible	none visible	none visible	none visible
pH	pH	6.5-8.5	9.27	8.01	8.6	8.4	8.4	7.7	8.3	7.6	9.2	7.4
Phosphorous	µg/L	200	9800	<50	90	<50	200	<50	200	<50	5,000	<50
Turbidity	NTU	20	Not tested – too turbid	1.5	110	2	<1	<1	360	9.6	Not tested – too turbid	5
Zinc	µg/L	12	1	5	5	3	92	8	60	9	1	11
		Compliant	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

		Sample Date	13/03/2023		23/03/2023		03/04/2023		19/04/2023		05/05/2023	
		Sample Type	Pre-treatment	Post-Treatment	Pre-treatment	Post-Treatment	Pre-treatment	Post-Treatment	Pre-treatment	Post-Treatment	Pre-treatment	Post-Treatment
Parameter	**Units**	**Criteria**										
TSS	mg/L	50	180	<5	<5	<5	110	20	24	<5	1,100	<5
Ammonia	µg/L	910	200	270	1,300	380	590	640	450	230	500	400
Chromium	µg/L	15	40	<5	<5	9	<5	<5	14	12	52	40
Cobalt	µg/L	5	<1	<1	<1	<1	<1	<1	1	<1	<1	<1
Copper	µg/L	3	10	<1	<1	3	<1	<1	3	1	21	2
Nitrate	µg/L	2,400	1,600	410	410	820	640	670	310	480	390	450
Nitrite	µg/L	2,400	400	54	660	540	270	300	220	110	180	130
Nitrogen	µg/L	2,400	3,100	700	2,200	1,900	2,400	2,400	1,600	1,700	2,600	900
Oil and Grease	Visible	none visible	none visible	none visible	none visible	none visible	none visible	none visible	none visible	none visible	none visible	none visible
pH	pH	6.5-8.5	9	7.7	7.7	7.9	8.3	8.2	8.1	7.9	8.2	7.8
Phosphorous	µg/L	200	100	<50	<50	<50	80	<50	70	<50	800	<50
Turbidity	NTU	20	240	0.7	3.9	5.2	140	17.8[1]	35	1.2	Not tested – too turbid	23
Zinc	µg/L	12	21	13	1,300	3	<1	6	6	10	25	42
		Compliant	No	Yes	No	Yes	No	Yes	No	Yes	No	No

1. NTU value from WTP probe adopted. Laboratory result for NTU was omitted as it was collected from water that was not being discharged and recirculated through the treatment plant

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

		Sample Date	09/05/2024		16/05/2023	
		Sample Type	Pre-treatment	Post-Treatment	Pre-treatment	Post-Treatment
Parameter	**Units**	**Criteria**				
TSS	mg/L	50	130	8	93	<5
Ammonia	µg/L	910	2,800	300	1,300	1,400
Chromium	µg/L	15	40	30	10	20
Cobalt	µg/L	5	4	2	5	1
Copper	µg/L	3	5	3	1	1
Nitrate	µg/L	2,400	360	300	250	340
Nitrite	µg/L	2,400	140	150	140	190
Nitrogen	µg/L	2,400	400	370	2,900	2,600
Oil and Grease	Visible	none visible	none visible	none visible	none visible	none visible
pH	pH	6.5-8.5	8	8.1	7.9	7.7
Phosphorous	µg/L	200	100	<50	100	<50
Turbidity	NTU	20	150	9.2	110	4
Zinc	µg/L	12	3	100	5	32
		Compliant	No	No	No	No

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

As per the results, three sampling events undertaken during May 2023 (5th, 9th, and 16th) were not compliant with the discharge requirement of the EPL, 21676, for the Rosehill temporary Water Treatment Plant and the Soil and Water Management Plan (SMWSTWTP-GLO-1NL-EN-PLN-000001). All other sampling events were compliant.

Post treatment sample results collected on the 5th of May 2023 indicated elevated concentrations of hexavalent chromium and zinc at 40 µg/L and 42 µg/L respectively compared to the discharge criteria for the two pollutants at 15 µg/L and 12 µg/L. Furthermore, turbidity was recorded marginally above the adopted limit (20 NTU) at 23 NTU. In response to the elevated concentrations, a subsequent sampling round was undertaken on the 9th of May 2023. Results of the subsequent sampling round identified elevated concentrations of hexavalent chromium and zinc at 30 µg/L and 100 µg/L respectively in the post treatment samples. Turbidity levels reduced to below the adopted criteria for the sampling round undertaken on 9 May 2023. A third sampling round was undertaken on the 16th of May 2023. Post treatment sample results indicated elevated concentration of ammonia, at 1,400 µg/L, hexavalent chromium, at 20 µg/L, total nitrogen, at 2,600 µg/L and zinc, at 32 µg/L, compared to their respective concentration limits of 910 µg/L, 15 µg/L, 2,400 µg/L, and 12 µg/L.

Sampling undertaken at the Rosehill Temporary Water Treatment Plant in May of 2023 consistently identified that the pollutants hexavalent chromium and zinc were in excess of the adopted discharge criteria, stipulated in Table 20, with additional exceedances of the pollutants ammonia and nitrogen identified during one sampling round. Turbidity levels recorded on the 5th of May 2023 appeared to be a one-off event and unrelated to suspended solids in the water column considering that TSS levels were consistently recorded below the adopted assessment criteria. Due to the detection of the pollutant exceedances, the treated water was not discharged but rather collected in tanks, either to disposed offsite or to be treated at the permanent Rosehill Water Treatment Plant, depending on the storage at the site. The design of the Rosehill temporary Water Treatment Plant was not further investigated or adapted to address the exceedances, considering the temporary Water Treatment Plant was due to be decommissioned and replaced by the Rosehill permanent Water Treatment Plant by August 2023.

6 CONCLUSIONS

Groundwater quality results from the January 2023 and April 2023 monitoring events indicate that the majority of locations are comparable to applicable baseline results. It is noted that the monitoring network is constantly changing, due to construction works happening at the sites.

Copper at SMW_ENV039 and ammonia at SMW_ADD_BH02 have been identified to have increased to greater than 2x their respective baseline values during the April 2023 monitoring event. Monitoring results from the July 2023 monitoring event are required to determine whether there is an exceedance against the performance criteria. This will be reported on in the next bi-annual Groundwater Monitoring Report, considering the results were obtained outside the reporting period of this monitoring report (19 Jan 2023 – 19 Jul 2023).

Groundwater level trends for GWMWs with continuous level logging indicate potential decreases in the groundwater level at GWMWs SMW_ADD_BH02 (9.0 m drawdown observed), SMW_BH057_ (1.9 m drawdown observed) w and SMW_ENV042 (0.7 m drawdown observed). Groundwater drawdown observed at GWMWs SMW_ADD_BH02, SMW_BH057_w and SMW_ENV042 do not indicate potential drawdown trigger level exceedances, due to not being near any potential sensitive groundwater receptors.

During the reporting period (January 2023 to July 2023), the Rosehill temporary Water Treatment Plant was the only operational plant across the project. Twelve sampling events occurred during the reporting period. Three sampling events undertaken during May 2023 (5th, 9th, and 16th) were not compliant with the discharge criteria as per the requirements of the EPL, 21676, for the Rosehill temporary Water Treatment and the Soil and Water Management Plan (SMWSTWTP-GLO-1NL-EN-PLN-000001), all other sampling events were compliant.

Sampling undertaken at the Rosehill Temporary Water Treatment in May of 2023 consistently identified that the pollutants hexavalent chromium and zinc were in excess of the adopted discharge criteria, with additional exceedances of the pollutants ammonia and nitrogen identified during one sampling round. Turbidity levels recorded on the 5th of May 2023 appeared to be a one-off event and unrelated to suspended solids in the water column considering that TSS levels were consistently recorded below the adopted assessment criteria. Since the first detection of these exceedances on the 5th of May, the treated water was not discharged but rather collected in tanks, either to disposed offsite or to be treated at the permanent Rosehill Water Treatment Plant.

7 REFERENCES

ANZECC/ARMCANZ (2000). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*

(ANZG 2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*

Australian/New Zealand Standards (1998). *Water Quality – Sampling Part 1: Guidance on the Design of Sampling Programs, Sampling Techniques and the Preservation and Handling of Samples.* AS/NZS 5667.1:1998, Reconfirmed 2016. Standards Australia, NSW.

Australian/New Zealand Standards (1998). *Water Quality – Sampling Part 11: Guidance on Sampling of Groundwater*. AS/NZS 5667.11.1998, Reconfirmed 2016. Standards Australia, NSW.

GLC (2022a). *Project Construction Groundwater Monitoring Program*, SMWSTWTP-GLO-1NL-EN-PRG-000002, Rev B, 30 May 2022

GLC (2022b). *Technical Report: Sydney Metro West – Western Tunnelling Package – Hydrogeological Interpretative Report (including Groundwater Modelling)*, SSMWSTWTP-GLO-1NLNL000-GE-RPT-000001, Rev C, 12 May 2022

DPI-Water (2012). *NSW Aquifer Interference Policy.*

HEPA (2020) *PFAS National Environmental Management Plan (Version 2.0).*

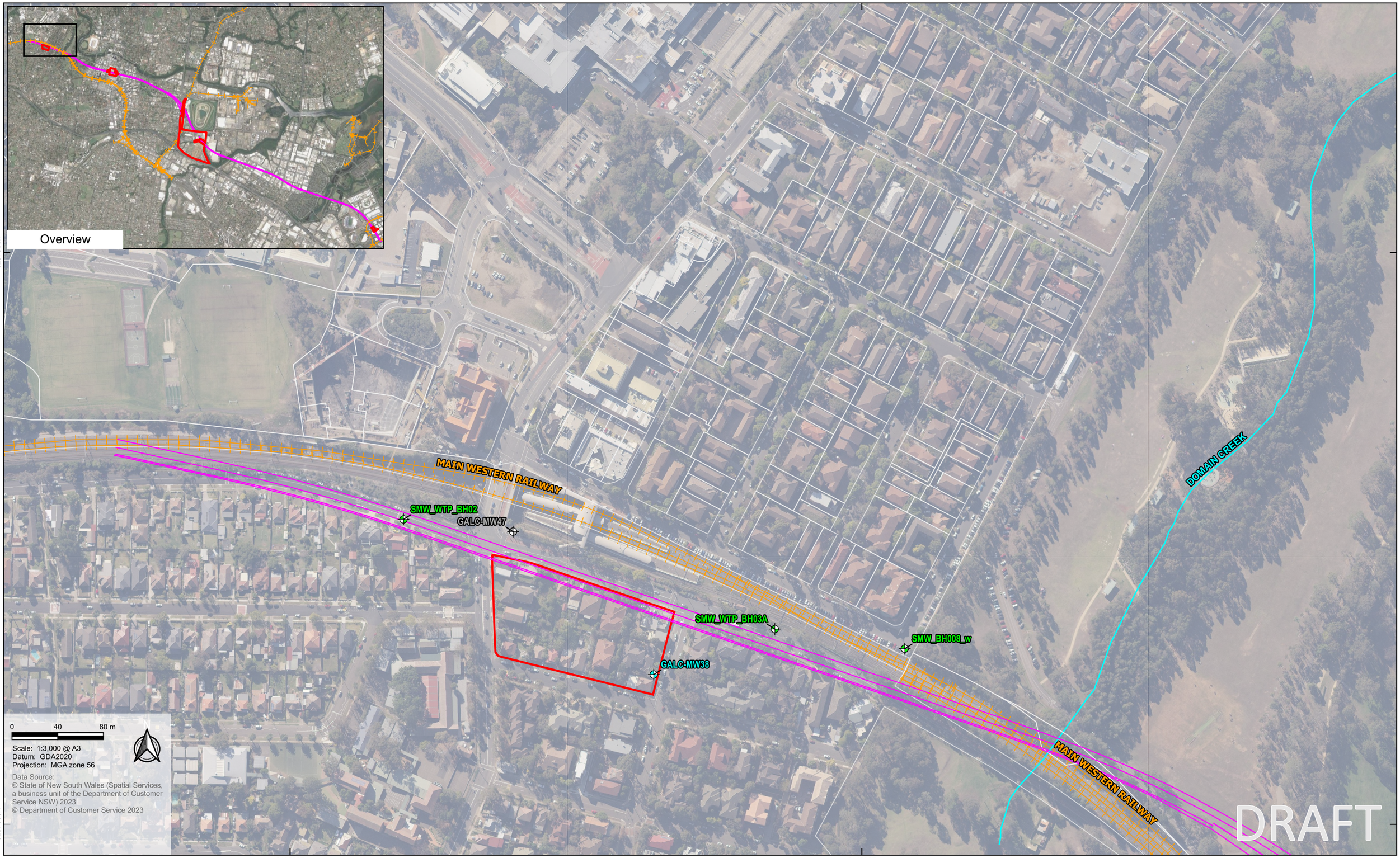
Jacobs/Arcadis (2020). *Environmental Impact Statement Concept and Stage 1.*

Jacobs (2020). *Environmental Impact Statement Concept and Stage 1 Technical Paper 7 Hydrogeology.*

NEPC (2013). *National Environment Protection (Assessment of Site Contamination) Measure.*

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

APPENDIX A – FIGURES



Filepath: ~SC2021\SC210108.01 Gamuda SMW WTP Enviro Support\Workspaces\SC210108.03 Groundwater Monitoring Program\GWMP - January Monitoring Round\Figure F1 Summary of Groundwater Monitoring Locations.qgz

Legend

- Site boundary
- Lot boundary
- Proposed tunnel alignment
- Watercourses
- Railways
- Manual water level & level logger - sampled
- Manual water level - not sampled
- Manual water level & level logger - not sampled

epic ENVIRONMENTAL

Gamuda Laing O'Rourke Consortium
Sydney Metro West Western Tunnelling Package
Groundwater Monitoring Program – January Monitoring Round

Figure F1 Summary of groundwater monitoring locations (Page 1 of 4)

SC210108.01 Rev A 07/06/2023

315000E

315500E

6257000N

6256500N

Overview

PARRAMATTA RIVER

SMW_BH004_s

SMW_BH004_w

GALC-MW79

PM_MW015

PM_MW016

GALC-MW32

GALC-MW33

SMW_BH003_s

GALC-MW26

SMW_BH002_w

PM_MW014

MAIN WESTERN RAILWAY

0 40 80 m

Scale: 1:3,000 @ A3
Datum: GDA2020
Projection: MGA zone 56

N

Data Source:
© State of New South Wales (Spatial Services, a business unit of the Department of Customer Service NSW) 2023
© Department of Customer Service 2023

DRAFT

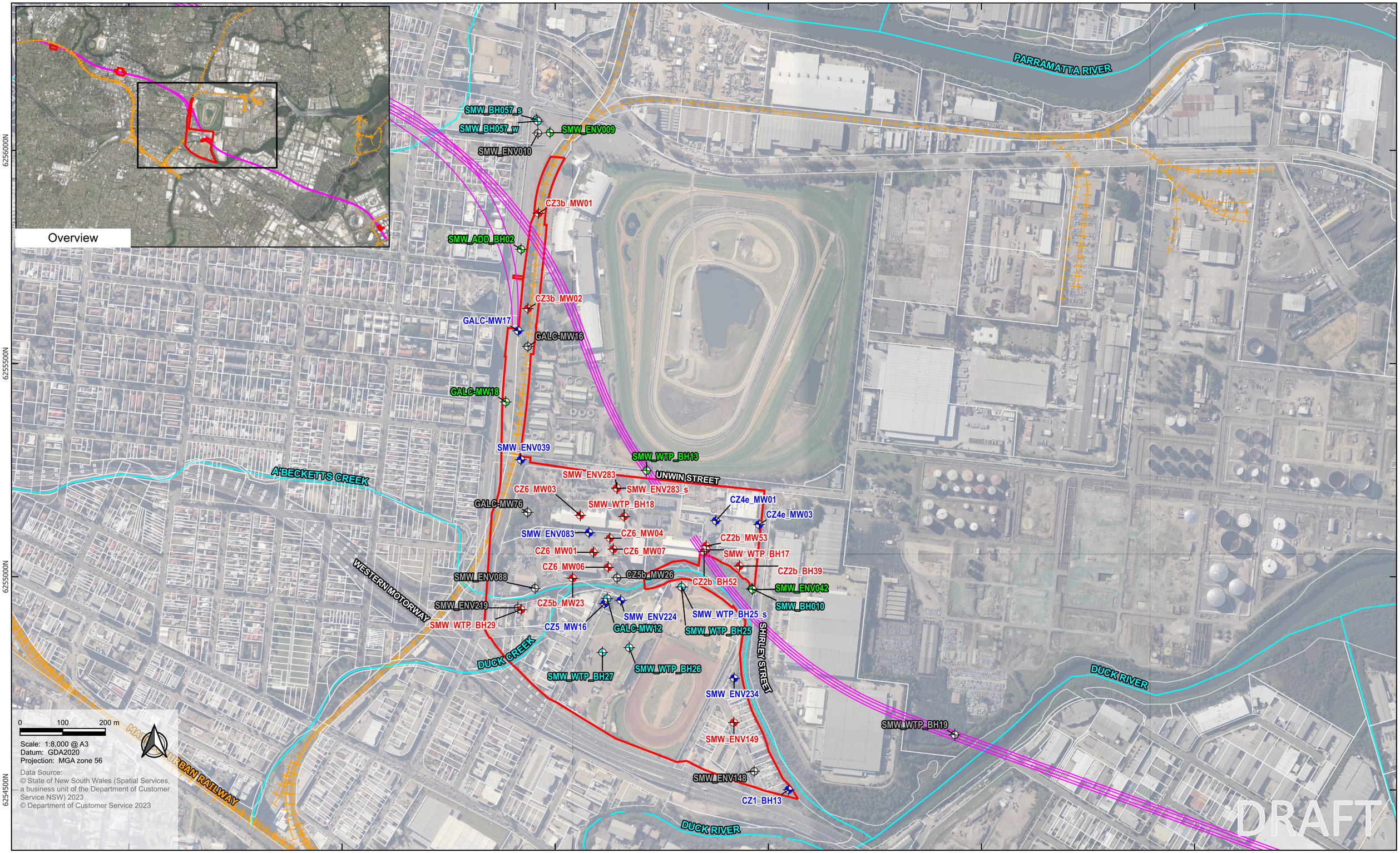
Legend

- Site boundary
- Lot boundary
- Proposed tunnel alignment
- Watercourses
- Railways
- Manual water level & level logger - sampled
- Manual water level - sampled
- Manual water level - not sampled
- Manual water level & level logger - not sampled
- Not accessible / destroyed

epic ENVIRONMENTAL

Gamuda Laing O'Rourke Consortium
Sydney Metro West Western Tunnelling Package
Groundwater Monitoring Program – January Monitoring Round

Figure F1 Summary of groundwater monitoring locations (Page 2 of 4)



Legend

- Site boundary
- Lot boundary
- Proposed tunnel alignment
- Watercourses
- Railways
- Manual water level & level logger - sampled
- Manual water level - sampled
- Manual water level - not sampled
- Manual water level & level logger - not sampled
- Not accessible / destroyed

epic ENVIRONMENTAL

Gamuda Laing O'Rourke Consortium
Sydney Metro West Western Tunnelling Package
Groundwater Monitoring Program – January Monitoring Round

Figure F1 Summary of groundwater monitoring locations (Page 3 of 4)

320000E
320500E
321000E
321500E
6254000N
6253500N
6253000N

HASLAMS CREEK

SMW_WTP_BH22

SMW_WTP_BH23

OLYMPIC PARK RAILWAY

Overview

0 50 100 m

Scale: 1:5,000 @ A3
Datum: GDA2020
Projection: MGA zone 56

Data Source:
© State of New South Wales (Spatial Services, a business unit of the Department of Customer Service NSW) 2023
© Department of Customer Service 2023

DRAFT

Legend

- Site boundary
- Lot boundary
- Proposed tunnel alignment
- Watercourses
- Railways
- Manual water level & level logger - not sampled
- Not accessible / destroyed

epic ENVIRONMENTAL

Gamuda Laing O'Rourke Consortium
Sydney Metro West Western Tunnelling Package
Groundwater Monitoring Program – January Monitoring Round

Figure F1 Summary of groundwater monitoring locations (Page 4 of 4)

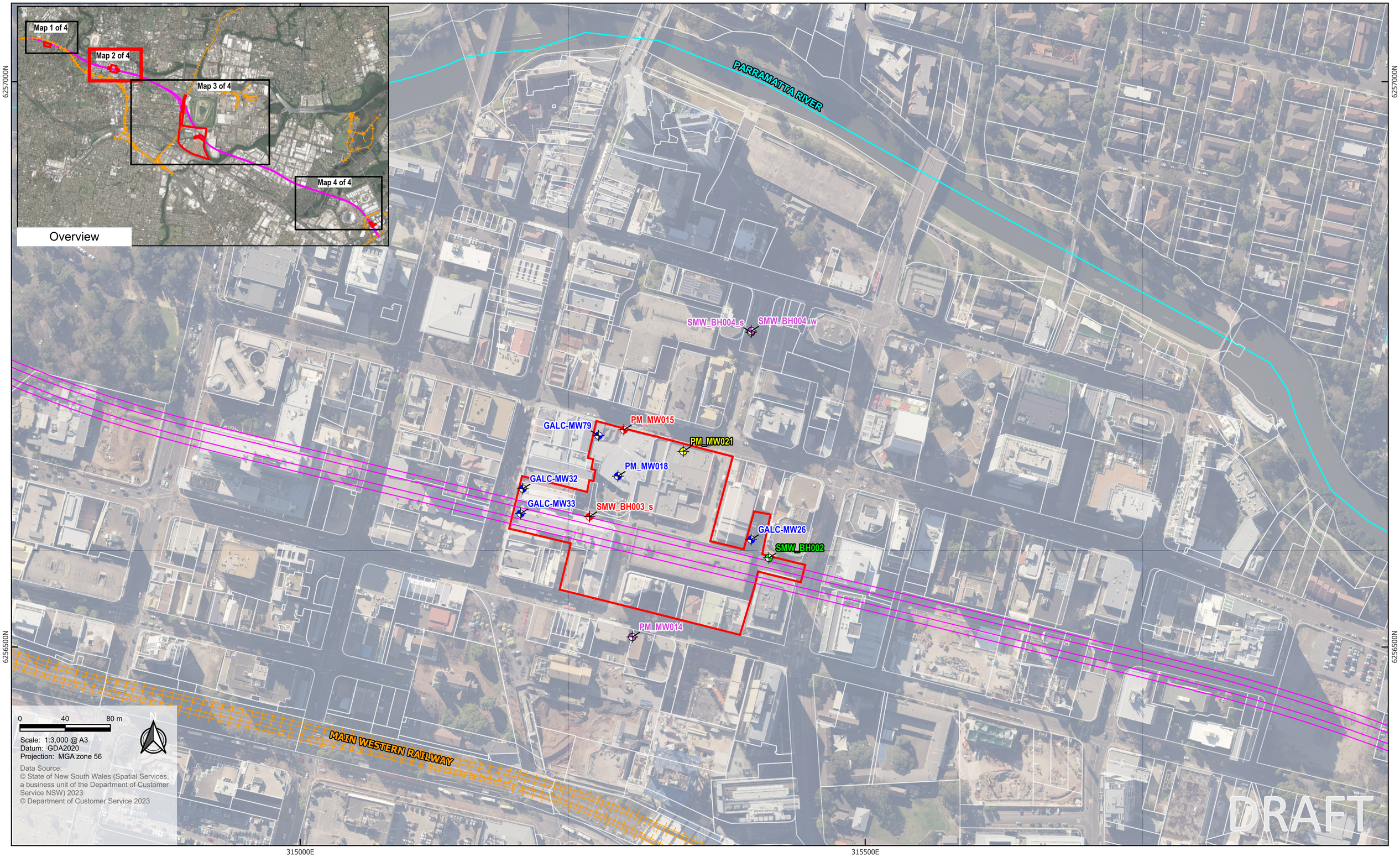


Legend

- Site boundary
- Lot boundary
- Proposed tunnel alignment
- Watercourses
- Railways
- Manual water level
- Manual water level, level logger & water quality

Gamuda Laing O'Rourke Consortium
Sydney Metro West Western Tunnelling Package
Groundwater Monitoring Program – April Monitoring Round

Figure F1 Summary of groundwater monitoring locations (Page 1 of 4)



Legend

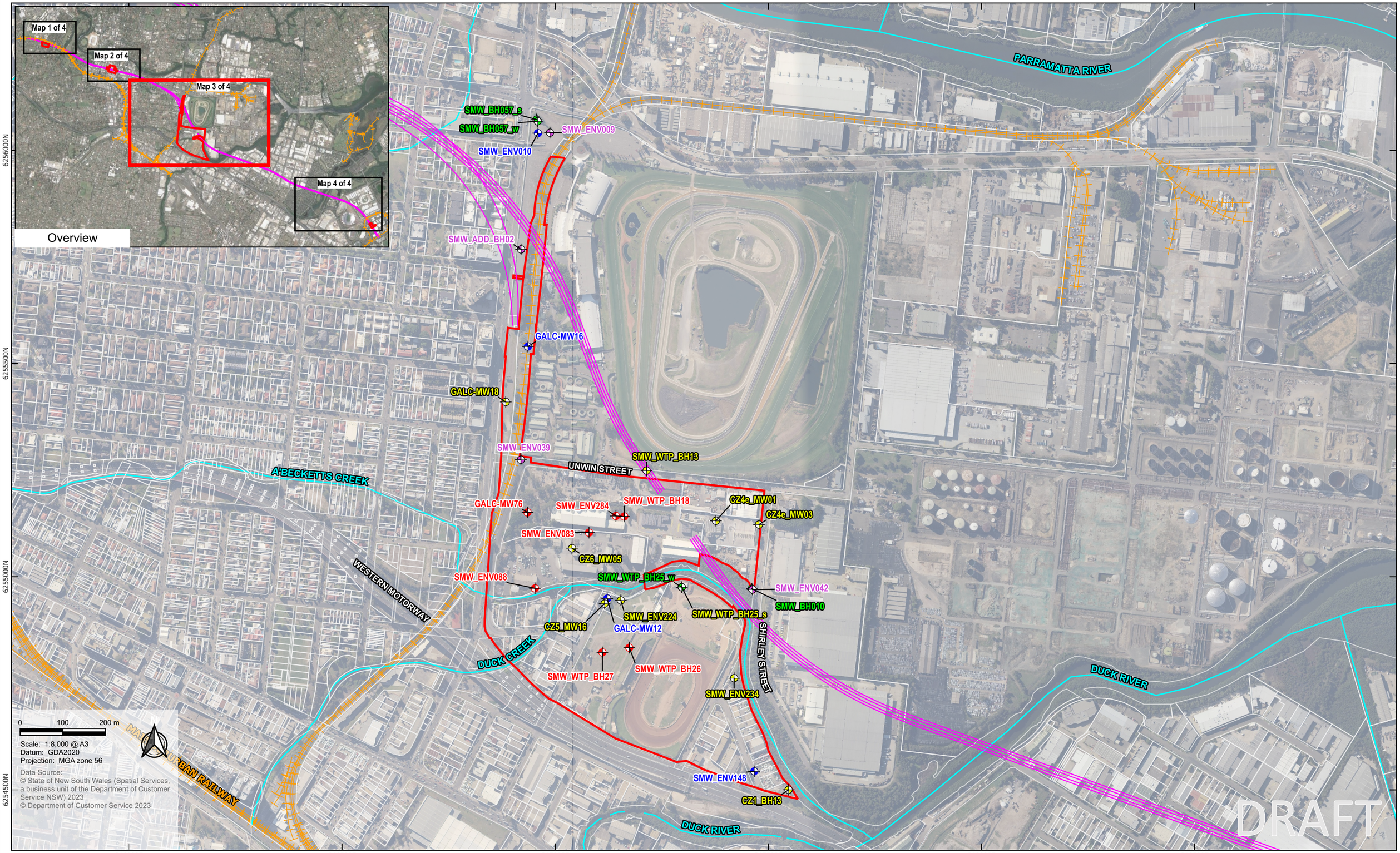
- Site boundary
- Lot boundary
- Proposed tunnel alignment
- Watercourses
- Railways
- Manual water level & level logger
- Manual water level
- Manual water level & water quality
- Not accessible / destroyed
- Manual water level, level logger & water quality

epic ENVIRONMENTAL

Gamuda Laing O'Rourke Consortium
Sydney Metro West Western Tunnelling Package
Groundwater Monitoring Program – April Monitoring Round

Figure F1 Summary of groundwater monitoring locations (Page 2 of 4)

Filepath: -\SC2021\SC210108.01 Gamuda SMW WTP Enviro Support\Workspaces\SC210108.03 Groundwater Monitoring Program\GWMP - April Monitoring Round\Figure F1 Summary of Groundwater Monitoring Locations.qgz



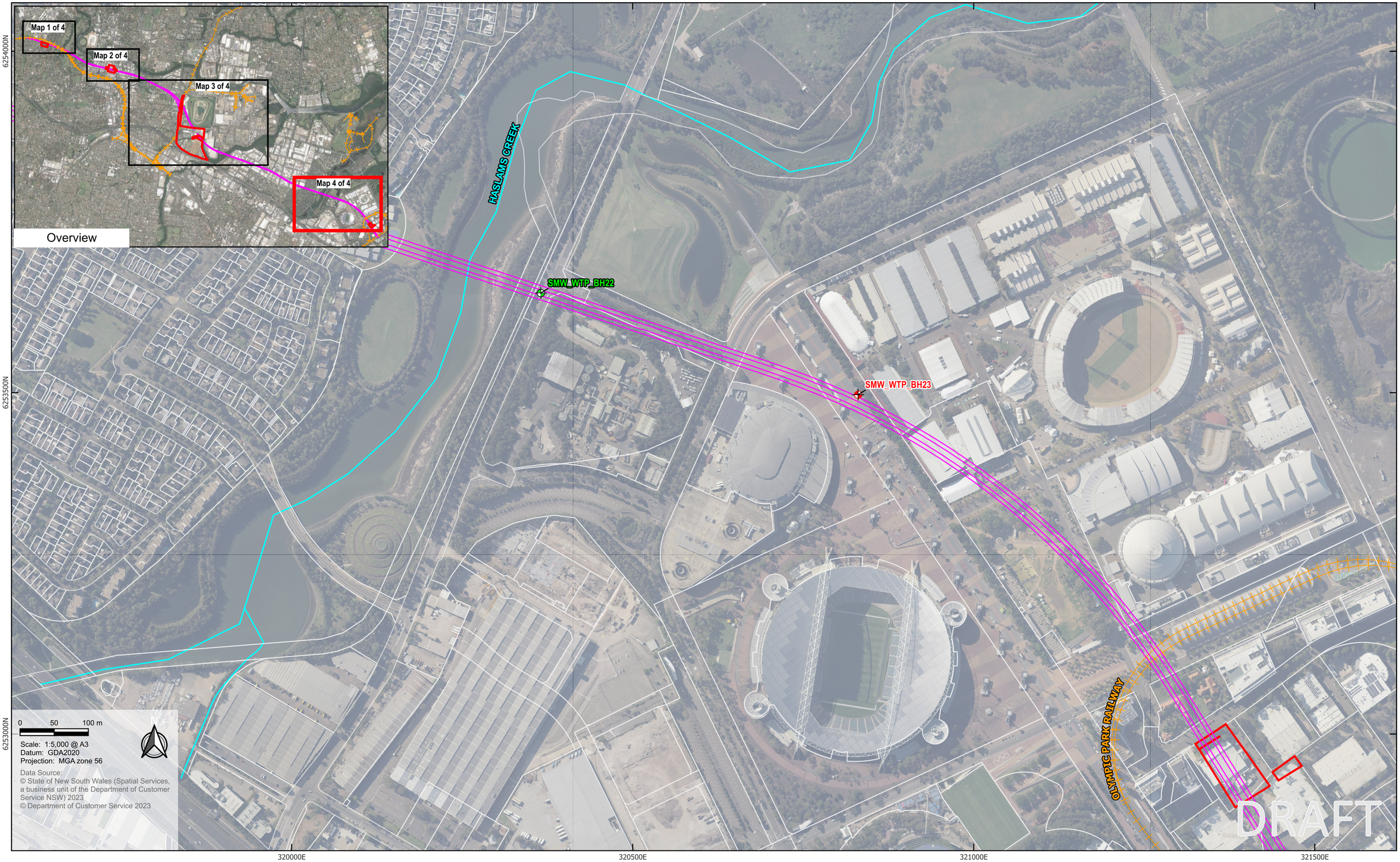
Legend

- Site boundary
- Lot boundary
- Proposed tunnel alignment
- Watercourses
- Railways
- Manual water level & level logger
- Manual water level
- Manual water level & water quality
- Not accessible / destroyed
- Manual water level, level logger & water quality

epic ENVIRONMENTAL

Gamuda Laing O'Rourke Consortium
Sydney Metro West Western Tunnelling Package
Groundwater Monitoring Program – April Monitoring Round

Figure F1 Summary of groundwater monitoring locations (Page 3 of 4)



Legend

- Site boundary
- Lot boundary
- Proposed tunnel alignment
- Watercourses
- Railways
- Manual water level & level logger
- Not accessible / destroyed

epic ENVIRONMENTAL

Gamuda Laing O'Rourke Consortium
Sydney Metro West Western Tunnelling Package
Groundwater Monitoring Program – April Monitoring Round

Figure F1 Summary of groundwater monitoring locations (Page 4 of 4)

Filepath: ~SC2021\SC210108.01 Gamuda SMW WTP Enviro Support\Workspaces\SC210108.03 Groundwater Monitoring Program\GWMP - April Monitoring Round\Figure F1 Summary of Groundwater Monitoring Locations.qgz

APPENDIX B – TABLES

Table T1. Groundwater Analytical Results – Marine (January 2023 GME)

Table T2. Groundwater Analytical Results – Freshwater (January 2023 GME)

Table T3. Rinsate and Trip Blank Results (January 2023 GME)

Table T4. RPD summary table (January 2023 GME)

Table T5. Groundwater Analytical Results – Marine (April 2023 GME)

Table T6. Groundwater Analytical Results – Freshwater (April 2023 GME)

Table T7. Rinsate and Trip Blank Results (April 2023 GME)

Table T8. RPD Summary Table (April 2023 GME)

Table T1 - Groundwater Analytical Results - Marine (January 2023 GME)

						NA	Physico-Chemical & Major Ions														Inorganics				
						Irgarol	Redox Potential (Lab)	pH (Lab)	Dissolved Oxygen	TDS	Chloride	Sulphate	Alkalinity (Hydroxide) as CaCO3	Carbonate as CaCO3	Bicarbonate as CaCO3	Alkalinity (total) as CaCO3	Calcium (filtered)	Magnesium (filtered)	Sodium (filtered)	Potassium (filtered)	Electrical Conductivity (Non Compensated)	Hardness (filtered)	Ammonia as N (filtered)	Kjeldahl Nitrogen Total	Organic Nitrogen as N
						µg/L	mV	-	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	ngCaCO3/	mg/L	mg/L	mg/L
EQL						2	0.1	0.01	0.1	5	1	1	1	1	1	1	0.5	0.5	0.5	0.5	1		0.005	0.1	0.2
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)																							0.91		
PFAS NEMP 2020 Interim Marine 95%																									
ANZECC 2000 SE Aust Triggers - Estuaries								7-8.5																	
NEPM 2013 Table 1C GILs, Marine Waters																									
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**																				
314602-1	**SMW_BH083**		**16 Jan 2023**	**Water**	**Normal**	<2	-	5.3	8.5	7,700	3,600	590	<5	<5	80	80	62	210	2,300	5.8	12,000	1,000	0.27	0.4	<0.2
314602-3	**QC01**	**SMW_BH083**	**16 Jan 2023**	**Water**	**Field_D**	<2	-	5.4	8.2	7,200	3,400	570	<5	<5	83	83	57	190	2,000	5.4	12,000	950	0.30	0.4	<0.2
ES2301657001	**QC02**	**SMW_BH083**	**16 Jan 2023**	**Water**	**Interlab_D**	-	60.6	5.69	8.4	5,590	3,100	455	<1	<1	82	82	56	157	1,390	5	8,350	786	0.30	0.6	-
314602-2	**CZ5_MW16**		**16 Jan 2023**	**Water**	**Normal**	<2	-	6.1	7.3	4,300	1,800	540	<5	<5	180	180	40	110	1,500	32	7,400	560	3.2	3.4	<0.2
314652-1	**SMW_ENV224**		**17 Jan 2023**	**Water**	**Normal**	<2	-	6.5	8.2	3,200	430	1,300	<5	<5	480	480	620	70	270	10	4,100	1,800	0.96	1.3	0.4
314652-2	**CZ1_BH13**		**17 Jan 2023**	**Water**	**Normal**	<2	-	6.3	8.3	26,000	11,000	740	<5	<5	760	760	680	740	7,100	94	35,000	4,800	2.0	2.2	<0.2
314652-3	**SMW_ENV236**		**17 Jan 2023**	**Water**	**Normal**	<2	-	5.4	8.5	18,000	8,900	2,000	<5	<5	110	110	170	960	4,700	11	27,000	4,400	0.18	0.3	<0.2
314652-4	**SMW_ENV234**		**17 Jan 2023**	**Water**	**Normal**	<2	-	6.4	7.8	38,000	19,000	1,500	<5	<5	570	570	890	1,800	11,000	100	51,000	9,600	1.9	1.8	<0.2
314652-5	**SMW-WTP-BH25_s**		**17 Jan 2023**	**Water**	**Normal**	<2	-	7.3	8.4	2,000	260	330	<5	<5	1,100	1,100	220	110	330	19	3,300	1,000	1.7	17	15
314652-5	**SMW-WTP-BH25_s**		**17 Jan 2023**	**Water**	**Normal**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314784-1	**CZ4e_MW03**		**18 Jan 2023**	**Water**	**Normal**	<2	-	6.7	8.9	3,700	1,600	900	<5	<5	190	190	86	120	1,000	4	6,800	700	0.061	0.1	<0.2
314784-2	**CZ4e_MW01**		**18 Jan 2023**	**Water**	**Normal**	<2	-	6.5	9.1	9,300	3,600	1,400	<5	<5	400	400	190	280	1,900	9.6	13,000	1,600	0.11	0.2	<0.2
314784-3	**SMW_ENV042**		**18 Jan 2023**	**Water**	**Normal**	<2	-	5.3	8.5	13,000	8,300	1,100	<5	<5	25	25	200	760	4,200	15	26,000	3,600	1.5	1.5	<0.2
314907-1	**SMW_WTP_BH13**		**20 Jan 2023**	**Water**	**Normal**	<2	303	6.8	8.8	4,600	2,000	250	<5	<5	270	270	36	120	1,100	8.0	7,400	600	0.028	0.1	<0.2
314907-2	**CZ6_MW05**		**20 Jan 2023**	**Water**	**Normal**	<2	253	7.1	8.8	820	170	38	<5	<5	310	310	20	20	210	2	1,200	130	0.41	0.6	<0.2
314907-2	**CZ6_MW05**		**20 Jan 2023**	**Water**	**Normal**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314911-1	**GALC-MW18**		**19 Jan 2023**	**Water**	**Normal**	<2	240	6.6	7.6	5,400	2,500	630	<5	<5	310	310	55	97	2,000	6.7	9,200	540	<0.005	0.2	<0.2
314911-2	**GALC-MW17**		**19 Jan 2023**	**Water**	**Normal**	<2	218	9.1	7.8	5,900	2,900	220	<5	69	320	390	190	0.7	1,200	230	9,600	470	0.40	0.7	<0.2
314911-3	**SMW-ADD-BH02**		**19 Jan 2023**	**Water**	**Normal**	<2	219	6.3	8.0	100	30	5	<5	<5	16	16	4	1	13	1	140	14	0.028	0.2	<0.2
314911-4	**SMW-ENV009**		**19 Jan 2023**	**Water**	**Normal**	<2	251	7.2	8.1	1,100	180	49	<5	<5	720	720	110	53	210	16	2,000	490	9.6	12	2.1
314911-5	**QC03**	**SMW-ENV009**	**19 Jan 2023**	**Water**	**Field_D**	<2	241	7.3	7.7	1,100	190	50	<5	<5	730	730	110	53	220	16	2,000	490	10	11	1.1
ES2302217001	**QC04**	**SMW-ENV009**	**19 Jan 2023**	**Water**	**Interlab_D**	-	134	7.13	5.2	1,180	206	47	<1	<1	695	695	131	65	194	19	1,900	595	9.50	11.0	-
314911-9	**SMW-ENV039**		**19 Jan 2023**	**Water**	**Normal**	<2	280	6.7	7.6	22,000	9,600	1,700	<5	<5	420	420	270	660	7,100	19	31,000	3,400	0.90	0.7	<0.2

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T1 - Groundwater Analytical Results - Marine (January 2023 GME)

						NA							Metals											
						Irgarol	Redox Potential (Lab)	Nitrate (as N) (filtered)	Nitrite (as N) (filtered)	Nitrite + Nitrate as N	Nitrogen (Total)	Reactive Phosphorus as P (Orthophosphate as P) (filtered)	Arsenic (filtered)	Cadmium (filtered)	Chromium (hexavalent) (filtered)	Chromium (Trivalent)	Chromium (III+VI) (filtered)	Copper (filtered)	Lead (filtered)	Manganese (filtered)	Mercury (filtered)	Nickel (filtered)	Phosphorus	Selenium (filtered)	Zinc (filtered)
						µg/L	mV	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	mg/L	mg/L	µg/L
EQL						2	0.1	0.005	0.005	0.01	0.1	0.005	0.2	0.05	0.001	0.001	0.2	0.5	0.1	0.0005	0.005	0.5	0.05	0.0002	1
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)								2.4						5.5	0.0044	0.027		1.3	4.4		0.4	70			15
PFAS NEMP 2020 Interim Marine 95%																									
ANZECC 2000 SE Aust Triggers - Estuaries											0.3												0.03		
NEPM 2013 Table 1C GILs, Marine Waters														0.7	0.0044	0.027		1.3	4.4		0.1	7			15
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**																				
314602-1	**SMW_BH083**		**16 Jan 2023**	**Water**	**Normal**	<2	-	<0.005	<0.005	-	0.4	<0.005	1	<0.1	<0.005	<0.005	<1	<1	<1	0.1	<0.05	8	<0.05	<0.001	21
314602-3	**QC01**	**SMW_BH083**	**16 Jan 2023**	**Water**	**Field_D**	<2	-	<0.005	<0.005	-	0.4	<0.005	1	<0.1	<0.005	<0.005	<1	<1	<1	0.1	<0.05	8	<0.05	<0.001	21
ES2301657001	**QC02**	**SMW_BH083**	**16 Jan 2023**	**Water**	**Interlab_D**	-	60.6	<0.01	<0.01	<0.01	0.6	0.02	1.4	<0.05	<0.001	<0.001	<0.2	<0.5	0.1	0.0940	<0.005	8.9	0.05	0.0005	20
314602-2	**CZ5_MW16**		**16 Jan 2023**	**Water**	**Normal**	<2	-	<0.005	<0.005	-	3.4	<0.005	1	<0.1	<0.005	<0.005	<1	<1	<1	0.13	<0.05	7	0.1	<0.001	22
314652-1	**SMW_ENV224**		**17 Jan 2023**	**Water**	**Normal**	<2	-	0.01	<0.005	-	1.3	<0.005	1	<0.1	<0.005	<0.005	<1	<1	<1	0.9	<0.05	7	<0.05	<0.001	1
314652-2	**CZ1_BH13**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<0.005	<0.005	-	2.2	<0.005	6	<0.1	<0.005	<0.005	<1	<1	<1	0.31	<0.05	3	0.2	<0.001	9
314652-3	**SMW_ENV236**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<0.005	<0.005	-	0.3	<0.005	4	<0.1	<0.005	<0.005	<1	<1	<1	0.15	<0.05	20	<0.05	<0.001	39
314652-4	**SMW_ENV234**		**17 Jan 2023**	**Water**	**Normal**	<2	-	0.005	<0.005	-	1.8	<0.005	9	<0.1	<0.005	<0.005	<1	<1	<1	1.8	<0.05	<1	<0.05	<0.001	<1
314652-5	**SMW-WTP-BH25_s**		**17 Jan 2023**	**Water**	**Normal**	<2	-	0.02	<0.005	-	17	<0.005	7	<0.1	<0.005	<0.005	<1	<1	<1	0.22	<0.05	<1	0.1	<0.001	5
314652-5	**SMW-WTP-BH25_s**		**17 Jan 2023**	**Water**	**Normal**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314784-1	**CZ4e_MW03**		**18 Jan 2023**	**Water**	**Normal**	<2	-	0.01	<0.005	-	0.1	0.01	<1	0.2	<0.005	<0.005	<1	1	<1	2.7	<0.05	18	0.1	<0.001	34
314784-2	**CZ4e_MW01**		**18 Jan 2023**	**Water**	**Normal**	<2	-	<0.005	<0.005	-	0.2	<0.005	3	<0.1	<0.005	<0.005	<1	<1	<1	1.4	<0.05	12	<0.05	<0.001	27
314784-3	**SMW_ENV042**		**18 Jan 2023**	**Water**	**Normal**	<2	-	<0.005	<0.005	-	1.5	<0.005	5	<0.1	<0.005	<0.005	<1	950	<1	0.25	<0.05	13	<0.05	<0.001	21
314907-1	**SMW_WTP_BH13**		**20 Jan 2023**	**Water**	**Normal**	<2	303	<0.005	<0.005	-	0.1	<0.005	1	<0.1	<0.005	<0.005	<1	<1	<1	0.17	<0.05	3	<0.05	<0.001	100
314907-2	**CZ6_MW05**		**20 Jan 2023**	**Water**	**Normal**	<2	253	<0.005	<0.005	-	0.6	<0.005	7	<0.1	<0.005	<0.005	<1	<1	<1	0.079	<0.05	<1	0.1	<0.001	3
314907-2	**CZ6_MW05**		**20 Jan 2023**	**Water**	**Normal**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314911-1	**GALC-MW18**		**19 Jan 2023**	**Water**	**Normal**	<2	240	<0.005	<0.005	-	0.2	<0.005	<1	<0.1	<0.005	<0.005	<1	<1	<1	0.9	<0.05	1	<0.05	<0.001	<1
314911-2	**GALC-MW17**		**19 Jan 2023**	**Water**	**Normal**	<2	218	0.70	0.012	-	1.4	<0.005	2	<0.1	0.02	<0.005	13	14	<1	<0.005	<0.05	5	0.1	0.002	1
314911-3	**SMW-ADD-BH02**		**19 Jan 2023**	**Water**	**Normal**	<2	219	0.35	0.008	-	0.6	<0.005	<1	<0.1	<0.005	<0.005	<1	9	<1	0.011	<0.05	4	0.1	<0.001	82
314911-4	**SMW-ENV009**		**19 Jan 2023**	**Water**	**Normal**	<2	251	<0.005	<0.005	-	12	<0.005	<1	<0.1	<0.005	<0.005	<1	<1	<1	0.93	<0.05	<1	0.3	<0.001	<1
314911-5	**QC03**	**SMW-ENV009**	**19 Jan 2023**	**Water**	**Field_D**	<2	241	<0.005	<0.005	-	11	<0.005	<1	<0.1	<0.005	<0.005	<1	<1	<1	0.97	<0.05	<1	0.4	<0.001	<1
ES2302217001	**QC04**	**SMW-ENV009**	**19 Jan 2023**	**Water**	**Interlab_D**	-	134	<0.01	<0.01	<0.01	11.0	-	0.5	<0.05	<0.001	<0.001	0.2	<0.5	<0.1	0.829	<0.005	<0.5	-	0.0004	<1
314911-9	**SMW-ENV039**		**19 Jan 2023**	**Water**	**Normal**	<2	280	<0.005	<0.005	-	0.7	<0.005	4	<0.1	<0.005	<0.005	<1	2	<1	1.4	<0.05	3	0.06	<0.001	9

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T1 - Groundwater Analytical Results - Marine (January 2023 GME)

						NA		BTEX								TRH									
						Irgarol	Redox Potential (Lab)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Naphthalene	Naphthalene (BTEX)	C6-C10	C6-C10 (F1 minus BTEX)	C10-C16	C10-C16 (F2 minus Naphthalene)	C16-C34	C34-C40	C10-C40 (Sum of total)	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene
						µg/L	mV	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL						2	0.1	1	1	1	2	1	2	1	1	10	10	50	50	100	100	50	1	1	1
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)								700	180	80				70	70									30
PFAS NEMP 2020 Interim Marine 95%																								
ANZECC 2000 SE Aust Triggers - Estuaries																								
NEPM 2013 Table 1C GILs, Marine Waters								500						50	50									
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**																			
314602-1	**SMW_BH083**		**16 Jan 2023**	**Water**	**Normal**	<2	-	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	160	160	280	<100	440	<1	<1	<1
314602-3	**QC01**	**SMW_BH083**	**16 Jan 2023**	**Water**	**Field_D**	<2	-	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1
ES2301657001	**QC02**	**SMW_BH083**	**16 Jan 2023**	**Water**	**Interlab_D**	-	60.6	<1	<2	<2	<2	<2	<2	<1.0	<5	<20	<20	<100	<100	<100	<100	<100	<5	<5	<5
314602-2	**CZ5_MW16**		**16 Jan 2023**	**Water**	**Normal**	<2	-	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1
314652-1	**SMW_ENV224**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1
314652-2	**CZ1_BH13**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1
314652-3	**SMW_ENV236**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	1,500	1,500	3,600	<100	5,100	<1	<1	<1
314652-4	**SMW_ENV234**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1
314652-5	**SMW-WTP-BH25_s**		**17 Jan 2023**	**Water**	**Normal**	<2	-	2	<1	<1	<2	<1	-	<1	<1	1,000	1,000	76	76	690	<100	760	<1	<1	<1
314652-5	**SMW-WTP-BH25_s**		**17 Jan 2023**	**Water**	**Normal**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314784-1	**CZ4e_MW03**		**18 Jan 2023**	**Water**	**Normal**	<2	-	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	<50	<50	150	<100	150	<1	<1	<1
314784-2	**CZ4e_MW01**		**18 Jan 2023**	**Water**	**Normal**	<2	-	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	100	100	200	<100	300	<1	<1	<1
314784-3	**SMW_ENV042**		**18 Jan 2023**	**Water**	**Normal**	<2	-	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1
314907-1	**SMW_WTP_BH13**		**20 Jan 2023**	**Water**	**Normal**	<2	303	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1
314907-2	**CZ6_MW05**		**20 Jan 2023**	**Water**	**Normal**	<2	253	<1	<1	<1	<2	<1	-	2	2	<10	<10	320	320	1,100	<100	1,400	<1	<1	<1
314907-2	**CZ6_MW05**		**20 Jan 2023**	**Water**	**Normal**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314911-1	**GALC-MW18**		**19 Jan 2023**	**Water**	**Normal**	<2	240	<1	1	<1	<2	<1	-	<1	<1	<10	<10	120	120	180	<100	300	<1	<1	<1
314911-2	**GALC-MW17**		**19 Jan 2023**	**Water**	**Normal**	<2	218	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	860	860	330	<100	1,200	<1	<1	<1
314911-3	**SMW-ADD-BH02**		**19 Jan 2023**	**Water**	**Normal**	<2	219	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	130	130	200	<100	330	<1	<1	<1
314911-4	**SMW-ENV009**		**19 Jan 2023**	**Water**	**Normal**	<2	251	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	50	50	250	<100	300	<1	<1	<1
314911-5	**QC03**	**SMW-ENV009**	**19 Jan 2023**	**Water**	**Field_D**	<2	241	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1
ES2302217001	**QC04**	**SMW-ENV009**	**19 Jan 2023**	**Water**	**Interlab_D**	-	134	<1	<2	<2	<2	<2	<2	<1.0	<5	<20	<20	<100	<100	<100	<100	<100	<5	<5	<5
314911-9	**SMW-ENV039**		**19 Jan 2023**	**Water**	**Normal**	<2	280	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T1 - Groundwater Analytical Results - Marine (January 2023 GME)

							NA		MAH						Halogenated Hydrocarbons												
							Irgarol	Redox Potential (Lab)	n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	tert-butylbenzene	1,2-dibromoethane	Bromomethane	Dichlorodifluoromethane	Iodomethane	Trichlorofluoromethane	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,1-dichloropropene
							µg/L	mV	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL							2	0.1	1	1	1	1	1	1	1	10	10	5	10	1	1	1	1	1	1	1
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)																					270	400	1,900		700	
PFAS NEMP 2020 Interim Marine 95%																										
ANZECC 2000 SE Aust Triggers - Estuaries																										
NEPM 2013 Table 1C GILs, Marine Waters																							1,900			
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**																					
314602-1	**SMW_BH083**		**16 Jan 2023**	**Water**	**Normal**		<2	-	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1	<1	<1	<1
314602-3	**QC01**	**SMW_BH083**	**16 Jan 2023**	**Water**	**Field_D**		<2	-	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1	<1	<1	<1
ES2301657001	**QC02**	**SMW_BH083**	**16 Jan 2023**	**Water**	**Interlab_D**		-	60.6	<5	<5	<5	<5	<5	<5	<5	<50	<50	<5	<50	<5	<5	<5	<5	<5	<5	<5
314602-2	**CZ5_MW16**		**16 Jan 2023**	**Water**	**Normal**		<2	-	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1	<1	<1	<1
314652-1	**SMW_ENV224**		**17 Jan 2023**	**Water**	**Normal**		<2	-	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1	<1	<1	<1
314652-2	**CZ1_BH13**		**17 Jan 2023**	**Water**	**Normal**		<2	-	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1	<1	<1	<1
314652-3	**SMW_ENV236**		**17 Jan 2023**	**Water**	**Normal**		<2	-	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1	<1	<1	<1
314652-4	**SMW_ENV234**		**17 Jan 2023**	**Water**	**Normal**		<2	-	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1	<1	<1	<1
314652-5	**SMW-WTP-BH25_s**		**17 Jan 2023**	**Water**	**Normal**		<2	-	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1	<1	<1	<1
314652-5	**SMW-WTP-BH25_s**		**17 Jan 2023**	**Water**	**Normal**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314784-1	**CZ4e_MW03**		**18 Jan 2023**	**Water**	**Normal**		<2	-	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1	<1	<1	<1
314784-2	**CZ4e_MW01**		**18 Jan 2023**	**Water**	**Normal**		<2	-	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1	<1	<1	<1
314784-3	**SMW_ENV042**		**18 Jan 2023**	**Water**	**Normal**		<2	-	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1	<1	<1	<1
314907-1	**SMW_WTP_BH13**		**20 Jan 2023**	**Water**	**Normal**		<2	303	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1	<1	<1	<1
314907-2	**CZ6_MW05**		**20 Jan 2023**	**Water**	**Normal**		<2	253	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1	<1	<1	<1
314907-2	**CZ6_MW05**		**20 Jan 2023**	**Water**	**Normal**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314911-1	**GALC-MW18**		**19 Jan 2023**	**Water**	**Normal**		<2	240	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1	<1	<1	<1
314911-2	**GALC-MW17**		**19 Jan 2023**	**Water**	**Normal**		<2	218	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1	<1	<1	<1
314911-3	**SMW-ADD-BH02**		**19 Jan 2023**	**Water**	**Normal**		<2	219	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1	<1	<1	<1
314911-4	**SMW-ENV009**		**19 Jan 2023**	**Water**	**Normal**		<2	251	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1	<1	<1	<1
314911-5	**QC03**	**SMW-ENV009**	**19 Jan 2023**	**Water**	**Field_D**		<2	241	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1	<1	<1	<1
ES2302217001	**QC04**	**SMW-ENV009**	**19 Jan 2023**	**Water**	**Interlab_D**		-	134	<5	<5	<5	<5	<5	<5	<5	<50	<50	<5	<50	<5	<5	<5	<5	<5	<5	<5
314911-9	**SMW-ENV039**		**19 Jan 2023**	**Water**	**Normal**		<2	280	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1	<1	<1	<1

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T1 - Groundwater Analytical Results - Marine (January 2023 GME)

| | | |

Table T1 - Groundwater Analytical Results - Marine (January 2023 GME)

						NA																	PAH	
						Irgarol	Redox Potential (Lab)	Hexachlorocyclopentadiene	Hexachloroethane	Trichloroethene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Vinyl chloride	Benzo(b+j+k)fluoranthene	2-chloronaphthalene	2-methylnaphthalene	3-methylcholanthrene	7,12-dimethylbenz(a)anthracene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene
						µg/L	mV	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL						2	0.1	5	2	1	1	1	1	10	0.002	2	2	2	2	1	1	1	1	0.5	1
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)										330	70			100								0.4		0.2	
PFAS NEMP 2020 Interim Marine 95%																									
ANZECC 2000 SE Aust Triggers - Estuaries																									
NEPM 2013 Table 1C GILs, Marine Waters																									
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**																				
314602-1	**SMW_BH083**		**16 Jan 2023**	**Water**	**Normal**	<2	-	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1
314602-3	**QC01**	**SMW_BH083**	**16 Jan 2023**	**Water**	**Field_D**	<2	-	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1
ES2301657001	**QC02**	**SMW_BH083**	**16 Jan 2023**	**Water**	**Interlab_D**	-	60.6	<10	<2	<5	<5	<5	<5	<50	-	<2	<2	<2	<2	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0
314602-2	**CZ5_MW16**		**16 Jan 2023**	**Water**	**Normal**	<2	-	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1
314652-1	**SMW_ENV224**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1
314652-2	**CZ1_BH13**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1
314652-3	**SMW_ENV236**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1
314652-4	**SMW_ENV234**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1
314652-5	**SMW-WTP-BH25_s**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1
314652-5	**SMW-WTP-BH25_s**		**17 Jan 2023**	**Water**	**Normal**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314784-1	**CZ4e_MW03**		**18 Jan 2023**	**Water**	**Normal**	<2	-	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1
314784-2	**CZ4e_MW01**		**18 Jan 2023**	**Water**	**Normal**	<2	-	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1
314784-3	**SMW_ENV042**		**18 Jan 2023**	**Water**	**Normal**	<2	-	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1
314907-1	**SMW_WTP_BH13**		**20 Jan 2023**	**Water**	**Normal**	<2	303	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1
314907-2	**CZ6_MW05**		**20 Jan 2023**	**Water**	**Normal**	<2	253	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	1	<1	<1	<1	<1	<1
314907-2	**CZ6_MW05**		**20 Jan 2023**	**Water**	**Normal**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	-	-	-	-
314911-1	**GALC-MW18**		**19 Jan 2023**	**Water**	**Normal**	<2	240	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1
314911-2	**GALC-MW17**		**19 Jan 2023**	**Water**	**Normal**	<2	218	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1
314911-3	**SMW-ADD-BH02**		**19 Jan 2023**	**Water**	**Normal**	<2	219	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1
314911-4	**SMW-ENV009**		**19 Jan 2023**	**Water**	**Normal**	<2	251	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1
314911-5	**QC03**	**SMW-ENV009**	**19 Jan 2023**	**Water**	**Field_D**	<2	241	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1
ES2302217001	**QC04**	**SMW-ENV009**	**19 Jan 2023**	**Water**	**Interlab_D**	-	134	<10	<2	<5	<5	<5	<5	<50	<0.004	<2	<2	<2	<2	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0
314911-9	**SMW-ENV039**		**19 Jan 2023**	**Water**	**Normal**	<2	280	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T1 - Groundwater Analytical Results - Marine (January 2023 GME)

						NA												TPH					Perfluoro
						Irgarol	Redox Potential (Lab)	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ	Benzo(a)pyrene TEQ calc (Zero)	PAHs (Sum of positives)	C6-C9	C10-C14	C15-C28	C29-C36	C10-C36 (Sum of total)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)
						µg/L	mV	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL						2	0.1	1	1	1	1	1	1	1	0.005	0.0005	0.001	10	50	100	50	50	0.01	0.01	0.01
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)										1.4			2												
PFAS NEMP 2020 Interim Marine 95%																									
ANZECC 2000 SE Aust Triggers - Estuaries																									
NEPM 2013 Table 1C GILs, Marine Waters																									
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**																				
314602-1	**SMW_BH083**		**16 Jan 2023**	**Water**	**Normal**	<2	-	<1	<1	<1	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	360	<100	360	0.09	0.08	0.27
314602-3	**QC01**	**SMW_BH083**	**16 Jan 2023**	**Water**	**Field_D**	<2	-	<1	<1	<1	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	<100	<100	<50	0.07	0.08	0.26
ES2301657001	**QC02**	**SMW_BH083**	**16 Jan 2023**	**Water**	**Interlab_D**	-	60.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<0.0005	-	<20	<50	<100	<50	<50	0.11	0.08	0.25
314602-2	**CZ5_MW16**		**16 Jan 2023**	**Water**	**Normal**	<2	-	<1	<1	<1	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	<100	<100	<50	0.02	<0.01	0.02
314652-1	**SMW_ENV224**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<1	<1	<1	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	<100	<100	<50	0.01	<0.01	0.03
314652-2	**CZ1_BH13**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<1	<1	<1	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	<100	<100	<50	<0.01	<0.01	<0.01
314652-3	**SMW_ENV236**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<1	<1	<1	<1	<1	<1	<1	<0.005	-	0[#1]	<10	860	4,100	160	5,200	<0.01	<0.01	<0.01
314652-4	**SMW_ENV234**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<1	<1	<1	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	<100	<100	<50	<0.01	<0.01	<0.01
314652-5	**SMW-WTP-BH25_s**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<1	<1	<1	<1	<1	<1	<1	<0.005	-	0[#1]	1,000	70	650	130	850	0.03	0.02	0.07
314652-5	**SMW-WTP-BH25_s**		**17 Jan 2023**	**Water**	**Normal**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314784-1	**CZ4e_MW03**		**18 Jan 2023**	**Water**	**Normal**	<2	-	<1	<1	<1	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	140	<100	140	0.04	0.02	0.04
314784-2	**CZ4e_MW01**		**18 Jan 2023**	**Water**	**Normal**	<2	-	<1	<1	<1	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	230	<100	230	<0.01	<0.01	<0.01
314784-3	**SMW_ENV042**		**18 Jan 2023**	**Water**	**Normal**	<2	-	<1	<1	<1	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	<100	<100	<50	<0.01	<0.01	<0.01
314907-1	**SMW_WTP_BH13**		**20 Jan 2023**	**Water**	**Normal**	<2	303	<1	<1	<1	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	<100	<100	<50	<0.01	<0.01	0.01
314907-2	**CZ6_MW05**		**20 Jan 2023**	**Water**	**Normal**	<2	253	<1	<1	<1	<1	<1	<1	<1	<0.005	-	0.0031	<10	160	1,200	140	1,500	<0.01	<0.01	0.03
314907-2	**CZ6_MW05**		**20 Jan 2023**	**Water**	**Normal**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314911-1	**GALC-MW18**		**19 Jan 2023**	**Water**	**Normal**	<2	240	<1	<1	<1	<1	<1	<1	<1	<0.005	-	0[#1]	<10	110	210	<100	310	<0.01	<0.01	<0.01
314911-2	**GALC-MW17**		**19 Jan 2023**	**Water**	**Normal**	<2	218	<1	<1	<1	<1	<1	<1	<1	<0.005	-	0[#1]	<10	770	420	<100	1,200	<0.01	<0.01	<0.01
314911-3	**SMW-ADD-BH02**		**19 Jan 2023**	**Water**	**Normal**	<2	219	<1	<1	<1	<1	<1	<1	<1	<0.005	-	0[#1]	<10	89	220	<100	300	<0.01	<0.01	<0.01
314911-4	**SMW-ENV009**		**19 Jan 2023**	**Water**	**Normal**	<2	251	<1	<1	<1	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	220	<100	220	0.01	<0.01	0.01
314911-5	**QC03**	**SMW-ENV009**	**19 Jan 2023**	**Water**	**Field_D**	<2	241	<1	<1	<1	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	<100	<100	<50	0.01	<0.01	0.01
ES2302217001	**QC04**	**SMW-ENV009**	**19 Jan 2023**	**Water**	**Interlab_D**	-	134	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<0.0005	-	<20	<50	<100	<50	<50	<0.02	<0.02	0.01
314911-9	**SMW-ENV039**		**19 Jan 2023**	**Water**	**Normal**	<2	280	<1	<1	<1	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	<100	<100	<50	<0.01	<0.01	<0.01

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T1 - Groundwater Analytical Results - Marine (January 2023 GME)

							NA		alkyl Sulfonic Acids				Perfluoroalkyl Carboxylic Acid											Perfluoro		
							Irgarol	Redox Potential (Lab)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctanesulfonic acid (PFOS)	Perfluorodecanesulfonic acid (PFDS)	Sum of PFHxS and PFOS	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (PFOSA)	N-Methyl perfluorooctane sulfonamide (NMeFOSA)	N-Ethyl perfluorooctane sulfonamide (NEtFOSA)
							µg/L	mV	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL							2	0.1	0.01	0.01	0.02	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.05	0.02	0.05	0.05
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)																										
PFAS NEMP 2020 Interim Marine 95%										0.13							220									
ANZECC 2000 SE Aust Triggers - Estuaries																										
NEPM 2013 Table 1C GILs, Marine Waters																										
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**																					
314602-1	**SMW_BH083**		**16 Jan 2023**	**Water**	**Normal**	<2	-	0.02	0.12	<0.02	0.39	0.03	0.04	0.24	0.06	0.06	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1
314602-3	**QC01**	**SMW_BH083**	**16 Jan 2023**	**Water**	**Field_D**	<2	-	0.02	0.12	<0.02	0.38	0.03	0.03	0.23	0.06	0.05	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1
ES2301657001	**QC02**	**SMW_BH083**	**16 Jan 2023**	**Water**	**Interlab_D**	-	60.6	<0.02	0.15	<0.02	0.40	<0.1	0.04	0.41	0.08	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05
314602-2	**CZ5_MW16**		**16 Jan 2023**	**Water**	**Normal**	<2	-	<0.01	<0.01	<0.02	0.02	<0.02	<0.02	0.01	<0.01	0.03	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1
314652-1	**SMW_ENV224**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<0.01	0.01	<0.02	0.04	0.03	<0.02	0.02	0.01	0.03	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1
314652-2	**CZ1_BH13**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1
314652-3	**SMW_ENV236**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1
314652-4	**SMW_ENV234**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1
314652-5	**SMW-WTP-BH25_s**		**17 Jan 2023**	**Water**	**Normal**	<2	-	<0.01	0.02	<0.02	0.09	0.02	<0.02	0.03	0.03	0.03	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1
314652-5	**SMW-WTP-BH25_s**		**17 Jan 2023**	**Water**	**Normal**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314784-1	**CZ4e_MW03**		**18 Jan 2023**	**Water**	**Normal**	<2	-	<0.01	0.01	<0.02	0.05	<0.02	<0.02	0.03	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1
314784-2	**CZ4e_MW01**		**18 Jan 2023**	**Water**	**Normal**	<2	-	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1
314784-3	**SMW_ENV042**		**18 Jan 2023**	**Water**	**Normal**	<2	-	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1
314907-1	**SMW_WTP_BH13**		**20 Jan 2023**	**Water**	**Normal**	<2	303	<0.01	<0.01	<0.02	0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1
314907-2	**CZ6_MW05**		**20 Jan 2023**	**Water**	**Normal**	<2	253	<0.01	0.04	<0.02	0.07	<0.02	<0.02	0.02	<0.01	0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1
314907-2	**CZ6_MW05**		**20 Jan 2023**	**Water**	**Normal**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314911-1	**GALC-MW18**		**19 Jan 2023**	**Water**	**Normal**	<2	240	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1
314911-2	**GALC-MW17**		**19 Jan 2023**	**Water**	**Normal**	<2	218	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1
314911-3	**SMW-ADD-BH02**		**19 Jan 2023**	**Water**	**Normal**	<2	219	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1
314911-4	**SMW-ENV009**		**19 Jan 2023**	**Water**	**Normal**	<2	251	<0.01	0.01	<0.02	0.02	0.04	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1
314911-5	**QC03**	**SMW-ENV009**	**19 Jan 2023**	**Water**	**Field_D**	<2	241	<0.01	<0.01	<0.02	0.01	0.04	<0.02	<0.01	<0.01	0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1
ES2302217001	**QC04**	**SMW-ENV009**	**19 Jan 2023**	**Water**	**Interlab_D**	-	134	<0.02	<0.01	<0.02	0.01	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05
314911-9	**SMW-ENV039**		**19 Jan 2023**	**Water**	**Normal**	<2	280	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T1 - Groundwater Analytical Results - Marine (January 2023 GME)

							NA	alkyl Sulfonamides					Fluorotelomer Sulfonic Acids				PFAS Totals		Organic	Phthalates						
							Irgarol	Redox Potential (Lab)	N-Methylperfluorooctanesulfonamidoethanol (N-MeFOSE)	N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA)	N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of PFAS	Terbutylazine	Bis(2-ethylhexyl) phthalate	Butyl benzyl phthalate	Diethylphthalate	Dimethyl phthalate	Di-n-butyl phthalate	Di-n-octyl phthalate	Methyl Ethyl Ketone
							µg/L	mV	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL							2	0.1	0.05	0.05	0.02	0.02	0.01	0.01	0.02	0.02	0.01	0.01	0.002	10	2	2	2	2	2	50
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)																										
PFAS NEMP 2020 Interim Marine 95%																										
ANZECC 2000 SE Aust Triggers - Estuaries																										
NEPM 2013 Table 1C GILs, Marine Waters																										
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**																					
314602-1	**SMW_BH083**		**16 Jan 2023**	**Water**	**Normal**		<2	-	<0.05	<0.5	<0.02	<0.02	<0.01	0.01	<0.02	<0.02	0.18	1.0	<0.002	<50	<10	<10	<10	<10	<10	-
314602-3	**QC01**	**SMW_BH083**	**16 Jan 2023**	**Water**	**Field_D**		<2	-	<0.05	<0.5	<0.02	<0.02	<0.01	0.01	<0.02	<0.02	0.18	0.96	<0.002	<50	<10	<10	<10	<10	<10	-
ES2301657001	**QC02**	**SMW_BH083**	**16 Jan 2023**	**Water**	**Interlab_D**		-	60.6	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	-	1.18	-	<10	<2	<2	<2	<2	<2	<50
314602-2	**CZ5_MW16**		**16 Jan 2023**	**Water**	**Normal**		<2	-	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	0.03	0.07	<0.002	<50	<10	<10	<10	<10	<10	-
314652-1	**SMW_ENV224**		**17 Jan 2023**	**Water**	**Normal**		<2	-	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	0.04	0.14	<0.002	<50	<10	<10	<10	<10	<10	-
314652-2	**CZ1_BH13**		**17 Jan 2023**	**Water**	**Normal**		<2	-	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.002	<50	<10	<10	<10	<10	<10	-
314652-3	**SMW_ENV236**		**17 Jan 2023**	**Water**	**Normal**		<2	-	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.002	<50	<10	<10	<10	<10	<10	-
314652-4	**SMW_ENV234**		**17 Jan 2023**	**Water**	**Normal**		<2	-	<0.05	<0.5	<0.04	<0.04	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.002	<50	<10	<10	<10	<10	<10	-
314652-5	**SMW-WTP-BH25_s**		**17 Jan 2023**	**Water**	**Normal**		<2	-	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	0.05	0.25	<0.002	<50	<10	<10	<10	<10	<10	-
314652-5	**SMW-WTP-BH25_s**		**17 Jan 2023**	**Water**	**Normal**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314784-1	**CZ4e_MW03**		**18 Jan 2023**	**Water**	**Normal**		<2	-	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	0.01	0.15	<0.002	<50	<10	<10	<10	<10	<10	-
314784-2	**CZ4e_MW01**		**18 Jan 2023**	**Water**	**Normal**		<2	-	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.002	<50	<10	<10	<10	<10	<10	-
314784-3	**SMW_ENV042**		**18 Jan 2023**	**Water**	**Normal**		<2	-	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.002	<50	<10	<10	<10	<10	<10	-
314907-1	**SMW_WTP_BH13**		**20 Jan 2023**	**Water**	**Normal**		<2	303	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	<0.01	0.01	<0.002	<50	<10	<10	<10	<10	<10	-
314907-2	**CZ6_MW05**		**20 Jan 2023**	**Water**	**Normal**		<2	253	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	0.05	0.09	<0.002	<50	<10	<10	<10	<10	<10	-
314907-2	**CZ6_MW05**		**20 Jan 2023**	**Water**	**Normal**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314911-1	**GALC-MW18**		**19 Jan 2023**	**Water**	**Normal**		<2	240	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.002	<50	<10	<10	<10	<10	<10	-
314911-2	**GALC-MW17**		**19 Jan 2023**	**Water**	**Normal**		<2	218	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.002	<50	<10	<10	<10	<10	<10	-
314911-3	**SMW-ADD-BH02**		**19 Jan 2023**	**Water**	**Normal**		<2	219	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.002	<50	<10	<10	<10	<10	<10	-
314911-4	**SMW-ENV009**		**19 Jan 2023**	**Water**	**Normal**		<2	251	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	0.01	0.07	<0.002	<50	<10	<10	<10	<10	<10	-
314911-5	**QC03**	**SMW-ENV009**	**19 Jan 2023**	**Water**	**Field_D**		<2	241	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	0.01	0.08	<0.002	<50	<10	<10	<10	<10	<10	-
ES2302217001	**QC04**	**SMW-ENV009**	**19 Jan 2023**	**Water**	**Interlab_D**		-	134	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	-	0.01	-	<10	<2	<2	<2	<2	<2	<50
314911-9	**SMW-ENV039**		**19 Jan 2023**	**Water**	**Normal**		<2	280	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.002	<50	<10	<10	<10	<10	<10	-

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

						NA	Solvents							
						Irgarol	Redox Potential (Lab)	2-hexanone (MBK)	4-Methyl-2-pentanone	Carbon disulfide	Cyclohexane	Isophorone	Vinyl acetate
						µg/L	mV	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L
EQL						2	0.1	50	50	5	0.001	2	50
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)													
PFAS NEMP 2020 Interim Marine 95%													
ANZECC 2000 SE Aust Triggers - Estuaries													
NEPM 2013 Table 1C GILs, Marine Waters													
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**								
314602-1	**SMW_BH083**		**16 Jan 2023**	**Water**	**Normal**	<2	-	-	-	-	<0.001	<5	-
314602-3	**QC01**	**SMW_BH083**	**16 Jan 2023**	**Water**	**Field_D**	<2	-	-	-	-	<0.001	<5	-
ES2301657001	**QC02**	**SMW_BH083**	**16 Jan 2023**	**Water**	**Interlab_D**	-	60.6	<50	<50	<5	-	<2	<50
314602-2	**CZ5_MW16**		**16 Jan 2023**	**Water**	**Normal**	<2	-	-	-	-	<0.001	<5	-
314652-1	**SMW_ENV224**		**17 Jan 2023**	**Water**	**Normal**	<2	-	-	-	-	<0.001	<5	-
314652-2	**CZ1_BH13**		**17 Jan 2023**	**Water**	**Normal**	<2	-	-	-	-	<0.001	<5	-
314652-3	**SMW_ENV236**		**17 Jan 2023**	**Water**	**Normal**	<2	-	-	-	-	<0.001	<5	-
314652-4	**SMW_ENV234**		**17 Jan 2023**	**Water**	**Normal**	<2	-	-	-	-	<0.001	<5	-
314652-5	**SMW-WTP-BH25_s**		**17 Jan 2023**	**Water**	**Normal**	<2	-	-	-	-	<0.001	<5	-
314652-5	**SMW-WTP-BH25_s**		**17 Jan 2023**	**Water**	**Normal**	-	-	-	-	-	-	-	-
314784-1	**CZ4e_MW03**		**18 Jan 2023**	**Water**	**Normal**	<2	-	-	-	-	<0.001	<5	-
314784-2	**CZ4e_MW01**		**18 Jan 2023**	**Water**	**Normal**	<2	-	-	-	-	<0.001	<5	-
314784-3	**SMW_ENV042**		**18 Jan 2023**	**Water**	**Normal**	<2	-	-	-	-	<0.001	<5	-
314907-1	**SMW_WTP_BH13**		**20 Jan 2023**	**Water**	**Normal**	<2	303	-	-	-	<0.001	<5	-
314907-2	**CZ6_MW05**		**20 Jan 2023**	**Water**	**Normal**	<2	253	-	-	-	<0.001	<5	-
314907-2	**CZ6_MW05**		**20 Jan 2023**	**Water**	**Normal**	-	-	-	-	-	-	-	-
314911-1	**GALC-MW18**		**19 Jan 2023**	**Water**	**Normal**	<2	240	-	-	-	<0.001	<5	-
314911-2	**GALC-MW17**		**19 Jan 2023**	**Water**	**Normal**	<2	218	-	-	-	<0.001	<5	-
314911-3	**SMW-ADD-BH02**		**19 Jan 2023**	**Water**	**Normal**	<2	219	-	-	-	<0.001	<5	-
314911-4	**SMW-ENV009**		**19 Jan 2023**	**Water**	**Normal**	<2	251	-	-	-	<0.001	<5	-
314911-5	**QC03**	**SMW-ENV009**	**19 Jan 2023**	**Water**	**Field_D**	<2	241	-	-	-	<0.001	<5	-
ES2302217001	**QC04**	**SMW-ENV009**	**19 Jan 2023**	**Water**	**Interlab_D**	-	134	<50	<50	<5	-	<2	<50
314911-9	**SMW-ENV039**		**19 Jan 2023**	**Water**	**Normal**	<2	280	-	-	-	<0.001	<5	-

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T2 - Groundwater Analytical Results - Freshwater (January 2023 GME)

							NA	Physico-Chemical & Major Ions																	
							Irgarol	Redox Potential (Lab)	pH Redox	pH (Lab)	Electrical Conductivity (Lab)	Dissolved Oxygen	TDS	Chloride	Sulfate as SO4 - Turbidimetric (filtered)	Sulphate	Alkalinity (Hydroxide) as CaCO3	Carbonate as CaCO3	Bicarbonate as CaCO3	Alkalinity (total) as CaCO3	Calcium (filtered)	Magnesium (filtered)	Sodium (filtered)	Potassium (filtered)	Anions Total	Cations Total	Ionic Balance
							µg/L	mV	-	-	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L	%
EQL							2	0.1	0.01	0.01	1	0.1	5	1	1	1	1	1	1	1	0.5	0.5	0.5	0.5	0.01	0.01	0.01
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)																										
PFAS NEMP 2020 Freshwater 95%																										
NEPM 2013 Table 1C GILs, Fresh Waters																										
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**																					
315085-1	**SMW_BH004_s**		**23 Jan 2023**	**Water**	**Normal**		<2	236	-	6.6	-	9.5	170	28	-	24	<5	<5	50	50	12	5	29	3	-	-	1.0
315085-2	**PM_BH015**		**23 Jan 2023**	**Water**	**Normal**		<2	254	-	5.9	-	8.5	380	200	-	22	<5	<5	26	26	5	10	110	<0.5	-	-	-4.0
315085-3	**PM_BH014**		**23 Jan 2023**	**Water**	**Normal**		<2	239	-	6.7	-	9.1	390	61	-	120	<5	<5	97	97	5.5	7.8	120	2	-	-	-1.0
315085-4	**QC05**	**315085-3**	**23 Jan 2023**	**Water**	**Field_D**		<2	234	-	6.7	-	9.2	390	60	-	120	<5	<5	96	96	5.5	7.8	110	2	-	-	-1.0
ES2302610001	**QC06**	**315085-3**	**23 Jan 2023**	**Water**	**Interlab_D**		-	137	6.34	6.45	660	8.6	452	62	124	-	<1	<1	89	89	-	-	-	-	-	-	-
315737-1	**SMW-WTP-BH02**		**03 Feb 2023**	**Water**	**Normal**		<2	253	-	9.5	-	7.9	440	25	-	13	<5	120	190	310	5.2	0.9	140	12	-	-	-2.0
315737-2	**SMW-BH701**		**03 Feb 2023**	**Water**	**Normal**		<2	283	-	6.8	-	7.2	6,000	2,700	-	520	<5	<5	810	810	59	190	1,900	38	-	-	-2.0
315737-3	**SMW-WTP-BH03A**		**03 Feb 2023**	**Water**	**Normal**		<2	229	-	6.9	-	8.9	120	20	-	17	<5	<5	32	32	7.5	2	19	1	-	-	-6.0

Comments
#1 NIL (+)VE

Environmental Standards
ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

Table T2 - Groundwater Analytical Results - Freshwater (January 2023 GME)

							Inorganics		Nutrients																		
							Hardness as CaCO3 (filtered)	Electrical Conductivity (Non Compensated)	Hardness (filtered)	Ammonia as N	Ammonia as N (filtered)	Kjeldahl Nitrogen Total	Organic Nitrogen as N	Nitrate (as N)	Nitrate (as N) (filtered)	Nitrite (as N)	Nitrite (as N) (filtered)	Nitrite + Nitrate as N	Nitrogen (Total)	Total Phosphorus as P (Organic Phosphate as P)	Reactive Phosphorus as P (Orthophosphate as P)	Reactive Phosphorus as P (Orthophosphate as P) (filtered)	Arsenic (filtered)	Cadmium (filtered)	Chromium (hexavalent) (filtered)	Chromium (Trivalent)	Chromium (Trivalent) (filtered)
							mg/L	µS/cm	ngCaCO3/	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	mg/L	mg/L	mg/L
EQL							1	1		0.005	0.005	0.1	0.2	0.005	0.005	0.005	0.005	0.01	0.1	0.01	0.005	0.005	0.2	0.05	0.001	0.001	0.001
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)										0.9	0.9													0.2	0.001		
PFAS NEMP 2020 Freshwater 95%																											
NEPM 2013 Table 1C GILs, Fresh Waters																								*0.2*	*0.001*		
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**																						
315085-1	**SMW_BH004_s**		**23 Jan 2023**	**Water**	**Normal**	-	290	50	-	<0.005	0.8	0.8	-	3.4	-	0.01	-	4.2	-	-	0.009	<1	<0.1	<0.005	<0.005	-
315085-2	**PM_BH015**		**23 Jan 2023**	**Water**	**Normal**	-	790	55	-	0.008	<0.1	<0.2	-	0.01	-	<0.005	-	0.1	-	-	<0.005	<1	<0.1	<0.005	<0.005	-
315085-3	**PM_BH014**		**23 Jan 2023**	**Water**	**Normal**	-	700	46	-	<0.005	0.7	0.7	-	3.2	-	<0.005	-	4.0	-	-	<0.005	<1	<0.1	<0.005	<0.005	-
315085-4	**QC05**	**315085-3**	**23 Jan 2023**	**Water**	**Field_D**	-	700	46	-	<0.005	0.7	0.7	-	3.3	-	<0.005	-	4.0	-	-	<0.005	<1	<0.1	<0.005	<0.005	-
ES2302610001	**QC06**	**315085-3**	**23 Jan 2023**	**Water**	**Interlab_D**	41	-	-	-	-	0.4	-	-	-	-	-	3.80	4.2	0.02	-	-	<1	<0.1	<0.01	-	<0.01
315737-1	**SMW-WTP-BH02**		**03 Feb 2023**	**Water**	**Normal**	-	700	17	-	<0.005	0.3	0.3	-	0.43	-	<0.005	-	0.8	-	-	0.11	2	<0.1	<0.005	<0.005	-
315737-2	**SMW-BH701**		**03 Feb 2023**	**Water**	**Normal**	-	9,600	910	-	-	-	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-
315737-3	**SMW-WTP-BH03A**		**03 Feb 2023**	**Water**	**Normal**	-	180	25	-	0.005	0.1	<0.2	-	0.061	-	<0.005	-	0.2	-	-	<0.005	<1	<0.1	<0.005	<0.005	-

Comments
#1 NIL (+)VE

Environmental Standards
ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

Table T2 - Groundwater Analytical Results - Freshwater (January 2023 GME)

						Metals									BTEX								TRH			
						Chromium (III+VI) (filtered)	Copper (filtered)	Lead (filtered)	Manganese (filtered)	Mercury (filtered)	Nickel (filtered)	Phosphorus	Selenium (filtered)	Zinc (filtered)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Naphthalene	Naphthalene (BTEX)	C6-C10	C6-C10 (F1 minus BTEX)	C10-C16	C10-C16 (F2 minus Naphthalene)
						µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL						0.2	0.5	0.1	0.0005	0.005	0.5	0.05	0.0002	1	1	1	1	2	1	2	0.2	1	10	10	50	50
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)							1.4	3.4	1.9	0.6	11		0.011	8	950	180	80		350		16	16				
PFAS NEMP 2020 Freshwater 95%																										
NEPM 2013 Table 1C GILs, Fresh Waters							*1.4*	*3.4*	*1.9*	*0.06*	*11*		*0.005*	*8*	*950*				*350*	*550*	*16*	*16*				
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**																					
315085-1	**SMW_BH004_s**		**23 Jan 2023**	**Water**	**Normal**	<1	*32*	<1	0.03	<0.05	2	<0.05	0.002	*18*	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	<50	<50
315085-2	**PM_BH015**		**23 Jan 2023**	**Water**	**Normal**	<1	<1	<1	0.028	<0.05	2	<0.05	<0.001	*20*	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	<50	<50
315085-3	**PM_BH014**		**23 Jan 2023**	**Water**	**Normal**	<1	1	<1	<0.005	<0.05	1	<0.05	0.003	5	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	<50	<50
315085-4	**QC05**	**315085-3**	**23 Jan 2023**	**Water**	**Field_D**	<1	<1	<1	<0.005	<0.05	<1	<0.05	0.003	3	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	<50	<50
ES2302610001	**QC06**	**315085-3**	**23 Jan 2023**	**Water**	**Interlab_D**	<1	<1	<1	0.002	<0.1	<1	-	<0.01	<5	<1	<2	<2	<2	<2	<2	<1.0	<5	<20	<20	<100	<100
315737-1	**SMW-WTP-BH02**		**03 Feb 2023**	**Water**	**Normal**	3	*70*	2	0.006	<0.05	3	0.1	<0.001	*11*	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	50	50
315737-2	**SMW-BH701**		**03 Feb 2023**	**Water**	**Normal**	-	-	-	-	-	-	-	-	-	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	<50	<50
315737-3	**SMW-WTP-BH03A**		**03 Feb 2023**	**Water**	**Normal**	<1	*3*	<1	<0.005	<0.05	2	0.2	<0.001	*15*	<1	<1	<1	<2	<1	-	<1	<1	<10	<10	<50	<50

Comments
#1 NIL (+)VE

Environmental Standards
ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

Table T2 - Groundwater Analytical Results - Freshwater (January 2023 GME)

														MAH									Halogenated Hydrocarbons									
													C16-C34	C34-C40	C10-C40 (Sum of total)	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene	n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	tert-butylbenzene	1,2-dibromoethane	Bromomethane	Dichlorodifluoromethane	Iodomethane	Trichlorofluoromethane	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane
													µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL													100	100	50	1	1	1	1	1	1	1	1	1	1	10	10	5	10	1	1	1	1
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)																		30													270	400	6,500
PFAS NEMP 2020 Freshwater 95%																																	
NEPM 2013 Table 1C GILs, Fresh Waters																																	*6,500*
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**																												
315085-1	**SMW_BH004_s**		**23 Jan 2023**	**Water**	**Normal**								<100	<100	<50	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1
315085-2	**PM_BH015**		**23 Jan 2023**	**Water**	**Normal**								<100	<100	<50	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1
315085-3	**PM_BH014**		**23 Jan 2023**	**Water**	**Normal**								<100	<100	<50	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1
315085-4	**QC05**	**315085-3**	**23 Jan 2023**	**Water**	**Field_D**								<100	<100	<50	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1
ES2302610001	**QC06**	**315085-3**	**23 Jan 2023**	**Water**	**Interlab_D**								<100	<100	<100	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<50	<5	<50	<5	<5	<5	<5
315737-1	**SMW-WTP-BH02**		**03 Feb 2023**	**Water**	**Normal**								190	<100	240	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1
315737-2	**SMW-BH701**		**03 Feb 2023**	**Water**	**Normal**								170	<100	170	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1
315737-3	**SMW-WTP-BH03A**		**03 Feb 2023**	**Water**	**Normal**								<100	<100	<50	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10	-	<10	<1	<1	<1	<1

Comments
#1 NIL (+)VE

Environmental Standards
ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

Table T2 - Groundwater Analytical Results - Freshwater (January 2023 GME)

						Chlorinated Hydrocarbons																
						1,1-dichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	Bromochloromethane	Bromodichloromethane	Bromoform	Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dibromomethane	Hexachlorobutadiene
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL						1	1	1	1	1	1	1	1	1	1	1	1	1	1	10	1	10	1	1	1	1
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)							700				1,900	900	1,100					240			770				
PFAS NEMP 2020 Freshwater 95%																									
NEPM 2013 Table 1C GILs, Fresh Waters																									
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**																				
315085-1	**SMW_BH004_s**		**23 Jan 2023**	**Water**	**Normal**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
315085-2	**PM_BH015**		**23 Jan 2023**	**Water**	**Normal**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	1	<10	<1	<1	<1	<1
315085-3	**PM_BH014**		**23 Jan 2023**	**Water**	**Normal**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
315085-4	**QC05**	**315085-3**	**23 Jan 2023**	**Water**	**Field_D**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
ES2302610001	**QC06**	**315085-3**	**23 Jan 2023**	**Water**	**Interlab_D**	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<2
315737-1	**SMW-WTP-BH02**		**03 Feb 2023**	**Water**	**Normal**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
315737-2	**SMW-BH701**		**03 Feb 2023**	**Water**	**Normal**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
315737-3	**SMW-WTP-BH03A**		**03 Feb 2023**	**Water**	**Normal**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1

Comments
#1 NIL (+)VE

Environmental Standards
ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

Table T2 - Groundwater Analytical Results - Freshwater (January 2023 GME)

									PAH														
									Hexachlorocyclopentadiene	Hexachloroethane	Trichloroethene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Vinyl chloride	Benzo(b+j+k)fluoranthene	2-chloronaphthalene	2-methylnaphthalene	3-methylcholanthrene	7,12-dimethylbenz(a)anthracene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene
									µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL									5	2	1	1	1	1	10	0.0002	2	2	2	2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)										360	330	70			100								0.4		0.2				1.4
PFAS NEMP 2020 Freshwater 95%																													
NEPM 2013 Table 1C GILs, Fresh Waters										*290*																			
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**																								
315085-1	**SMW_BH004_s**		**23 Jan 2023**	**Water**	**Normal**	<5	<2	<1	1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1
315085-2	**PM_BH015**		**23 Jan 2023**	**Water**	**Normal**	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1
315085-3	**PM_BH014**		**23 Jan 2023**	**Water**	**Normal**	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1
315085-4	**QC05**	**315085-3**	**23 Jan 2023**	**Water**	**Field_D**	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1
ES2302610001	**QC06**	**315085-3**	**23 Jan 2023**	**Water**	**Interlab_D**	<10	<2	<5	<5	<5	<5	<50	<0.004	<2	<2	<2	<2	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<1.0
315737-1	**SMW-WTP-BH02**		**03 Feb 2023**	**Water**	**Normal**	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1
315737-2	**SMW-BH701**		**03 Feb 2023**	**Water**	**Normal**	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1
315737-3	**SMW-WTP-BH03A**		**03 Feb 2023**	**Water**	**Normal**	<5	<2	<1	<1	<1	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1

Comments
#1 NIL (+)VE

Environmental Standards
ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

Table T2 - Groundwater Analytical Results - Freshwater (January 2023 GME)

										TPH					Perfluoroalkyl Sulfonic Acids								
									Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ	Benzo(a)pyrene TEQ calc (Zero)	PAHs (Sum of positives)	C6-C9	C10-C14	C15-C28	C29-C36	C10-C36 (Sum of total)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctanesulfonic acid (PFOS)	Perfluorodecanesulfonic acid (PFDS)	Sum of PFHxS and PFOS	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)
									µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL									0.1	0.1	0.1	0.1	0.0005	0.0005	0.001	10	50	100	50	50	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)											2																		
PFAS NEMP 2020 Freshwater 95%																									0.13				
NEPM 2013 Table 1C GILs, Fresh Waters																													
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**																								
315085-1	**SMW_BH004_s**		**23 Jan 2023**	**Water**	**Normal**	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	<100	<100	<50	0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02
315085-2	**PM_BH015**		**23 Jan 2023**	**Water**	**Normal**	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	<100	<100	<50	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02
315085-3	**PM_BH014**		**23 Jan 2023**	**Water**	**Normal**	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	<100	<100	<50	0.08	0.03	0.18	<0.01	0.14	<0.02	0.31	0.06	0.23
315085-4	**QC05**	**315085-3**	**23 Jan 2023**	**Water**	**Field_D**	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	<100	<100	<50	0.1	0.03	0.19	<0.01	0.15	<0.02	0.34	0.06	0.26
ES2302610001	**QC06**	**315085-3**	**23 Jan 2023**	**Water**	**Interlab_D**	<1.0	<1.0	<1.0	<1.0	-	<0.0005	-	<20	<50	<100	<50	<50	0.09	0.03	0.18	<0.02	0.15	<0.02	0.33	<0.1	0.29
315737-1	**SMW-WTP-BH02**		**03 Feb 2023**	**Water**	**Normal**	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	170	<100	170	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02
315737-2	**SMW-BH701**		**03 Feb 2023**	**Water**	**Normal**	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	110	<100	110	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02
315737-3	**SMW-WTP-BH03A**		**03 Feb 2023**	**Water**	**Normal**	<1	<1	<1	<1	<0.005	-	0[#1]	<10	<50	<100	<100	<50	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02

Comments
#1 NIL (+)VE

Environmental Standards
ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

Table T2 - Groundwater Analytical Results - Freshwater (January 2023 GME)

						Perfluoroalkyl Carboxylic Acid									Perfluoroalkyl Sulfonamides							Fluorotelomer Sulfonic Acids				PFAS
						Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (PFOSA)	N-Methyl perfluorooctane sulfonamide	N-Ethyl perfluorooctane sulfonamide	N-Methylperfluorooctanesulfonamidoethan	N-ethylperfluorooctane sulfonamidoethanol	N-methylperfluorooctane sulfonamidoacetic	N-ethyl-perfluorooctanesulfonamidoacetic acid	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of US EPA PFAS (PFOS + PFOA)*
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL						0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.05	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.01	0.02	0.02	0.01
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)																										
PFAS NEMP 2020 Freshwater 95%								220																		
NEPM 2013 Table 1C GILs, Fresh Waters																										
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**																					
315085-1	**SMW_BH004_s**		**23 Jan 2023**	**Water**	**Normal**	0.02	<0.01	0.02	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	0.02
315085-2	**PM_BH015**		**23 Jan 2023**	**Water**	**Normal**	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	<0.01
315085-3	**PM_BH014**		**23 Jan 2023**	**Water**	**Normal**	0.24	0.07	0.11	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	0.24
315085-4	**QC05**	**315085-3**	**23 Jan 2023**	**Water**	**Field_D**	0.25	0.08	0.11	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	0.26
ES2302610001	**QC06**	**315085-3**	**23 Jan 2023**	**Water**	**Interlab_D**	0.26	0.07	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	-
315737-1	**SMW-WTP-BH02**		**03 Feb 2023**	**Water**	**Normal**	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.01	0.02	<0.02	<0.02	<0.01
315737-2	**SMW-BH701**		**03 Feb 2023**	**Water**	**Normal**	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.01
315737-3	**SMW-WTP-BH03A**		**03 Feb 2023**	**Water**	**Normal**	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	<0.01

Comments
#1 NIL (+)VE

Environmental Standards
ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

Table T2 - Groundwater Analytical Results - Freshwater (January 2023 GME)

						Totals	Organic	Phthalates						Solvents						
						Sum of PFAS	Terbutylazine	Bis(2-ethylhexyl) phthalate	Butyl benzyl phthalate	Diethylphthalate	Dimethyl phthalate	Di-n-butyl phthalate	Di-n-octyl phthalate	Methyl Ethyl Ketone	2-hexanone (MBK)	4-Methyl-2-pentanone	Carbon disulfide	Cyclohexane	Isophorone	Vinyl acetate
						µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L
EQL						0.01	0.002	10	2	2	2	2	2	50	50	50	5	0.001	2	50
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)										1,000	3,700	26								
PFAS NEMP 2020 Freshwater 95%																				
NEPM 2013 Table 1C GILs, Fresh Waters										*1,000*	*3,700*	*10*								
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**															
315085-1	**SMW_BH004_s**		**23 Jan 2023**	**Water**	**Normal**	0.05	<0.002	<50	<10	<10	<10	<10	<10	-	-	-	-	<0.001	<5	-
315085-2	**PM_BH015**		**23 Jan 2023**	**Water**	**Normal**	<0.01	<0.002	<50	<10	<10	<10	<10	<10	-	-	-	-	<0.001	<5	-
315085-3	**PM_BH014**		**23 Jan 2023**	**Water**	**Normal**	1.1	<0.002	<50	<10	<10	<10	<10	<10	-	-	-	-	<0.001	<5	-
315085-4	**QC05**	**315085-3**	**23 Jan 2023**	**Water**	**Field_D**	1.2	<0.002	<50	<10	<10	<10	<10	<10	-	-	-	-	<0.001	<5	-
ES2302610001	**QC06**	**315085-3**	**23 Jan 2023**	**Water**	**Interlab_D**	1.17	-	<10	<2	<2	<2	<2	<2	<50	<50	<50	<5	-	<2	<50
315737-1	**SMW-WTP-BH02**		**03 Feb 2023**	**Water**	**Normal**	0.02	<0.002	<50	<10	<10	<10	<10	<10	-	-	-	-	<0.001	<5	-
315737-2	**SMW-BH701**		**03 Feb 2023**	**Water**	**Normal**	<0.01	<0.002	<50	<10	<10	<10	<10	<10	-	-	-	-	<0.001	<5	-
315737-3	**SMW-WTP-BH03A**		**03 Feb 2023**	**Water**	**Normal**	<0.01	<0.002	<50	<10	<10	<10	<10	<10	-	-	-	-	<0.001	<5	-

Comments
#1 NIL (+)VE

Environmental Standards
ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

Table T3 - Rinsate and Trip Blank Results (January 2023 GME)

				Metals										BTEX							TRH			
				Arsenic (filtered)	Cadmium (filtered)	Chromium (hexavalent) (filtered)	Chromium (Trivalent)	Chromium (III+VI) (filtered)	Copper (filtered)	Lead (filtered)	Mercury (filtered)	Nickel (filtered)	Zinc (filtered)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Naphthalene (BTEX)	C6-C10	C6-C10 (F1 minus BTEX)	C10-C16	C10-C16 (F2 minus Naphthalene)
				µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				1	0.1	0.005	0.005	1	1	1	0.05	1	1	1	1	1	2	1	2	1	10	10	50	50
Lab Report Number	**Field ID**	**Date**	**Matrix Type**																					
ES2301657	**TB02**	**11 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	<1	3	<2	<2	<2	<2	<5	<20	<20	-	-
314602	**RS01**	**16 Jan 2023**	**Water**	<1	<0.1	-	-	<1	<1	<1	<0.05	<1	<1	<1	1	<1	<2	<1	-	<1	<10	<10	-	-
314602	**TB01**	**16 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	<1	3	<1	<2	<1	-	<1	<10	<10	-	-
ES2302217	**TB06**	**16 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	<1	<2	<2	<2	<2	<2	<5	<20	<20	-	-
314652	**RS02**	**17 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	<1	1	<1	<2	<1	-	<1	<10	<10	-	-
314652	**TB03**	**17 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	<1	3	<1	<2	<1	-	<1	<10	<10	-	-
314784	**RS03**	**18 Jan 2023**	**Water**	<1	<0.1	<0.005	-	<1	<1	<1	<0.05	<1	<1	<1	<1	<1	<2	<1	-	<1	<10	<10	-	-
314784	**TB04**	**18 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	<1	4	<1	<2	<1	-	<1	<10	<10	-	-
314911	**RS04**	**19 Jan 2023**	**Water**	<1	<0.1	-	-	<1	<1	<1	<0.05	<1	1	<1	<1	<1	<2	<1	-	<1	<10	<10	-	-
314911	**TB05**	**19 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	<1	6	<1	<2	<1	-	<1	<10	<10	-	-
314907	**Rinsate**	**20 Jan 2023**	**Water**	<1	<0.1	-	-	<1	<1	<1	<0.05	<1	<1	<1	<1	<1	<2	<1	-	<1	<10	<10	-	-
314907	**TB07**	**20 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<2	<1	-	<1	<10	<10	-	-
315085	**RS06**	**23 Jan 2023**	**Water**	<1	<0.1	-	-	<1	<1	<1	<0.05	<1	<1	<1	<1	<1	<2	<1	-	<1	<10	<10	-	-
315085	**TB**	**23 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<2	<1	-	<1	<10	<10	-	-
ES2302610	**TB**	**23 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	<1	*	<2	<2	<2	<2	<5	<20	<20	-	-
315737	**RS07**	**03 Feb 2023**	**Water**	<1	<0.1	<0.005	<0.005	<1	<1	<1	<0.05	<1	<1	<1	<1	<1	<2	<1	-	<1	<10	<10	<50	<50
315737	**TB0302**	**03 Feb 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<2	<1	-	<1	<10	<10	-	-

Table T3 - Rinsate and Trip Blank Results (January 2023 GME)

							MAH									Halogenated Hydrocarbons									
				C16-C34	C34-C40	C10-C40 (Sum of total)	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene	n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	tert-butylbenzene	1,2-dibromoethane	Bromomethane	Dichlorodifluoromethane	Trichlorofluoromethane	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				100	100	50	1	1	1	1	1	1	1	1	1	1	10	10	10	1	1	1	1	1	
Lab Report Number	**Field ID**	**Date**	**Matrix Type**																						
ES2301657	**TB02**	**11 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
314602	**RS01**	**16 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
314602	**TB01**	**16 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ES2302217	**TB06**	**16 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
314652	**RS02**	**17 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
314652	**TB03**	**17 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
314784	**RS03**	**18 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
314784	**TB04**	**18 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
314911	**RS04**	**19 Jan 2023**	**Water**	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10	<10	<1	<1	<1	<1	<1	
314911	**TB05**	**19 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
314907	**Rinsate**	**20 Jan 2023**	**Water**	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10	<10	<1	<1	<1	<1	<1	
314907	**TB07**	**20 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
315085	**RS06**	**23 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
315085	**TB**	**23 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ES2302610	**TB**	**23 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
315737	**RS07**	**03 Feb 2023**	**Water**	<100	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
315737	**TB0302**	**03 Feb 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Table T3 - Rinsate and Trip Blank Results (January 2023 GME)

				Chlorinated Hydrocarbons																			
				1,1-dichloroethene	1,1-dichloropropene	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	Bromochloromethane	Bromodichloromethane	Bromoform	Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dibromomethane	Hexachlorobutadiene	Trichloroethene
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				1	1	1	1	1	1	1	1	1	1	1	1	1	10	1	10	1	1	1	1	1
Lab Report Number	**Field ID**	**Date**	**Matrix Type**																					
ES2301657	**TB02**	**11 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314602	**RS01**	**16 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314602	**TB01**	**16 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ES2302217	**TB06**	**16 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314652	**RS02**	**17 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314652	**TB03**	**17 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314784	**RS03**	**18 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314784	**TB04**	**18 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314911	**RS04**	**19 Jan 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	1	<10	<1	<1	<1	<1	<1
314911	**TB05**	**19 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
314907	**Rinsate**	**20 Jan 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	1	<10	<1	<1	<1	<1	<1
314907	**TB07**	**20 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
315085	**RS06**	**23 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
315085	**TB**	**23 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ES2302610	**TB**	**23 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
315737	**RS07**	**03 Feb 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
315737	**TB0302**	**03 Feb 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table T3 - Rinsate and Trip Blank Results (January 2023 GME)

								TPH					Solven
				Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Vinyl chloride	C6-C9	C10-C14	C15-C28	C29-C36	C10-C36 (Sum of total)	Cyclohexane
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
EQL				1	1	1	10	10	50	100	100	50	0.001
Lab Report Number	**Field ID**	**Date**	**Matrix Type**										
ES2301657	**TB02**	**11 Jan 2023**	**Water**	-	-	-	-	<20	-	-	-	-	-
314602	**RS01**	**16 Jan 2023**	**Water**	-	-	-	-	<10	-	-	-	-	-
314602	**TB01**	**16 Jan 2023**	**Water**	-	-	-	-	<10	-	-	-	-	-
ES2302217	**TB06**	**16 Jan 2023**	**Water**	-	-	-	-	<20	-	-	-	-	-
314652	**RS02**	**17 Jan 2023**	**Water**	-	-	-	-	<10	-	-	-	-	-
314652	**TB03**	**17 Jan 2023**	**Water**	-	-	-	-	<10	-	-	-	-	-
314784	**RS03**	**18 Jan 2023**	**Water**	-	-	-	-	<10	-	-	-	-	-
314784	**TB04**	**18 Jan 2023**	**Water**	-	-	-	-	<10	-	-	-	-	-
314911	**RS04**	**19 Jan 2023**	**Water**	<1	<1	<1	<10	<10	-	-	-	-	<0.001
314911	**TB05**	**19 Jan 2023**	**Water**	-	-	-	-	<10	-	-	-	-	-
314907	**Rinsate**	**20 Jan 2023**	**Water**	<1	<1	<1	<10	<10	-	-	-	-	<0.001
314907	**TB07**	**20 Jan 2023**	**Water**	-	-	-	-	<10	-	-	-	-	-
315085	**RS06**	**23 Jan 2023**	**Water**	-	-	-	-	<10	-	-	-	-	-
315085	**TB**	**23 Jan 2023**	**Water**	-	-	-	-	<10	-	-	-	-	-
ES2302610	**TB**	**23 Jan 2023**	**Water**	-	-	-	-	<20	-	-	-	-	-
315737	**RS07**	**03 Feb 2023**	**Water**	-	-	-	-	<10	<50	<100	<100	<50	-
315737	**TB0302**	**03 Feb 2023**	**Water**	-	-	-	-	<10	-	-	-	-	-

Table T4. RPD summary table (January 2023 GME)

				NA	Metals														
				Irgarol	Arsenic (filtered)	Barium (filtered)	Beryllium (filtered)	Boron (filtered)	Cadmium (filtered)	Chromium (hexavalent) (filtered)	Chromium (Trivalent)	Chromium (Trivalent) (filtered)	Chromium (III+VI) (filtered)	Cobalt (filtered)	Copper (filtered)	Lead (filtered)	Manganese (filtered)	Mercury (filtered)	Nickel (filtered)
				µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L
EQL				2	0.2	0.0005	0.0001	0.005	0.05	0.001	0.001	0.001	0.2	0.0001	0.5	0.1	0.0005	0.005	0.5
Lab Report Number	**Field ID**	**Date**	**Matrix Type**																
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	<2	1	0.039	<0.0005	-	<0.1	<0.005	<0.005	-	<1	0.021	<1	<1	0.1	<0.05	8
314602	**QC01**	**16 Jan 2023**	**Water**	<2	1	0.037	<0.0005	-	<0.1	<0.005	<0.005	-	<1	0.02	<1	<1	0.1	<0.05	8
RPD				0	0	5	0	-	0	0	0	-	0	5	0	0	0	0	0
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	<2	1	0.039	<0.0005	-	<0.1	<0.005	<0.005	-	<1	0.021	<1	<1	0.1	<0.05	8
ES2301657	**QC02**	**16 Jan 2023**	**Water**	-	1.4	0.0390	<0.0001	0.039	<0.05	<0.001	-	<0.001	<0.2	0.0212	<0.5	0.1	0.0940	<0.005	8.9
RPD				-	33	0	0	-	0	0	-	-	0	1	0	0	6	0	11
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<2	<1	0.74	<0.0005	-	<0.1	<0.005	<0.005	-	<1	<0.001	<1	<1	0.93	<0.05	<1
314911	**QC03**	**19 Jan 2023**	**Water**	<2	<1	0.73	<0.0005	-	<0.1	<0.005	<0.005	-	<1	<0.001	<1	<1	0.97	<0.05	<1
RPD				0	0	1	0	-	0	0	0	-	0	0	0	0	4	0	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<2	<1	0.74	<0.0005	-	<0.1	<0.005	<0.005	-	<1	<0.001	<1	<1	0.93	<0.05	<1
ES2302217	**QC04**	**19 Jan 2023**	**Water**	-	0.5	0.504	<0.0001	0.417	<0.05	<0.001	-	<0.001	<1	0.0004	<0.5	<0.1	0.829	<0.005	<0.5
RPD				-	0	38	0	-	0	0	-	-	0	0	0	0	11	0	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<2	<1	0.74	<0.0005	-	<0.1	<0.005	<0.005	-	<1	<0.001	<1	<1	0.93	<0.05	<1
ES2302217	**QC04**	**19 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	0.2	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-
315085	**PM_BH014**	**23 Jan 2023**	**Water**	<2	<1	0.083	<0.0005	-	<0.1	<0.005	<0.005	-	<1	<0.001	1	<1	<0.005	<0.05	1
315085	**QC05**	**23 Jan 2023**	**Water**	<2	<1	0.074	<0.0005	-	<0.1	<0.005	<0.005	-	<1	<0.001	<1	<1	<0.005	<0.05	<1
RPD				0	0	11	0	-	0	0	0	-	0	0	0	0	0	0	0
315085	**PM_BH014**	**23 Jan 2023**	**Water**	<2	<1	0.083	<0.0005	-	<0.1	<0.005	<0.005	-	<1	<0.001	1	<1	<0.005	<0.05	1
ES2302610	**QC06**	**23 Jan 2023**	**Water**	-	<1	0.070	<0.001	0.10	<0.1	<0.01	-	<0.01	<1	<0.001	<1	<1	0.002	<0.1	<1
RPD				-	0	17	0	-	0	0	-	-	0	0	0	0	0	0	0

Comments
#1 NIL (+)VE

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 50 (1 - 10 x EQL); 50 (10 - 30 x EQL); 50 (> 30 x EQL))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

Table T4. RPD summary table (January 2023 GME)

									BTEX									
				Phosphorus	Selenium (filtered)	Vanadium (filtered)	Zinc (filtered)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Naphthalene	Naphthalene (BTEX)	Total BTEX	C6-C10	C6-C10 (F1 minus BTEX)	C10-C16
				mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				0.05	0.0002	0.0002	1	1	1	1	2	1	2	1	1	1	10	10	50
Lab Report Number	**Field ID**	**Date**	**Matrix Type**															
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	<0.05	<0.001	-	21	<1	<1	<1	<2	<1	-	<1	<1	-	<10	<10	160
314602	**QC01**	**16 Jan 2023**	**Water**	<0.05	<0.001	-	21	<1	<1	<1	<2	<1	-	<1	<1	-	<10	<10	<50
RPD				0	0	-	0	0	0	0	0	0	-	0	0	-	0	0	105
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	<0.05	<0.001	-	21	<1	<1	<1	<2	<1	-	<1	<1	-	<10	<10	160
ES2301657	**QC02**	**16 Jan 2023**	**Water**	-	0.0005	0.0012	20	<1	<2	<2	<2	<2	<2	<1.0	<5	<1	<20	<20	<100
RPD				-	0	-	5	0	0	0	0	0	-	0	0	-	0	0	46
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	0.3	<0.001	-	<1	<1	<1	<1	<2	<1	-	<1	<1	-	<10	<10	50
314911	**QC03**	**19 Jan 2023**	**Water**	0.4	<0.001	-	<1	<1	<1	<1	<2	<1	-	<1	<1	-	<10	<10	<50
RPD				29	0	-	0	0	0	0	0	0	-	0	0	-	0	0	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	0.3	<0.001	-	<1	<1	<1	<1	<2	<1	-	<1	<1	-	<10	<10	50
ES2302217	**QC04**	**19 Jan 2023**	**Water**	-	0.0004	<0.0002	<1	<1	<2	<2	<2	<2	<2	<1.0	<5	<1	<20	<20	<100
RPD				-	0	-	0	0	0	0	0	0	-	0	0	-	0	0	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	0.3	<0.001	-	<1	<1	<1	<1	<2	<1	-	<1	<1	-	<10	<10	50
ES2302217	**QC04**	**19 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
315085	**PM_BH014**	**23 Jan 2023**	**Water**	<0.05	0.003	-	5	<1	<1	<1	<2	<1	-	<1	<1	-	<10	<10	<50
315085	**QC05**	**23 Jan 2023**	**Water**	<0.05	0.003	-	3	<1	<1	<1	<2	<1	-	<1	<1	-	<10	<10	<50
RPD				0	0	-	50	0	0	0	0	0	-	0	0	-	0	0	0
315085	**PM_BH014**	**23 Jan 2023**	**Water**	<0.05	0.003	-	5	<1	<1	<1	<2	<1	-	<1	<1	-	<10	<10	<50
ES2302610	**QC06**	**23 Jan 2023**	**Water**	-	<0.01	<0.01	<5	<1	<2	<2	<2	<2	<2	<1.0	<5	<1	<20	<20	<100
RPD				-	0	-	0	0	0	0	0	0	-	0	0	-	0	0	0

Comments
#1 NIL (+)VE

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier rang**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any r**

Table T4. RPD summary table (January 2023 GME)

				TRH				MAH									Halogenated Hydroc		
				C10-C16 (F2 minus Naphthalene)	C16-C34	C34-C40	C10-C40 (Sum of total)	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	isopropylbenzene	n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	tert-butylbenzene	1,2-dibromoethane	Bromomethane	Dichlorodifluoromethane
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				50	100	100	50	1	1	1	1	1	1	1	1	1	1	10	10
Lab Report Number	**Field ID**	**Date**	**Matrix Type**																
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	160	280	<100	440	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10
314602	**QC01**	**16 Jan 2023**	**Water**	<50	<100	<100	<50	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10
RPD				105	95	0	159	0	0	0	0	0	0	0	0	0	0	0	0
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	160	280	<100	440	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10
ES2301657	**QC02**	**16 Jan 2023**	**Water**	<100	<100	<100	<100	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<50
RPD				46	95	0	126	0	0	0	0	0	0	0	0	0	0	0	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	50	250	<100	300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10
314911	**QC03**	**19 Jan 2023**	**Water**	<50	<100	<100	<50	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10
RPD				0	86	0	143	0	0	0	0	0	0	0	0	0	0	0	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	50	250	<100	300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10
ES2302217	**QC04**	**19 Jan 2023**	**Water**	<100	<100	<100	<100	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<50
RPD				0	86	0	100	0	0	0	0	0	0	0	0	0	0	0	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	50	250	<100	300	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10
ES2302217	**QC04**	**19 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
315085	**PM_BH014**	**23 Jan 2023**	**Water**	<50	<100	<100	<50	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10
315085	**QC05**	**23 Jan 2023**	**Water**	<50	<100	<100	<50	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
315085	**PM_BH014**	**23 Jan 2023**	**Water**	<50	<100	<100	<50	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10
ES2302610	**QC06**	**23 Jan 2023**	**Water**	<100	<100	<100	<100	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<50
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Comments
#1 NIL (+)VE

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier rang**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any**

Table T4. RPD summary table (January 2023 GME)

				arbons																
				Iodomethane	Trichlorofluoromethane	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	Bromochloromethane
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				5	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Lab Report Number	**Field ID**	**Date**	**Matrix Type**																
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	-	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
314602	**QC01**	**16 Jan 2023**	**Water**	-	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
RPD				-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	-	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ES2301657	**QC02**	**16 Jan 2023**	**Water**	<5	<50	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-
RPD				-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	-	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
314911	**QC03**	**19 Jan 2023**	**Water**	-	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
RPD				-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	-	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ES2302217	**QC04**	**19 Jan 2023**	**Water**	<5	<50	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-
RPD				-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	-	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ES2302217	**QC04**	**19 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
315085	**PM_BH014**	**23 Jan 2023**	**Water**	-	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
315085	**QC05**	**23 Jan 2023**	**Water**	-	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
RPD				-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
315085	**PM_BH014**	**23 Jan 2023**	**Water**	-	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ES2302610	**QC06**	**23 Jan 2023**	**Water**	<5	<50	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-
RPD				-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-

Comments
#1 NIL (+)VE

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier rang**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any**

Table T4. RPD summary table (January 2023 GME)

				Chlorinated Hydrocarbons															
				Bromodichloromethane	Bromoform	Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dibromomethane	Hexachlorobutadiene	Hexachlorocyclopentadiene	Hexachloroethane	Trichloroethene	Tetrachloroethene	trans-1,2-dichloroethene
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				1	1	1	1	10	1	10	1	1	1	1	5	2	1	1	1
Lab Report Number	**Field ID**	**Date**	**Matrix Type**																
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<5	<2	<1	<1	<1
314602	**QC01**	**16 Jan 2023**	**Water**	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<5	<2	<1	<1	<1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<5	<2	<1	<1	<1
ES2301657	**QC02**	**16 Jan 2023**	**Water**	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<2	<10	<2	<5	<5	<5
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<5	<2	<1	<1	<1
314911	**QC03**	**19 Jan 2023**	**Water**	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<5	<2	<1	<1	<1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<5	<2	<1	<1	<1
ES2302217	**QC04**	**19 Jan 2023**	**Water**	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<2	<10	<2	<5	<5	<5
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<5	<2	<1	<1	<1
ES2302217	**QC04**	**19 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
315085	**PM_BH014**	**23 Jan 2023**	**Water**	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<5	<2	<1	<1	<1
315085	**QC05**	**23 Jan 2023**	**Water**	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<5	<2	<1	<1	<1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
315085	**PM_BH014**	**23 Jan 2023**	**Water**	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<5	<2	<1	<1	<1
ES2302610	**QC06**	**23 Jan 2023**	**Water**	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<2	<10	<2	<5	<5	<5
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Comments
#1 NIL (+)VE

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier rang**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any r**

Table T4. RPD summary table (January 2023 GME)

						PAH														
				trans-1,3-dichloropropene	Vinyl chloride	Benzo(b+j+k)fluoranthene	2-chloronaphthalene	2-methylnaphthalene	3-methylcholanthrene	7,12-dimethylbenz(a)anthracene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(b+j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene
				µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L
EQL				1	10	0.002	2	2	2	2	1	1	1	1	0.5	0.001	1	1	1
Lab Report Number	**Field ID**	**Date**	**Matrix Type**																
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	-	<1	-	<1
314602	**QC01**	**16 Jan 2023**	**Water**	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	-	<1	-	<1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	-	0	-	0
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	-	<1	-	<1
ES2301657	**QC02**	**16 Jan 2023**	**Water**	<5	<50	-	<2	<2	<2	<2	<1.0	<1.0	<1.0	<1.0	<0.5	<0.0010	<1.0	<1.0	<1.0
RPD				0	0	-	0	0	0	0	0	0	0	0	0	-	0	-	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	-	<1	-	<1
314911	**QC03**	**19 Jan 2023**	**Water**	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	-	<1	-	<1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	-	0	-	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	-	<1	-	<1
ES2302217	**QC04**	**19 Jan 2023**	**Water**	<5	<50	<0.004	<2	<2	<2	<2	<1.0	<1.0	<1.0	<1.0	<0.5	<0.0010	<1.0	<1.0	<1.0
RPD				0	0	0	0	0	0	0	0	0	0	0	0	-	0	-	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	-	<1	-	<1
ES2302217	**QC04**	**19 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
315085	**PM_BH014**	**23 Jan 2023**	**Water**	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	-	<1	-	<1
315085	**QC05**	**23 Jan 2023**	**Water**	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	-	<1	-	<1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	-	0	-	0
315085	**PM_BH014**	**23 Jan 2023**	**Water**	<1	<10	<0.002	<2	<2	<2	<2	<1	<1	<1	<1	<1	-	<1	-	<1
ES2302610	**QC06**	**23 Jan 2023**	**Water**	<5	<50	<0.004	<2	<2	<2	<2	<1.0	<1.0	<1.0	<1.0	<0.5	<0.0010	<1.0	<1.0	<1.0
RPD				0	0	0	0	0	0	0	0	0	0	0	0	-	0	-	0

Comments
#1 NIL (+)VE

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier rang**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any**

Table T4. RPD summary table (January 2023 GME)

													TPH					
				Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ	Benzo(a)pyrene TEQ calc (Zero)	PAHs (Sum of total)	PAHs (Sum of positives)	C6-C9	C10-C14	C15-C28	C29-C36	C10-C36 (Sum of total)	Perfluorobutane sulfonic acid (PFBS)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				1	1	1	1	1	1	0.005	0.0005	0.5	0.001	10	50	100	50	50	0.01
Lab Report Number	**Field ID**	**Date**	**Matrix Type**																
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	<1	<1	<1	<1	<1	<1	<0.005	-	-	0[#1]	<10	<50	360	<100	360	0.09
314602	**QC01**	**16 Jan 2023**	**Water**	<1	<1	<1	<1	<1	<1	<0.005	-	-	0[#1]	<10	<50	<100	<100	<50	0.07
RPD				0	0	0	0	0	0	0	-	-	-	0	0	113	0	151	25
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	<1	<1	<1	<1	<1	<1	<0.005	-	-	0[#1]	<10	<50	360	<100	360	0.09
ES2301657	**QC02**	**16 Jan 2023**	**Water**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<0.0005	<0.5	-	<20	<50	<100	<50	<50	0.11
RPD				0	0	0	0	0	0	-	-	-	-	0	0	113	0	151	20
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<1	<1	<1	<1	<1	<1	<0.005	-	-	0[#1]	<10	<50	220	<100	220	0.01
314911	**QC03**	**19 Jan 2023**	**Water**	<1	<1	<1	<1	<1	<1	<0.005	-	-	0[#1]	<10	<50	<100	<100	<50	0.01
RPD				0	0	0	0	0	0	0	-	-	-	0	0	75	0	126	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<1	<1	<1	<1	<1	<1	<0.005	-	-	0[#1]	<10	<50	220	<100	220	0.01
ES2302217	**QC04**	**19 Jan 2023**	**Water**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<0.0005	<0.5	-	<20	<50	<100	<50	<50	<0.02
RPD				0	0	0	0	0	0	-	-	-	-	0	0	75	0	126	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<1	<1	<1	<1	<1	<1	<0.005	-	-	0[#1]	<10	<50	220	<100	220	0.01
ES2302217	**QC04**	**19 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
315085	**PM_BH014**	**23 Jan 2023**	**Water**	<1	<1	<1	<1	<1	<1	<0.005	-	-	0[#1]	<10	<50	<100	<100	<50	0.08
315085	**QC05**	**23 Jan 2023**	**Water**	<1	<1	<1	<1	<1	<1	<0.005	-	-	0[#1]	<10	<50	<100	<100	<50	0.1
RPD				0	0	0	0	0	0	0	-	-	-	0	0	0	0	0	22
315085	**PM_BH014**	**23 Jan 2023**	**Water**	<1	<1	<1	<1	<1	<1	<0.005	-	-	0[#1]	<10	<50	<100	<100	<50	0.08
ES2302610	**QC06**	**23 Jan 2023**	**Water**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<0.0005	<0.5	-	<20	<50	<100	<50	<50	0.09
RPD				0	0	0	0	0	0	-	-	-	-	0	0	0	0	0	12

Comments
#1 NIL (+)VE

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier rang**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any r**

Table T4. RPD summary table (January 2023 GME)

				Perfluoroalkyl Sulfonic Acids						Perfluoroalkyl Carboxylic Acid									
				Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctanesulfonic acid (PFOS)	Perfluorodecanesulfonic acid (PFDS)	Sum of PFHxS and PFOS	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
Lab Report Number	**Field ID**	**Date**	**Matrix Type**																
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	0.08	0.27	0.02	0.12	<0.02	0.39	0.03	0.04	0.24	0.06	0.06	<0.01	<0.02	<0.02	<0.05	<0.1
314602	**QC01**	**16 Jan 2023**	**Water**	0.08	0.26	0.02	0.12	<0.02	0.38	0.03	0.03	0.23	0.06	0.05	<0.01	<0.02	<0.02	<0.05	<0.1
RPD				0	4	0	0	0	3	0	29	4	0	18	0	0	0	0	0
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	0.08	0.27	0.02	0.12	<0.02	0.39	0.03	0.04	0.24	0.06	0.06	<0.01	<0.02	<0.02	<0.05	<0.1
ES2301657	**QC02**	**16 Jan 2023**	**Water**	0.08	0.25	<0.02	0.15	<0.02	0.40	<0.1	0.04	0.41	0.08	0.06	<0.02	<0.02	<0.02	<0.02	<0.02
RPD				0	8	0	22	0	3	0	0	52	29	0	0	0	0	0	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<0.01	0.01	<0.01	0.01	<0.02	0.02	0.04	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1
314911	**QC03**	**19 Jan 2023**	**Water**	<0.01	0.01	<0.01	<0.01	<0.02	0.01	0.04	<0.02	<0.01	<0.01	0.01	<0.01	<0.02	<0.02	<0.05	<0.1
RPD				0	0	0	0	0	67	0	0	0	0	0	0	0	0	0	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<0.01	0.01	<0.01	0.01	<0.02	0.02	0.04	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1
ES2302217	**QC04**	**19 Jan 2023**	**Water**	<0.02	0.01	<0.02	<0.01	<0.02	0.01	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02
RPD				0	0	0	0	0	67	0	0	0	0	0	0	0	0	0	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<0.01	0.01	<0.01	0.01	<0.02	0.02	0.04	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1
ES2302217	**QC04**	**19 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
315085	**PM_BH014**	**23 Jan 2023**	**Water**	0.03	0.18	<0.01	0.14	<0.02	0.31	0.06	0.23	0.24	0.07	0.11	<0.01	<0.02	<0.02	<0.05	<0.1
315085	**QC05**	**23 Jan 2023**	**Water**	0.03	0.19	<0.01	0.15	<0.02	0.34	0.06	0.26	0.25	0.08	0.11	<0.01	<0.02	<0.02	<0.05	<0.1
RPD				0	5	0	7	0	9	0	12	4	13	0	0	0	0	0	0
315085	**PM_BH014**	**23 Jan 2023**	**Water**	0.03	0.18	<0.01	0.14	<0.02	0.31	0.06	0.23	0.24	0.07	0.11	<0.01	<0.02	<0.02	<0.05	<0.1
ES2302610	**QC06**	**23 Jan 2023**	**Water**	0.03	0.18	<0.02	0.15	<0.02	0.33	<0.1	0.29	0.26	0.07	0.10	<0.02	<0.02	<0.02	<0.02	<0.02
RPD				0	0	0	7	0	6	0	23	8	0	10	0	0	0	0	0

Comments
#1 NIL (+)VE

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier rang**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any r**

Table T4. RPD summary table (January 2023 GME)

				Perfluoroalkyl Sulfonamides								Fluorotelomer Sulfonic Acids				PFAS Totals			Organic
				Perfluorotetradecanoic acid (PFTeDA)	Perfluorooctane sulfonamide (PFOSA)	N-Methyl perfluorooctane sulfonamide (NMeFOSA)	N-Ethyl perfluorooctane sulfonamide (NEtFOSA)	N-Methylperfluorooctanesulfonamidoethanol (N-MeFOSE)	N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA)	N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFAS (WA DER List)	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of PFAS	Terbutylazine
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
EQL				0.05	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.002
Lab Report Number	**Field ID**	**Date**	**Matrix Type**																
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	<0.5	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.01	0.01	<0.02	<0.02	-	0.18	1.0	<0.002
314602	**QC01**	**16 Jan 2023**	**Water**	<0.5	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.01	0.01	<0.02	<0.02	-	0.18	0.96	<0.002
RPD				0	0	0	0	0	0	0	0	0	0	0	0	-	0	4	0
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	<0.5	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.01	0.01	<0.02	<0.02	-	0.18	1.0	<0.002
ES2301657	**QC02**	**16 Jan 2023**	**Water**	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.10	-	1.18	-
RPD				0	0	0	0	0	0	0	0	0	0	0	0	-	-	17	-
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<0.5	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	-	0.01	0.07	<0.002
314911	**QC03**	**19 Jan 2023**	**Water**	<0.5	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	-	0.01	0.08	<0.002
RPD				0	0	0	0	0	0	0	0	0	0	0	0	-	0	13	0
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<0.5	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	-	0.01	0.07	<0.002
ES2302217	**QC04**	**19 Jan 2023**	**Water**	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01	-	0.01	-
RPD				0	0	0	0	0	0	0	0	0	0	0	0	-	-	150	-
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<0.5	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	-	0.01	0.07	<0.002
ES2302217	**QC04**	**19 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
315085	**PM_BH014**	**23 Jan 2023**	**Water**	<0.5	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	-	0.24	1.1	<0.002
315085	**QC05**	**23 Jan 2023**	**Water**	<0.5	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	-	0.26	1.2	<0.002
RPD				0	0	0	0	0	0	0	0	0	0	0	0	-	8	9	0
315085	**PM_BH014**	**23 Jan 2023**	**Water**	<0.5	<0.1	<0.05	<0.1	<0.05	<0.5	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	-	0.24	1.1	<0.002
ES2302610	**QC06**	**23 Jan 2023**	**Water**	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	1.14	-	1.17	-
RPD				0	0	0	0	0	0	0	0	0	0	0	0	-	-	6	-

Comments
#1 NIL (+)VE

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier rang**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any r**

Table T4. RPD summary table (January 2023 GME)

				Phthalates						Solvents						
				Bis(2-ethylhexyl) phthalate	Butyl benzyl phthalate	Diethylphthalate	Dimethyl phthalate	Di-n-butyl phthalate	Di-n-octyl phthalate	Methyl Ethyl Ketone	2-hexanone (MBK)	4-Methyl-2-pentanone	Carbon disulfide	Cyclohexane	Isophorone	Vinyl acetate
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L
EQL				10	2	2	2	2	2	50	50	50	5	0.001	2	50
Lab Report Number	**Field ID**	**Date**	**Matrix Type**													
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	<50	<10	<10	<10	<10	<10	-	-	-	-	<0.001	<5	-
314602	**QC01**	**16 Jan 2023**	**Water**	<50	<10	<10	<10	<10	<10	-	-	-	-	<0.001	<5	-
RPD				0	0	0	0	0	0	-	-	-	-	0	0	-
314602	**SMW_BH083**	**16 Jan 2023**	**Water**	<50	<10	<10	<10	<10	<10	-	-	-	-	<0.001	<5	-
ES2301657	**QC02**	**16 Jan 2023**	**Water**	<10	<2	<2	<2	<2	<2	<50	<50	<50	<5	-	<2	<50
RPD				0	0	0	0	0	0	-	-	-	-	-	0	-
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<50	<10	<10	<10	<10	<10	-	-	-	-	<0.001	<5	-
314911	**QC03**	**19 Jan 2023**	**Water**	<50	<10	<10	<10	<10	<10	-	-	-	-	<0.001	<5	-
RPD				0	0	0	0	0	0	-	-	-	-	0	0	-
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<50	<10	<10	<10	<10	<10	-	-	-	-	<0.001	<5	-
ES2302217	**QC04**	**19 Jan 2023**	**Water**	<10	<2	<2	<2	<2	<2	<50	<50	<50	<5	-	<2	<50
RPD				0	0	0	0	0	0	-	-	-	-	-	0	-
314911	**SMW-ENV009**	**19 Jan 2023**	**Water**	<50	<10	<10	<10	<10	<10	-	-	-	-	<0.001	<5	-
ES2302217	**QC04**	**19 Jan 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-
315085	**PM_BH014**	**23 Jan 2023**	**Water**	<50	<10	<10	<10	<10	<10	-	-	-	-	<0.001	<5	-
315085	**QC05**	**23 Jan 2023**	**Water**	<50	<10	<10	<10	<10	<10	-	-	-	-	<0.001	<5	-
RPD				0	0	0	0	0	0	-	-	-	-	0	0	-
315085	**PM_BH014**	**23 Jan 2023**	**Water**	<50	<10	<10	<10	<10	<10	-	-	-	-	<0.001	<5	-
ES2302610	**QC06**	**23 Jan 2023**	**Water**	<10	<2	<2	<2	<2	<2	<50	<50	<50	<5	-	<2	<50
RPD				0	0	0	0	0	0	-	-	-	-	-	0	-

Comments
#1 NIL (+)VE

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier rang**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any r**

Table T5. Groundwater Analytical Results – Marine (April 2023 GME)

					Physico-Chemical & Major Ions													
					pH (Lab)	Electrical Conductivity (Lab)	Total Dissolved Solids (Calc.)	TDS	Chloride	Sulfate as SO4 - Turbidimetric (filtered)	Sulphate	Alkalinity (Hydroxide) as CaCO3	Carbonate as CaCO3	Bicarbonate as CaCO3	Alkalinity (total) as CaCO3	Calcium (filtered)	Magnesium (filtered)	Sodium (filtered)	Potassium (filtered)
					µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					0.01	1	1	5	1	1	1	1	1	1	1	0.5	0.5	0.5	0.5
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)																			
ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)																			
PFAS NEMP 2020 Interim Marine 95%																			
ANZECC 2000 SE Aust Triggers - Estuaries					7-8.5														
NEPM 2013 Table 1C GILs, Marine Waters																			
Sample Code	**Field ID**	**Date**	**Matrix Type**	**Sample Type**															
321086-1	**CZ1_BH13**	**17 Apr 2023**	**Water**	**Normal**	6.3	-	-	25,000	14,000	-	1,300	<5	<5	640	640	450	550	6,400	70
321086-2	**SMW_ENV224**	**17 Apr 2023**	**Water**	**Normal**	6.6	-	-	3,600	520	-	1,500	<5	<5	520	520	630	65	200	10
321086-9	**QC01**	**17 Apr 2023**	**Water**	**Field_D**	6.6	-	-	3,400	390	-	1,700	<5	<5	480	480	620	61	190	9.6
ES2312848001	**QC02**	**17 Apr 2023**	**Water**	**Interlab_D**	7.03	3,280	2,130	-	358	1,620	-	<1	<1	499	499	644	67	216	10
321086-3	**SMW_ENV234**	**17 Apr 2023**	**Water**	**Normal**	6.5	-	-	22,000	12,000	-	960	<5	<5	450	450	420	580	5,400	65
321086-4	**SMW-WTP-BH25_S**	**17 Apr 2023**	**Water**	**Normal**	7.2	-	-	2,100	300	-	390	<5	<5	1,100	1,100	230	83	330	21
321086-5	**CZ5_MW16**	**17 Apr 2023**	**Water**	**Normal**	6.1	-	-	3,700	1,800	-	540	<5	<5	190	190	30	69	910	25
321257-1	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	**Normal**	6.4	-	-	6,600	3,700	-	360	<5	<5	230	230	60	210	1,800	11
321257-5	**QC03**	**19 Apr 2023**	**Water**	**Field_D**	6.4	-	-	6,400	3,800	-	380	<5	<5	230	230	64	230	1,800	12
ES2313090001	**QC04**	**19 Apr 2023**	**Water**	**Interlab_D**	6.80	10,400	6,760	-	3,660	338	-	<1	<1	242	242	73	206	1,810	10
321257-2	**GALC-MW18**	**19 Apr 2023**	**Water**	**Normal**	6.8	-	-	4,900	2,700	-	540	<5	<5	280	280	48	100	1,400	7.6
321257-3	**CZ6-MW05**	**19 Apr 2023**	**Water**	**Normal**	6.9	-	-	720	220	-	21	<5	<5	270	270	9.1	17	250	4
321264-1	**SMW_ENV042**	**18 Apr 2023**	**Water**	**Normal**	5.9	-	-	16,000	9,400	-	1,200	<5	<5	60	60	200	730	4,700	15
321264-2	**CZ4e-MW01**	**18 Apr 2023**	**Water**	**Normal**	6.3	-	-	11,000	5,400	-	1,600	<5	<5	340	340	150	370	3,000	7.4
321264-3	**CZ4e-MW03**	**18 Apr 2023**	**Water**	**Normal**	6.1	-	-	3,800	1,700	-	800	<5	<5	130	130	71	110	1,000	3
321264-4	**SMW_ENV039**	**18 Apr 2023**	**Water**	**Normal**	6.4	-	-	22,000	12,000	-	2,000	<5	<5	440	440	340	820	5,700	23
321713-1	**SMW_ENV009**	**24 Apr 2023**	**Water**	**Normal**	6.9	-	-	1,100	250	-	14	<5	<5	690	690	120	52	180	17
323457-1	**SMW_ADD_BH02**	**17 May 2023**	**Water**	**Normal**	6.6	-	-	7,700	3,700	-	410	<5	<5	610	610	130	130	810	23

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T5. Groundwater Analytical Results – Marine (April 2023 GME)

												Inorganics								Nutrients
					pH (Lab)	Electrical Conductivity (Lab)	Fluoride	Anions Total	Cations Total	Ionic Balance	Hardness as CaCO3 (filtered)	Electrical Conductivity (Non Compensated)	Hardness (filtered)	Ammonia as N	Ammonia as N (filtered)	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrate (as N) (filtered)	Nitrite (as N)
					-	µS/cm	mg/L	meq/L	meq/L	%	mg/L	µS/cm	mgCaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL					0.01	1	0.1	0.01	0.01	0.01	1	1		0.005	0.005	0.1	0.005	0.005	0.005
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)														0.91	0.91				
ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)														0.5	0.5				
PFAS NEMP 2020 Interim Marine 95%																			
ANZECC 2000 SE Aust Triggers - Estuaries					7-8.5														
NEPM 2013 Table 1C GILs, Marine Waters																			
Sample Code	**Field ID**	**Date**	**Matrix Type**	**Sample Type**															
321086-1	**CZ1_BH13**	**17 Apr 2023**	**Water**	**Normal**	6.3	-	-	-	-	-11	-	33,000	3,400	-	1.4	1.4	-	<0.005	-
321086-2	**SMW_ENV224**	**17 Apr 2023**	**Water**	**Normal**	6.6	-	-	-	-	-10	-	4,100	1,800	-	0.91	1.4	-	<0.005	-
321086-9	**QC01**	**17 Apr 2023**	**Water**	**Field_D**	6.6	-	-	-	-	-11	-	3,700	1,800	-	0.79	1.4	-	<0.005	-
ES2312848001	**QC02**	**17 Apr 2023**	**Water**	**Interlab_D**	7.03	3,280	0.4	53.8	47.3	6.42	1,880	-	-	0.76	-	-	<0.01	-	<0.01
321086-3	**SMW_ENV234**	**17 Apr 2023**	**Water**	**Normal**	6.5	-	-	-	-	-8.0	-	30,000	3,400	-	2.2	3.1	-	<0.005	-
321086-4	**SMW-WTP-BH25_S**	**17 Apr 2023**	**Water**	**Normal**	7.2	-	-	-	-	-8.0	-	3,000	920	-	15	19	-	<0.005	-
321086-5	**CZ5_MW16**	**17 Apr 2023**	**Water**	**Normal**	6.1	-	-	-	-	-17	-	6,400	360	-	2.2	2.6	-	<0.005	-
321257-1	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	**Normal**	6.4	-	-	-	-	-8.0	-	10,000	1,000	-	0.057	0.2	-	<0.005	-
321257-5	**QC03**	**19 Apr 2023**	**Water**	**Field_D**	6.4	-	-	-	-	-8.0	-	11,000	1,100	-	0.057	0.2	-	<0.005	-
ES2313090001	**QC04**	**19 Apr 2023**	**Water**	**Interlab_D**	6.80	10,400	0.1	115	99.6	7.23	1,030	-	-	0.06	-	-	<0.01	-	<0.01
321257-2	**GALC-MW18**	**19 Apr 2023**	**Water**	**Normal**	6.8	-	-	-	-	-12	-	8,400	550	-	0.020	0.3	-	<0.005	-
321257-3	**CZ6-MW05**	**19 Apr 2023**	**Water**	**Normal**	6.9	-	-	-	-	2.0	-	1,200	91	-	0.28	0.6	-	0.14	-
321264-1	**SMW_ENV042**	**18 Apr 2023**	**Water**	**Normal**	5.9	-	-	-	-	-3.0	-	24,000	3,500	-	1.2	1.4	-	<0.005	-
321264-2	**CZ4e-MW01**	**18 Apr 2023**	**Water**	**Normal**	6.3	-	-	-	-	-6.0	-	15,000	1,900	-	0.088	0.3	-	<0.005	-
321264-3	**CZ4e-MW03**	**18 Apr 2023**	**Water**	**Normal**	6.1	-	-	-	-	-10	-	6,300	610	-	0.037	0.2	-	<0.005	-
321264-4	**SMW_ENV039**	**18 Apr 2023**	**Water**	**Normal**	6.4	-	-	-	-	-6.0	-	30,000	4,200	-	0.77	0.8	-	<0.005	-
321713-1	**SMW_ENV009**	**24 Apr 2023**	**Water**	**Normal**	6.9	-	-	-	-	-7.0	-	1,900	510	-	7.8	10	-	0.008	-
323457-1	**SMW_ADD_BH02**	**17 May 2023**	**Water**	**Normal**	6.6	-	-	-	-	-40	-	11,000	860	-	2.7	2.7	-	0.006	-

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T5. Groundwater Analytical Results – Marine (April 2023 GME)

																			Metals	
					pH (Lab)	Electrical Conductivity (Lab)	Nitrite (as N) (filtered)	Nitrite + Nitrate as N	Nitrogen (Total)	Reactive Phosphorus as P (Orthophosphate as P)	Reactive Phosphorus as P (Orthophosphate as P) (filtered)	Aluminium (filtered)	Arsenic (filtered)	Cadmium (filtered)	Chromium (hexavalent) (filtered)	Chromium (III+VI) (filtered)	Copper (filtered)	Iron (filtered)	Lead (filtered)
					-	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	mg/L	µg/L
EQL					0.01	1	0.005	0.01	0.1	0.005	0.005	0.01	1	0.1	0.005	1	1	0.05	1
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)														5.5	0.0044		1.3		4.4
ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)														0.7	0.00014		0.3		2.2
PFAS NEMP 2020 Interim Marine 95%																			
ANZECC 2000 SE Aust Triggers - Estuaries					7-8.5				0.3	0.005	0.005								
NEPM 2013 Table 1C GILs, Marine Waters														0.7	0.0044		1.3		4.4
Sample Code	**Field ID**	**Date**	**Matrix Type**	**Sample Type**															
321086-1	**CZ1_BH13**	**17 Apr 2023**	**Water**	**Normal**	6.3	-	<0.005	-	1.4	-	<0.005	-	6	<0.1	<0.005	<1	<1	-	<1
321086-2	**SMW_ENV224**	**17 Apr 2023**	**Water**	**Normal**	6.6	-	<0.005	-	1.4	-	<0.005	-	1	<0.1	<0.005	<1	<1	-	<1
321086-9	**QC01**	**17 Apr 2023**	**Water**	**Field_D**	6.6	-	<0.005	-	1.4	-	<0.005	-	<1	<0.1	<0.005	<1	<1	-	<1
ES2312848001	**QC02**	**17 Apr 2023**	**Water**	**Interlab_D**	7.03	3,280	-	<0.01	-	<0.01	-	<0.01	<1	<0.1	-	<1	<1	4.04	<1
321086-3	**SMW_ENV234**	**17 Apr 2023**	**Water**	**Normal**	6.5	-	<0.005	-	3.1	-	<0.005	-	5	<0.1	<0.005	<1	<1	-	<1
321086-4	**SMW-WTP-BH25_S**	**17 Apr 2023**	**Water**	**Normal**	7.2	-	<0.005	-	19	-	<0.005	-	4	<0.1	<0.005	<1	<1	-	<1
321086-5	**CZ5_MW16**	**17 Apr 2023**	**Water**	**Normal**	6.1	-	<0.005	-	2.6	-	<0.005	-	11	<0.1	<0.005	<1	<1	-	<1
321257-1	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	**Normal**	6.4	-	<0.005	-	0.2	-	<0.005	-	1	<0.1	<0.005	<1	<1	-	<1
321257-5	**QC03**	**19 Apr 2023**	**Water**	**Field_D**	6.4	-	<0.005	-	0.2	-	<0.005	-	1	<0.1	<0.005	<1	<1	-	<1
ES2313090001	**QC04**	**19 Apr 2023**	**Water**	**Interlab_D**	6.80	10,400	-	<0.01	-	<0.01	-	<0.01	1	<0.1	-	<1	<1	8.48	<1
321257-2	**GALC-MW18**	**19 Apr 2023**	**Water**	**Normal**	6.8	-	<0.005	-	0.3	-	<0.005	-	1	<0.1	<0.005	<1	<1	-	<1
321257-3	**CZ6-MW05**	**19 Apr 2023**	**Water**	**Normal**	6.9	-	0.061	-	0.8	-	<0.005	-	6	<0.1	<0.005	<1	<1	-	<1
321264-1	**SMW_ENV042**	**18 Apr 2023**	**Water**	**Normal**	5.9	-	<0.005	-	1.4	-	<0.005	-	5	<0.1	<0.005	<1	570	-	<1
321264-2	**CZ4e-MW01**	**18 Apr 2023**	**Water**	**Normal**	6.3	-	<0.005	-	0.3	-	<0.005	-	7	<0.1	<0.005	<1	<1	-	<1
321264-3	**CZ4e-MW03**	**18 Apr 2023**	**Water**	**Normal**	6.1	-	<0.005	-	0.2	-	<0.005	-	<1	0.3	<0.005	<1	<1	-	<1
321264-4	**SMW_ENV039**	**18 Apr 2023**	**Water**	**Normal**	6.4	-	<0.005	-	0.8	-	<0.005	-	3	<0.1	<0.005	<1	350	-	<1
321713-1	**SMW_ENV009**	**24 Apr 2023**	**Water**	**Normal**	6.9	-	<0.005	-	10	-	<0.005	-	<1	<0.1	<0.005	<1	<1	-	<1
323457-1	**SMW_ADD_BH02**	**17 May 2023**	**Water**	**Normal**	6.6	-	<0.005	-	2.7	-	<0.005	-	22	<0.1	<0.005	<1	32	-	<1

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T5. Groundwater Analytical Results – Marine (April 2023 GME)

																		BTEX
					pH (Lab)	Electrical Conductivity (Lab)	Manganese (filtered)	Mercury (filtered)	Nickel (filtered)	Phosphorus	Selenium (filtered)	Zinc (filtered)	Benzene		Toluene		Ethylbenzene		Xylenes (m & p)
						µS/cm	mg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	%	µg/L	%	µg/L	%	µg/L
EQL					0.01	1	0.005	0.05	1	0.05	0.001	1	1	1	1	1	1	1	2
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)								0.4	70			15	700		180		80		
ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)								0.1	7			7	500		110		50		
PFAS NEMP 2020 Interim Marine 95%																			
ANZECC 2000 SE Aust Triggers - Estuaries					7-8.5					0.03									
NEPM 2013 Table 1C GILs, Marine Waters								0.1	7			15	500						
Sample Code	**Field ID**	**Date**	**Matrix Type**	**Sample Type**															
321086-1	**CZ1_BH13**	**17 Apr 2023**	**Water**	**Normal**	6.3	-	0.46	<0.05	4	0.1	<0.001	9	<1	-	<1	-	<1	-	<2
321086-2	**SMW_ENV224**	**17 Apr 2023**	**Water**	**Normal**	6.6	-	1.2	<0.05	9	0.05	<0.001	3	<1	-	<1	-	<1	-	<2
321086-9	**QC01**	**17 Apr 2023**	**Water**	**Field_D**	6.6	-	1.1	<0.05	9	<0.05	<0.001	4	<1	-	<1	-	<1	-	<2
ES2312848001	**QC02**	**17 Apr 2023**	**Water**	**Interlab_D**	7.03	3,280	-	<0.1	9	-	<0.01	<5	<1	-	<2	-	<2	-	<2
321086-3	**SMW_ENV234**	**17 Apr 2023**	**Water**	**Normal**	6.5	-	1.8	<0.05	4	<0.05	<0.001	<1	<1	-	<1	-	<1	-	<2
321086-4	**SMW-WTP-BH25_S**	**17 Apr 2023**	**Water**	**Normal**	7.2	-	0.25	<0.05	<1	0.1	<0.001	<1	2	-	<1	-	<1	-	<2
321086-5	**CZ5_MW16**	**17 Apr 2023**	**Water**	**Normal**	6.1	-	0.093	0.06	6	<0.05	<0.001	12	<1	-	<1	-	<1	-	<2
321257-1	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	**Normal**	6.4	-	0.2	<0.05	6	<0.05	<0.001	1	<1	-	<1	-	<1	-	<2
321257-5	**QC03**	**19 Apr 2023**	**Water**	**Field_D**	6.4	-	0.19	<0.05	5	<0.05	<0.001	1	<1	-	<1	-	<1	-	<2
ES2313090001	**QC04**	**19 Apr 2023**	**Water**	**Interlab_D**	6.80	10,400	-	<0.1	6	-	<0.01	<5	<1	-	<2	-	<2	-	<2
321257-2	**GALC-MW18**	**19 Apr 2023**	**Water**	**Normal**	6.8	-	0.59	<0.05	2	<0.05	<0.001	<1	<1	-	<1	-	<1	-	<2
321257-3	**CZ6-MW05**	**19 Apr 2023**	**Water**	**Normal**	6.9	-	0.034	<0.05	<1	0.08	<0.001	<1	<1	-	<1	-	<1	-	<2
321264-1	**SMW_ENV042**	**18 Apr 2023**	**Water**	**Normal**	5.9	-	0.29	<0.05	12	<0.05	<0.001	21	<1	-	<1	-	<1	-	<2
321264-2	**CZ4e-MW01**	**18 Apr 2023**	**Water**	**Normal**	6.3	-	1.5	<0.05	21	<0.05	<0.001	48	<1	-	<1	-	<1	-	<2
321264-3	**CZ4e-MW03**	**18 Apr 2023**	**Water**	**Normal**	6.1	-	2.9	<0.05	17	0.06	<0.001	34	<1	-	<1	-	<1	-	<2
321264-4	**SMW_ENV039**	**18 Apr 2023**	**Water**	**Normal**	6.4	-	1.2	<0.05	24	<0.05	<0.001	9	<1	-	<1	-	<1	-	<2
321713-1	**SMW_ENV009**	**24 Apr 2023**	**Water**	**Normal**	6.9	-	0.85	<0.05	<1	0.4	<0.001	<1	<1	-	<1	-	<1	-	<2
323457-1	**SMW_ADD_BH02**	**17 May 2023**	**Water**	**Normal**	6.6	-	0.27	<0.05	7	<0.05	<0.001	12	<1	-	<1	-	<1	-	<2

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T5. Groundwater Analytical Results – Marine (April 2023 GME)

													TRH						
					pH (Lab)	Electrical Conductivity (Lab)	Xylene (m & p)	Xylene (o)		Xylene Total	Naphthalene	Naphthalene (BTEX)	C6-C10	C6-C10 (F1 minus BTEX)	C10-C16	C10-C16 (F2 minus Naphthalene)	C16-C34	C34-C40	C10-C40 (Sum of total)
						µS/cm	%	µg/L	%	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					0.01	1	2	1	1	2	0.2	1	10	10	50	50	100	100	50
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)											70	70							
ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)											50	50							
PFAS NEMP 2020 Interim Marine 95%																			
ANZECC 2000 SE Aust Triggers - Estuaries					7-8.5														
NEPM 2013 Table 1C GILs, Marine Waters											50	50							
Sample Code	**Field ID**	**Date**	**Matrix Type**	**Sample Type**															
321086-1	**CZ1_BH13**	**17 Apr 2023**	**Water**	**Normal**	6.3	-	-	<1	-	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50
321086-2	**SMW_ENV224**	**17 Apr 2023**	**Water**	**Normal**	6.6	-	-	<1	-	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50
321086-9	**QC01**	**17 Apr 2023**	**Water**	**Field_D**	6.6	-	-	<1	-	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50
ES2312848001	**QC02**	**17 Apr 2023**	**Water**	**Interlab_D**	7.03	3,280	-	<2	-	<2	<1.0	<5	<20	<20	<100	<100	<100	<100	<100
321086-3	**SMW_ENV234**	**17 Apr 2023**	**Water**	**Normal**	6.5	-	-	<1	-	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50
321086-4	**SMW-WTP-BH25_S**	**17 Apr 2023**	**Water**	**Normal**	7.2	-	-	<1	-	-	<0.2	<1	1,100	1,100	130	130	260	<100	400
321086-5	**CZ5_MW16**	**17 Apr 2023**	**Water**	**Normal**	6.1	-	-	<1	-	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50
321257-1	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	**Normal**	6.4	-	-	<1	-	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50
321257-5	**QC03**	**19 Apr 2023**	**Water**	**Field_D**	6.4	-	-	<1	-	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50
ES2313090001	**QC04**	**19 Apr 2023**	**Water**	**Interlab_D**	6.80	10,400	-	<2	-	<2	<1.0	<5	<20	<20	<100	<100	<100	<100	<100
321257-2	**GALC-MW18**	**19 Apr 2023**	**Water**	**Normal**	6.8	-	-	<1	-	-	<0.2	<1	<10	<10	94	94	<100	<100	90
321257-3	**CZ6-MW05**	**19 Apr 2023**	**Water**	**Normal**	6.9	-	-	<1	-	-	<0.2	<1	<10	<10	120	120	190	<100	310
321264-1	**SMW_ENV042**	**18 Apr 2023**	**Water**	**Normal**	5.9	-	-	<1	-	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50
321264-2	**CZ4e-MW01**	**18 Apr 2023**	**Water**	**Normal**	6.3	-	-	<1	-	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50
321264-3	**CZ4e-MW03**	**18 Apr 2023**	**Water**	**Normal**	6.1	-	-	<1	-	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50
321264-4	**SMW_ENV039**	**18 Apr 2023**	**Water**	**Normal**	6.4	-	-	<1	-	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50
321713-1	**SMW_ENV009**	**24 Apr 2023**	**Water**	**Normal**	6.9	-	-	<1	-	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50
323457-1	**SMW_ADD_BH02**	**17 May 2023**	**Water**	**Normal**	6.6	-	-	<1	-	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T5. Groundwater Analytical Results – Marine (April 2023 GME)

							MAH									Halogenated Hydrocarbons			
					pH (Lab)	Electrical Conductivity (Lab)	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene	n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	tert-butylbenzene	1,2-dibromoethane	Bromomethane	Dichlorodifluoromethane	Trichlorofluoromethane
						µS/cm	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					0.01	1	1	1	1	1	1	1	1	1	1	1	2	10	10
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)									30										
ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)									20										
PFAS NEMP 2020 Interim Marine 95%																			
ANZECC 2000 SE Aust Triggers - Estuaries					7-8.5														
NEPM 2013 Table 1C GILs, Marine Waters																			
Sample Code	**Field ID**	**Date**	**Matrix Type**	**Sample Type**															
321086-1	**CZ1_BH13**	**17 Apr 2023**	**Water**	**Normal**	6.3	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10
321086-2	**SMW_ENV224**	**17 Apr 2023**	**Water**	**Normal**	6.6	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10
321086-9	**QC01**	**17 Apr 2023**	**Water**	**Field_D**	6.6	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10
ES2312848001	**QC02**	**17 Apr 2023**	**Water**	**Interlab_D**	7.03	3,280	-	-	-	-	-	-	-	-	-	-	-	-	-
321086-3	**SMW_ENV234**	**17 Apr 2023**	**Water**	**Normal**	6.5	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10
321086-4	**SMW-WTP-BH25_S**	**17 Apr 2023**	**Water**	**Normal**	7.2	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10
321086-5	**CZ5_MW16**	**17 Apr 2023**	**Water**	**Normal**	6.1	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10
321257-1	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	**Normal**	6.4	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10
321257-5	**QC03**	**19 Apr 2023**	**Water**	**Field_D**	6.4	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10
ES2313090001	**QC04**	**19 Apr 2023**	**Water**	**Interlab_D**	6.80	10,400	-	-	-	-	-	-	-	-	-	-	-	-	-
321257-2	**GALC-MW18**	**19 Apr 2023**	**Water**	**Normal**	6.8	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10
321257-3	**CZ6-MW05**	**19 Apr 2023**	**Water**	**Normal**	6.9	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10
321264-1	**SMW_ENV042**	**18 Apr 2023**	**Water**	**Normal**	5.9	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10
321264-2	**CZ4e-MW01**	**18 Apr 2023**	**Water**	**Normal**	6.3	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10
321264-3	**CZ4e-MW03**	**18 Apr 2023**	**Water**	**Normal**	6.1	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10
321264-4	**SMW_ENV039**	**18 Apr 2023**	**Water**	**Normal**	6.4	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10
321713-1	**SMW_ENV009**	**24 Apr 2023**	**Water**	**Normal**	6.9	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10
323457-1	**SMW_ADD_BH02**	**17 May 2023**	**Water**	**Normal**	6.6	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T5. Groundwater Analytical Results – Marine (April 2023 GME)

								pH (Lab)	Electrical Conductivity (Lab)	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane
								µg/L	µS/cm	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL								0.01	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)											270	400	1,900		700				1,900	900	1,100	
ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)											130	200	140		500				1,000	600	700	
PFAS NEMP 2020 Interim Marine 95%																						
ANZECC 2000 SE Aust Triggers - Estuaries								7-8.5														
NEPM 2013 Table 1C GILs, Marine Waters													1,900									
Sample Code	**Field ID**	**Date**	**Matrix Type**	**Sample Type**																		
321086-1	**CZ1_BH13**	**17 Apr 2023**	**Water**	**Normal**				6.3	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321086-2	**SMW_ENV224**	**17 Apr 2023**	**Water**	**Normal**				6.6	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321086-9	**QC01**	**17 Apr 2023**	**Water**	**Field_D**				6.6	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ES2312848001	**QC02**	**17 Apr 2023**	**Water**	**Interlab_D**				7.03	3,280	-	-	-	-	-	-	-	-	-	-	-	-	-
321086-3	**SMW_ENV234**	**17 Apr 2023**	**Water**	**Normal**				6.5	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321086-4	**SMW-WTP-BH25_S**	**17 Apr 2023**	**Water**	**Normal**				7.2	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321086-5	**CZ5_MW16**	**17 Apr 2023**	**Water**	**Normal**				6.1	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321257-1	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	**Normal**				6.4	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321257-5	**QC03**	**19 Apr 2023**	**Water**	**Field_D**				6.4	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ES2313090001	**QC04**	**19 Apr 2023**	**Water**	**Interlab_D**				6.80	10,400	-	-	-	-	-	-	-	-	-	-	-	-	-
321257-2	**GALC-MW18**	**19 Apr 2023**	**Water**	**Normal**				6.8	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321257-3	**CZ6-MW05**	**19 Apr 2023**	**Water**	**Normal**				6.9	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321264-1	**SMW_ENV042**	**18 Apr 2023**	**Water**	**Normal**				5.9	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321264-2	**CZ4e-MW01**	**18 Apr 2023**	**Water**	**Normal**				6.3	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321264-3	**CZ4e-MW03**	**18 Apr 2023**	**Water**	**Normal**				6.1	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321264-4	**SMW_ENV039**	**18 Apr 2023**	**Water**	**Normal**				6.4	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321713-1	**SMW_ENV009**	**24 Apr 2023**	**Water**	**Normal**				6.9	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
323457-1	**SMW_ADD_BH02**	**17 May 2023**	**Water**	**Normal**				6.6	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T5. Groundwater Analytical Results – Marine (April 2023 GME)

					Chlorinated Hydrocarbons															
					pH (Lab)	Electrical Conductivity (Lab)	Bromochloromethane	Bromodichloromethane	Bromoform	Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dibromomethane	Dichloromethane	Hexachlorobutadiene
						µS/cm	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					0.01	1	1	1	1	1	1	10	1	10	1	1	1	4	0.7
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)										240			770					4,000	
ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)										150			370					3,000	
PFAS NEMP 2020 Interim Marine 95%																			
ANZECC 2000 SE Aust Triggers - Estuaries					7-8.5														
NEPM 2013 Table 1C GILs, Marine Waters																			
Sample Code	**Field ID**	**Date**	**Matrix Type**	**Sample Type**															
321086-1	**CZ1_BH13**	**17 Apr 2023**	**Water**	**Normal**	6.3	-	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321086-2	**SMW_ENV224**	**17 Apr 2023**	**Water**	**Normal**	6.6	-	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321086-9	**QC01**	**17 Apr 2023**	**Water**	**Field_D**	6.6	-	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
ES2312848001	**QC02**	**17 Apr 2023**	**Water**	**Interlab_D**	7.03	3,280	-	-	-	-	-	-	-	-	-	-	-	-	-
321086-3	**SMW_ENV234**	**17 Apr 2023**	**Water**	**Normal**	6.5	-	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321086-4	**SMW-WTP-BH25_S**	**17 Apr 2023**	**Water**	**Normal**	7.2	-	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321086-5	**CZ5_MW16**	**17 Apr 2023**	**Water**	**Normal**	6.1	-	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321257-1	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	**Normal**	6.4	-	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321257-5	**QC03**	**19 Apr 2023**	**Water**	**Field_D**	6.4	-	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
ES2313090001	**QC04**	**19 Apr 2023**	**Water**	**Interlab_D**	6.80	10,400	-	-	-	-	-	-	-	-	-	-	-	-	-
321257-2	**GALC-MW18**	**19 Apr 2023**	**Water**	**Normal**	6.8	-	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321257-3	**CZ6-MW05**	**19 Apr 2023**	**Water**	**Normal**	6.9	-	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321264-1	**SMW_ENV042**	**18 Apr 2023**	**Water**	**Normal**	5.9	-	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321264-2	**CZ4e-MW01**	**18 Apr 2023**	**Water**	**Normal**	6.3	-	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321264-3	**CZ4e-MW03**	**18 Apr 2023**	**Water**	**Normal**	6.1	-	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321264-4	**SMW_ENV039**	**18 Apr 2023**	**Water**	**Normal**	6.4	-	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321713-1	**SMW_ENV009**	**24 Apr 2023**	**Water**	**Normal**	6.9	-	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
323457-1	**SMW_ADD_BH02**	**17 May 2023**	**Water**	**Normal**	6.6	-	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T5. Groundwater Analytical Results – Marine (April 2023 GME)

				pH (Lab)	Electrical Conductivity (Lab)	Trichloroethene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Vinyl chloride	Benzo(b+j+k)fluoranthene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Chrysene
				µg/L	µS/cm	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				0.01	1	1	1	1	1	0.3	0.0002	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)						330	70			100				0.4		0.2		
ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)						220	40			70				0.01		0.1		
PFAS NEMP 2020 Interim Marine 95%																		
ANZECC 2000 SE Aust Triggers - Estuaries				7-8.5														
NEPM 2013 Table 1C GILs, Marine Waters																		
Sample Code	**Field ID**	**Date**	**Matrix Type**	**Sample Type**														
321086-1	**CZ1_BH13**	**17 Apr 2023**	**Water**	**Normal**	6.3	-	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
321086-2	**SMW_ENV224**	**17 Apr 2023**	**Water**	**Normal**	6.6	-	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
321086-9	**QC01**	**17 Apr 2023**	**Water**	**Field_D**	6.6	-	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
ES2312848001	**QC02**	**17 Apr 2023**	**Water**	**Interlab_D**	7.03	3,280	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0
321086-3	**SMW_ENV234**	**17 Apr 2023**	**Water**	**Normal**	6.5	-	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
321086-4	**SMW-WTP-BH25_S**	**17 Apr 2023**	**Water**	**Normal**	7.2	-	<1	<1	<1	<1	<0.3	<0.0002	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
321086-5	**CZ5_MW16**	**17 Apr 2023**	**Water**	**Normal**	6.1	-	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
321257-1	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	**Normal**	6.4	-	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
321257-5	**QC03**	**19 Apr 2023**	**Water**	**Field_D**	6.4	-	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
ES2313090001	**QC04**	**19 Apr 2023**	**Water**	**Interlab_D**	6.80	10,400	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0
321257-2	**GALC-MW18**	**19 Apr 2023**	**Water**	**Normal**	6.8	-	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
321257-3	**CZ6-MW05**	**19 Apr 2023**	**Water**	**Normal**	6.9	-	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
321264-1	**SMW_ENV042**	**18 Apr 2023**	**Water**	**Normal**	5.9	-	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
321264-2	**CZ4e-MW01**	**18 Apr 2023**	**Water**	**Normal**	6.3	-	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
321264-3	**CZ4e-MW03**	**18 Apr 2023**	**Water**	**Normal**	6.1	-	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
321264-4	**SMW_ENV039**	**18 Apr 2023**	**Water**	**Normal**	6.4	-	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
321713-1	**SMW_ENV009**	**24 Apr 2023**	**Water**	**Normal**	6.9	-	<1	<1	<1	<1	<0.3	<0.0002	0.2	<0.1	<0.1	<0.1	<0.1	<0.1
323457-1	**SMW_ADD_BH02**	**17 May 2023**	**Water**	**Normal**	6.6	-	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T5. Groundwater Analytical Results – Marine (April 2023 GME)

					PAH											TPH			
					pH (Lab)	Electrical Conductivity (Lab)	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ	Benzo(a)pyrene TEQ calc (Zero)	PAHs (Sum of positives)	C6-C9	C10-C14	C15-C28	C29-C36
					-	µS/cm	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L
EQL					0.01	1	0.1	0.1	0.1	0.1	0.1	0.1	0.0005	0.0005	0.0001	10	50	100	50
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)								1.4			2								
ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)								1			0.6								
PFAS NEMP 2020 Interim Marine 95%																			
ANZECC 2000 SE Aust Triggers - Estuaries					7-8.5														
NEPM 2013 Table 1C GILs, Marine Waters																			
Sample Code	**Field ID**	**Date**	**Matrix Type**	**Sample Type**															
321086-1	**CZ1_BH13**	**17 Apr 2023**	**Water**	**Normal**	6.3	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100
321086-2	**SMW_ENV224**	**17 Apr 2023**	**Water**	**Normal**	6.6	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100
321086-9	**QC01**	**17 Apr 2023**	**Water**	**Field_D**	6.6	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100
ES2312848001	**QC02**	**17 Apr 2023**	**Water**	**Interlab_D**	7.03	3,280	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<0.0005	-	<20	<50	<100	<50
321086-3	**SMW_ENV234**	**17 Apr 2023**	**Water**	**Normal**	6.5	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100
321086-4	**SMW-WTP-BH25_S**	**17 Apr 2023**	**Water**	**Normal**	7.2	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	-	0.00013	1,000	96	300	<100
321086-5	**CZ5_MW16**	**17 Apr 2023**	**Water**	**Normal**	6.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100
321257-1	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	**Normal**	6.4	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100
321257-5	**QC03**	**19 Apr 2023**	**Water**	**Field_D**	6.4	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100
ES2313090001	**QC04**	**19 Apr 2023**	**Water**	**Interlab_D**	6.80	10,400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<0.0005	-	<20	<50	<100	<50
321257-2	**GALC-MW18**	**19 Apr 2023**	**Water**	**Normal**	6.8	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	77	<100	<100
321257-3	**CZ6-MW05**	**19 Apr 2023**	**Water**	**Normal**	6.9	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	110	200	<100
321264-1	**SMW_ENV042**	**18 Apr 2023**	**Water**	**Normal**	5.9	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100
321264-2	**CZ4e-MW01**	**18 Apr 2023**	**Water**	**Normal**	6.3	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100
321264-3	**CZ4e-MW03**	**18 Apr 2023**	**Water**	**Normal**	6.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100
321264-4	**SMW_ENV039**	**18 Apr 2023**	**Water**	**Normal**	6.4	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100
321713-1	**SMW_ENV009**	**24 Apr 2023**	**Water**	**Normal**	6.9	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	-	0.00018	<10	<50	<100	<100
323457-1	**SMW_ADD_BH02**	**17 May 2023**	**Water**	**Normal**	6.6	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T5. Groundwater Analytical Results – Marine (April 2023 GME)

								PCBs							Perfluoroalkyl Sulfonic Acids				
					pH (Lab)	Electrical Conductivity (Lab)	C10-C36 (Sum of total)	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Perfluorobutane sulfonic acid (PFBS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorooctanesulfonic acid (PFOS)	Sum of PFHxS and PFOS	Perfluorobutanoic acid (PFBA)
					µS/cm	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					0.01	1	50	2	2	2	2	2	2	2	0.02	0.01	0.01	0.01	0.1
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)																			
ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)																			
PFAS NEMP 2020 Interim Marine 95%																	0.13		
ANZECC 2000 SE Aust Triggers - Estuaries					7-8.5														
NEPM 2013 Table 1C GILs, Marine Waters																			
Sample Code	**Field ID**	**Date**	**Matrix Type**	**Sample Type**															
321086-1	**CZ1_BH13**	**17 Apr 2023**	**Water**	**Normal**	6.3	-	<50	<2	<2	<2	<2	<2	<2	<2	-	0.02	<0.01	0.02	-
321086-2	**SMW_ENV224**	**17 Apr 2023**	**Water**	**Normal**	6.6	-	<50	<2	<2	<2	<2	<2	<2	<2	-	0.02	0.02	0.04	-
321086-9	**QC01**	**17 Apr 2023**	**Water**	**Field_D**	6.6	-	<50	<2	<2	<2	<2	<2	<2	<2	-	0.02	0.02	0.04	-
ES2312848001	**QC02**	**17 Apr 2023**	**Water**	**Interlab_D**	7.03	3,280	<50	-	-	-	-	-	-	-	0.04	0.03	0.02	0.05	<0.1
321086-3	**SMW_ENV234**	**17 Apr 2023**	**Water**	**Normal**	6.5	-	<50	<2	<2	<2	<2	<2	<2	<2	-	0.01	0.02	0.03	-
321086-4	**SMW-WTP-BH25_S**	**17 Apr 2023**	**Water**	**Normal**	7.2	-	390	<10	<10	<10	<10	<10	<10	<10	-	0.08	0.05	0.13	-
321086-5	**CZ5_MW16**	**17 Apr 2023**	**Water**	**Normal**	6.1	-	<50	<2	<2	<2	<2	<2	<2	<2	-	0.02	<0.01	0.02	-
321257-1	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	**Normal**	6.4	-	<50	<2	<2	<2	<2	<2	<2	<2	-	0.01	<0.01	0.01	-
321257-5	**QC03**	**19 Apr 2023**	**Water**	**Field_D**	6.4	-	<50	<2	<2	<2	<2	<2	<2	<2	-	0.01	<0.01	0.01	-
ES2313090001	**QC04**	**19 Apr 2023**	**Water**	**Interlab_D**	6.80	10,400	<50	-	-	-	-	-	-	-	<0.02	<0.01	<0.01	<0.01	<0.1
321257-2	**GALC-MW18**	**19 Apr 2023**	**Water**	**Normal**	6.8	-	80	<2	<2	<2	<2	<2	<2	<2	-	<0.01	0.02	0.02	-
321257-3	**CZ6-MW05**	**19 Apr 2023**	**Water**	**Normal**	6.9	-	310	<2	<2	<2	<2	<2	<2	<2	-	0.04	0.06	0.10	-
321264-1	**SMW_ENV042**	**18 Apr 2023**	**Water**	**Normal**	5.9	-	<50	<2	<2	<2	<2	<2	<2	<2	-	<0.01	<0.01	<0.01	-
321264-2	**CZ4e-MW01**	**18 Apr 2023**	**Water**	**Normal**	6.3	-	<50	<2	<2	<2	<2	<2	<2	<2	-	<0.01	<0.01	<0.01	-
321264-3	**CZ4e-MW03**	**18 Apr 2023**	**Water**	**Normal**	6.1	-	<50	<2	<2	<2	<2	<2	<2	<2	-	0.05	0.01	0.07	-
321264-4	**SMW_ENV039**	**18 Apr 2023**	**Water**	**Normal**	6.4	-	<50	<2	<2	<2	<2	<2	<2	<2	-	<0.01	<0.01	<0.01	-
321713-1	**SMW_ENV009**	**24 Apr 2023**	**Water**	**Normal**	6.9	-	<50	<2	<2	<2	<2	<2	<2	<2	-	0.01	0.01	0.02	-
323457-1	**SMW_ADD_BH02**	**17 May 2023**	**Water**	**Normal**	6.6	-	<50	<2	<2	<2	<2	<2	<2	<2	-	<0.01	0.01	0.01	-

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T5. Groundwater Analytical Results – Marine (April 2023 GME)

					Perfluoroalkyl Carboxylic Acid						Fluorotelomer Sulfonic Acids				PFAS Totals		Solvents
					pH (Lab)	Electrical Conductivity (Lab)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of PFAS	Cyclohexane
					µS/cm	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
EQL					0.01	1	0.02	0.02	0.02	0.01	0.05	0.01	0.02	0.05	0.01	0.01	0.001
ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)																	
ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)																	
PFAS NEMP 2020 Interim Marine 95%										220							
ANZECC 2000 SE Aust Triggers - Estuaries					7-8.5												
NEPM 2013 Table 1C GILs, Marine Waters																	
Sample Code	**Field ID**	**Date**	**Matrix Type**	**Sample Type**													
321086-1	**CZ1_BH13**	**17 Apr 2023**	**Water**	**Normal**	6.3	-	-	-	-	<0.01	-	<0.01	<0.02	-	<0.01	0.02	<0.001
321086-2	**SMW_ENV224**	**17 Apr 2023**	**Water**	**Normal**	6.6	-	-	-	-	0.02	-	0.02	<0.02	-	0.04	0.08	<0.001
321086-9	**QC01**	**17 Apr 2023**	**Water**	**Field_D**	6.6	-	-	-	-	0.03	-	0.02	<0.02	-	0.04	0.09	<0.001
ES2312848001	**QC02**	**17 Apr 2023**	**Water**	**Interlab_D**	7.03	3,280	<0.02	0.05	<0.02	0.03	<0.05	<0.05	<0.05	<0.05	-	-	-
321086-3	**SMW_ENV234**	**17 Apr 2023**	**Water**	**Normal**	6.5	-	-	-	-	0.04	-	<0.01	<0.02	-	0.06	0.07	<0.001
321086-4	**SMW-WTP-BH25_S**	**17 Apr 2023**	**Water**	**Normal**	7.2	-	-	-	-	0.03	-	<0.01	<0.02	-	0.09	0.16	<0.001
321086-5	**CZ5_MW16**	**17 Apr 2023**	**Water**	**Normal**	6.1	-	-	-	-	0.03	-	<0.01	<0.02	-	0.03	0.05	<0.001
321257-1	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	**Normal**	6.4	-	-	-	-	<0.01	-	<0.01	<0.02	-	<0.01	0.01	<0.001
321257-5	**QC03**	**19 Apr 2023**	**Water**	**Field_D**	6.4	-	-	-	-	<0.01	-	<0.01	<0.02	-	<0.01	0.01	<0.001
ES2313090001	**QC04**	**19 Apr 2023**	**Water**	**Interlab_D**	6.80	10,400	<0.02	<0.02	<0.02	<0.01	<0.05	<0.05	<0.05	<0.05	-	-	-
321257-2	**GALC-MW18**	**19 Apr 2023**	**Water**	**Normal**	6.8	-	-	-	-	<0.01	-	<0.01	<0.02	-	0.02	0.02	<0.001
321257-3	**CZ6-MW05**	**19 Apr 2023**	**Water**	**Normal**	6.9	-	-	-	-	0.01	-	<0.01	<0.02	-	0.07	0.12	<0.001
321264-1	**SMW_ENV042**	**18 Apr 2023**	**Water**	**Normal**	5.9	-	-	-	-	<0.01	-	<0.01	<0.02	-	<0.01	<0.01	<0.001
321264-2	**CZ4e-MW01**	**18 Apr 2023**	**Water**	**Normal**	6.3	-	-	-	-	<0.01	-	<0.01	<0.02	-	<0.01	<0.01	<0.001
321264-3	**CZ4e-MW03**	**18 Apr 2023**	**Water**	**Normal**	6.1	-	-	-	-	0.01	-	<0.01	<0.02	-	0.03	0.08	<0.001
321264-4	**SMW_ENV039**	**18 Apr 2023**	**Water**	**Normal**	6.4	-	-	-	-	<0.01	-	<0.01	<0.02	-	<0.01	<0.01	<0.001
321713-1	**SMW_ENV009**	**24 Apr 2023**	**Water**	**Normal**	6.9	-	-	-	-	<0.01	-	<0.01	<0.02	-	0.01	0.02	<0.001
323457-1	**SMW_ADD_BH02**	**17 May 2023**	**Water**	**Normal**	6.6	-	-	-	-	<0.01	-	0.02	<0.02	-	0.01	0.03	<0.001

Environmental Standards

ANZG, March 2021, ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Marine Water 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Interim Marine 95%
DoE, 2000, ANZECC 2000 SE Aust Triggers - Estuaries
2013, NEPM 2013 Table 1C GILs, Marine Waters

Table T6. Groundwater Analytical Results – Freshwater (April 2023 GME)

						Physico-Chemical & Major Ions												
						pH (Lab)	TDS	Chloride	Sulphate	Alkalinity (Hydroxide) as CaCO3	Carbonate as CaCO3	Bicarbonate as CaCO3	Alkalinity (total) as CaCO3	Calcium (filtered)	Magnesium (filtered)	Sodium (filtered)	Potassium (filtered)	Ionic Balance
						-	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%
EQL							5	1	1	5	5	5	5	0.5	0.5	0.5	0.5	
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)																		
ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)																		
PFAS NEMP 2020 Freshwater 95%																		
NEPM 2013 Table 1C GILs, Fresh Waters																		
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**													
321476-3	**PM-BH14**		**20 Apr 2023**	**Water**	**Normal**	6.7	330	42	91	<5	<5	110	110	7.4	8.0	100	2	0
321476-4	**PM-BH21**		**20 Apr 2023**	**Water**	**Normal**	6.3	360	61	130	<5	<5	73	73	4	3	110	3	-4.0
321532-1	**SMW_BH004_S**		**21 Apr 2023**	**Water**	**Normal**	6.3	160	43	32	<5	<5	49	49	9.0	7.0	47	3	5.0
321532-2	**SMW_BH004_W**		**21 Apr 2023**	**Water**	**Normal**	6.6	76	16	5	<5	<5	29	29	12	1	8.9	3	1.0
321532-3	**SMW_WTP-BH02**		**21 Apr 2023**	**Water**	**Normal**	9.6	510	23	14	<5	170	210	380	3	0.7	190	16	1.0
321532-4	**SMW_WTP-BH03A**		**21 Apr 2023**	**Water**	**Normal**	6.6	49	6	4	<5	<5	29	29	9.6	0.8	8.0	1	6.0
321713-1	**SMW_ENV009**		**24 Apr 2023**	**Water**	**Normal**	6.9	1,100	250	14	<5	<5	690	690	120	52	180	17	-7.0
321713-2	**SMW_BH008_W**		**24 Apr 2023**	**Water**	**Normal**	6.6	13,000	6,900	400	<5	<5	1,000	1,000	280	500	3,500	59	-3.0
321713-3	**QC05**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	7,300	420	<5	<5	1,100	1,100	280	500	3,600	59	-5.0
321713-4	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	7,300	420	<5	<5	1,100	1,100	280	500	3,600	59	-5.0
ES2316368001	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Interlab_D**	-	-	-	-	-	-	-	-	-	-	-	-	-

Environmental Standards
ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

						Inorganics		Nutrients									
						pH (Lab)	TDS	Electrical Conductivity (Non Compensated)	Hardness (filtered)	Ammonia as N (filtered)	Kjeldahl Nitrogen Total	Nitrogen (Total Oxidised)	Nitrate (as N) (filtered)	Nitrite (as N) (filtered)	Nitrogen (Total)	Reactive Phosphorus as P (Orthophosphate as P) (filtered)	Arsenic (filtered)	Beryllium (filtered)
						-	mg/L	µS/cm	mgCaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L
EQL							5	1		0.005	0.1	0.005	0.005	0.005	0.1	0.005	1	0.0005
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)										0.9								
ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)										0.32								
PFAS NEMP 2020 Freshwater 95%																		
NEPM 2013 Table 1C GILs, Fresh Waters																		
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**													
321476-3	**PM-BH14**		**20 Apr 2023**	**Water**	**Normal**	6.7	330	570	51	0.017	<0.1	3.1	3.1	<0.005	3.1	0.005	<1	<0.0005
321476-4	**PM-BH21**		**20 Apr 2023**	**Water**	**Normal**	6.3	360	610	24	0.026	<0.1	0.1	0.10	<0.005	0.2	<0.005	<1	<0.0005
321532-1	**SMW_BH004_S**		**21 Apr 2023**	**Water**	**Normal**	6.3	160	310	51	<0.005	0.8	2.9	2.9	<0.005	3.8	0.01	<1	<0.0005
321532-2	**SMW_BH004_W**		**21 Apr 2023**	**Water**	**Normal**	6.6	76	120	36	<0.005	0.2	<0.005	<0.005	<0.005	0.2	0.01	<1	<0.0005
321532-3	**SMW_WTP-BH02**		**21 Apr 2023**	**Water**	**Normal**	9.6	510	790	11	0.005	0.6	0.3	0.33	<0.005	0.9	0.11	2	<0.0005
321532-4	**SMW_WTP-BH03A**		**21 Apr 2023**	**Water**	**Normal**	6.6	49	84	27	0.043	0.5	0.2	0.23	0.010	0.8	0.04	<1	<0.0005
321713-1	**SMW_ENV009**		**24 Apr 2023**	**Water**	**Normal**	6.9	1,100	1,900	510	7.8	10	0.008	0.008	<0.005	10	<0.005	<1	<0.0005
321713-2	**SMW_BH008_W**		**24 Apr 2023**	**Water**	**Normal**	6.6	13,000	19,000	2,700	2.8	3.3	<0.005	<0.005	<0.005	3.4	<0.005	2	<0.0005
321713-3	**QC05**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	19,000	2,800	2.8	3.4	<0.005	<0.005	<0.005	3.4	0.02	2	<0.0005
321713-4	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	19,000	2,700	2.8	3.4	<0.005	<0.005	<0.005	3.4	0.02	2	<0.0005
ES2316368001	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Interlab_D**	-	-	-	-	-	-	-	-	-	-	-	<1	-

Environmental Standards

ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

Table T6. Groundwater Analytical Results – Freshwater (April 2023 GME)

						Metals												
						pH (Lab)	TDS	Boron (filtered)	Cadmium (filtered)	Chromium (hexavalent) (filtered)	Chromium (III+VI) (filtered)	Cobalt (filtered)	Copper (filtered)	Lead (filtered)	Manganese (filtered)	Mercury (filtered)	Nickel (filtered)	Phosphorus
						-	mg/L	mg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	mg/L
EQL							5	0.02	0.1	0.005	1	0.001	1	1	0.005	0.05	1	0.05
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)								0.37	0.2	0.001			1.4	3.4	1.9	0.6	11	
ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)								0.09	0.06	0.00001			1	1	1.2	0.06	8	
PFAS NEMP 2020 Freshwater 95%																		
NEPM 2013 Table 1C GILs, Fresh Waters								*0.37*	*0.2*	*0.001*			*1.4*	*3.4*	*1.9*	*0.06*	*11*	
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**													
321476-3	**PM-BH14**		**20 Apr 2023**	**Water**	**Normal**	6.7	330	0.1	<0.1	<0.005	<1	<0.001	*2*	<1	<0.005	<0.05	<1	<0.05
321476-4	**PM-BH21**		**20 Apr 2023**	**Water**	**Normal**	6.3	360	0.1	<0.1	<0.005	<1	<0.001	<1	<1	0.011	<0.05	<1	<0.05
321532-1	**SMW_BH004_S**		**21 Apr 2023**	**Water**	**Normal**	6.3	160	0.05	<0.1	<0.005	<1	0.006	*7*	<1	0.055	<0.05	3	0.07
321532-2	**SMW_BH004_W**		**21 Apr 2023**	**Water**	**Normal**	6.6	76	0.02	<0.1	<0.005	<1	<0.001	*9*	<1	0.008	<0.05	*27*	0.08
321532-3	**SMW_WTP-BH02**		**21 Apr 2023**	**Water**	**Normal**	9.6	510	<0.02	<0.1	<0.005	3	<0.001	*90*	3	0.007	<0.05	4	0.1
321532-4	**SMW_WTP-BH03A**		**21 Apr 2023**	**Water**	**Normal**	6.6	49	<0.02	<0.1	<0.005	<1	<0.001	*5*	<1	0.019	<0.05	2	0.1
321713-1	**SMW_ENV009**		**24 Apr 2023**	**Water**	**Normal**	6.9	1,100	0.29	<0.1	<0.005	<1	<0.001	<1	<1	0.85	<0.05	<1	0.4
321713-2	**SMW_BH008_W**		**24 Apr 2023**	**Water**	**Normal**	6.6	13,000	0.1	<0.1	<0.005	<1	<0.001	*51*	<1	0.086	<0.05	<1	<0.05
321713-3	**QC05**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	0.1	0.1	<0.005	<1	<0.001	*73*	<1	0.089	<0.05	<1	<0.05
321713-4	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	0.1	<0.1	<0.005	<1	<0.001	*61*	<1	0.089	<0.05	<1	<0.05
ES2316368001	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Interlab_D**	-	-	-	<0.1	-	<1	-	*33*	<1	-	<0.1	2	-

Environmental Standards
ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

									BTEX									
	pH (Lab)	TDS	Selenium (filtered)	Zinc (filtered)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Naphthalene	Naphthalene (BTEX)	C6-C10	C6-C10 (F1 minus BTEX)					
	-	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L					
EQL		5	0.001	1	1	1	1	2	1	0.2	1	10	10					
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)			0.011	8	950	180	80		350	16	16							
ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)			0.005	2.4	600	110	50		200	2.5	2.5							
PFAS NEMP 2020 Freshwater 95%																		
NEPM 2013 Table 1C GILs, Fresh Waters			*0.005*	*8*	*950*				*350*	*16*	*16*							
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**													
321476-3	**PM-BH14**		**20 Apr 2023**	**Water**	**Normal**	6.7	330	0.004	5	<1	<1	<1	<2	<1	<0.2	<1	<10	<10
321476-4	**PM-BH21**		**20 Apr 2023**	**Water**	**Normal**	6.3	360	0.001	*10*	<1	<1	<1	<2	<1	<0.2	<1	<10	<10
321532-1	**SMW_BH004_S**		**21 Apr 2023**	**Water**	**Normal**	6.3	160	0.003	*30*	<1	<1	<1	<2	<1	<0.2	<1	<10	<10
321532-2	**SMW_BH004_W**		**21 Apr 2023**	**Water**	**Normal**	6.6	76	<0.001	*9*	<1	<1	<1	<2	<1	<0.2	<1	<10	<10
321532-3	**SMW_WTP-BH02**		**21 Apr 2023**	**Water**	**Normal**	9.6	510	<0.001	*13*	<1	<1	<1	<2	<1	<0.2	<1	<10	<10
321532-4	**SMW_WTP-BH03A**		**21 Apr 2023**	**Water**	**Normal**	6.6	49	<0.001	*24*	<1	<1	<1	<2	<1	<0.2	<1	<10	<10
321713-1	**SMW_ENV009**		**24 Apr 2023**	**Water**	**Normal**	6.9	1,100	<0.001	<1	<1	<1	<1	<2	<1	<0.2	<1	<10	<10
321713-2	**SMW_BH008_W**		**24 Apr 2023**	**Water**	**Normal**	6.6	13,000	<0.001	4	<1	<1	<1	<2	<1	<0.2	<1	<10	<10
321713-3	**QC05**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	<0.001	4	<1	<1	<1	<2	<1	<0.2	<1	<10	<10
321713-4	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	<0.001	3	<1	<1	<1	<2	<1	<0.2	<1	<10	<10
ES2316368001	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Interlab_D**	-	-	-	<5	-	-	-	-	-	-	-	-	-

Environmental Standards

ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

						TRH							MAH					
						pH (Lab)	TDS	C10-C16	C10-C16 (F2 minus Naphthalene)	C16-C34	C34-C40	C10-C40 (Sum of total)	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene	n-butylbenzene	n-propylbenzene	p-isopropyltoluene
						-	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL							5	50	50	100	100	50	1	1	1	1	1	1
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)															30			
ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)															20			
PFAS NEMP 2020 Freshwater 95%																		
NEPM 2013 Table 1C GILs, Fresh Waters																		
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**													
321476-3	**PM-BH14**		**20 Apr 2023**	**Water**	**Normal**	6.7	330	<50	<50	<100	<100	<50	<1	<1	<1	<1	<1	<1
321476-4	**PM-BH21**		**20 Apr 2023**	**Water**	**Normal**	6.3	360	<50	<50	<100	<100	<50	<1	<1	<1	<1	<1	<1
321532-1	**SMW_BH004_S**		**21 Apr 2023**	**Water**	**Normal**	6.3	160	<50	<50	<100	<100	<50	<1	<1	<1	<1	<1	<1
321532-2	**SMW_BH004_W**		**21 Apr 2023**	**Water**	**Normal**	6.6	76	<50	<50	130	<100	130	<1	<1	<1	<1	<1	<1
321532-3	**SMW_WTP-BH02**		**21 Apr 2023**	**Water**	**Normal**	9.6	510	600	600	590	<100	1,200	<1	<1	<1	<1	<1	<1
321532-4	**SMW_WTP-BH03A**		**21 Apr 2023**	**Water**	**Normal**	6.6	49	700	700	700	<100	1,400	<1	<1	<1	<1	<1	<1
321713-1	**SMW_ENV009**		**24 Apr 2023**	**Water**	**Normal**	6.9	1,100	<50	<50	<100	<100	<50	<1	<1	<1	<1	<1	<1
321713-2	**SMW_BH008_W**		**24 Apr 2023**	**Water**	**Normal**	6.6	13,000	<50	<50	<100	<100	<50	<1	<1	<1	<1	<1	<1
321713-3	**QC05**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	<50	<50	<100	<100	<50	<1	<1	<1	<1	<1	<1
321713-4	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	<50	<50	<100	<100	<50	<1	<1	<1	<1	<1	<1
ES2316368001	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Interlab_D**	-	-	-	-	-	-	-	-	-	-	-	-	-

Environmental Standards

ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

										Halogenated Hydrocarbons							
	pH (Lab)	TDS	sec-butylbenzene	Styrene	tert-butylbenzene	1,2-dibromoethane	Bromomethane	Dichlorodifluoromethane	Trichlorofluoromethane	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane
	-	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL		5	1	1	1	1	2	10	10	1	1	1	1
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)											270	400	6,500
ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)											130	200	5,400
PFAS NEMP 2020 Freshwater 95%													
NEPM 2013 Table 1C GILs, Fresh Waters													*6,500*

Sample Code	Field ID	Parent Sample	Date	Matrix Type	Sample Type												
321476-3	**PM-BH14**		**20 Apr 2023**	**Water**	**Normal**	6.7	330	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1	<1
321476-4	**PM-BH21**		**20 Apr 2023**	**Water**	**Normal**	6.3	360	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1	<1
321532-1	**SMW_BH004_S**		**21 Apr 2023**	**Water**	**Normal**	6.3	160	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1	<1
321532-2	**SMW_BH004_W**		**21 Apr 2023**	**Water**	**Normal**	6.6	76	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1	<1
321532-3	**SMW_WTP-BH02**		**21 Apr 2023**	**Water**	**Normal**	9.6	510	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1	<1
321532-4	**SMW_WTP-BH03A**		**21 Apr 2023**	**Water**	**Normal**	6.6	49	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1	<1
321713-1	**SMW_ENV009**		**24 Apr 2023**	**Water**	**Normal**	6.9	1,100	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1	<1
321713-2	**SMW_BH008_W**		**24 Apr 2023**	**Water**	**Normal**	6.6	13,000	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1	<1
321713-3	**QC05**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1	<1
321713-4	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1	<1
ES2316368001	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Interlab_D**	-	-	-	-	-	-	-	-	-	-	-	-	-

Environmental Standards
ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

																														Chlori
								pH (Lab)	TDS	1,1-dichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	Bromochloromethane	Bromodichloromethane
								-	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL									5	1	1	1	1	1	1	1	1	1	1	1
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)											700					1,900	900	1,100			
ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)											500					1,000	600	700			
PFAS NEMP 2020 Freshwater 95%																					
NEPM 2013 Table 1C GILs, Fresh Waters																					
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**																
321476-3	**PM-BH14**		**20 Apr 2023**	**Water**	**Normal**			6.7	330	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321476-4	**PM-BH21**		**20 Apr 2023**	**Water**	**Normal**			6.3	360	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321532-1	**SMW_BH004_S**		**21 Apr 2023**	**Water**	**Normal**			6.3	160	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321532-2	**SMW_BH004_W**		**21 Apr 2023**	**Water**	**Normal**			6.6	76	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321532-3	**SMW_WTP-BH02**		**21 Apr 2023**	**Water**	**Normal**			9.6	510	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321532-4	**SMW_WTP-BH03A**		**21 Apr 2023**	**Water**	**Normal**			6.6	49	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321713-1	**SMW_ENV009**		**24 Apr 2023**	**Water**	**Normal**			6.9	1,100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321713-2	**SMW_BH008_W**		**24 Apr 2023**	**Water**	**Normal**			6.6	13,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321713-3	**QC05**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**			6.6	14,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321713-4	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**			6.6	14,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ES2316368001	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Interlab_D**			-	-	-	-	-	-	-	-	-	-	-	-	-

Environmental Standards

ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

						ıated Hydrocarbons												
						pH (Lab)	TDS	Bromoform	Carbon tetrachloride	Chlorodibromometha ne	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dibromomethane	Dichloromethane	Hexachlorobutadiene
						-	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL							5	1	1	1	10	1	10	1	1	1	4	0.7
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)									240			770					4,000	
ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)									150			370					3,000	
PFAS NEMP 2020 Freshwater 95%																		
NEPM 2013 Table 1C GILs, Fresh Waters																		
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**													
321476-3	**PM-BH14**		**20 Apr 2023**	**Water**	**Normal**	6.7	330	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321476-4	**PM-BH21**		**20 Apr 2023**	**Water**	**Normal**	6.3	360	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321532-1	**SMW_BH004_S**		**21 Apr 2023**	**Water**	**Normal**	6.3	160	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321532-2	**SMW_BH004_W**		**21 Apr 2023**	**Water**	**Normal**	6.6	76	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321532-3	**SMW_WTP-BH02**		**21 Apr 2023**	**Water**	**Normal**	9.6	510	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321532-4	**SMW_WTP-BH03A**		**21 Apr 2023**	**Water**	**Normal**	6.6	49	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321713-1	**SMW_ENV009**		**24 Apr 2023**	**Water**	**Normal**	6.9	1,100	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321713-2	**SMW_BH008_W**		**24 Apr 2023**	**Water**	**Normal**	6.6	13,000	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321713-3	**QC05**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
321713-4	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	<1	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7
ES2316368001	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Interlab_D**	-	-	-	-	-	-	-	-	-	-	-	-	-

Environmental Standards

ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

						pH (Lab)	TDS	Trichloroethene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Vinyl chloride	Benzo(b+j+k)fluoranthene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene
						-	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL							5	1	1	1	1	0.3	0.0002	0.1	0.1	0.1	0.1	0.1
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)								330	70			100				0.4		0.2
ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)								220	40			70				0.01		0.1
PFAS NEMP 2020 Freshwater 95%																		
NEPM 2013 Table 1C GILs, Fresh Waters																		
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**													
321476-3	**PM-BH14**		**20 Apr 2023**	**Water**	**Normal**	6.7	330	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1
321476-4	**PM-BH21**		**20 Apr 2023**	**Water**	**Normal**	6.3	360	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1
321532-1	**SMW_BH004_S**		**21 Apr 2023**	**Water**	**Normal**	6.3	160	<1	2	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1
321532-2	**SMW_BH004_W**		**21 Apr 2023**	**Water**	**Normal**	6.6	76	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1
321532-3	**SMW_WTP-BH02**		**21 Apr 2023**	**Water**	**Normal**	9.6	510	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1
321532-4	**SMW_WTP-BH03A**		**21 Apr 2023**	**Water**	**Normal**	6.6	49	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1
321713-1	**SMW_ENV009**		**24 Apr 2023**	**Water**	**Normal**	6.9	1,100	<1	<1	<1	<1	<0.3	<0.0002	0.2	<0.1	<0.1	<0.1	<0.1
321713-2	**SMW_BH008_W**		**24 Apr 2023**	**Water**	**Normal**	6.6	13,000	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1
321713-3	**QC05**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1
321713-4	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	<1	<1	<1	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1
ES2316368001	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Interlab_D**	-	-	-	-	-	-	-	-	-	-	-	-	-

Environmental Standards

ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

Table T6. Groundwater Analytical Results – Freshwater (April 2023 GME)

						PAH												
						pH (Lab)	TDS	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ	PAHs (Sum of positives)	C6-C9
						-	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L
EQL							5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0005	0.0001	10
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)											1.4			2				
ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)											1			0.6				
PFAS NEMP 2020 Freshwater 95%																		
NEPM 2013 Table 1C GILs, Fresh Waters																		
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**													
321476-3	**PM-BH14**		**20 Apr 2023**	**Water**	**Normal**	6.7	330	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	<0.0001	<10
321476-4	**PM-BH21**		**20 Apr 2023**	**Water**	**Normal**	6.3	360	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	<0.0001	<10
321532-1	**SMW_BH004_S**		**21 Apr 2023**	**Water**	**Normal**	6.3	160	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	<0.0001	<10
321532-2	**SMW_BH004_W**		**21 Apr 2023**	**Water**	**Normal**	6.6	76	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	<0.0001	<10
321532-3	**SMW_WTP-BH02**		**21 Apr 2023**	**Water**	**Normal**	9.6	510	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	<0.0001	<10
321532-4	**SMW_WTP-BH03A**		**21 Apr 2023**	**Water**	**Normal**	6.6	49	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	<0.0001	<10
321713-1	**SMW_ENV009**		**24 Apr 2023**	**Water**	**Normal**	6.9	1,100	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	0.00018	<10
321713-2	**SMW_BH008_W**		**24 Apr 2023**	**Water**	**Normal**	6.6	13,000	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	<0.0001	<10
321713-3	**QC05**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	<0.0001	<10
321713-4	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0005	<0.0001	<10
ES2316368001	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Interlab_D**	-	-	-	-	-	-	-	-	-	-	-	-	-

Environmental Standards

ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

Table T6. Groundwater Analytical Results – Freshwater (April 2023 GME)

						TPH						PCBs						
						pH (Lab)	TDS	C10-C14	C15-C28	C29-C36	C10-C36 (Sum of total)	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260
						-	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL							5	50	100	100	50	2	2	2	2	2	2	2
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)															0.6		0.03	
ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)															0.3		0.01	
PFAS NEMP 2020 Freshwater 95%																		
NEPM 2013 Table 1C GILs, Fresh Waters															*0.3*		*0.01*	
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**													
321476-3	**PM-BH14**		**20 Apr 2023**	**Water**	**Normal**	6.7	330	<50	<100	<100	<50	<2	<2	<2	<2	<2	<2	<2
321476-4	**PM-BH21**		**20 Apr 2023**	**Water**	**Normal**	6.3	360	<50	<100	<100	<50	<2	<2	<2	<2	<2	<2	<2
321532-1	**SMW_BH004_S**		**21 Apr 2023**	**Water**	**Normal**	6.3	160	<50	<100	<100	<50	<2	<2	<2	<2	<2	<2	<2
321532-2	**SMW_BH004_W**		**21 Apr 2023**	**Water**	**Normal**	6.6	76	<50	<100	<100	<50	<2	<2	<2	<2	<2	<2	<2
321532-3	**SMW_WTP-BH02**		**21 Apr 2023**	**Water**	**Normal**	9.6	510	200	830	250	1,300	<2	<2	<2	<2	<2	<2	<2
321532-4	**SMW_WTP-BH03A**		**21 Apr 2023**	**Water**	**Normal**	6.6	49	96	1,100	300	1,500	<2	<2	<2	<2	<2	<2	<2
321713-1	**SMW_ENV009**		**24 Apr 2023**	**Water**	**Normal**	6.9	1,100	<50	<100	<100	<50	<2	<2	<2	<2	<2	<2	<2
321713-2	**SMW_BH008_W**		**24 Apr 2023**	**Water**	**Normal**	6.6	13,000	<50	<100	<100	<50	<2	<2	<2	<2	<2	<2	<2
321713-3	**QC05**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	<50	<100	<100	<50	<2	<2	<2	<2	<2	<2	<2
321713-4	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	<50	<100	<100	<50	<2	<2	<2	<2	<2	<2	<2
ES2316368001	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Interlab_D**	-	-	-	-	-	-	-	-	-	-	-	-	-

Environmental Standards
ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

								Perfluoroalkyl Sulfonic Acids			Perfluoroalkyl Carboxylic Acid	Fluorotelomer Sulfonic Acids		PFAS Totals		Solvents
						pH (Lab)	TDS	Perfluorohexane sulfonic acid (PFHxS)	Perfluorooctanesulfonic acid (PFOS)	Sum of PFHxS and PFOS	Perfluorooctanoic acid (PFOA)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of PFAS	Cyclohexane
						-	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
EQL							5	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.001
ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)																
ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)																
PFAS NEMP 2020 Freshwater 95%									0.13		220					
NEPM 2013 Table 1C GILs, Fresh Waters																
Sample Code	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**	**Sample Type**											
321476-3	**PM-BH14**		**20 Apr 2023**	**Water**	**Normal**	6.7	330	0.18	0.23	0.41	0.15	<0.01	<0.02	0.39	0.56	<0.001
321476-4	**PM-BH21**		**20 Apr 2023**	**Water**	**Normal**	6.3	360	<0.01	0.04	0.04	0.02	<0.01	<0.02	0.06	0.06	<0.001
321532-1	**SMW_BH004_S**		**21 Apr 2023**	**Water**	**Normal**	6.3	160	<0.01	0.02	0.02	0.03	<0.01	<0.02	0.05	0.05	<0.001
321532-2	**SMW_BH004_W**		**21 Apr 2023**	**Water**	**Normal**	6.6	76	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.001
321532-3	**SMW_WTP-BH02**		**21 Apr 2023**	**Water**	**Normal**	9.6	510	<0.01	0.01	0.01	<0.01	<0.01	<0.02	0.01	0.01	<0.001
321532-4	**SMW_WTP-BH03A**		**21 Apr 2023**	**Water**	**Normal**	6.6	49	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.001
321713-1	**SMW_ENV009**		**24 Apr 2023**	**Water**	**Normal**	6.9	1,100	0.01	0.01	0.02	<0.01	<0.01	<0.02	0.01	0.02	<0.001
321713-2	**SMW_BH008_W**		**24 Apr 2023**	**Water**	**Normal**	6.6	13,000	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.001
321713-3	**QC05**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.001
321713-4	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Field_D**	6.6	14,000	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.001
ES2316368001	**QC06**	**SMW_BH008_W**	**24 Apr 2023**	**Water**	**Interlab_D**	-	-	-	-	-	-	-	-	-	-	-

Environmental Standards

ANZG, March 2021, ANZG (2018) Freshwater 95% LOSP Toxicant DGVs (March 2021)
ANZG, March 2021, ANZG (2018) Freshwater 99% LOSP Toxicant DGVs (March 2021)
HEPA, January 2020, PFAS NEMP 2020 Freshwater 95%
2013, NEPM 2013 Table 1C GILs, Fresh Waters

Table T7. Rinsate and Trip Blank Results (April 2023 GME)

						Physico-Chemical & Major Ions													
						pH (Lab)	TDS	Chloride	Sulphate	Alkalinity (Hydroxide) as CaCO3	Carbonate as CaCO3	Bicarbonate as CaCO3	Alkalinity (total) as CaCO3	Calcium (filtered)	Magnesium (filtered)	Sodium (filtered)	Potassium (filtered)	Ionic Balance
						-	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%
EQL							5	1	1	5	5	5	5	0.5	0.5	0.5	0.5	
Sample Code	**Location Code**	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**													
321086-8		**R01**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321086-7		**TB**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321086-6		**TS**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321264-5		**R02**		**18 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321264-7		**TB**		**18 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321257-4		**R03**		**19 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321257-7		**TB**		**19 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321476-5		**RB04**		**20 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321476-2		**TB031**		**20 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321713-5		**RB06**		**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321713-6		**TB40**		**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-

Table T7. Rinsate and Trip Blank Results (April 2023 GME)

						Inorganics		Nutrients										
						Electrical Conductivity (Non Compensated)	Hardness (filtered)	Ammonia as N (filtered)	Kjeldahl Nitrogen Total	Nitrogen (Total Oxidised)	Nitrate (as N) (filtered)	Nitrite (as N) (filtered)	Nitrogen (Total)	Reactive Phosphorus as P (Orthophosphate as P) (filtered)	Arsenic (filtered)	Cadmium (filtered)	Chromium (hexavalent) (filtered)	Chromium (III+VI) (filtered)
						µS/cm	mgCaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	mg/L	µg/L
EQL						1		0.005	0.1	0.005	0.005	0.005	0.1	0.005	1	0.1	0.005	1
Sample Code	**Location Code**	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**													
321086-8		**R01**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	<1	<0.1	-	<1
321086-7		**TB**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321086-6		**TS**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321264-5		**R02**		**18 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	<1	<0.1	-	<1
321264-7		**TB**		**18 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321257-4		**R03**		**19 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	<1	<0.1	-	<1
321257-7		**TB**		**19 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321476-5		**RB04**		**20 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	<1	<0.1	-	<1
321476-2		**TB031**		**20 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321713-5		**RB06**		**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	<1	<0.1	-	<1
321713-6		**TB40**		**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-

Table T7. Rinsate and Trip Blank Results (April 2023 GME)

						Metals													
						Copper (filtered)	Lead (filtered)	Manganese (filtered)	Mercury (filtered)	Nickel (filtered)	Phosphorus	Selenium (filtered)	Zinc (filtered)	Benzene		Toluene		Ethylbenzene
						µg/L	µg/L	mg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	%	µg/L	%	µg/L
EQL						1	1	0.005	0.05	1	0.05	0.001	1	1	1	1	1	1
Sample Code	**Location Code**	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**													
321086-8		**R01**		**17 Apr 2023**	**Water**	<1	<1	-	<0.05	<1	-	-	<1	<1	-	<1	-	<1
321086-7		**TB**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	<1	-	<1	-	<1
321086-6		**TS**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	114	-	108	-
321264-5		**R02**		**18 Apr 2023**	**Water**	<1	<1	<0.005	<0.05	<1	-	<0.001	<1	<1	-	<1	-	<1
321264-7		**TB**		**18 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	<1	-	<1	-	<1
321257-4		**R03**		**19 Apr 2023**	**Water**	<1	<1	<0.005	<0.05	<1	-	<0.001	<1	<1	-	<1	-	<1
321257-7		**TB**		**19 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	<1	-	<1	-	<1
321476-5		**RB04**		**20 Apr 2023**	**Water**	<1	<1	<0.005	<0.05	<1	-	<0.001	<1	<1	-	<1	-	<1
321476-2		**TB031**		**20 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	<1	-	<1	-	<1
321713-5		**RB06**		**24 Apr 2023**	**Water**	<1	<1	-	<0.05	<1	-	-	<1	<1	-	<1	-	<1
321713-6		**TB40**		**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	<1	-	<1	-	<1

Table T7. Rinsate and Trip Blank Results (April 2023 GME)

						BTEX							TRH					
						Ethylbenzene	Xylene (m & p)		Xylene (o)		Naphthalene	Naphthalene (BTEX)	C6-C10	C6-C10 (F1 minus BTEX)	C10-C16	C10-C16 (F2 minus Naphthalene)	C16-C34	C34-C40
						%	µg/L	%	µg/L	%	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL						1	2	2	1	1	0.2	1	10	10	50	50	100	100
Sample Code	**Location Code**	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**													
321086-8		**R01**		**17 Apr 2023**	**Water**	-	<2	-	<1	-	-	<1	<10	<10	<50	<50	<100	<100
321086-7		**TB**		**17 Apr 2023**	**Water**	-	<2	-	<1	-	-	<1	<10	<10	-	-	-	-
321086-6		**TS**		**17 Apr 2023**	**Water**	118	-	107	-	108	-	-	-	-	-	-	-	-
321264-5		**R02**		**18 Apr 2023**	**Water**	-	<2	-	<1	-	-	<1	<10	<10	<50	<50	<100	<100
321264-7		**TB**		**18 Apr 2023**	**Water**	-	<2	-	<1	-	-	<1	<10	<10	-	-	-	-
321257-4		**R03**		**19 Apr 2023**	**Water**	-	<2	-	<1	-	-	<1	<10	<10	<50	<50	<100	<100
321257-7		**TB**		**19 Apr 2023**	**Water**	-	<2	-	<1	-	-	<1	<10	<10	-	-	-	-
321476-5		**RB04**		**20 Apr 2023**	**Water**	-	<2	-	<1	-	-	<1	<10	<10	<50	<50	<100	<100
321476-2		**TB031**		**20 Apr 2023**	**Water**	-	<2	-	<1	-	-	<1	<10	<10	-	-	-	-
321713-5		**RB06**		**24 Apr 2023**	**Water**	-	<2	-	<1	-	-	<1	<10	<10	<50	<50	<100	<100
321713-6		**TB40**		**24 Apr 2023**	**Water**	-	<2	-	<1	-	-	<1	<10	<10	-	-	-	-

Table T7. Rinsate and Trip Blank Results (April 2023 GME)

							MAH										Halogenated Hydrocarbon		
						C10-C40 (Sum of total)	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene	n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	tert-butylbenzene	1,2-dibromoethane	Bromomethane	Dichlorodifluoromethane
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL						50	1	1	1	1	1	1	1	1	1	1	2	10
Sample Code	**Location Code**	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**													
321086-8		**R01**		**17 Apr 2023**	**Water**	<50	-	-	-	-	-	-	-	-	-	-	-	-
321086-7		**TB**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321086-6		**TS**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321264-5		**R02**		**18 Apr 2023**	**Water**	<50	-	-	-	-	-	-	-	-	-	-	-	-
321264-7		**TB**		**18 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321257-4		**R03**		**19 Apr 2023**	**Water**	<50	-	-	-	-	-	-	-	-	-	-	-	-
321257-7		**TB**		**19 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321476-5		**RB04**		**20 Apr 2023**	**Water**	<50	-	-	-	-	-	-	-	-	-	-	-	-
321476-2		**TB031**		**20 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321713-5		**RB06**		**24 Apr 2023**	**Water**	<50	-	-	-	-	-	-	-	-	-	-	-	-
321713-6		**TB40**		**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-

Table T7. Rinsate and Trip Blank Results (April 2023 GME)

						s													
						Trichlorofluoromethane	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL						10	1	1	1	1	1	1	1	1	1	1	1	1
Sample Code	**Location Code**	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**													
321086-8		**R01**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321086-7		**TB**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321086-6		**TS**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321264-5		**R02**		**18 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321264-7		**TB**		**18 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321257-4		**R03**		**19 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321257-7		**TB**		**19 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321476-5		**RB04**		**20 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321476-2		**TB031**		**20 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321713-5		**RB06**		**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321713-6		**TB40**		**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-

Table T7. Rinsate and Trip Blank Results (April 2023 GME)

						Chlorinated Hydrocarbons												
						2,2-dichloropropane	Bromochloromethane	Bromodichloromethane	Bromoform	Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dibromomethane	Dichloromethane
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL						1	1	1	1	1	1	10	1	10	1	1	1	4
Sample Code	**Location Code**	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**													
321086-8		**R01**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321086-7		**TB**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321086-6		**TS**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321264-5		**R02**		**18 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321264-7		**TB**		**18 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321257-4		**R03**		**19 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321257-7		**TB**		**19 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321476-5		**RB04**		**20 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321476-2		**TB031**		**20 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321713-5		**RB06**		**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321713-6		**TB40**		**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-

Table T7. Rinsate and Trip Blank Results (April 2023 GME)

						Hexachlorobutadiene	Trichloroethene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Vinyl chloride	Benzo(b+j+k)fluoranthene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL						0.7	1	1	1	1	0.3	0.0002	0.1	0.1	0.1	0.1	0.1	0.1
Sample Code	**Location Code**	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**													
321086-8		**R01**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321086-7		**TB**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321086-6		**TS**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321264-5		**R02**		**18 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321264-7		**TB**		**18 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321257-4		**R03**		**19 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321257-7		**TB**		**19 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321476-5		**RB04**		**20 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321476-2		**TB031**		**20 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321713-5		**RB06**		**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321713-6		**TB40**		**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-

Table T7. Rinsate and Trip Blank Results (April 2023 GME)

						PAH									TPH			
						Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ	PAHs (Sum of positives)	C6-C9	C10-C14	C15-C28	C29-C36
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L
EQL						0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0005	0.0001	10	50	100	100
Sample Code	**Location Code**	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**													
321086-8		**R01**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	<10	<50	<100	<100
321086-7		**TB**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	<10	-	-	-
321086-6		**TS**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321264-5		**R02**		**18 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	<10	<50	<100	<100
321264-7		**TB**		**18 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	<10	-	-	-
321257-4		**R03**		**19 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	<10	<50	<100	<100
321257-7		**TB**		**19 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	<10	-	-	-
321476-5		**RB04**		**20 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	<10	<50	<100	<100
321476-2		**TB031**		**20 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	<10	-	-	-
321713-5		**RB06**		**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	<10	<50	<100	<100
321713-6		**TB40**		**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	<10	-	-	-

Table T7. Rinsate and Trip Blank Results (April 2023 GME)

							PCBs								Perfluoroalkyl Sulfonic Acids			Perfluoroalkyl Carboxylic Acid	Fluorotelon Ac
						C10-C36 (Sum of total)	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Perfluorohexane sulfonic acid (PFHxS)	Perfluorooctanesulfonic acid (PFOS)	Sum of PFHxS and PFOS	Perfluorooctanoic acid (PFOA)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL						50	2	2	2	2	2	2	2	0.01	0.01	0.01	0.01	0.01
Sample Code	**Location Code**	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**													
321086-8		**R01**		**17 Apr 2023**	**Water**	<50	-	-	-	-	-	-	-	-	-	-	-	-
321086-7		**TB**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321086-6		**TS**		**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321264-5		**R02**		**18 Apr 2023**	**Water**	<50	-	-	-	-	-	-	-	-	-	-	-	-
321264-7		**TB**		**18 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321257-4		**R03**		**19 Apr 2023**	**Water**	<50	-	-	-	-	-	-	-	-	-	-	-	-
321257-7		**TB**		**19 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321476-5		**RB04**		**20 Apr 2023**	**Water**	<50	-	-	-	-	-	-	-	-	-	-	-	-
321476-2		**TB031**		**20 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
321713-5		**RB06**		**24 Apr 2023**	**Water**	<50	-	-	-	-	-	-	-	-	-	-	-	-
321713-6		**TB40**		**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-

Table T7. Rinsate and Trip Blank Results (April 2023 GME)

						ner Sulfonic ids	PFAS Totals		Solvents
						8:2 Fluorotelomer sulfonic acid (8:2 FTS)	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of PFAS	Cyclohexane
						µg/L	µg/L	µg/L	mg/L
EQL						0.02	0.01	0.01	0.001
Sample Code	**Location Code**	**Field ID**	**Parent Sample**	**Date**	**Matrix Type**				
321086-8		**R01**		**17 Apr 2023**	**Water**	-	-	-	-
321086-7		**TB**		**17 Apr 2023**	**Water**	-	-	-	-
321086-6		**TS**		**17 Apr 2023**	**Water**	-	-	-	-
321264-5		**R02**		**18 Apr 2023**	**Water**	-	-	-	-
321264-7		**TB**		**18 Apr 2023**	**Water**	-	-	-	-
321257-4		**R03**		**19 Apr 2023**	**Water**	-	-	-	-
321257-7		**TB**		**19 Apr 2023**	**Water**	-	-	-	-
321476-5		**RB04**		**20 Apr 2023**	**Water**	-	-	-	-
321476-2		**TB031**		**20 Apr 2023**	**Water**	-	-	-	-
321713-5		**RB06**		**24 Apr 2023**	**Water**	-	-	-	-
321713-6		**TB40**		**24 Apr 2023**	**Water**	-	-	-	-

Table T8. RPD Summary Table (April 2023 GME)

				Physico-Chemical & Major Ions												
				pH (Lab)	Electrical Conductivity (Lab)	Total Dissolved Solids (Calc.)	TDS	Chloride	Sulfate as SO4 - Turbidimetric (filtered)	Sulphate	Alkalinity (Hydroxide) as CaCO3	Carbonate as CaCO3	Bicarbonate as CaCO3	Alkalinity (total) as CaCO3	Calcium (filtered)	Magnesium (filtered)
				-	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL				0.01	1	1	5	1	1	1	1	1	1	1	0.5	0.5
Lab Report Number	**Field ID**	**Date**	**Matrix Type**													
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	6.6	-	-	3,600	520	-	1,500	<5	<5	520	520	630	65
321086	**QC01**	**17 Apr 2023**	**Water**	6.6	-	-	3,400	390	-	1,700	<5	<5	480	480	620	61
RPD				0	-	-	6	29	-	12	0	0	8	8	2	6
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	6.6	-	-	3,600	520	-	1,500	<5	<5	520	520	630	65
ES2312848	**QC02**	**17 Apr 2023**	**Water**	7.03	3,280	2,130	-	358	1,620	-	<1	<1	499	499	644	67
RPD				6	-	-	-	37	-	-	0	0	4	4	2	3
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	6.4	-	-	6,600	3,700	-	360	<5	<5	230	230	60	210
321257	**QC03**	**19 Apr 2023**	**Water**	6.4	-	-	6,400	3,800	-	380	<5	<5	230	230	64	230
RPD				0	-	-	3	3	-	5	0	0	0	0	6	9
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	6.4	-	-	6,600	3,700	-	360	<5	<5	230	230	60	210
ES2313090	**QC04**	**19 Apr 2023**	**Water**	6.80	10,400	6,760	-	3,660	338	-	<1	<1	242	242	73	206
RPD				6	-	-	-	1	-	-	0	0	5	5	20	2
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	6.6	-	-	13,000	6,900	-	400	<5	<5	1,000	1,000	280	500
321713	**QC06**	**24 Apr 2023**	**Water**	6.6	-	-	14,000	7,300	-	420	<5	<5	1,100	1,100	280	500
RPD				0	-	-	7	6	-	5	0	0	10	10	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	6.6	-	-	13,000	6,900	-	400	<5	<5	1,000	1,000	280	500
321713	**QC05**	**24 Apr 2023**	**Water**	6.6	-	-	14,000	7,300	-	420	<5	<5	1,100	1,100	280	500
RPD				0	-	-	7	6	-	5	0	0	10	10	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	6.6	-	-	13,000	6,900	-	400	<5	<5	1,000	1,000	280	500
ES2316368	**QC06**	**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**

****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 50 (1 - 10 x EQL); 50 (10 - 30 x EQL); 50 (> 30 x EQL))**

*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

Table T8. RPD Summary Table (April 2023 GME)

											Inorganics					
				Sodium (filtered)	Potassium (filtered)	Fluoride	Anions Total	Cations Total	Ionic Balance	Hardness as CaCO3 (filtered)	Electrical Conductivity (Non Compensated)	Hardness (filtered)	Ammonia as N	Ammonia as N (filtered)	Kjeldahl Nitrogen Total	Nitrate (as N)
				mg/L	mg/L	mg/L	meq/L	meq/L	%	mg/L	µS/cm	mgCaCO3/L	mg/L	mg/L	mg/L	mg/L
EQL				0.5	0.5	0.1	0.01	0.01	0.01	1	1		0.005	0.005	0.1	0.005
Lab Report Number	**Field ID**	**Date**	**Matrix Type**													
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	200	10	-	-	-	-10	-	4,100	1,800	-	0.91	1.4	-
321086	**QC01**	**17 Apr 2023**	**Water**	190	9.6	-	-	-	-11	-	3,700	1,800	-	0.79	1.4	-
RPD				5	4	-	-	-	10	-	10	0	-	14	0	-
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	200	10	-	-	-	-10	-	4,100	1,800	-	0.91	1.4	-
ES2312848	**QC02**	**17 Apr 2023**	**Water**	216	10	0.4	53.8	47.3	6.42	1,880	-	-	0.76	-	-	<0.01
RPD				8	0	-	-	-	917	-	-	-	-	-	-	-
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	1,800	11	-	-	-	-8.0	-	10,000	1,000	-	0.057	0.2	-
321257	**QC03**	**19 Apr 2023**	**Water**	1,800	12	-	-	-	-8.0	-	11,000	1,100	-	0.057	0.2	-
RPD				0	9	-	-	-	0	-	10	10	-	0	0	-
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	1,800	11	-	-	-	-8.0	-	10,000	1,000	-	0.057	0.2	-
ES2313090	**QC04**	**19 Apr 2023**	**Water**	1,810	10	0.1	115	99.6	7.23	1,030	-	-	0.06	-	-	<0.01
RPD				1	10	-	-	-	3,956	-	-	-	-	-	-	-
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	3,500	59	-	-	-	-3.0	-	19,000	2,700	-	2.8	3.3	-
321713	**QC06**	**24 Apr 2023**	**Water**	3,600	59	-	-	-	-5.0	-	19,000	2,700	-	2.8	3.4	-
RPD				3	0	-	-	-	50	-	0	0	-	0	3	-
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	3,500	59	-	-	-	-3.0	-	19,000	2,700	-	2.8	3.3	-
321713	**QC05**	**24 Apr 2023**	**Water**	3,600	59	-	-	-	-5.0	-	19,000	2,800	-	2.8	3.4	-
RPD				3	0	-	-	-	50	-	0	4	-	0	3	-
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	3,500	59	-	-	-	-3.0	-	19,000	2,700	-	2.8	3.3	-
ES2316368	**QC06**	**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any me**

Table T8. RPD Summary Table (April 2023 GME)

				Nutrients													
				Nitrate (as N) (filtered)	Nitrite (as N)	Nitrite (as N) (filtered)	Nitrite + Nitrate as N	Nitrogen (Total)	Reactive Phosphorus as P (Orthophosphate as P)	Reactive Phosphorus as P (Orthophosphate as P) (filtered)	Aluminium (filtered)	Arsenic (filtered)	Cadmium (filtered)	Chromium (hexavalent) (filtered)	Chromium (III+VI) (filtered)	Copper (filtered)
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L
EQL				0.005	0.005	0.005	0.01	0.1	0.005	0.005	0.01	1	0.1	0.005	1	1
Lab Report Number	**Field ID**	**Date**	**Matrix Type**													
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	<0.005	-	<0.005	-	1.4	-	<0.005	-	1	<0.1	<0.005	<1	<1
321086	**QC01**	**17 Apr 2023**	**Water**	<0.005	-	<0.005	-	1.4	-	<0.005	-	<1	<0.1	<0.005	<1	<1
RPD				0	-	0	-	0	-	0	-	0	0	0	0	0
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	<0.005	-	<0.005	-	1.4	-	<0.005	-	1	<0.1	<0.005	<1	<1
ES2312848	**QC02**	**17 Apr 2023**	**Water**	-	<0.01	-	<0.01	-	<0.01	-	<0.01	<1	<0.1	-	<1	<1
RPD				-	-	-	-	-	-	-	-	0	0	-	0	0
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	<0.005	-	<0.005	-	0.2	-	<0.005	-	1	<0.1	<0.005	<1	<1
321257	**QC03**	**19 Apr 2023**	**Water**	<0.005	-	<0.005	-	0.2	-	<0.005	-	1	<0.1	<0.005	<1	<1
RPD				0	-	0	-	0	-	0	-	0	0	0	0	0
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	<0.005	-	<0.005	-	0.2	-	<0.005	-	1	<0.1	<0.005	<1	<1
ES2313090	**QC04**	**19 Apr 2023**	**Water**	-	<0.01	-	<0.01	-	<0.01	-	<0.01	1	<0.1	-	<1	<1
RPD				-	-	-	-	-	-	-	-	0	0	-	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<0.005	-	<0.005	-	3.4	-	<0.005	-	2	<0.1	<0.005	<1	51
321713	**QC06**	**24 Apr 2023**	**Water**	<0.005	-	<0.005	-	3.4	-	0.02	-	2	<0.1	<0.005	<1	61
RPD				0	-	0	-	0	-	120	-	0	0	0	0	18
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<0.005	-	<0.005	-	3.4	-	<0.005	-	2	<0.1	<0.005	<1	51
321713	**QC05**	**24 Apr 2023**	**Water**	<0.005	-	<0.005	-	3.4	-	0.02	-	2	0.1	<0.005	<1	73
RPD				0	-	0	-	0	-	120	-	0	0	0	0	35
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<0.005	-	<0.005	-	3.4	-	<0.005	-	2	<0.1	<0.005	<1	51
ES2316368	**QC06**	**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	<1	<0.1	-	<1	33
RPD				-	-	-	-	-	-	-	-	67	0	-	0	43

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any me**

Table T8. RPD Summary Table (April 2023 GME)

				Metals								BTEX				
				Iron (filtered)	Lead (filtered)	Manganese (filtered)	Mercury (filtered)	Nickel (filtered)	Phosphorus	Selenium (filtered)	Zinc (filtered)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)
				mg/L	µg/L	mg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				0.05	1	0.005	0.05	1	0.05	0.001	1	1	1	1	2	1
Lab Report Number	**Field ID**	**Date**	**Matrix Type**													
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	-	<1	1.2	<0.05	9	0.05	<0.001	3	<1	<1	<1	<2	<1
321086	**QC01**	**17 Apr 2023**	**Water**	-	<1	1.1	<0.05	9	<0.05	<0.001	4	<1	<1	<1	<2	<1
RPD				-	0	9	0	0	0	0	29	0	0	0	0	0
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	-	<1	1.2	<0.05	9	0.05	<0.001	3	<1	<1	<1	<2	<1
ES2312848	**QC02**	**17 Apr 2023**	**Water**	4.04	<1	-	<0.1	9	-	<0.01	<5	<1	<2	<2	<2	<2
RPD				-	0	-	0	0	-	0	0	0	0	0	0	0
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	-	<1	0.2	<0.05	6	<0.05	<0.001	1	<1	<1	<1	<2	<1
321257	**QC03**	**19 Apr 2023**	**Water**	-	<1	0.19	<0.05	5	<0.05	<0.001	1	<1	<1	<1	<2	<1
RPD				-	0	5	0	18	0	0	0	0	0	0	0	0
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	-	<1	0.2	<0.05	6	<0.05	<0.001	1	<1	<1	<1	<2	<1
ES2313090	**QC04**	**19 Apr 2023**	**Water**	8.48	<1	-	<0.1	6	-	<0.01	<5	<1	<2	<2	<2	<2
RPD				-	0	-	0	0	-	0	0	0	0	0	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	-	<1	0.086	<0.05	<1	<0.05	<0.001	4	<1	<1	<1	<2	<1
321713	**QC06**	**24 Apr 2023**	**Water**	-	<1	0.089	<0.05	<1	<0.05	<0.001	3	<1	<1	<1	<2	<1
RPD				-	0	3	0	0	0	0	29	0	0	0	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	-	<1	0.086	<0.05	<1	<0.05	<0.001	4	<1	<1	<1	<2	<1
321713	**QC05**	**24 Apr 2023**	**Water**	-	<1	0.089	<0.05	<1	<0.05	<0.001	4	<1	<1	<1	<2	<1
RPD				-	0	3	0	0	0	0	0	0	0	0	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	-	<1	0.086	<0.05	<1	<0.05	<0.001	4	<1	<1	<1	<2	<1
ES2316368	**QC06**	**24 Apr 2023**	**Water**	-	<1	-	<0.1	2	-	-	<5	-	-	-	-	-
RPD				-	0	-	0	67	-	-	0	-	-	-	-	-

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any me**

Table T8. RPD Summary Table (April 2023 GME)

							TRH									
				Xylene Total	Naphthalene	Naphthalene (BTEX)	C6-C10	C6-C10 (F1 minus BTEX)	C10-C16	C10-C16 (F2 minus Naphthalene)	C16-C34	C34-C40	C10-C40 (Sum of total)	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				2	0.2	1	10	10	50	50	100	100	50	1	1	1
Lab Report Number	**Field ID**	**Date**	**Matrix Type**													
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1
321086	**QC01**	**17 Apr 2023**	**Water**	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1
RPD				-	0	0	0	0	0	0	0	0	0	0	0	0
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1
ES2312848	**QC02**	**17 Apr 2023**	**Water**	<2	<1.0	<5	<20	<20	<100	<100	<100	<100	<100	-	-	-
RPD				-	0	0	0	0	0	0	0	0	0	-	-	-
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1
321257	**QC03**	**19 Apr 2023**	**Water**	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1
RPD				-	0	0	0	0	0	0	0	0	0	0	0	0
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1
ES2313090	**QC04**	**19 Apr 2023**	**Water**	<2	<1.0	<5	<20	<20	<100	<100	<100	<100	<100	-	-	-
RPD				-	0	0	0	0	0	0	0	0	0	-	-	-
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1
321713	**QC06**	**24 Apr 2023**	**Water**	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1
RPD				-	0	0	0	0	0	0	0	0	0	0	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1
321713	**QC05**	**24 Apr 2023**	**Water**	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1
RPD				-	0	0	0	0	0	0	0	0	0	0	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	-	<0.2	<1	<10	<10	<50	<50	<100	<100	<50	<1	<1	<1
ES2316368	**QC06**	**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any me**

Table T8. RPD Summary Table (April 2023 GME)

				MAH						Halogenated Hydrocarbons						
				n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	tert-butylbenzene	1,2-dibromoethane	Bromomethane	Dichlorodifluoromethane	Trichlorofluoromethane	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				1	1	1	1	1	1	1	2	10	10	1	1	1
Lab Report Number	**Field ID**	**Date**	**Matrix Type**													
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1
321086	**QC01**	**17 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1
ES2312848	**QC02**	**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1
321257	**QC03**	**19 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1
ES2313090	**QC04**	**19 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1
321713	**QC06**	**24 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1
321713	**QC05**	**24 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<2	<10	<10	<1	<1	<1
ES2316368	**QC06**	**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any me**

Table T8. RPD Summary Table (April 2023 GME)

				Chlorinated Hydroc												
				1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	Bromochloromethane	Bromodichloromethane	Bromoform
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				1	1	1	1	1	1	1	1	1	1	1	1	1
Lab Report Number	**Field ID**	**Date**	**Matrix Type**													
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321086	**QC01**	**17 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ES2312848	**QC02**	**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321257	**QC03**	**19 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ES2313090	**QC04**	**19 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321713	**QC06**	**24 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
321713	**QC05**	**24 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ES2316368	**QC06**	**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**

****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range**

*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any me**

Table T8. RPD Summary Table (April 2023 GME)

				arbons												
				Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dibromomethane	Dichloromethane	Hexachlorobutadiene	Trichloroethene	Tetrachloroethene	trans-1,2-dichloroethene
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				1	1	10	1	10	1	1	1	4	0.7	1	1	1
Lab Report Number	**Field ID**	**Date**	**Matrix Type**													
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7	<1	<1	<1
321086	**QC01**	**17 Apr 2023**	**Water**	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7	<1	<1	<1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7	<1	<1	<1
ES2312848	**QC02**	**17 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7	<1	<1	<1
321257	**QC03**	**19 Apr 2023**	**Water**	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7	<1	<1	<1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7	<1	<1	<1
ES2313090	**QC04**	**19 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7	<1	<1	<1
321713	**QC06**	**24 Apr 2023**	**Water**	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7	<1	<1	<1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7	<1	<1	<1
321713	**QC05**	**24 Apr 2023**	**Water**	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7	<1	<1	<1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<1	<1	<10	<1	<10	<1	<1	<1	<4	<0.7	<1	<1	<1
ES2316368	**QC06**	**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any me**

Table T8. RPD Summary Table (April 2023 GME)

						PAH										
				trans-1,3-dichloropropene	Vinyl chloride	Benzo(b+j+k)fluoranthene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene
				µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				1	0.3	0.0002	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Lab Report Number	**Field ID**	**Date**	**Matrix Type**													
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
321086	**QC01**	**17 Apr 2023**	**Water**	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
ES2312848	**QC02**	**17 Apr 2023**	**Water**	-	-	-	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0
RPD				-	-	-	0	0	0	0	0	0	0	0	0	0
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
321257	**QC03**	**19 Apr 2023**	**Water**	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
ES2313090	**QC04**	**19 Apr 2023**	**Water**	-	-	-	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0
RPD				-	-	-	0	0	0	0	0	0	0	0	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
321713	**QC06**	**24 Apr 2023**	**Water**	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
321713	**QC05**	**24 Apr 2023**	**Water**	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<1	<0.3	<0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
ES2316368	**QC06**	**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any me**

Table T8. RPD Summary Table (April 2023 GME)

										TPH						
				Indeno(1,2,3-c,d)pyrene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ	Benzo(a)pyrene TEQ calc (Zero)	PAHs (Sum of positives)	C6-C9	C10-C14	C15-C28	C29-C36	C10-C36 (Sum of total)	Arochlor 1016	Arochlor 1221
				µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				0.1	0.1	0.1	0.0005	0.0005	0.0001	10	50	100	50	50	2	2
Lab Report Number	**Field ID**	**Date**	**Matrix Type**													
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100	<50	<2	<2
321086	**QC01**	**17 Apr 2023**	**Water**	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100	<50	<2	<2
RPD				0	0	0	0	-	0	0	0	0	0	0	0	0
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100	<50	<2	<2
ES2312848	**QC02**	**17 Apr 2023**	**Water**	<1.0	<1.0	<1.0	-	<0.0005	-	<20	<50	<100	<50	<50	-	-
RPD				0	0	0	-	-	-	0	0	0	0	0	-	-
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100	<50	<2	<2
321257	**QC03**	**19 Apr 2023**	**Water**	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100	<50	<2	<2
RPD				0	0	0	0	-	0	0	0	0	0	0	0	0
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100	<50	<2	<2
ES2313090	**QC04**	**19 Apr 2023**	**Water**	<1.0	<1.0	<1.0	-	<0.0005	-	<20	<50	<100	<50	<50	-	-
RPD				0	0	0	-	-	-	0	0	0	0	0	-	-
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100	<50	<2	<2
321713	**QC06**	**24 Apr 2023**	**Water**	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100	<50	<2	<2
RPD				0	0	0	0	-	0	0	0	0	0	0	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100	<50	<2	<2
321713	**QC05**	**24 Apr 2023**	**Water**	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100	<50	<2	<2
RPD				0	0	0	0	-	0	0	0	0	0	0	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<0.1	<0.1	<0.1	<0.0005	-	<0.0001	<10	<50	<100	<100	<50	<2	<2
ES2316368	**QC06**	**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any me**

Table T8. RPD Summary Table (April 2023 GME)

				PCBs					Perfluoroalkyl Sulfonic Acids				Perfluoroalkyl Carboxylic Acid			
				Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Perfluorobutane sulfonic acid (PFBS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorooctanesulfonic acid (PFOS)	Sum of PFHxS and PFOS	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				2	2	2	2	2	0.02	0.01	0.01	0.01	0.1	0.02	0.02	0.02
Lab Report Number	**Field ID**	**Date**	**Matrix Type**													
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	<2	<2	<2	<2	<2	-	0.02	0.02	0.04	-	-	-	-
321086	**QC01**	**17 Apr 2023**	**Water**	<2	<2	<2	<2	<2	-	0.02	0.02	0.04	-	-	-	-
RPD				0	0	0	0	0	-	0	0	0	-	-	-	-
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	<2	<2	<2	<2	<2	-	0.02	0.02	0.04	-	-	-	-
ES2312848	**QC02**	**17 Apr 2023**	**Water**	-	-	-	-	-	0.04	0.03	0.02	0.05	<0.1	<0.02	0.05	<0.02
RPD				-	-	-	-	-	-	40	0	22	-	-	-	-
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	<2	<2	<2	<2	<2	-	0.01	<0.01	0.01	-	-	-	-
321257	**QC03**	**19 Apr 2023**	**Water**	<2	<2	<2	<2	<2	-	0.01	<0.01	0.01	-	-	-	-
RPD				0	0	0	0	0	-	0	0	0	-	-	-	-
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	<2	<2	<2	<2	<2	-	0.01	<0.01	0.01	-	-	-	-
ES2313090	**QC04**	**19 Apr 2023**	**Water**	-	-	-	-	-	<0.02	<0.01	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02
RPD				-	-	-	-	-	-	0	0	0	-	-	-	-
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<2	<2	<2	<2	<2	-	<0.01	<0.01	<0.01	-	-	-	-
321713	**QC06**	**24 Apr 2023**	**Water**	<2	<2	<2	<2	<2	-	<0.01	<0.01	<0.01	-	-	-	-
RPD				0	0	0	0	0	-	0	0	0	-	-	-	-
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<2	<2	<2	<2	<2	-	<0.01	<0.01	<0.01	-	-	-	-
321713	**QC05**	**24 Apr 2023**	**Water**	<2	<2	<2	<2	<2	-	<0.01	<0.01	<0.01	-	-	-	-
RPD				0	0	0	0	0	-	0	0	0	-	-	-	-
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<2	<2	<2	<2	<2	-	<0.01	<0.01	<0.01	-	-	-	-
ES2316368	**QC06**	**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-

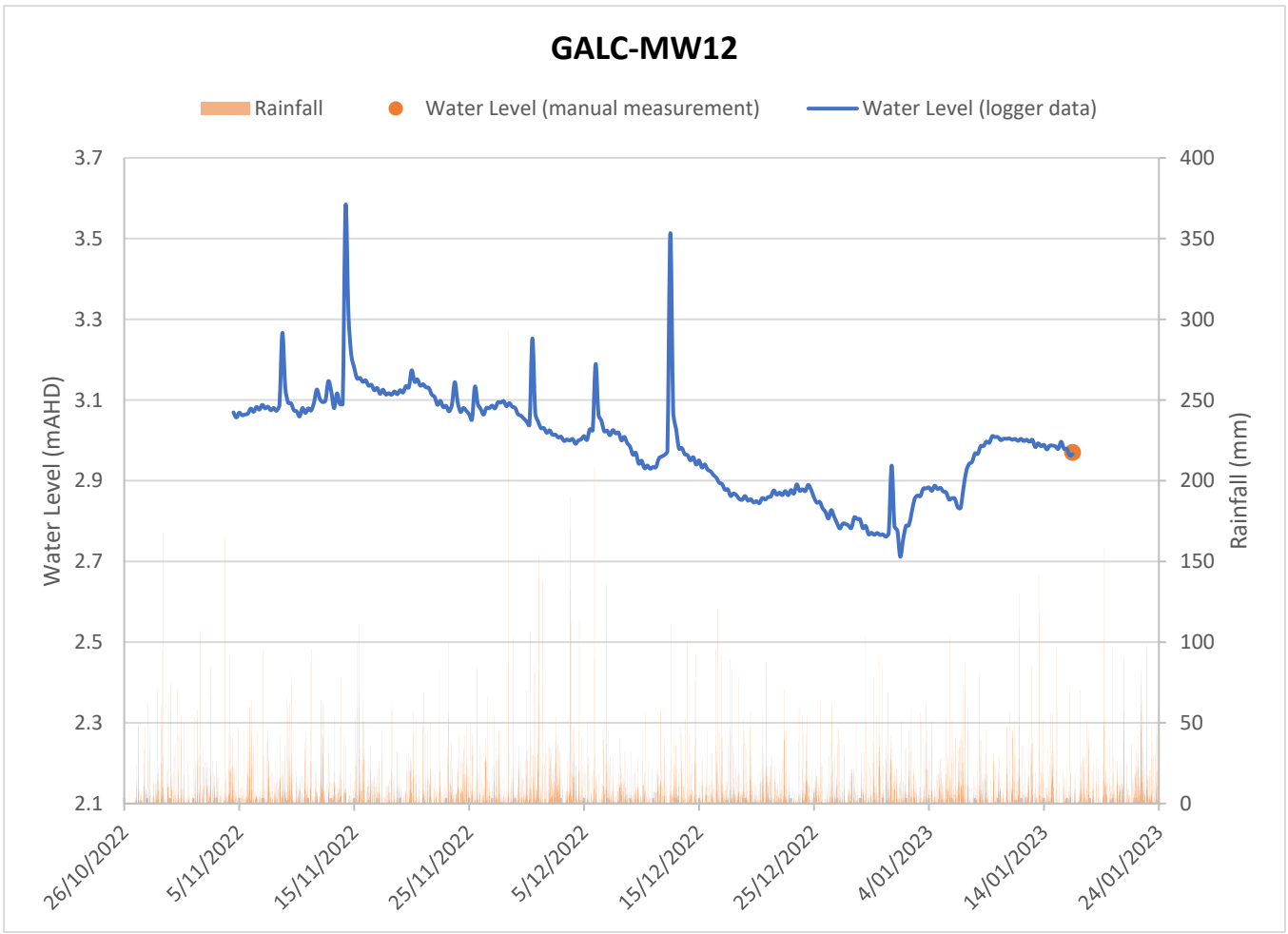
***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any me**

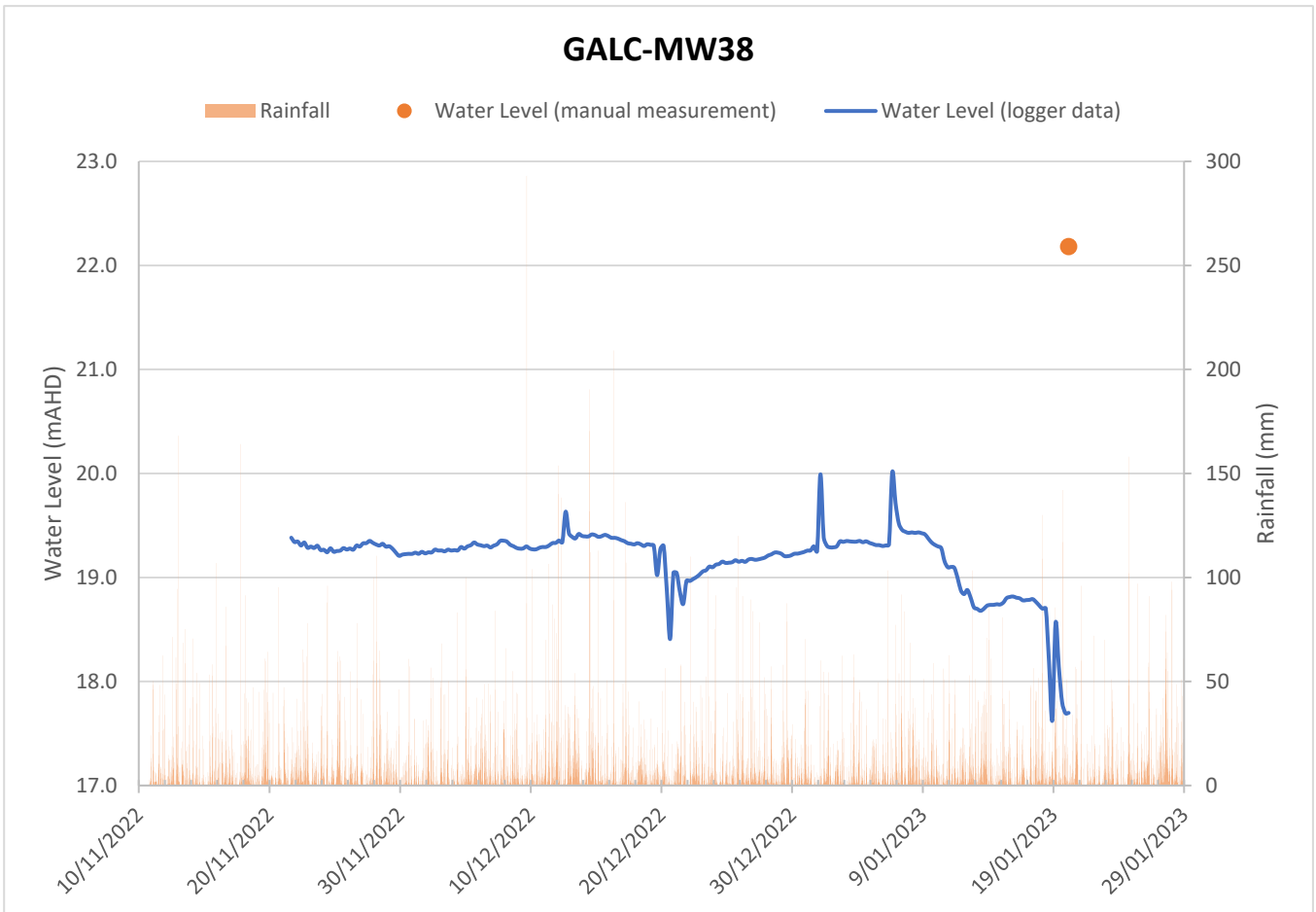
Table T8. RPD Summary Table (April 2023 GME)

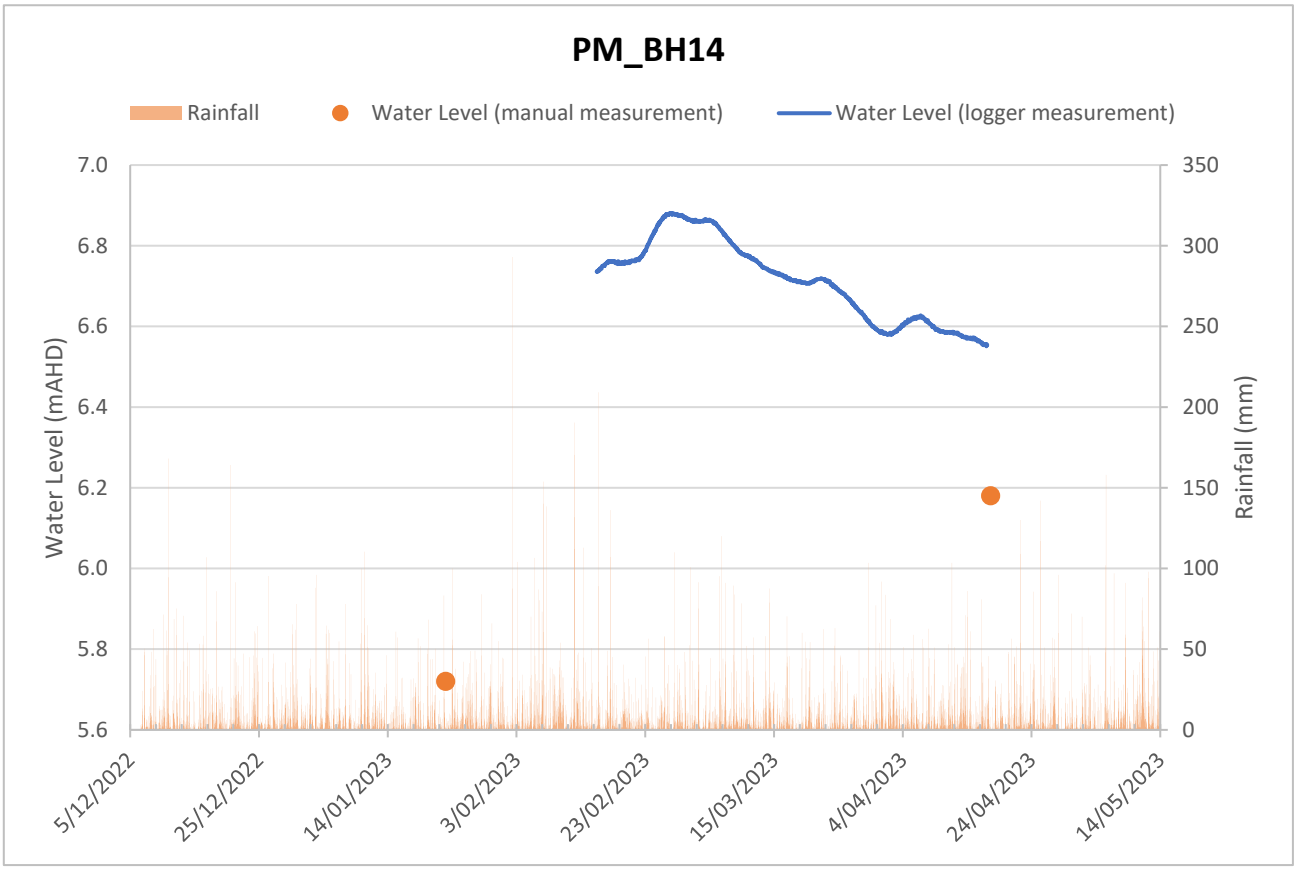
				Fluorotelomer Sulfonic Acids					PFAS Totals		Solvents
				Perfluorooctanoic acid (PFOA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of PFAS	Cyclohexane
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
EQL				0.01	0.05	0.01	0.02	0.05	0.01	0.01	0.001
Lab Report Number	**Field ID**	**Date**	**Matrix Type**								
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	0.02	-	0.02	<0.02	-	0.04	0.08	<0.001
321086	**QC01**	**17 Apr 2023**	**Water**	0.03	-	0.02	<0.02	-	0.04	0.09	<0.001
RPD				40	-	0	0	-	0	12	0
321086	**SMW_ENV224**	**17 Apr 2023**	**Water**	0.02	-	0.02	<0.02	-	0.04	0.08	<0.001
ES2312848	**QC02**	**17 Apr 2023**	**Water**	0.03	<0.05	<0.05	<0.05	<0.05	-	-	-
RPD				40	-	0	0	-	-	-	-
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	<0.01	-	<0.01	<0.02	-	<0.01	0.01	<0.001
321257	**QC03**	**19 Apr 2023**	**Water**	<0.01	-	<0.01	<0.02	-	<0.01	0.01	<0.001
RPD				0	-	0	0	-	0	0	0
321257	**SMW_WTP_BH13**	**19 Apr 2023**	**Water**	<0.01	-	<0.01	<0.02	-	<0.01	0.01	<0.001
ES2313090	**QC04**	**19 Apr 2023**	**Water**	<0.01	<0.05	<0.05	<0.05	<0.05	-	-	-
RPD				0	-	0	0	-	-	-	-
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<0.01	-	<0.01	<0.02	-	<0.01	<0.01	<0.001
321713	**QC06**	**24 Apr 2023**	**Water**	<0.01	-	<0.01	<0.02	-	<0.01	<0.01	<0.001
RPD				0	-	0	0	-	0	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<0.01	-	<0.01	<0.02	-	<0.01	<0.01	<0.001
321713	**QC05**	**24 Apr 2023**	**Water**	<0.01	-	<0.01	<0.02	-	<0.01	<0.01	<0.001
RPD				0	-	0	0	-	0	0	0
321713	**SMW_BH008_W**	**24 Apr 2023**	**Water**	<0.01	-	<0.01	<0.02	-	<0.01	<0.01	<0.001
ES2316368	**QC06**	**24 Apr 2023**	**Water**	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-

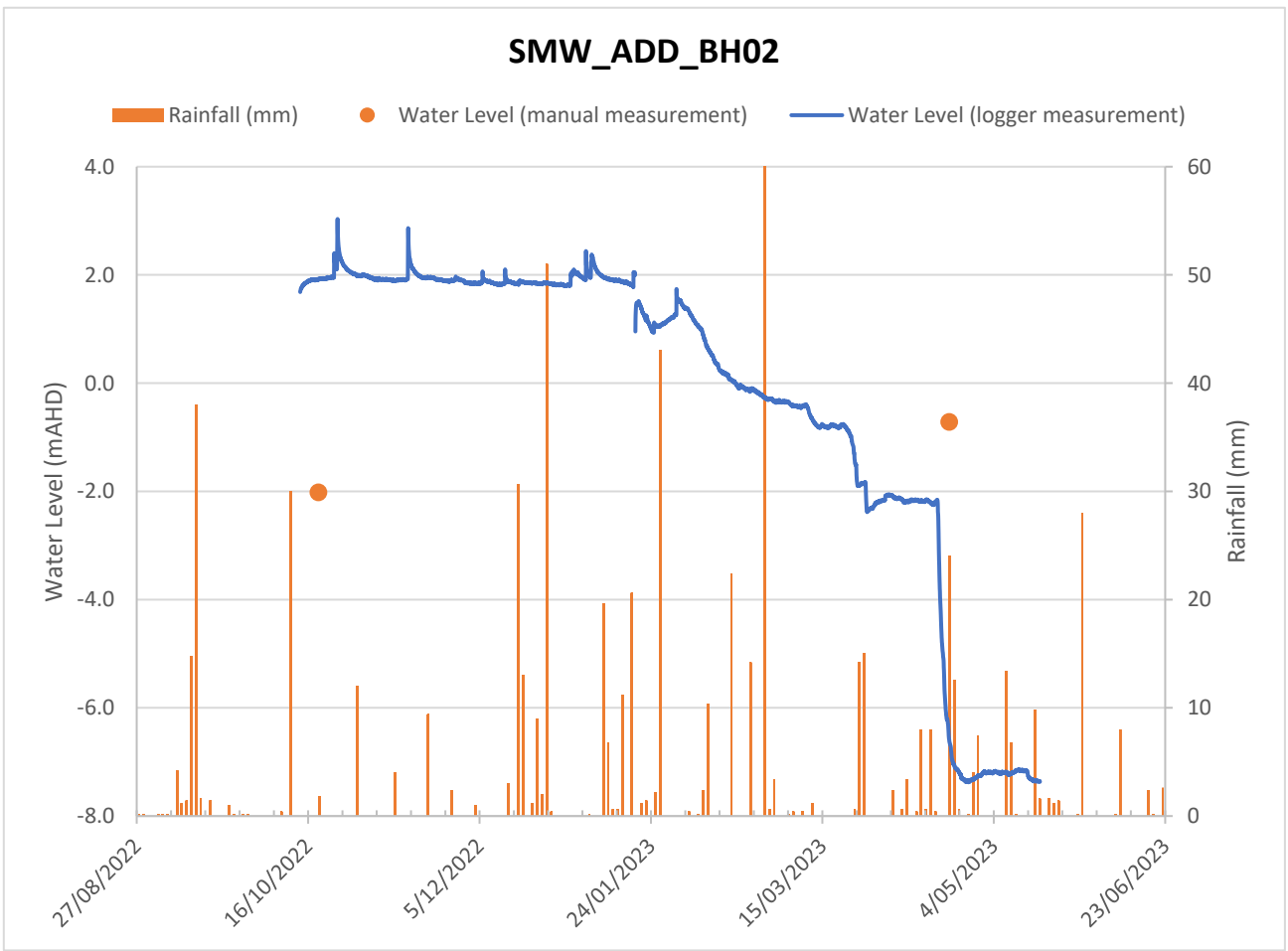
***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any me**

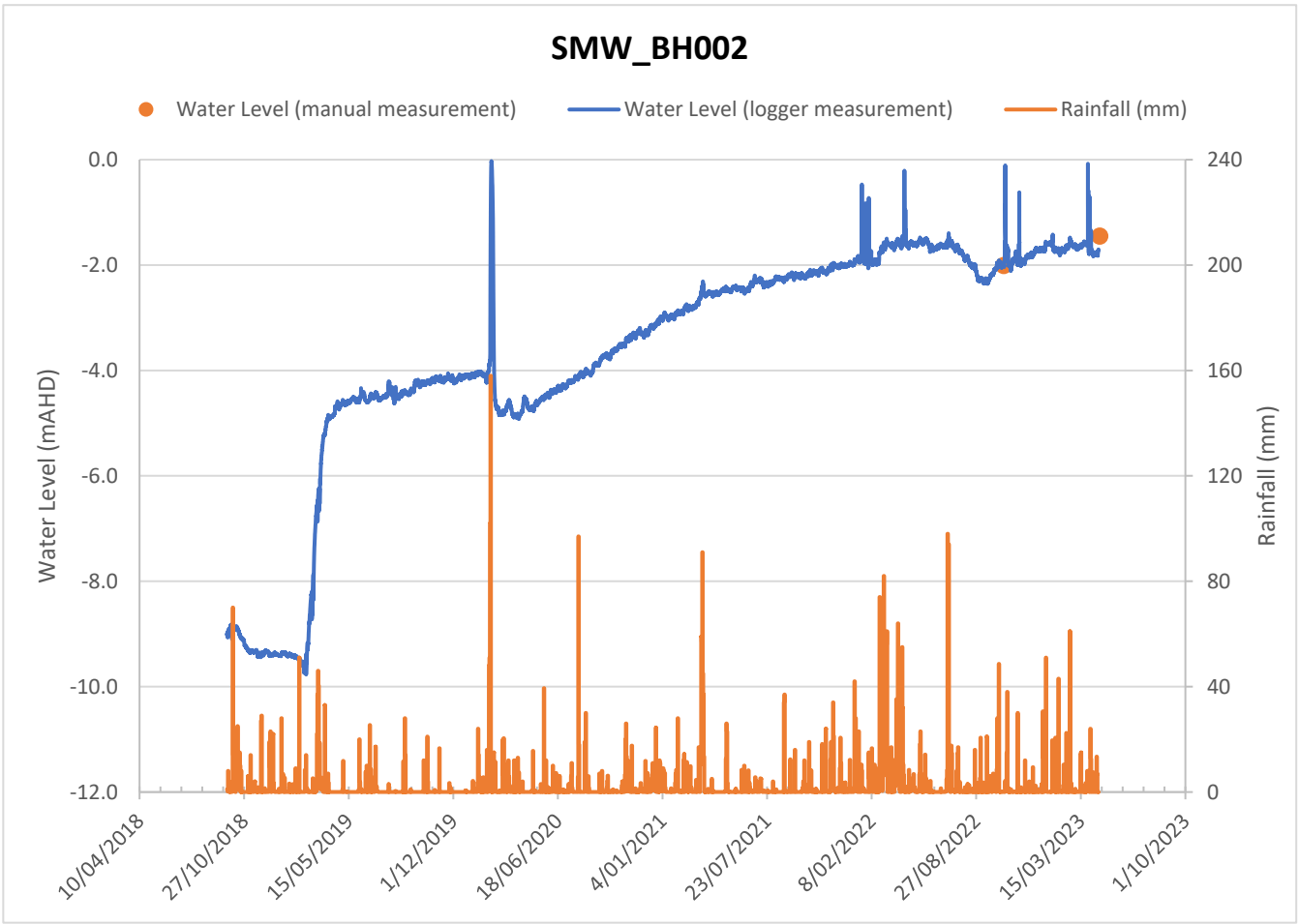
APPENDIX C – HYDROGRAPHS

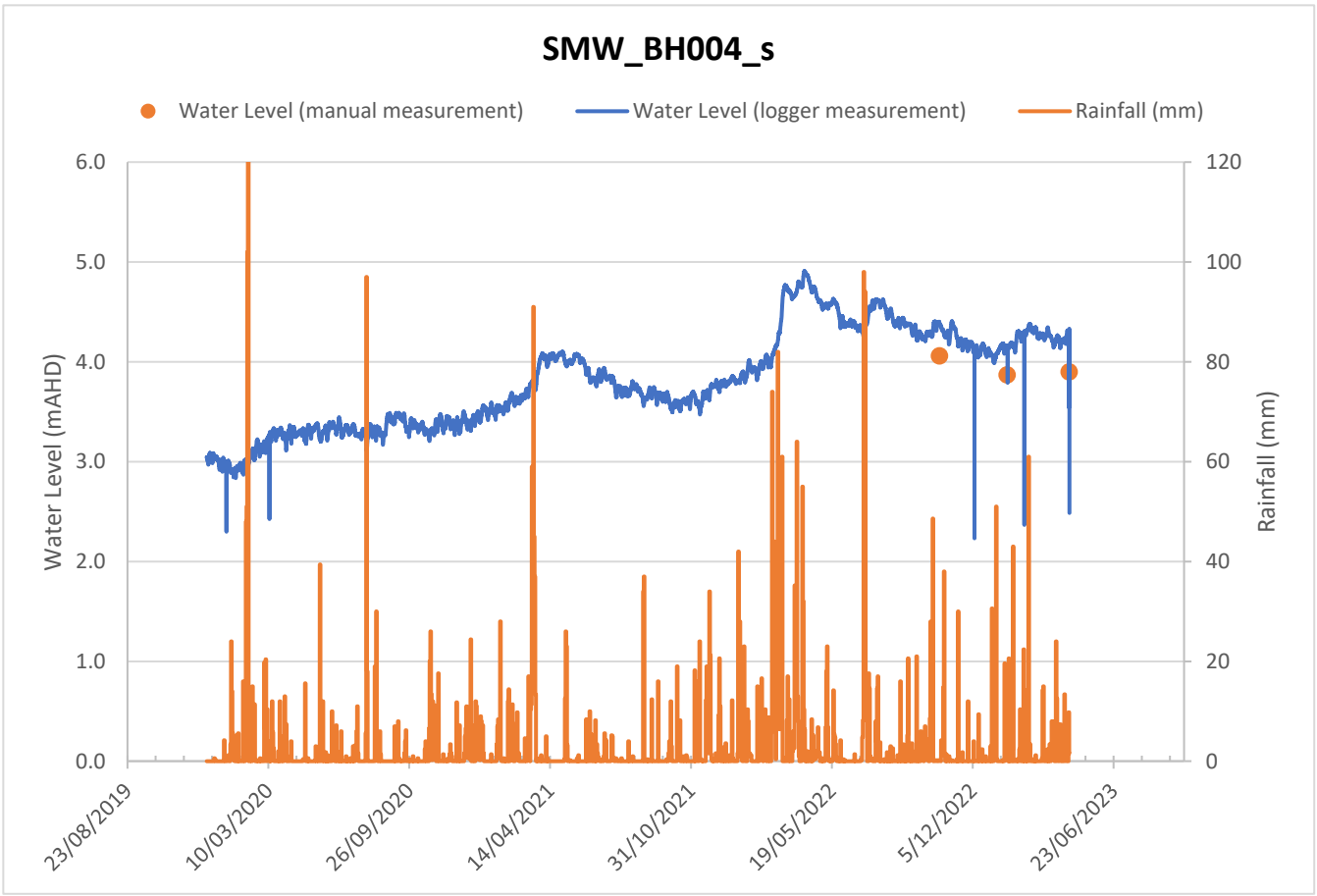

GALC-MW12
Rainfall
Water Level (manual measurement)
Water Level (logger data)
Water Level (mAHD)
Rainfall (mm)
3.7
3.5
3.3
3.1
2.9
2.7
2.5
2.3
2.1
400
350
300
250
200
150
100
50
0
26/10/2022
5/11/2022
15/11/2022
25/11/2022
5/12/2022
15/12/2022
25/12/2022
4/01/2023
14/01/2023
24/01/2023

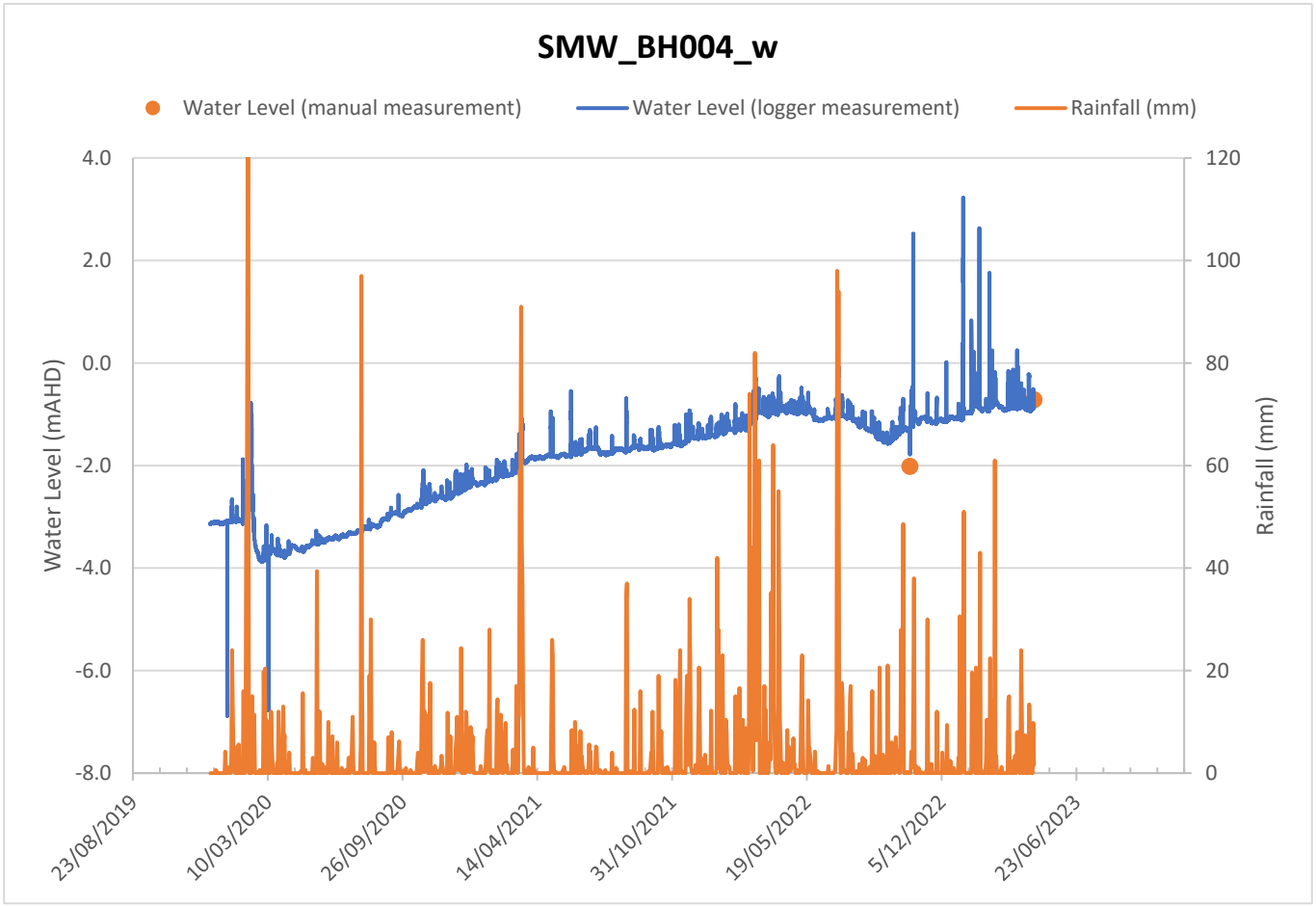

GALC-MW38
Rainfall
Water Level (manual measurement)
Water Level (logger data)
Water Level (mAHD)
Rainfall (mm)
23.0
22.0
21.0
20.0
19.0
18.0
17.0
300
250
200
150
100
50
0
10/11/2022
20/11/2022
30/11/2022
10/12/2022
20/12/2022
30/12/2022
9/01/2023
19/01/2023
29/01/2023

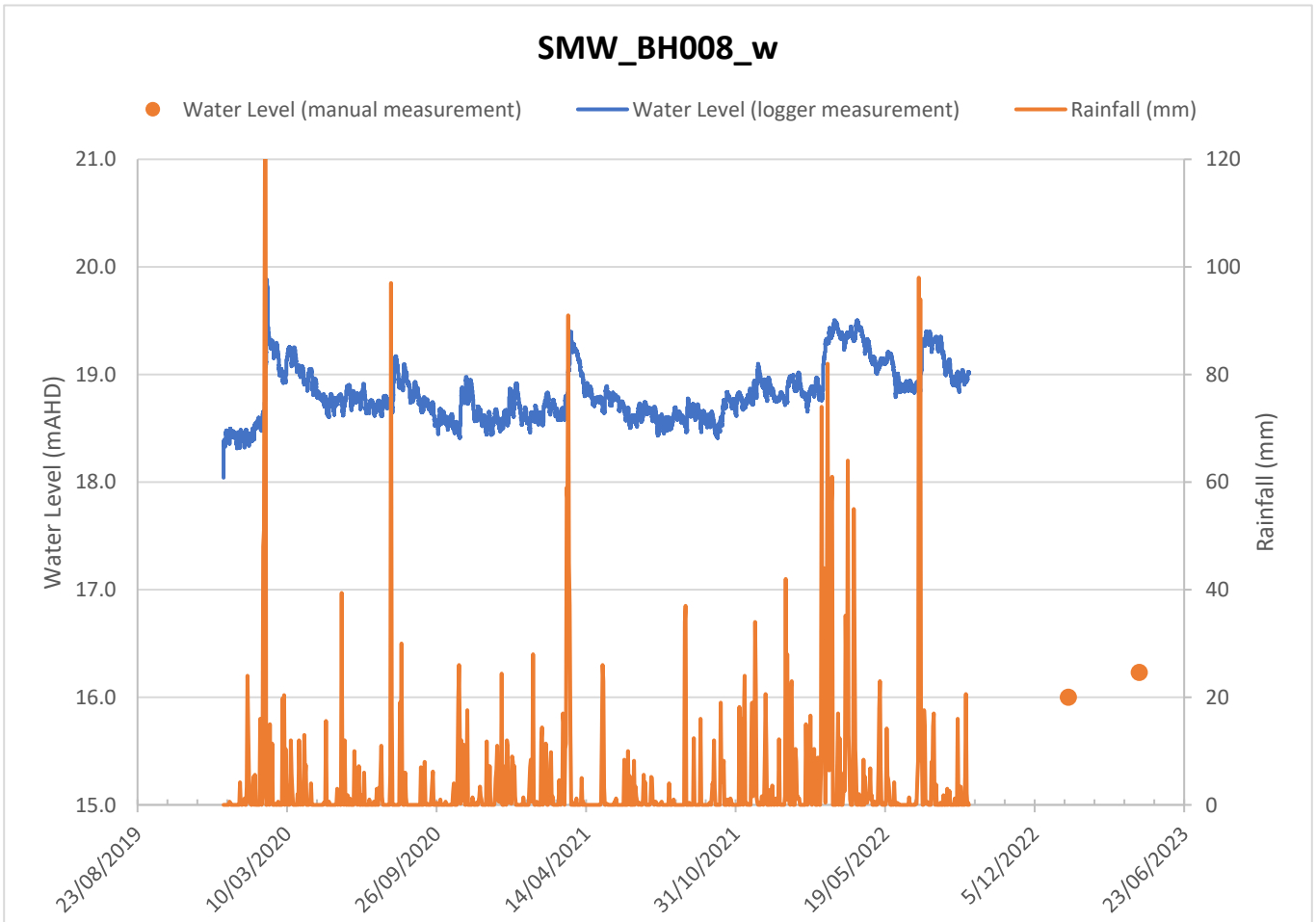

PM_BH14
Rainfall
Water Level (manual measurement)
Water Level (logger measurement)
Water Level (mAHD)
Rainfall (mm)
7.0
6.8
6.6
6.4
6.2
6.0
5.8
5.6
350
300
250
200
150
100
50
0
5/12/2022
25/12/2022
14/01/2023
3/02/2023
23/02/2023
15/03/2023
4/04/2023
24/04/2023
14/05/2023

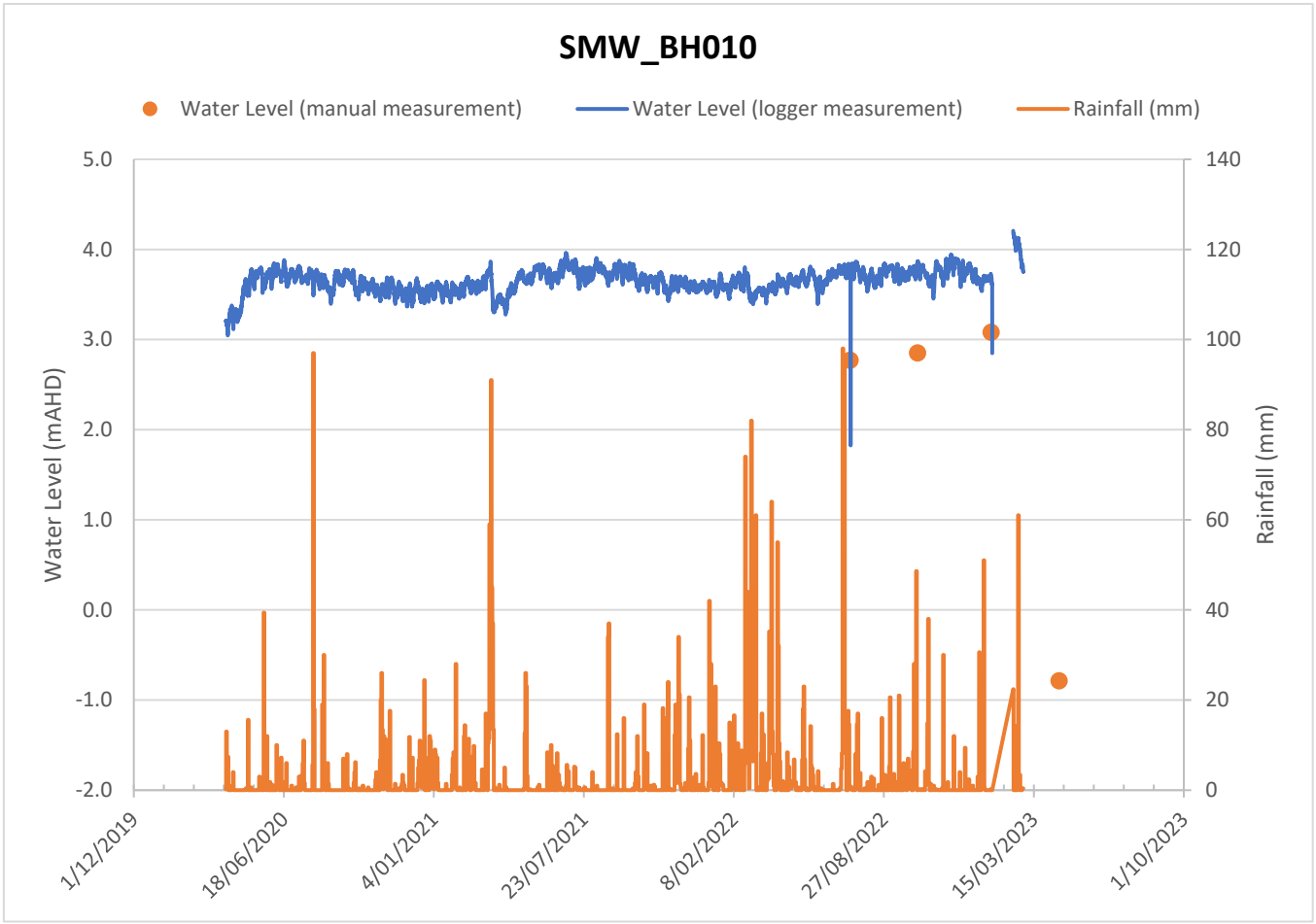

SMW_ADD_BH02
Rainfall (mm)
Water Level (manual measurement)
Water Level (logger measurement)
Water Level (mAHD)
Rainfall (mm)
4.0
2.0
0.0
-2.0
-4.0
-6.0
-8.0
60
50
40
30
20
10
0
27/08/2022
16/10/2022
5/12/2022
24/01/2023
15/03/2023
4/05/2023
23/06/2023

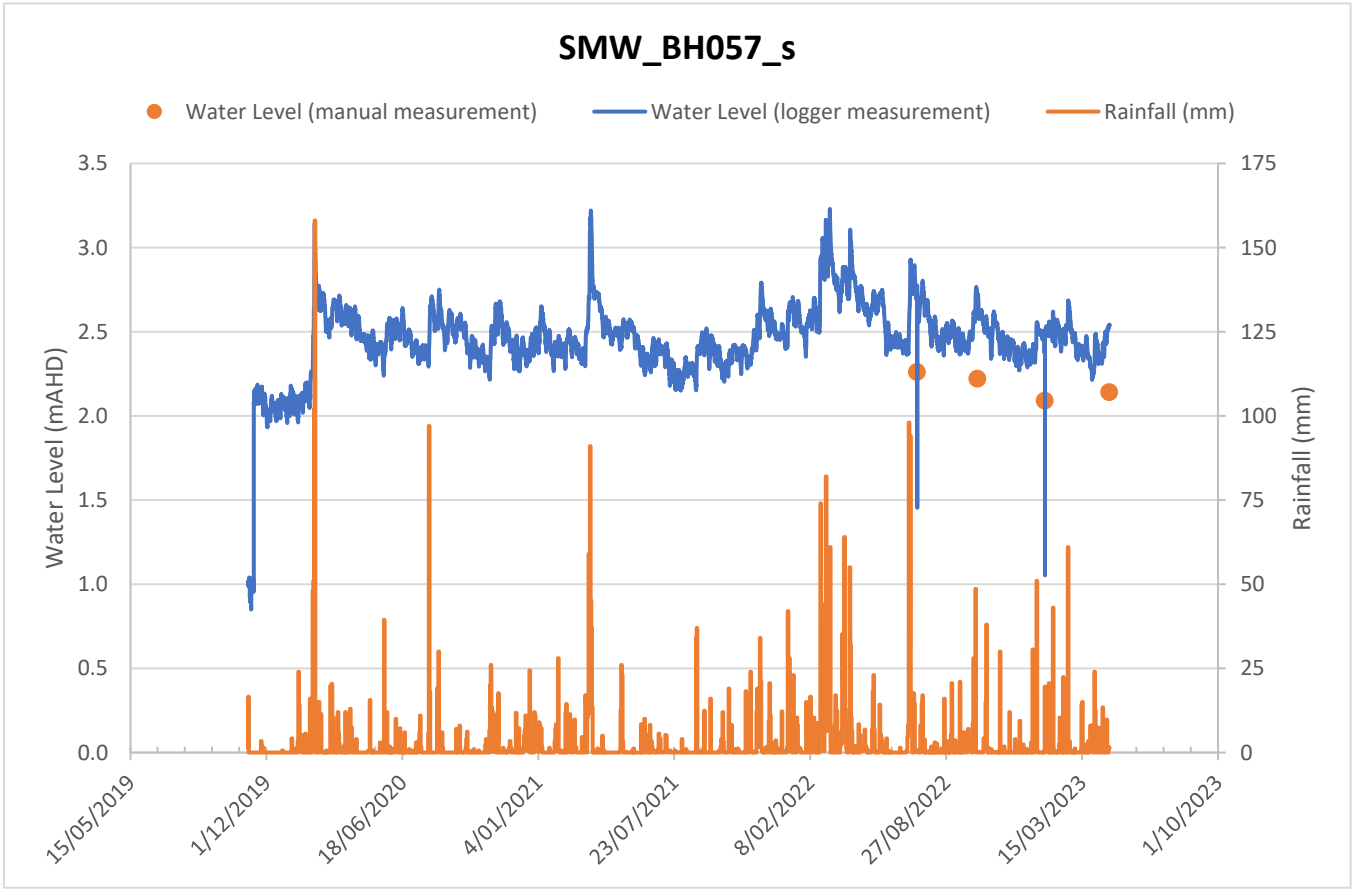

SMW_BH002
Water Level (manual measurement)
Water Level (logger measurement)
Rainfall (mm)
Water Level (mAHD)
Rainfall (mm)
0.0
-2.0
-4.0
-6.0
-8.0
-10.0
-12.0
240
200
160
120
80
40
0
10/04/2018
27/10/2018
15/05/2019
1/12/2019
18/06/2020
4/01/2021
23/07/2021
8/02/2022
27/08/2022
15/03/2023
1/10/2023

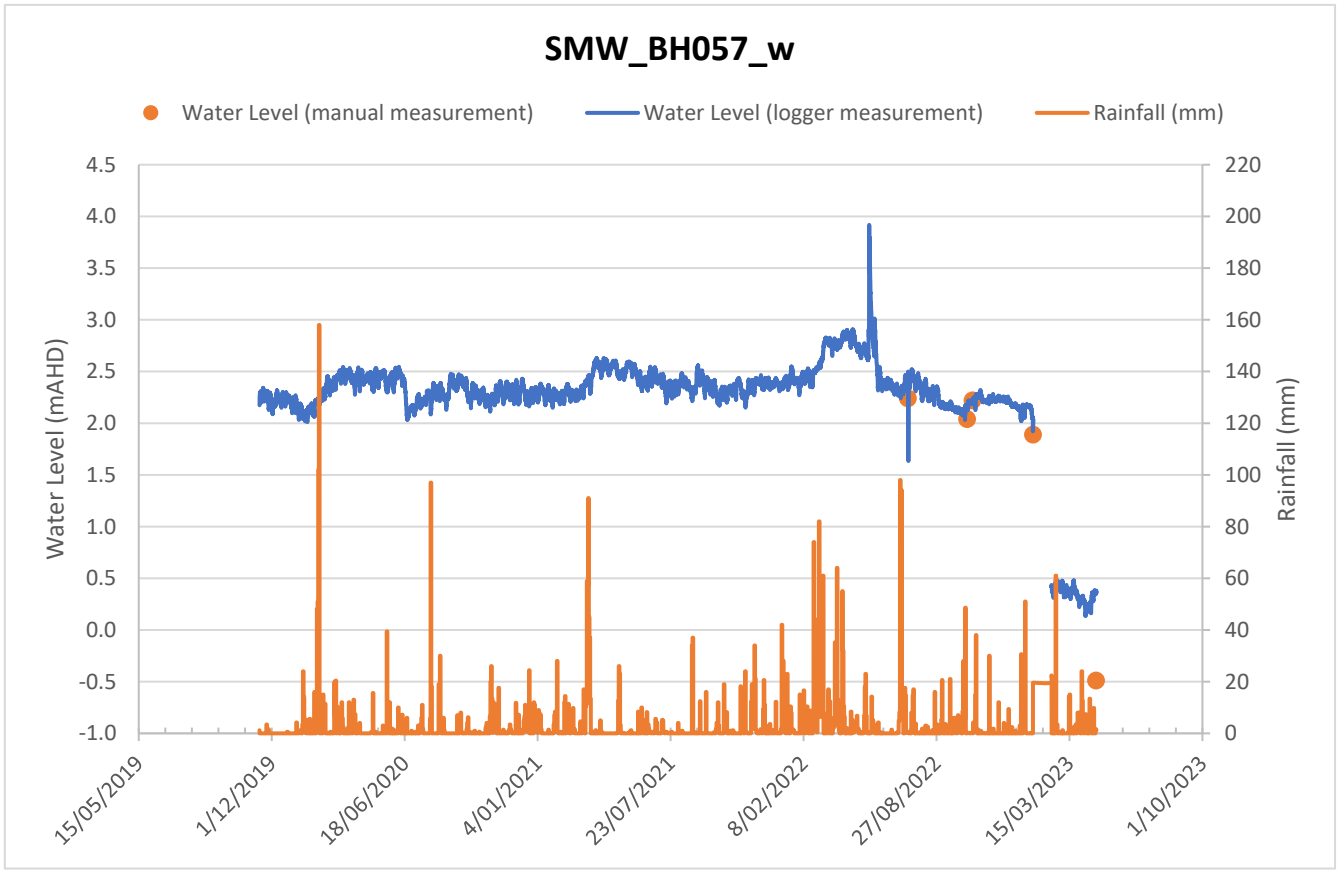

SMW_BH004_s
Water Level (manual measurement)
Water Level (logger measurement)
Rainfall (mm)
Water Level (mAHD)
Rainfall (mm)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
120
100
80
60
40
20
0
23/08/2019
10/03/2020
26/09/2020
14/04/2021
31/10/2021
19/05/2022
5/12/2022
23/06/2023

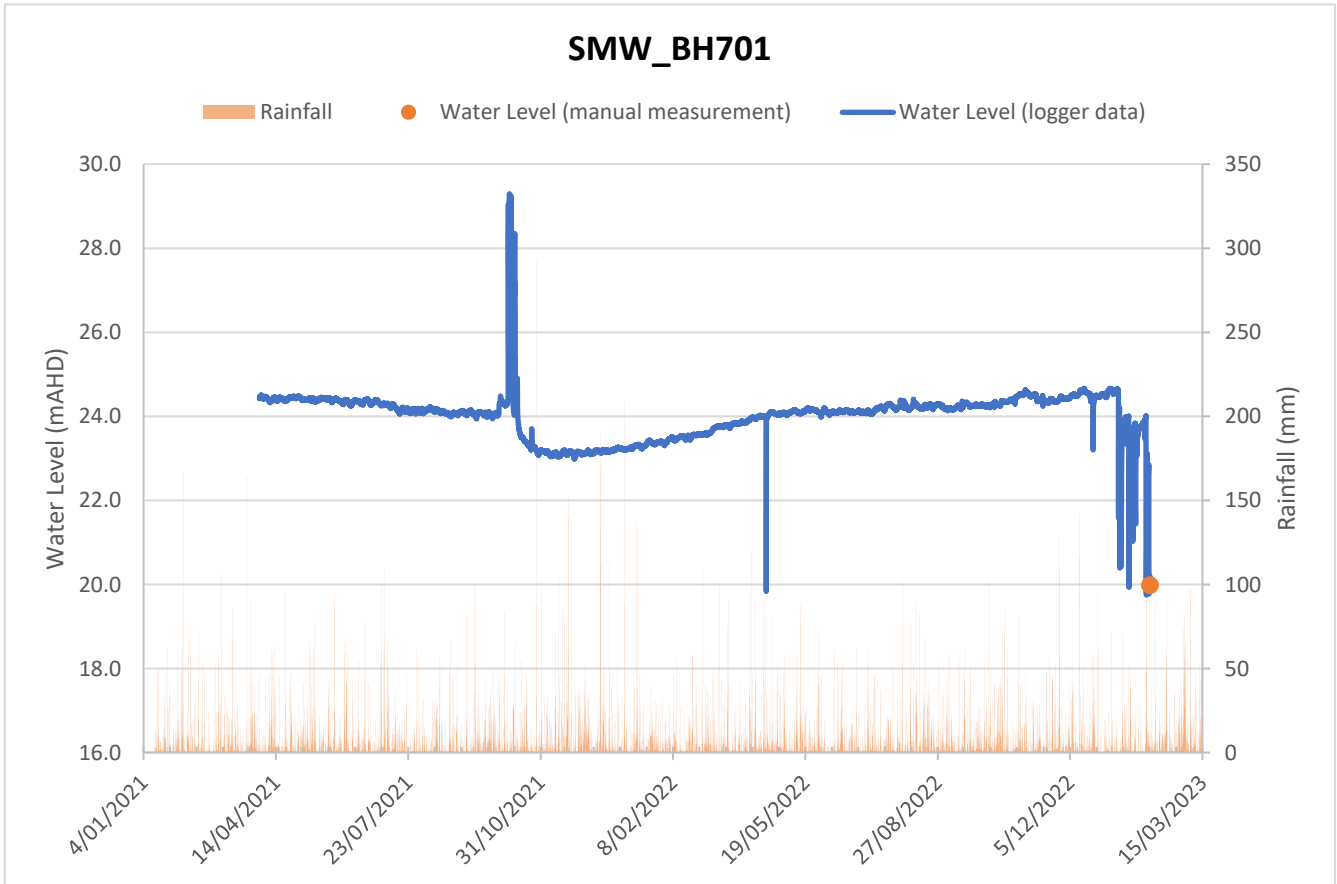

SMW_BH004_w
Water Level (manual measurement)
Water Level (logger measurement)
Rainfall (mm)
Water Level (mAHD)
Rainfall (mm)
4.0
2.0
0.0
-2.0
-4.0
-6.0
-8.0
120
100
80
60
40
20
0
23/08/2019
10/03/2020
26/09/2020
14/04/2021
31/10/2021
19/05/2022
5/12/2022
23/06/2023

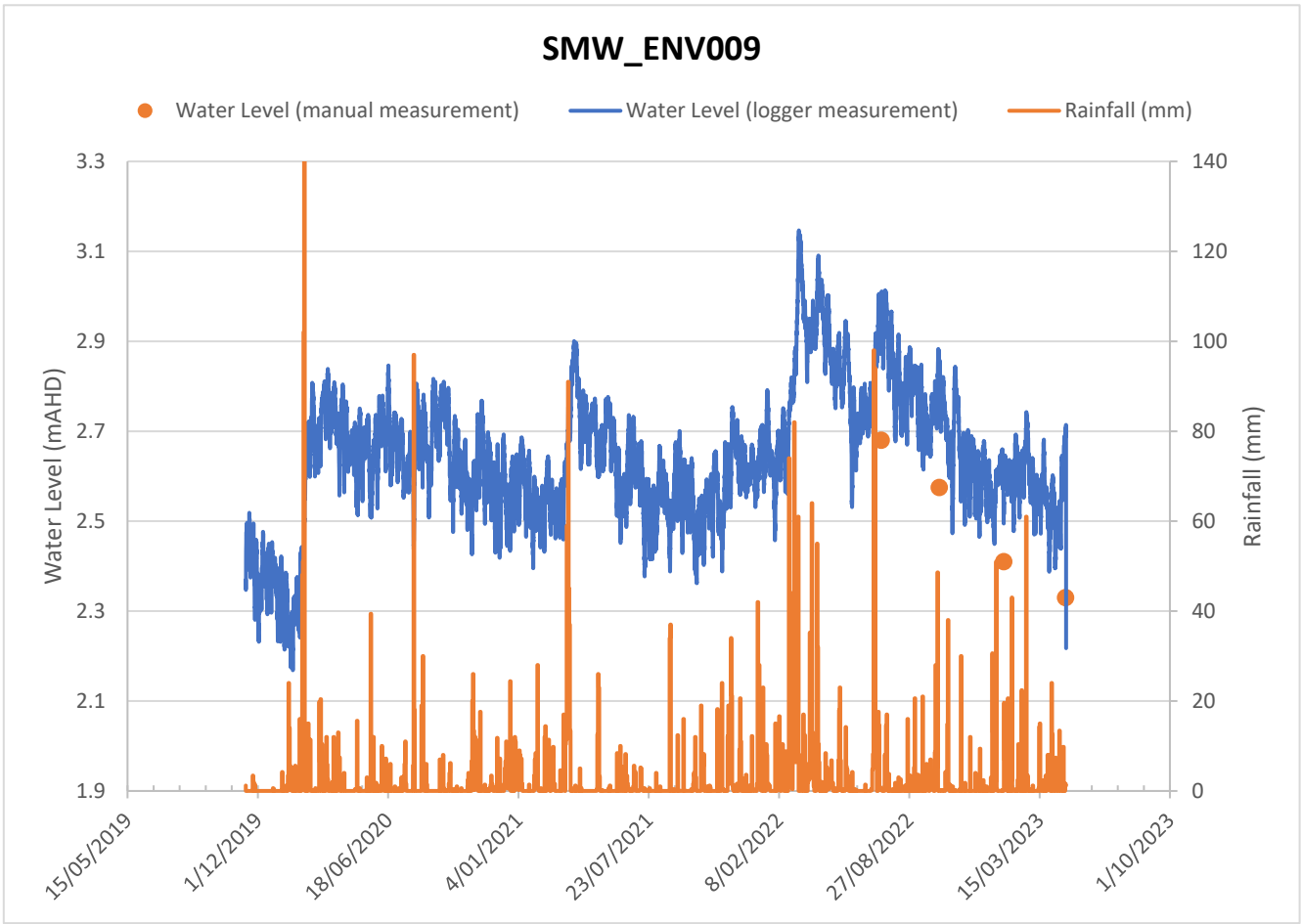

SMW_BH008_w
Water Level (manual measurement)
Water Level (logger measurement)
Rainfall (mm)
Water Level (mAHD)
Rainfall (mm)
21.0
20.0
19.0
18.0
17.0
16.0
15.0
120
100
80
60
40
20
0
23/08/2019
10/03/2020
26/09/2020
14/04/2021
31/10/2021
19/05/2022
5/12/2022
23/06/2023

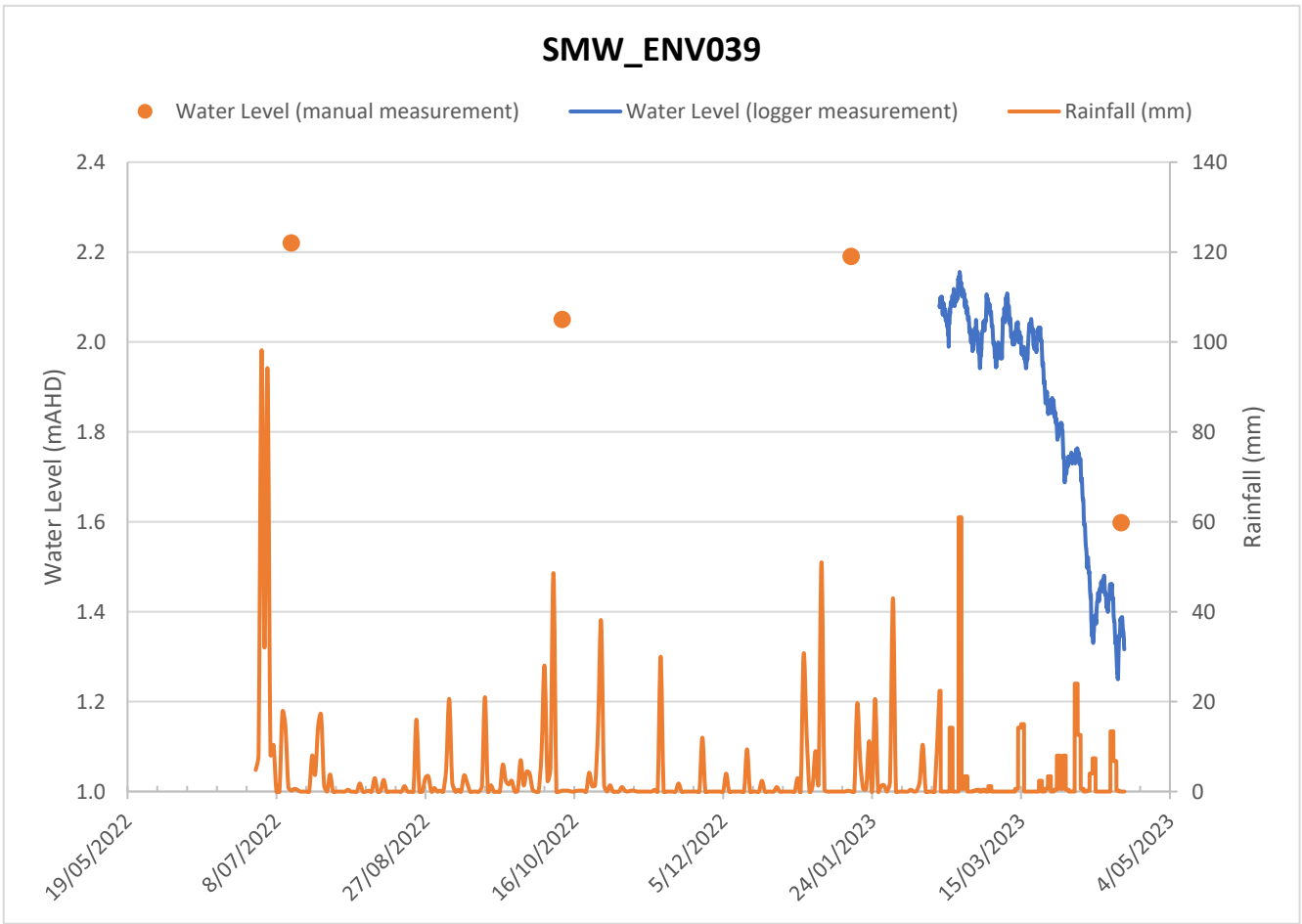

SMW_BH010
Water Level (manual measurement)
Water Level (logger measurement)
Rainfall (mm)
Water Level (mAHD)
Rainfall (mm)
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
140
120
100
80
60
40
20
0
1/12/2019
18/06/2020
4/01/2021
23/07/2021
8/02/2022
27/08/2022
15/03/2023
1/10/2023

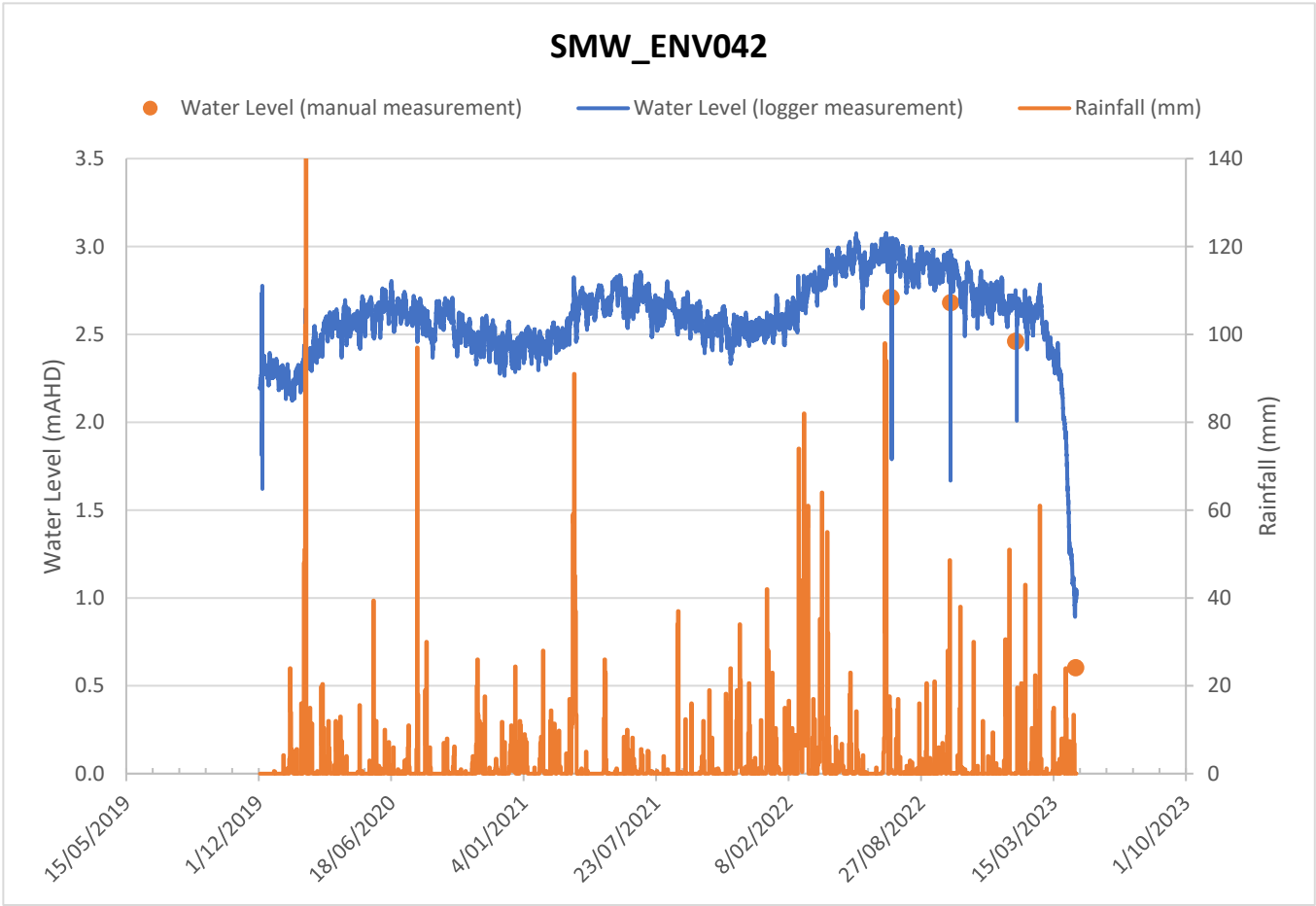

SMW_BH057_s
Water Level (manual measurement)
Water Level (logger measurement)
Rainfall (mm)
Water Level (mAHD)
Rainfall (mm)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
175
150
125
100
75
50
25
0
15/05/2019
1/12/2019
18/06/2020
4/01/2021
23/07/2021
8/02/2022
27/08/2022
15/03/2023
1/10/2023

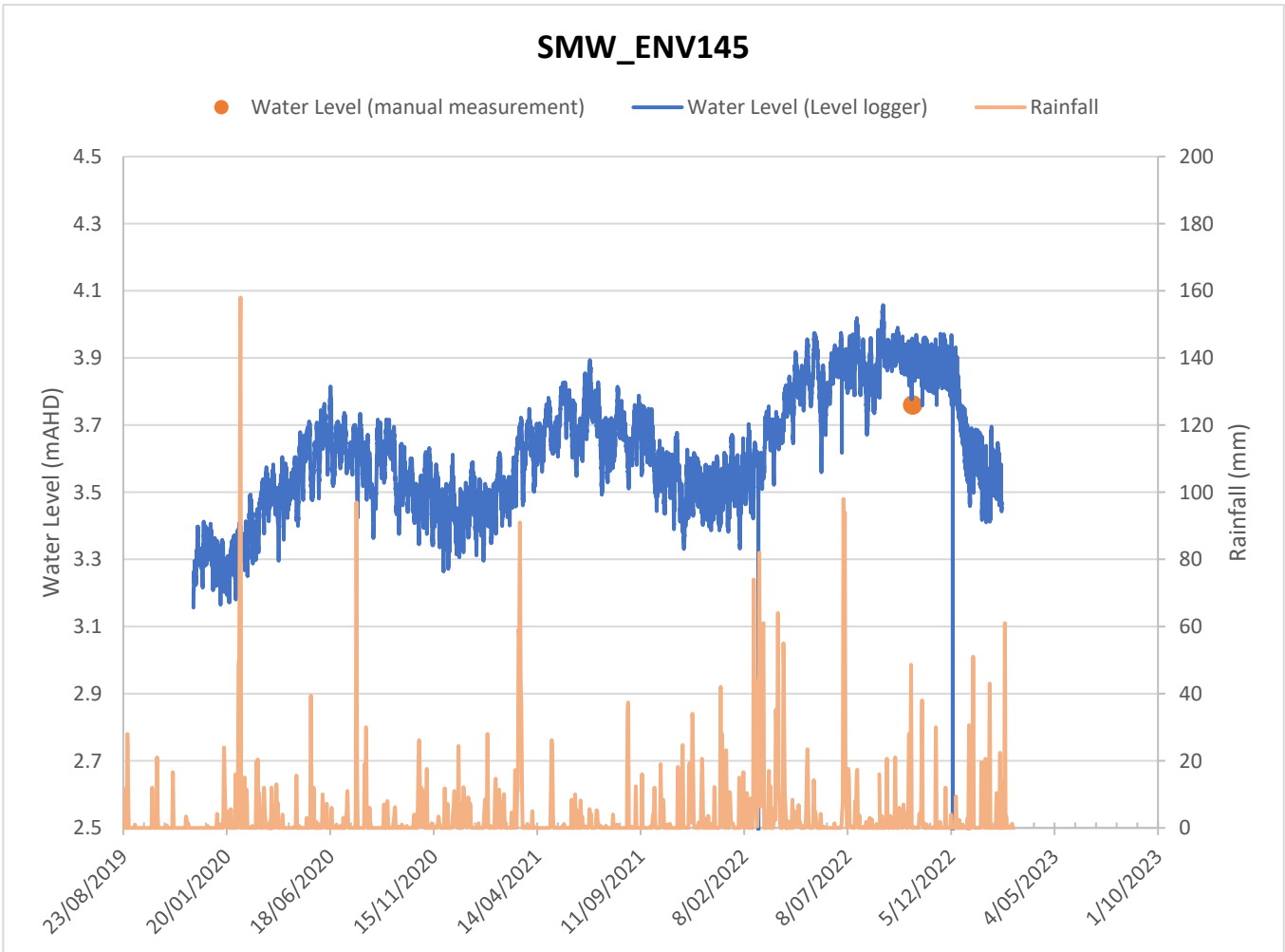

SMW_BH057_w
Water Level (manual measurement)
Water Level (logger measurement)
Rainfall (mm)
Water Level (mAHD)
Rainfall (mm)
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
220
200
180
160
140
120
100
80
60
40
20
0
15/05/2019
1/12/2019
18/06/2020
4/01/2021
23/07/2021
8/02/2022
27/08/2022
15/03/2023
1/10/2023

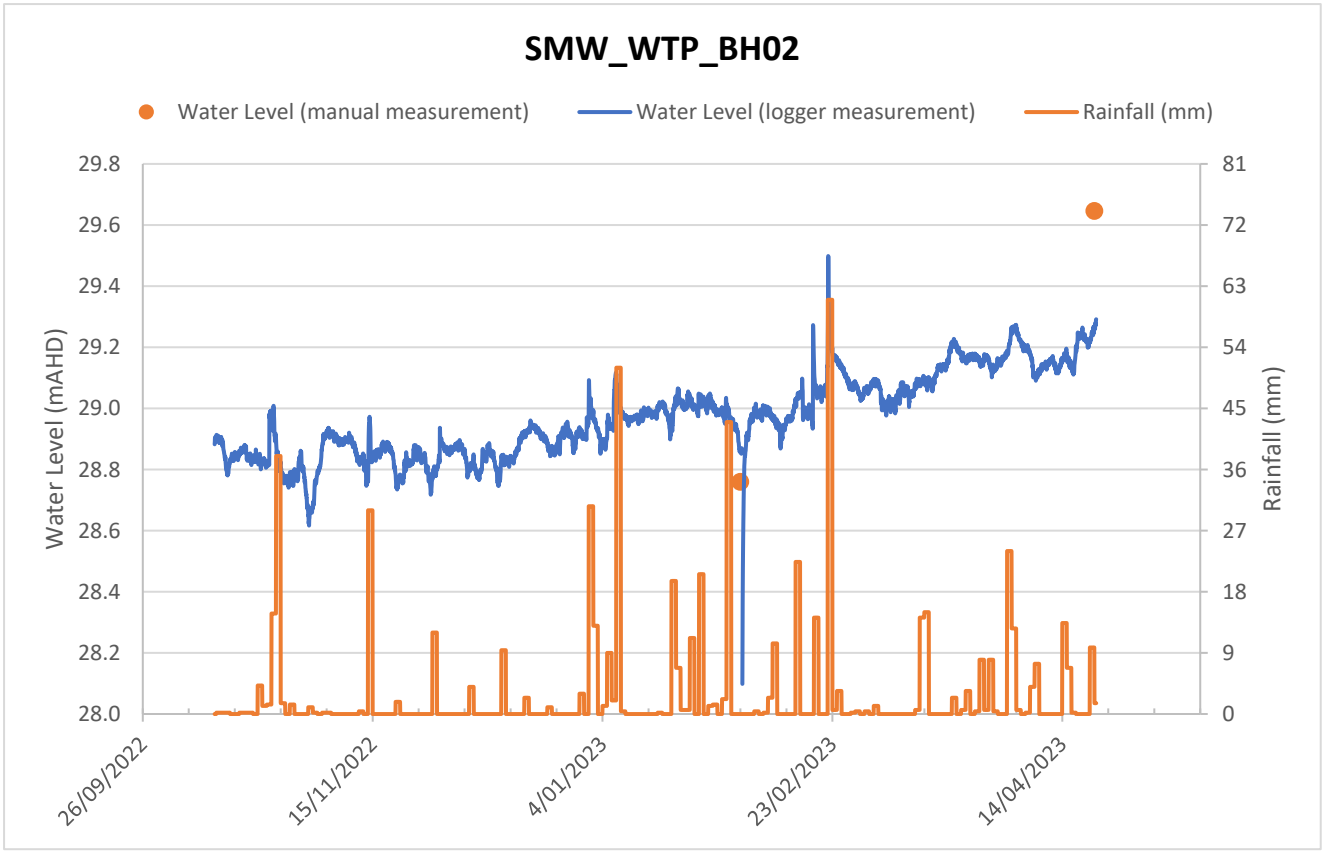

SMW_BH701
Rainfall
Water Level (manual measurement)
Water Level (logger data)
Water Level (mAHD)
Rainfall (mm)
30.0
28.0
26.0
24.0
22.0
20.0
18.0
16.0
350
300
250
200
150
100
50
0
4/01/2021
14/04/2021
23/07/2021
31/10/2021
8/02/2022
19/05/2022
27/08/2022
5/12/2022
15/03/2023

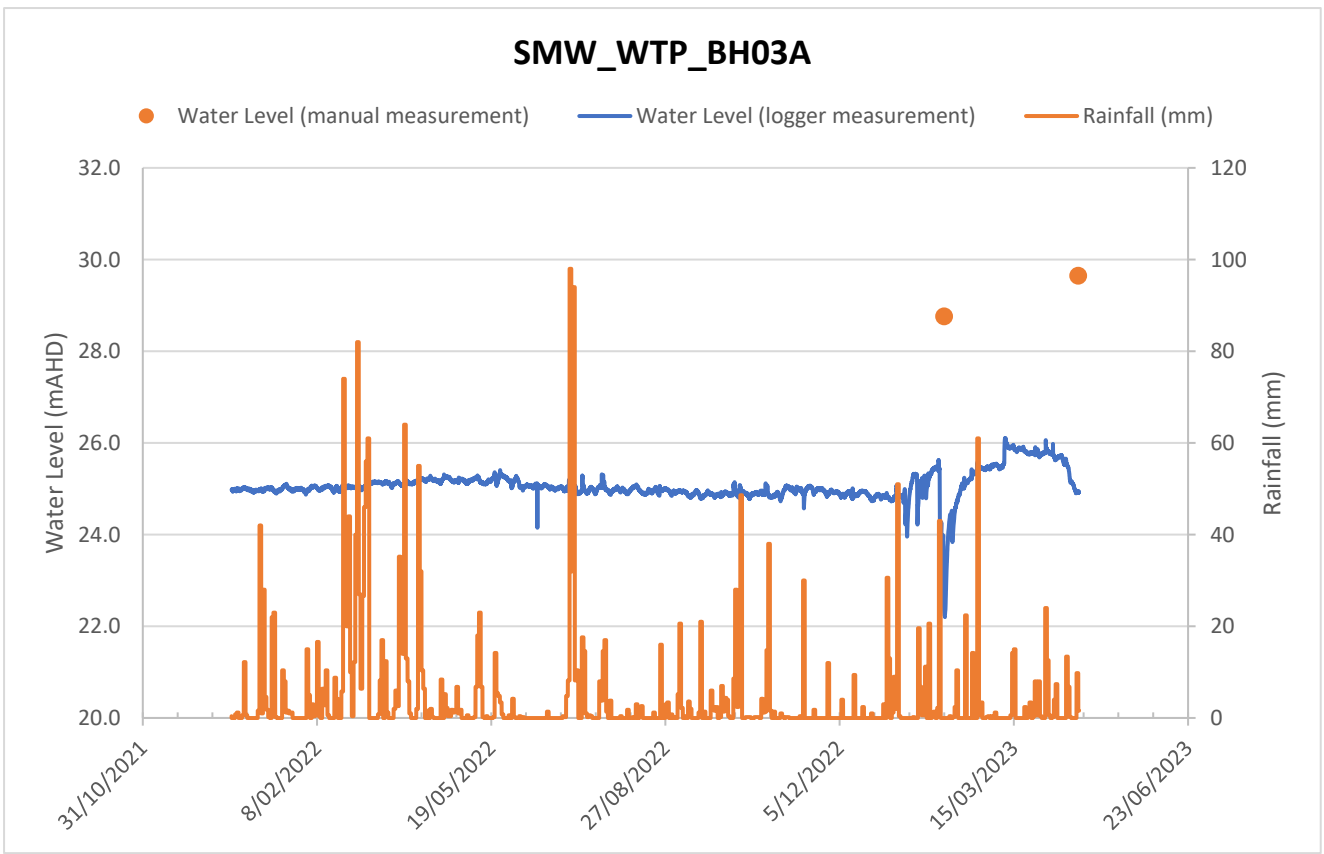

SMW_ENV009
Water Level (manual measurement)
Water Level (logger measurement)
Rainfall (mm)
Water Level (mAHD)
Rainfall (mm)
3.3
3.1
2.9
2.7
2.5
2.3
2.1
1.9
140
120
100
80
60
40
20
0
15/05/2019
1/12/2019
18/06/2020
4/01/2021
23/07/2021
8/02/2022
27/08/2022
15/03/2023
1/10/2023

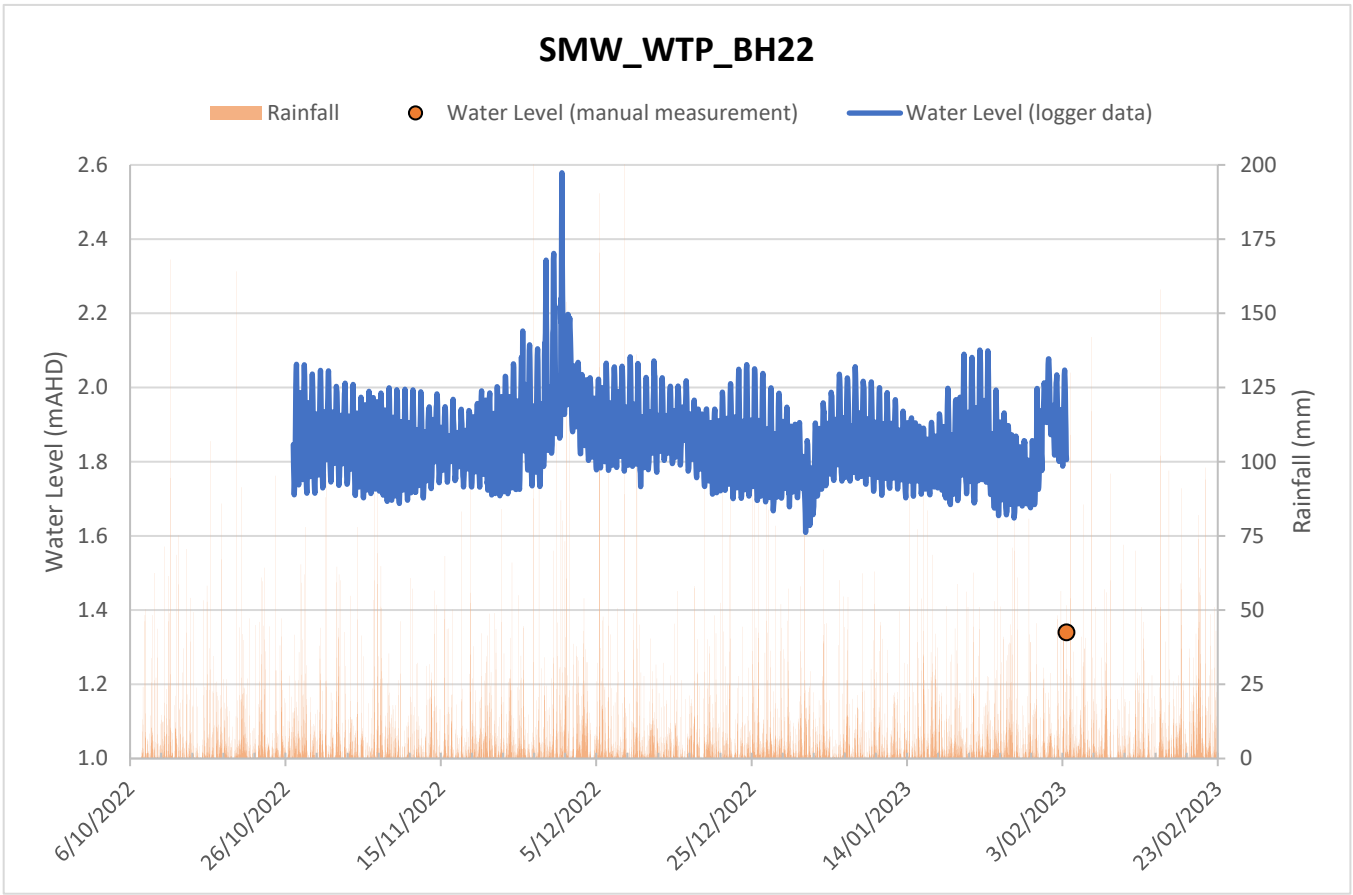

SMW_ENV039
Water Level (manual measurement)
Water Level (logger measurement)
Rainfall (mm)
Water Level (mAHD)
Rainfall (mm)
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
140
120
100
80
60
40
20
0
19/05/2022
8/07/2022
27/08/2022
16/10/2022
5/12/2022
24/01/2023
15/03/2023
4/05/2023

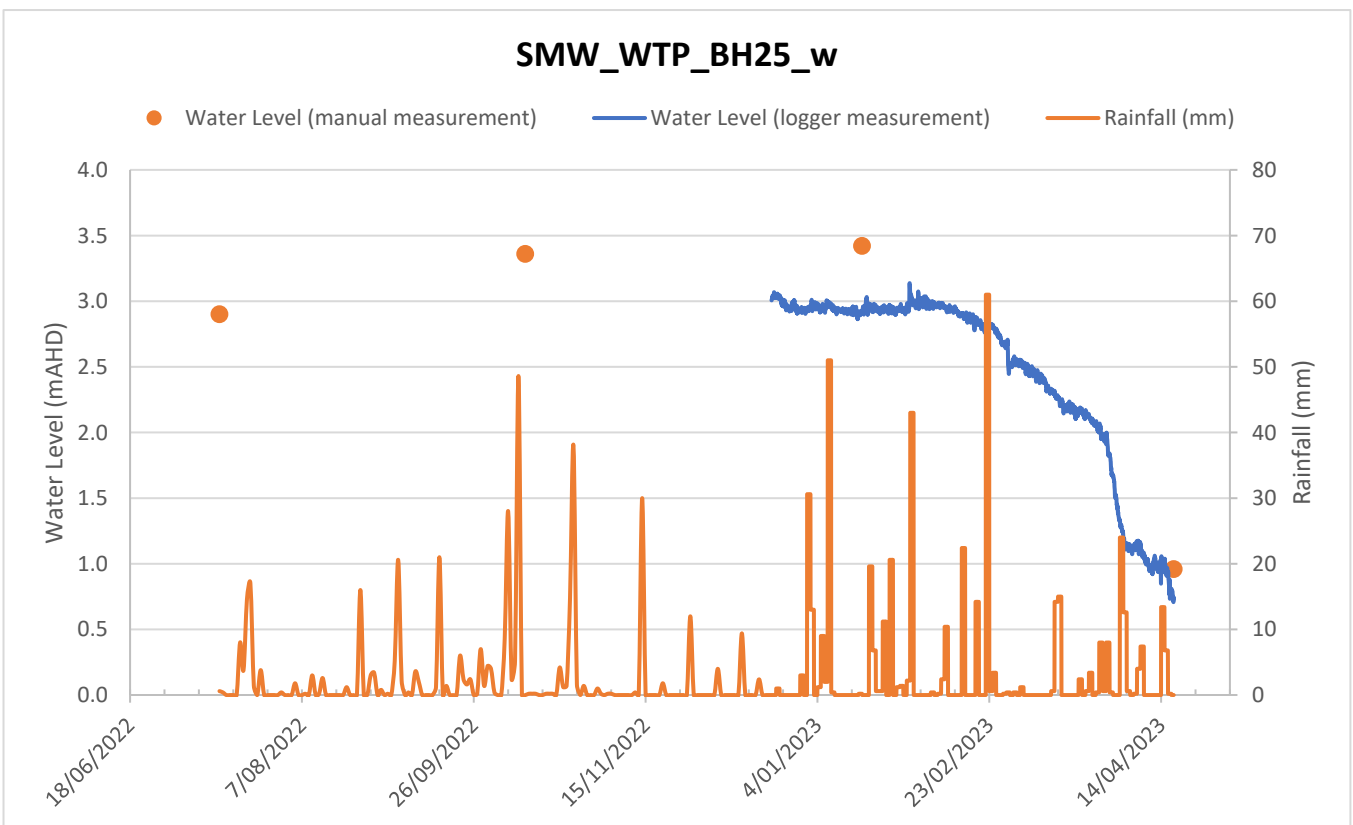

SMW_ENV042
Water Level (manual measurement)
Water Level (logger measurement)
Rainfall (mm)
Water Level (mAHD)
Rainfall (mm)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
140
120
100
80
60
40
20
0
15/05/2019
1/12/2019
18/06/2020
4/01/2021
23/07/2021
8/02/2022
27/08/2022
15/03/2023
1/10/2023

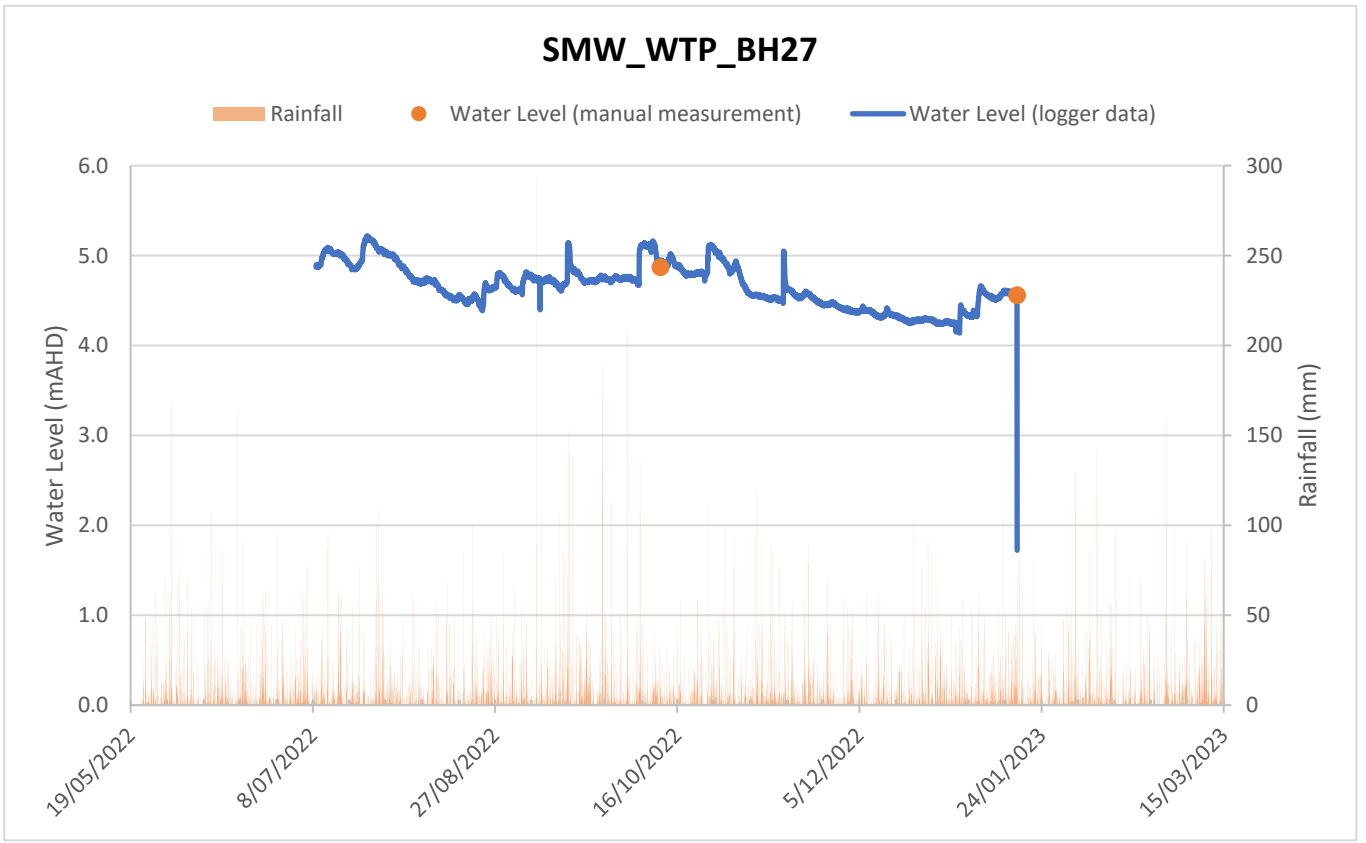

SMW_ENV145
Water Level (manual measurement)
Water Level (Level logger)
Rainfall
Water Level (mAHD)
Rainfall (mm)
4.5
4.3
4.1
3.9
3.7
3.5
3.3
3.1
2.9
2.7
2.5
200
180
160
140
120
100
80
60
40
20
0
23/08/2019
20/01/2020
18/06/2020
15/11/2020
14/04/2021
11/09/2021
8/02/2022
8/07/2022
5/12/2022
4/05/2023
1/10/2023


SMW_WTP_BH02
Water Level (manual measurement)
Water Level (logger measurement)
Rainfall (mm)
Water Level (mAHD)
Rainfall (mm)
29.8
29.6
29.4
29.2
29.0
28.8
28.6
28.4
28.2
28.0
81
72
63
54
45
36
27
18
9
0
26/09/2022
15/11/2022
4/01/2023
23/02/2023
14/04/2023

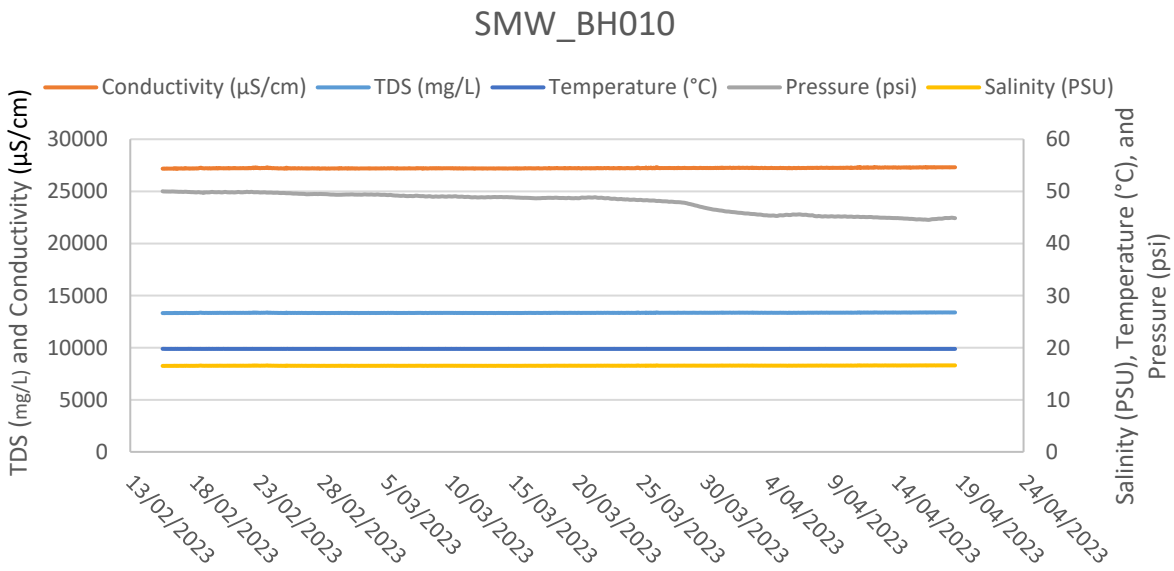

SMW_WTP_BH03A
Water Level (manual measurement)
Water Level (logger measurement)
Rainfall (mm)
Water Level (mAHD)
Rainfall (mm)
32.0
30.0
28.0
26.0
24.0
22.0
20.0
120
100
80
60
40
20
0
31/10/2021
8/02/2022
19/05/2022
27/08/2022
5/12/2022
15/03/2023
23/06/2023

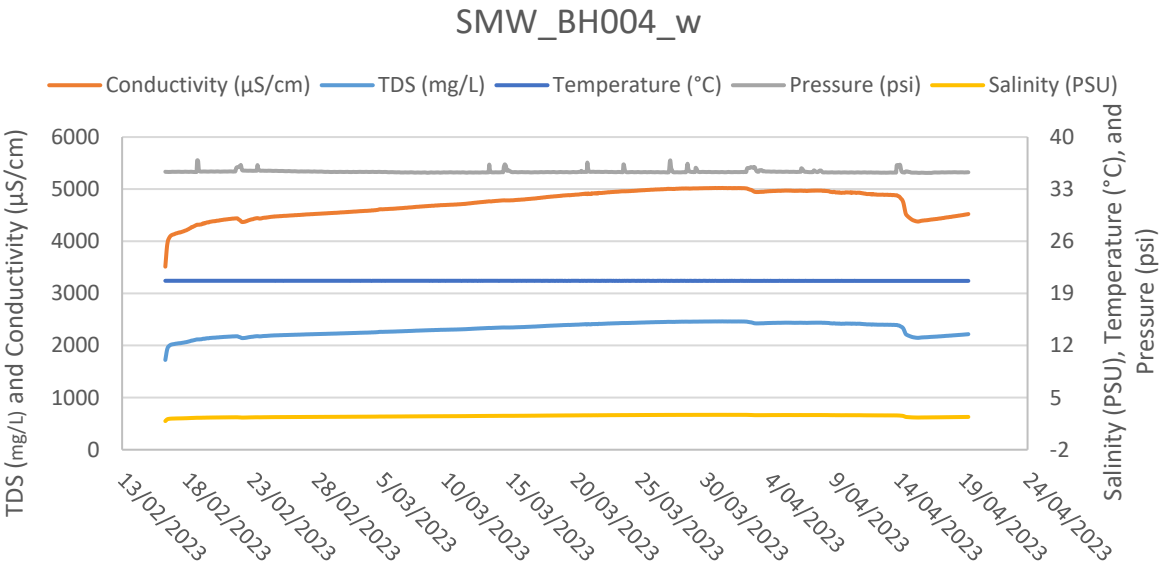

SMW_WTP_BH22
Rainfall
Water Level (manual measurement)
Water Level (logger data)
Water Level (mAHD)
Rainfall (mm)
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
200
175
150
125
100
75
50
25
0
6/10/2022
26/10/2022
15/11/2022
5/12/2022
25/12/2022
14/01/2023
3/02/2023
23/02/2023

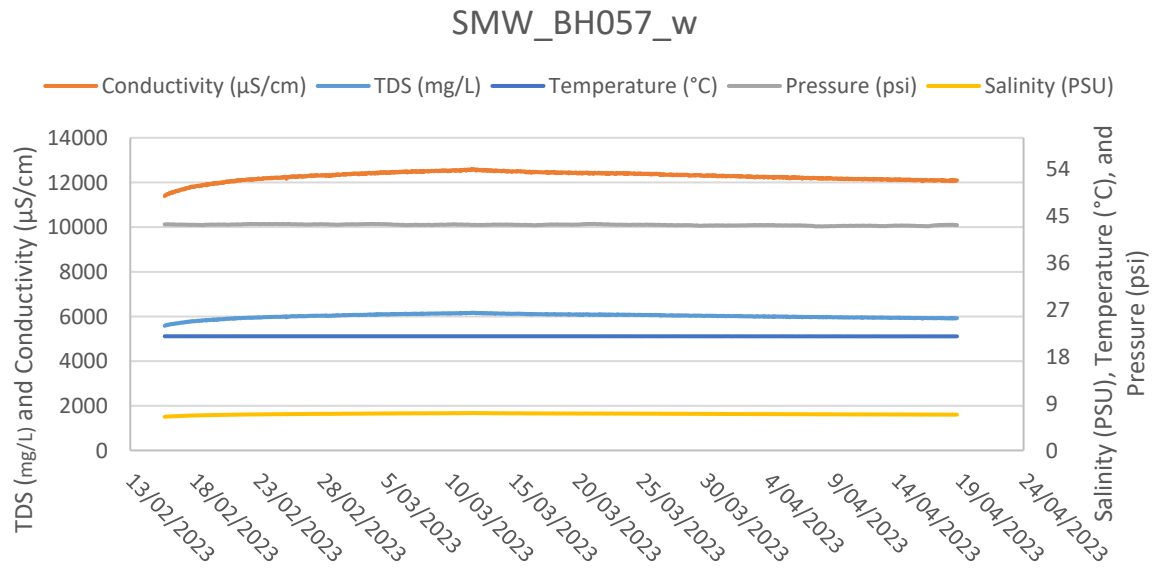

SMW_WTP_BH25_w
Water Level (manual measurement)
Water Level (logger measurement)
Rainfall (mm)
Water Level (mAHD)
Rainfall (mm)
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
80
70
60
50
40
30
20
10
0
18/06/2022
7/08/2022
26/09/2022
15/11/2022
4/01/2023
23/02/2023
14/04/2023


SMW_WTP_BH27
Rainfall
Water Level (manual measurement)
Water Level (logger data)
Water Level (mAHD)
Rainfall (mm)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
300
250
200
150
100
50
0
19/05/2022
8/07/2022
27/08/2022
16/10/2022
5/12/2022
24/01/2023
15/03/2023

CTD logger data – Apr 2023 GME







APPENDIX D – FIELD DATA SHEETS

January 2023 monitoring event

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	WTP_Site01_BH04
Job No:	SC210108.03	**Date:**	23/1/2023 16:26
Recorded By:	Natalie C	**Lat / Long:**	-33.81493,151.00544
Weather:	Partly cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.3
Well Material	Other:	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		Purge Method	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	VWP data obtained, piezometer			

PHOTOS (IF TAKEN)



Photo1: Area

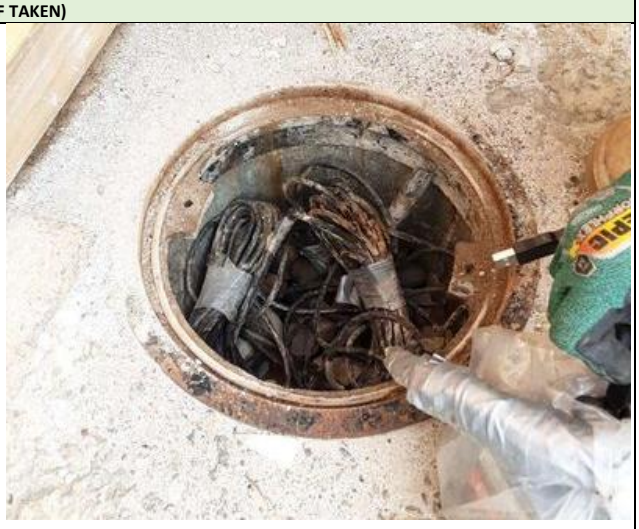


Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW-BH701
Job No:	SC210108.03	**Date:**	3/2/2023 09:48
Recorded By:	Joy X	**Lat / Long:**	-33.80895,150.98864
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	9.4	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	10.1	Well Diameter (mm)	50
Height of Standing Water Column (m)	0.7	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	7.35

FIELD PARAMETER MEASUREMENT

Purged dry? ☐ Yes At L ☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
3/2	10:17			8.79	6.31	9,946	-30.8		-0.9			6,454	23.9	Yellow, brown	No

Other Observations

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH29
Job No:	SC210108.03	**Date:**	17/1/2023 10:09
Recorded By:	Joy X	**Lat / Long:**	-33.83008,151.02153
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Cannot locate posibly demolished			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH27
Job No:	SC210108.03	**Date:**	17/1/2023 06:45
Recorded By:	Natalie C	**Lat / Long:**	-33.83132,151.02345
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	0.46	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	5.95	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.49	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	57.645

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	3.7 m next to concrete barrier, organic odour, has insitu logger, 3.15 m bgl			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH26
Job No:	SC210108.03	**Date:**	17/1/2023 08:09
Recorded By:	Joy X	**Lat / Long:**	-33.83094,151.02431
Weather:	Partly cloudy hot		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	0.68	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	9.56	Well Diameter (mm)	50
Height of Standing Water Column (m)	8.88	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	93.24

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Bolts weary, prize open with screwdriver, logger inside, 7.69 m bgl			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH25_s
Job No:	SC210108.03	**Date:**	17/1/2023 15:16
Recorded By:	Joy X	**Lat / Long:**	-33.82967,151.02563
Weather:	Hot		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	2.13	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	5.7	Well Diameter (mm)	50
Height of Standing Water Column (m)	3.57	Well Annulus (mm)	100
Discharge Water Disposal Method	Other	Minimum Purge Volume	37.485

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
17/1	15:22	0.2		2.18	7.33	2,970	-140.7	1.58	16.6			2,925	24.8		
17/1	15:25	0.5	0.15	2.21	7.32	3,811	-138.5	0.41	5			2,470	24.7		
17/1	15:29	1.3	0.2	2.24	7.29	3,592	-139.8	0.17	2.1			2,327	24.3		
17/1	15:32	1.5	0.1	2.26	7.27	3,450	-140	0.09	1			2,134	24.1		
17/1	15:35	1.6	0.05	2.28	7.25	3,279	-140	0.08	1			2,125	24.1		
17/1	15:38	2.2	0.3	2.29	7.26	3,229	-139.6	0.1	1.2			2,099	24.1		
Other Observations		Slightly turbid, orange brown colour, no odour													

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No	
		Gauged	☑ Yes ☐ No	
Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)

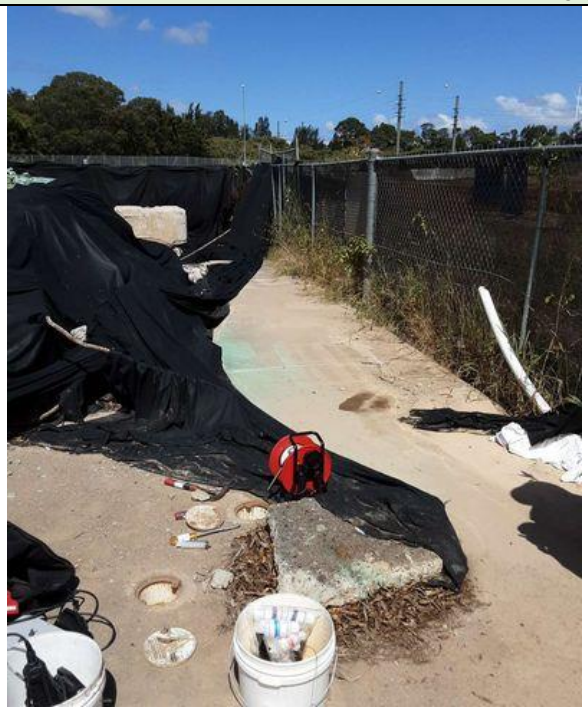


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH25
Job No:	SC210108.03	**Date:**	17/1/2023 15:10
Recorded By:	Joy X	**Lat / Long:**	-33.8297,151.02567
Weather:	Hot		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.15
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	2.62	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	10.29	Well Diameter (mm)	50
Height of Standing Water Column (m)	7.67	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	80.535

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	North well* inside asbesfos exclusion zone, logger is 8 mbgl			

PHOTOS (IF TAKEN)

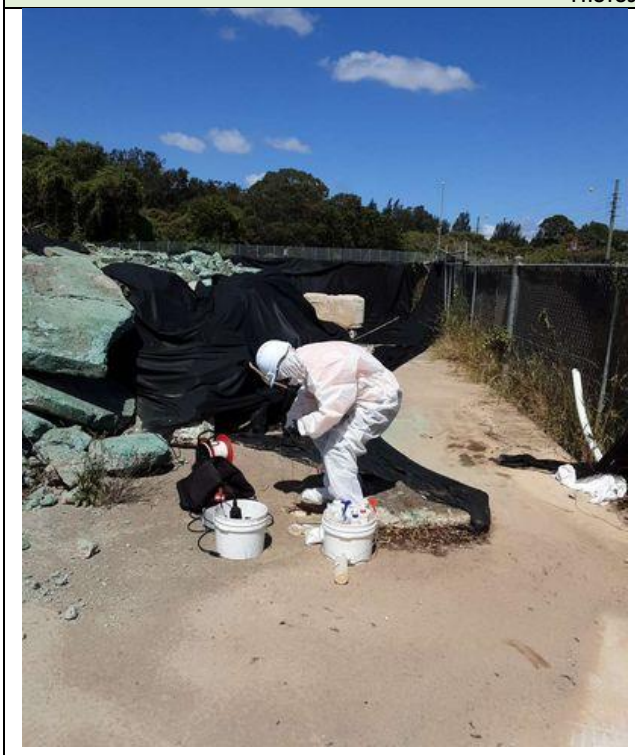


Photo1: Area

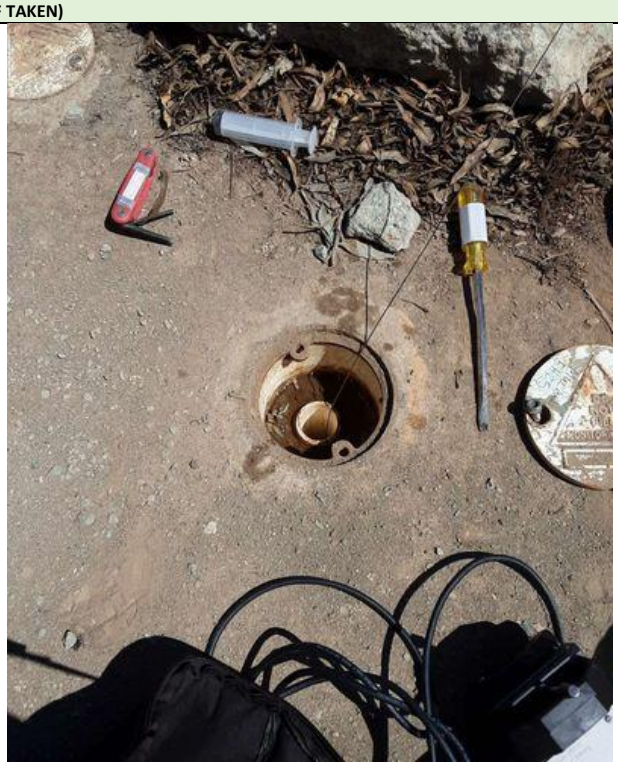


Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH23
Job No:	SC210108.03	**Date:**	3/2/2023 14:33
Recorded By:	Joy X	**Lat / Long:**	-33.84361,151.06355
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	6.04	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	30.5	Well Diameter (mm)	50
Height of Standing Water Column (m)	24.46	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	256.83

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Logger might lost. Silty bottom. Got permission from Jane			

PHOTOS (IF TAKEN)

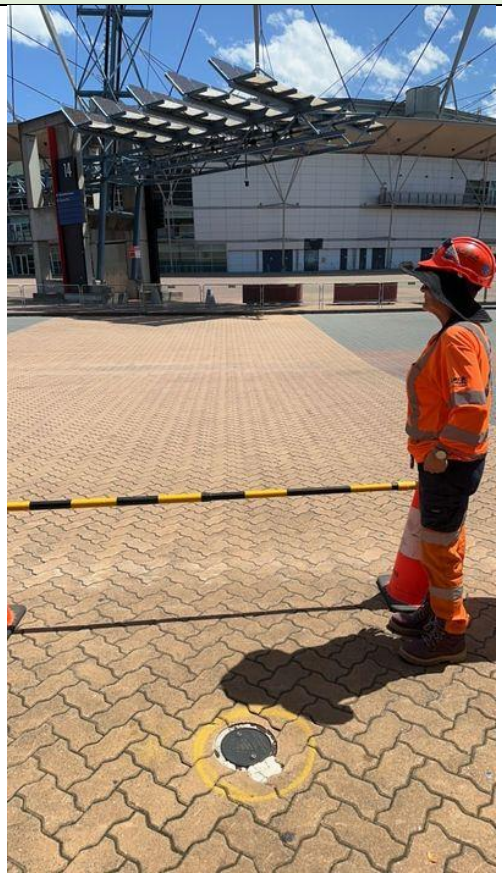


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH22
Job No:	SC210108.03	**Date:**	3/2/2023 13:57
Recorded By:	Joy X	**Lat / Long:**	-33.84216,151.05855
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.15
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		Purge Method	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.7	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	25.4	Well Diameter (mm)	50
Height of Standing Water Column (m)	23.7	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	248.85

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	In situ 100- 20.4m			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH19
Job No:	SC210108.03	**Date:**	18/1/2023 15:58
Recorded By:	Joy X	**Lat / Long:**	-33.83297,151.03246
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.94
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		Purge Method	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	4.33	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH18
Job No:	SC210108.03	**Date:**	16/1/2023 14:27
Recorded By:	Natalie C	**Lat / Long:**	-33.82815,151.02428
Weather:	Partly cloudy, hot		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Bolts broken,could not open			

PHOTOS (IF TAKEN)





Photo1: Area	**Photo 2: Bore condition**

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH17
Job No:	SC210108.03	**Date:**	18/1/2023 12:21
Recorded By:	Natalie C	**Lat / Long:**	-33.82863,151.02637
Weather:	Hot		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Covered by hail road			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH13
Job No:	SC210108.03	**Date:**	20/1/2023 13:48
Recorded By:	Joy X	**Lat / Long:**	-33.82723,151.02482
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.15
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	0.98	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	7.3	Well Diameter (mm)	50
Height of Standing Water Column (m)	6.32	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	66.36

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
20/1	14:00	0.8		1.1	6.45	7,007	-140.7	0.28	3			4,556	20.7	Clear	No odour
20/1	14:03	1.3	0.25	1.2	6.38	7,075	-152.9	0.23	2.6			4,602	21.1		
20/1	14:08	1.5	0.04	1.39	6.36	7,064	-157	0.2	2.2			4,589	21.1		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	GALC LOGGER in, heavy blue lid. Silty bottom. Pvc power			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH03A
Job No:	SC210108.03	**Date:**	3/2/2023 11:26
Recorded By:	Joy X	**Lat / Long:**	-33.8093,150.98968
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.17
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		Purge Method	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	6.04	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	22.13	Well Diameter (mm)	50
Height of Standing Water Column (m)	16.09	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	168.945

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
3/2	12:06			6.55	6.45	178.1	-48		-0.9			116.35	27.7	Suspension	No
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Gatic cover found 5 m away, pen found inside			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH02
Job No:	SC210108.03	**Date:**	3/2/2023 08:40
Recorded By:	Joy X	**Lat / Long:**	-33.80834,150.98618
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	6.7	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	21.1	Well Diameter (mm)	50
Height of Standing Water Column (m)	14.4	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	151.2

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
3/2	09:05	5			9.53	707		2.97	33.5			461.5	21.4	Brown, suspension	No

Other Observations	Q

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV284
Job No:	SC210108.03	**Date:**	16/1/2023 14:17
Recorded By:	Natalie C	**Lat / Long:**	-33.82818,151.02394
Weather:	Partly cloudy		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	0.64	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	6.95	Well Diameter (mm)	50
Height of Standing Water Column (m)	6.31	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	66.255

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Slightly silty at bottom			

PHOTOS (IF TAKEN)

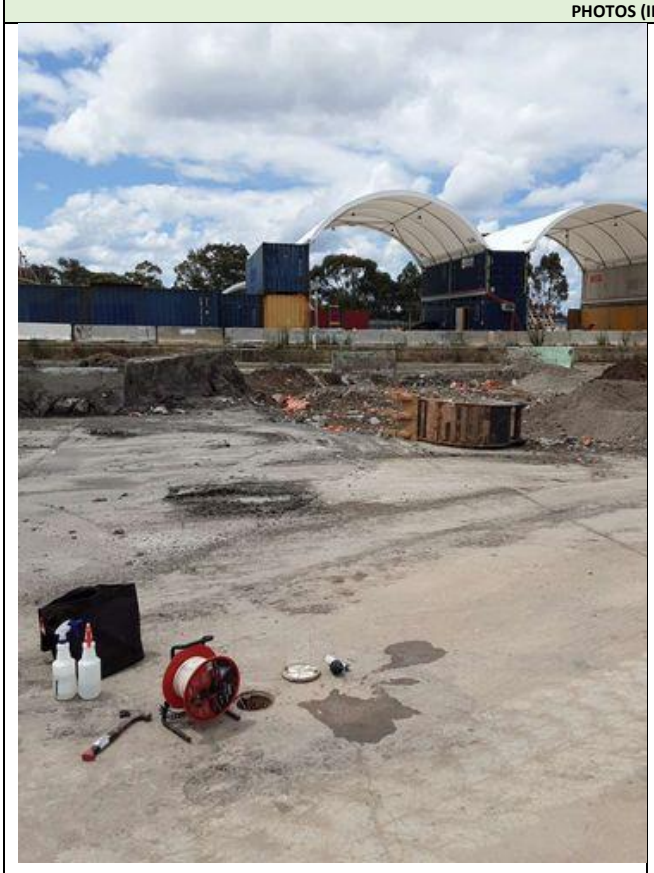


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV283_s
Job No:	SC210108.03	**Date:**	16/1/2023 14:41
Recorded By:	Joy X	**Lat / Long:**	-33.82764,151.02407
Weather:			

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Destroyed			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV283
Job No:	SC210108.03	**Date:**	16/1/2023 14:40
Recorded By:	Natalie C	**Lat / Long:**	-33.82765,151.02406
Weather:			

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Destroyed			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV276
Job No:	SC210108.03	**Date:**	21/2/2023 15:16
Recorded By:	Joy X	**Lat / Long:**	-33.83075,151.02168
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Gatic cover broken, cna			

PHOTOS (IF TAKEN)

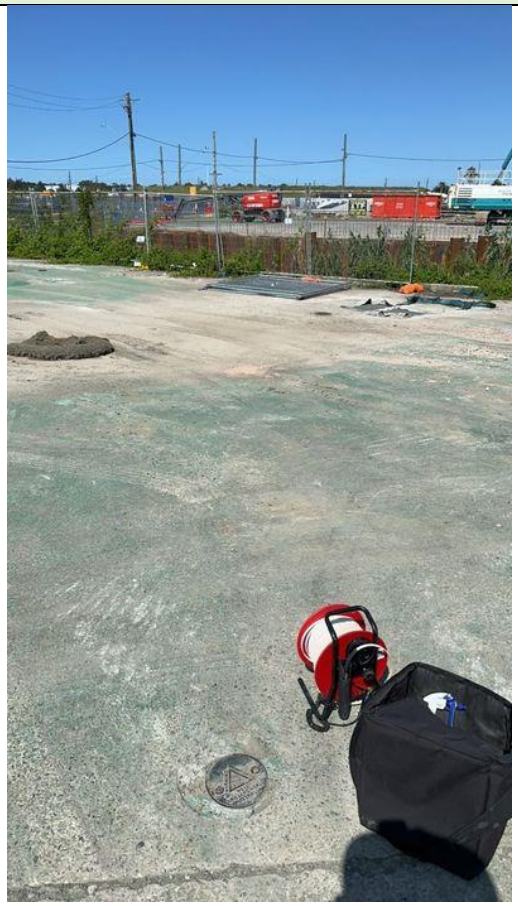


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV236
Job No:	SC210108.03	**Date:**	17/1/2023 12:36
Recorded By:	Joy X	**Lat / Long:**	-33.83275,151.02716
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.58	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry? ☐ Yes At L ☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
17/1	12:42	0.5		1.78	5.29	28,927	69.2	0.77	10			18,785.5		Slightly turbud, greyish	No
17/1	12:45	0.8	0	1.87	5.26	28,472	74.9	0.48	6.6			18,499	24.6		
17/1	12:50	1.1	0	1.9	5.2	28,286	74.2	0.74	9.9			18,401.5	25.9		
17/1	12:54	1.4	0	2.06	5.13	27,803	73.8	0.64	8.6			18,011.5	25.2		
17/1	12:57	1.8	0	2.25	5.06	27,217	74.3	0.6	8.1			17,647	25.1		
17/1	13:01	2.2	0.1	2.36	5.04	26,819	76.1	0.6	8			17,400.5	25.1		
17/1	13:04		0	2.47	5.03	26,628	75.6	0.61	8.1			17,296.5			
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Alternative for ENV149			

PHOTOS (IF TAKEN)

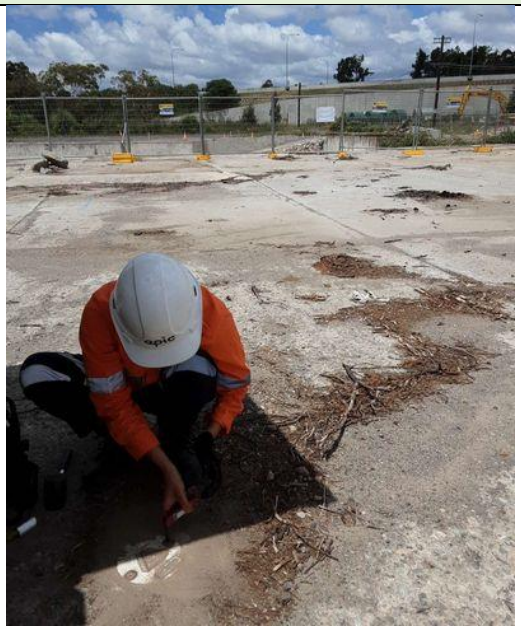


Photo1: Area

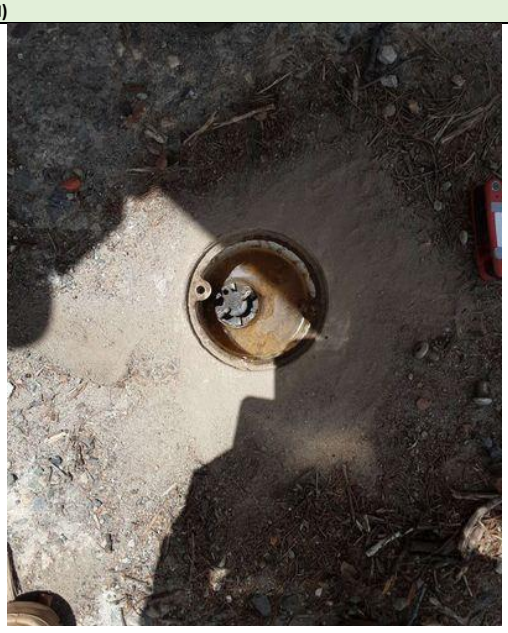


Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV234
Job No:	SC210108.03	**Date:**	17/1/2023 13:30
Recorded By:	Joy X	**Lat / Long:**	-33.83157,151.02694
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	0.56	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	5.2	Well Diameter (mm)	50
Height of Standing Water Column (m)	4.64	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	48.72

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
17/1	13:33	0.2		0.57	6.3	46,882	-35.6	1.02	13.1			31,031	26.6		
17/1	13:36	0.6	0.2	0.57	6.33	48,547	-69.7	0.22	3.2			31,590	26.6		
17/1	13:39	0.8	0.1	0.57	6.34	48,663	-76.5	0.16	2.4			31,642	26.4		
17/1	13:42	1.3	0.25	0.57	6.34	48,665	-82	0.25	3.5			31,655	26.5		
Other Observations		Organic odour, colourless													

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	No bolts			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV224
Job No:	SC210108.03	**Date:**	17/1/2023 08:51
Recorded By:	Natalie C	**Lat / Long:**	-33.82991,151.02411
Weather:	Sunny hot		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	2.7	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	4.45	Well Diameter (mm)	50
Height of Standing Water Column (m)	1.75	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	18.375

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
17/1	08:56	0.4		2.7	6.27	11,587	-65	0.27	3.1			7,501	21.6		
17/1	08:59	0.9	0.25	2.7	6.44	7,750	-91.2	0.16	1.8			4,881	20.8		
17/1	09:02	1.4	0.25	2.7	6.48	6,590	-94.5	0.21	2.5			4,231	21.1		
17/1	09:06	1.9	0.13	2.7	6.5	5,925	-93.6	0.29	3.5			3,802	21.4		
17/1	09:09	2.2	0.15	2.7	6.51	5,300	-90.7	0.34	4			3,415	21.8		
17/1	09:12	2.5	0.15	2.7	6.51	4,999	-88.3	0.37	4.3			3,224	21.8		
17/1	09:15	2.5	0	2.705	6.49	4,802	-85	0.38	4.4			3,074	21.8		
17/1	09:18	2.7	0.1	2.7	6.49	4,520	-82.4	0.39	4.5			2,931	22.1		
17/1	09:21	3.3	0.2	2.7	6.48	4,382	-80.8	0.38	4.4			2,840	22.6		
17/1	09:24	3.5	-0.15	2.7	6.47	4,333	-79.7	0.37	4.4			2,808	22.6		
Other Observations		Slightly turbid, grey colour, slightly organic odour, slight sheen on surface													

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)

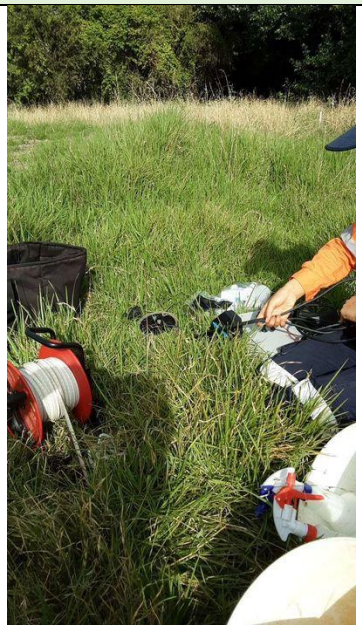


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV219
Job No:	SC210108.03	**Date:**	17/1/2023 10:11
Recorded By:	Joy X	**Lat / Long:**	-33.83001,151.02136
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Bad	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	2.18	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	3.1	Well Diameter (mm)	50
Height of Standing Water Column (m)	0.92	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	9.66

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Gatic cover destroyed, well open			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV149
Job No:	SC210108.03	**Date:**	17/1/2023 11:19
Recorded By:	Joy X	**Lat / Long:**	-33.8326,151.02688
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)	NaN	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	NaN

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Bolts broken, cannot open			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV148
Job No:	SC210108.03	**Date:**	17/1/2023 12:07
Recorded By:	Natalie C	**Lat / Long:**	-33.83356,151.02732
Weather:	Paetlycloudy, hot		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.755	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	6.35	Well Diameter (mm)	50
Height of Standing Water Column (m)	4.595	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	48.249

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Silty at bottom			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Feb

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV145
Job No:	SC210108.03	**Date:**	16/2/2023 08:05
Recorded By:	Joy X	**Lat / Long:**	-33.82804,151.02781
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)

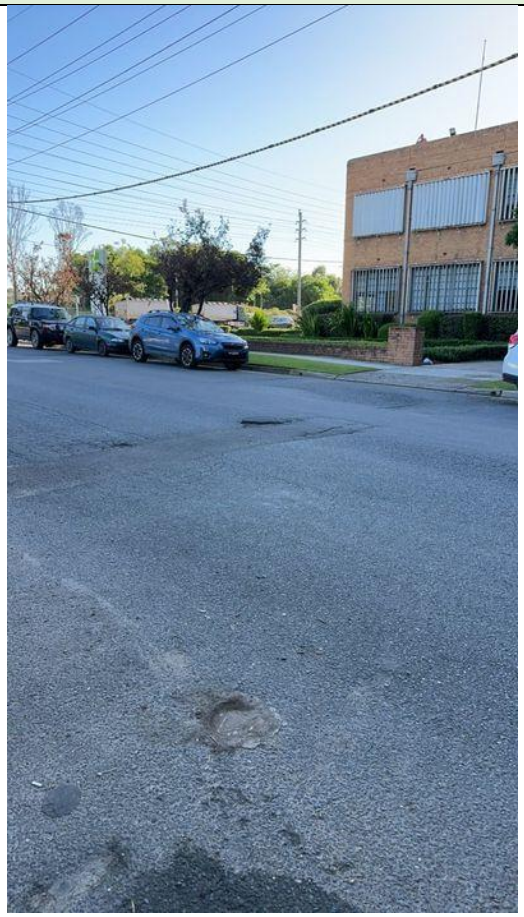


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV089
Job No:	SC210108.03	**Date:**	16/1/2023 12:34
Recorded By:	Joy X	**Lat / Long:**	-33.8294,151.02305
Weather:	Partly Cloudy		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Covered by stockpiles, cannot locate			

PHOTOS (IF TAKEN)

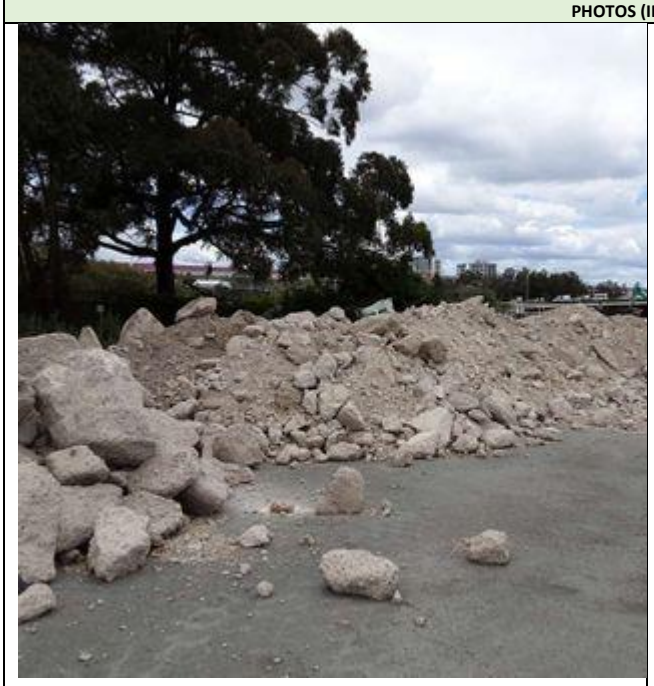


Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV088
Job No:	SC210108.03	**Date:**	16/1/2023 11:36
Recorded By:	Joy X	**Lat / Long:**	-33.82964,151.02194
Weather:	Ps		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.07
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		Purge Method	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	2.55	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	5.95	Well Diameter (mm)	50
Height of Standing Water Column (m)	3.4	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	35.7

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	No gatic cover, filled with soil/fine gravels.			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV083
Job No:	SC210108.03	**Date:**	16/1/2023 08:00
Recorded By:	Natalie C	**Lat / Long:**	-33.82845,151.0233
Weather:	Sunny warm		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.08
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	0.36	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	5.95	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.59	Well Annulus (mm)	100
Discharge Water Disposal Method	Other	Minimum Purge Volume	58.695

FIELD PARAMETER MEASUREMENT

Purged dry?	☑ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
16/1	08:08	1		0.65	5	20,818	7.7	0.2	2.6			13,045	25.5		
16/1	08:12	1.3	0.08	0.85	4.98	19,669	-1.3	0.25	3.3			12,655	25.6		
16/1	08:15	1.6	0.15	0.9	25.7	18,930	-1.1	0.25	3.3			12,233	25.7		
16/1	08:18	2	0.2	0.99	4.98	17,619	-1.5	0.26	3.3			11,420.5	25.7	Clear	No
16/1	08:22	2.5	0.1	1.06	4.99	16,753	-2.7	0.28	3.6			10,764	25.6		
16/1	08:25	3	0	1.14	5.03	15,485	0.2	0.31	4			10,030	26.7		
16/1	08:28	3.4	0.13	1.17	5.76	14,735	2.1	0.33	4.3			9,555	25.7		
16/1	08:31	4	0	1.09	5.05	14,527	6.9	0.37	4.7			9,657	25.8		
16/1	08:34	4.4	0.2	1.15	5.11	14,024	5	0.38	4.8			9,067	26		
Other Observations		Colourless, no odour													

WELL SAMPLING

Sampling Method:	Peristatic	**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
		QC01	QC01	RS01
Analysis/Bottles				
Comment	Well head semi flooded			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV042
Job No:	SC210108.03	**Date:**	18/1/2023 12:45
Recorded By:	Joy X	**Lat / Long:**	-33.82978,151.02739
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.97	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	10.3	Well Diameter (mm)	50
Height of Standing Water Column (m)	8.33	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	87.465

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
18/1	12:53	0.3		2.16	5.7	24,183	80.7	0.33	4.4			15,717	24.9		
18/1	12:56	0.7	0.15	2.29	5.7	24,144	74.5	0.22	3			15,691	25		
18/1	13:00	1.2	0.2	2.33	5.68	24,188	62.7	0.23	3			15,723	24.9		
18/1	13:03	1.5	0.15	2.45	5.69	24,178	59.1	0.27	3.8			15,717	25		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Logger data extracted, 7.8 mbgl			

PHOTOS (IF TAKEN)



Photo1: Area

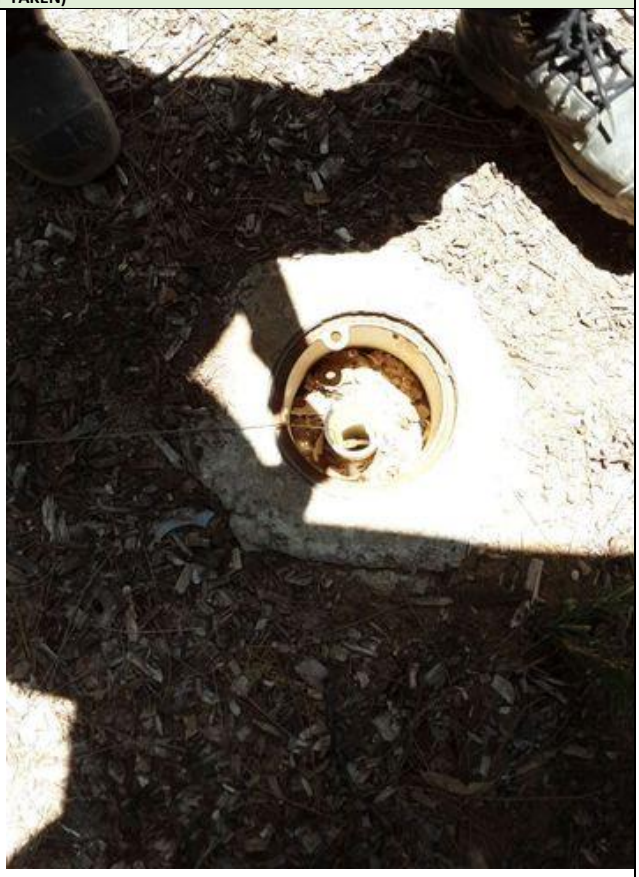


Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV039
Job No:	SC210108.03	**Date:**	19/1/2023 16:14
Recorded By:	Joy X	**Lat / Long:**	-33.82683,151.02163
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.06
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	4.22	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	10.32	Well Diameter (mm)	50
Height of Standing Water Column (m)	6.1	Well Annulus (mm)	100
Discharge Water Disposal Method	Other	Minimum Purge Volume	64.05

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
19/1	16:19	0.2		4.32	6.68	14,655	-59.9	2.22	25.6			9,581	20.2		
19/1	16:22	0.4	0.1	4.38	6.21	29,260	-35.8	0.8	9.6			19,025	20.3		
19/1	16:25	1.2	0.4	4.43	6.22	29,347	-36.5	0.63	7.7			19,077	20.4		
19/1	16:28	1.5	0.15	4.45	6.16	29,462	-36.8	0.57	7			19,155.5	20.4		
19/1	16:31	1.8	0.15	4.5	6.12	29,623	-36.4	0.41	5.1			19,272	20.4		
19/1	16:34	2	0.1	4.52	6.11	29,768	-36.2	0.41	5.1			19,357	20.4		
19/1	16:37	2.2	0.1	4.55	6.11	29,934	-35.7	0.51	6.3			19,480	20.4		
Other Observations		Colourless, no odour													

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV010
Job No:	SC210108.03	**Date:**	19/1/2023 12:03
Recorded By:	Joy X	**Lat / Long:**	-33.82005,151.02221
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.66	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	7.05	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.39	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	56.595

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)

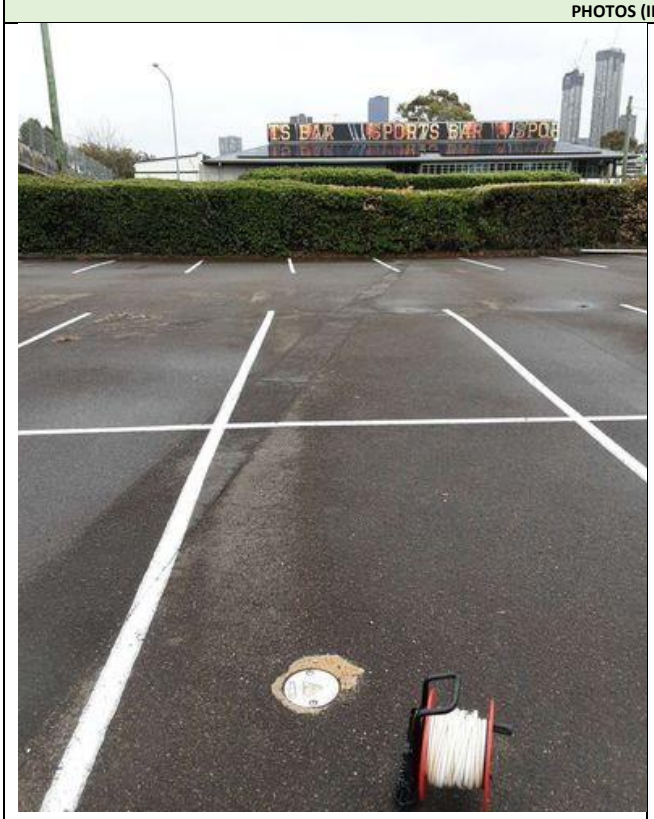


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV009
Job No:	SC210108.03	**Date:**	19/1/2023 10:42
Recorded By:	Joy X	**Lat / Long:**	-33.81991,151.02263
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	1.87	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	7.12	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.25	Well Annulus (mm)	100
Discharge Water Disposal Method	Other	Minimum Purge Volume	55.125

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
19/1	10:48	0.3		1.865	6.99	1,947	-118.9	0.55	6.1			1,287	22.7		
19/1	10:51	0.6	0.1	1.865	7	1,960	-128.8	0.47	5.5			1,274	22.8		
19/1	10:54	0.9	0.15	1.865	6.98	1,974	-132.2	0.31	3.7			1,280	23.3		
19/1	10:57	1.3	0.2	1.865	6.98	1,991	-133.8	0.26	3.1			1,293	23.5		
19/1	11:00	1.5	0.1	1.865	6.97	1,995	-135.1	0.21	2.4			1,293	23.6		
Other Observations		Slightly turbid, slightly yellowgrey. No odour													

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
		QC03	QC03	RS04
Analysis/Bottles				
Comment	Logger 4.3 mbgl			

PHOTOS (IF TAKEN)

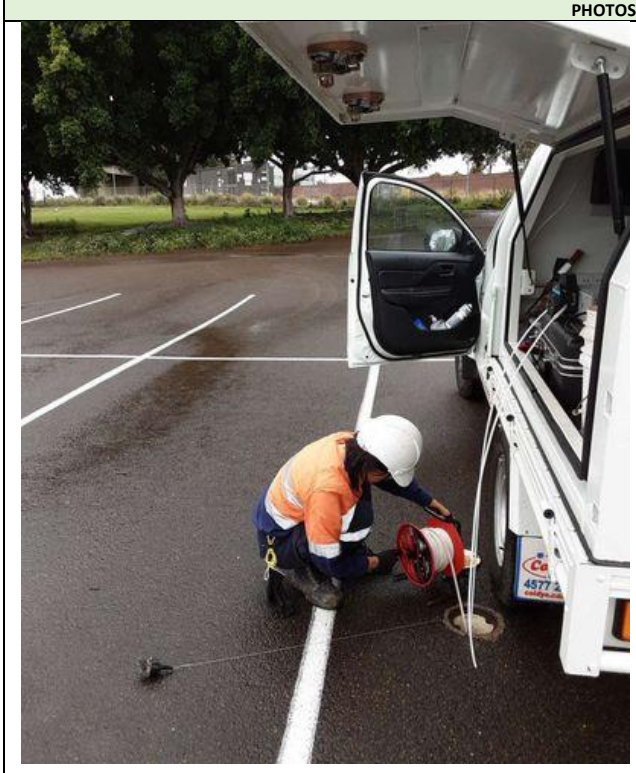


Photo1: Area

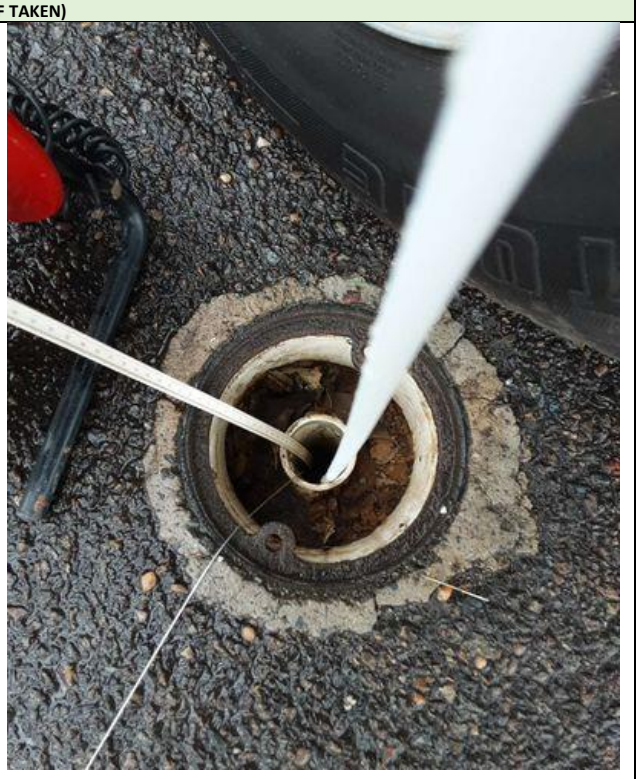


Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH057_w
Job No:	SC210108.03	**Date:**	19/1/2023 11:43
Recorded By:	Natalie C	**Lat / Long:**	-33.81975,151.02222
Weather:	Cold, wet		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.2
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.95	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	27.65	Well Diameter (mm)	50
Height of Standing Water Column (m)	25.7	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	269.85

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Solinst level logger, 23.6 stringlength			

PHOTOS (IF TAKEN)



Photo1: Area

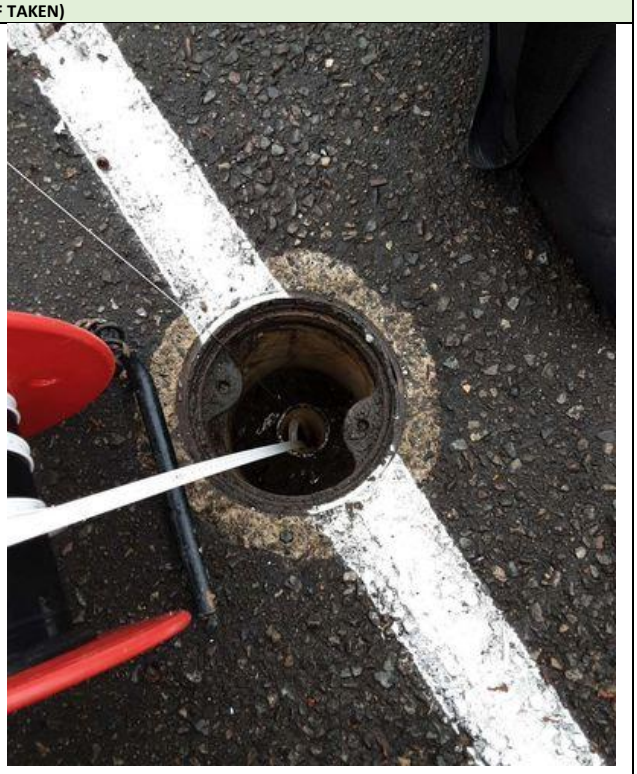


Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH057_s
Job No:	SC210108.03	**Date:**	19/1/2023 10:54
Recorded By:	Joy X	**Lat / Long:**	-33.81973,151.02219
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.17
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.75	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	4.6	Well Diameter (mm)	50
Height of Standing Water Column (m)	2.85	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	29.925

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Solinst level logger, 2.93m string length, silty bottom			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH018
Job No:	SC210108.03	**Date:**	20/1/2023 09:54
Recorded By:	Joy X	**Lat / Long:**	-33.80383,150.99263
Weather:			

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Under car			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH010
Job No:	SC210108.03	**Date:**	18/1/2023 13:26
Recorded By:	Joy X	**Lat / Long:**	-33.82977,151.02748
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.05
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.27	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	27.6	Well Diameter (mm)	50
Height of Standing Water Column (m)	26.33	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	276.465

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	CTD logger installed, 9.8 mbgl			

PHOTOS (IF TAKEN)

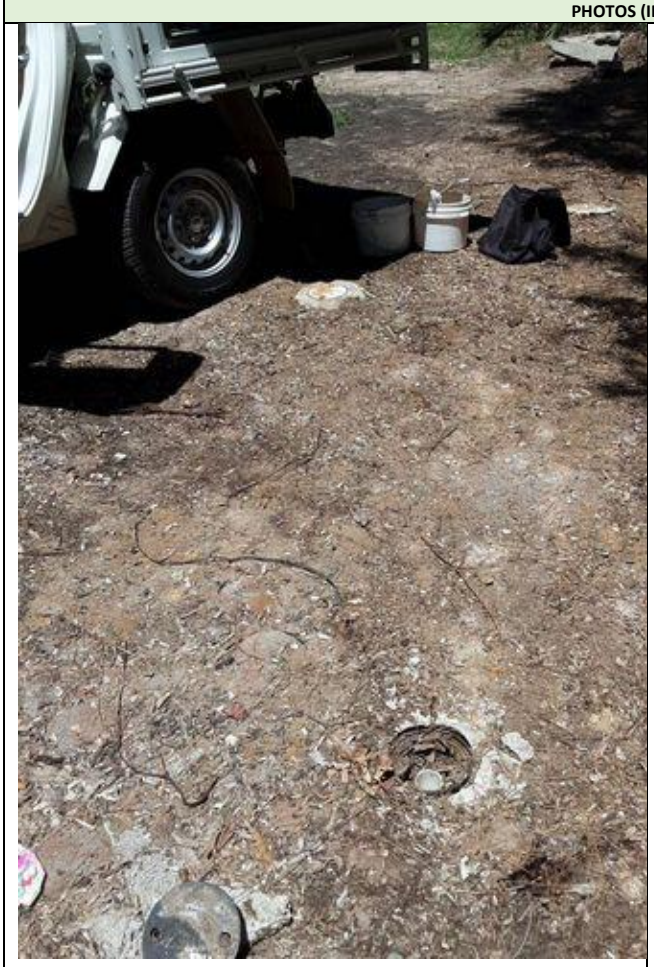


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH008_w
Job No:	SC210108.03	**Date:**	20/1/2023 08:43
Recorded By:	Joy X	**Lat / Long:**	-33.80949,150.99095
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.15
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Bad	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		Purge Method	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	5.08	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	18	Well Diameter (mm)	50
Height of Standing Water Column (m)	12.92	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	135.66

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Logger-11.8m string			

PHOTOS (IF TAKEN)

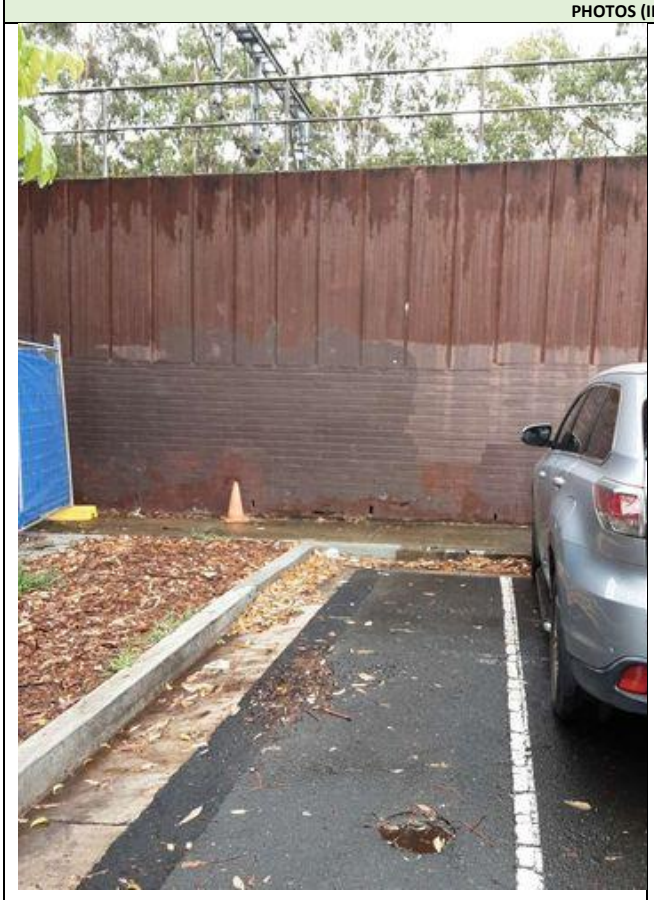


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH004_w
Job No:	SC210108.03	**Date:**	23/1/2023 15:54
Recorded By:	Natalie C	**Lat / Long:**	-33.81312,151.00565
Weather:	Partly cloudy		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Could not access, underneath car			

PHOTOS (IF TAKEN)

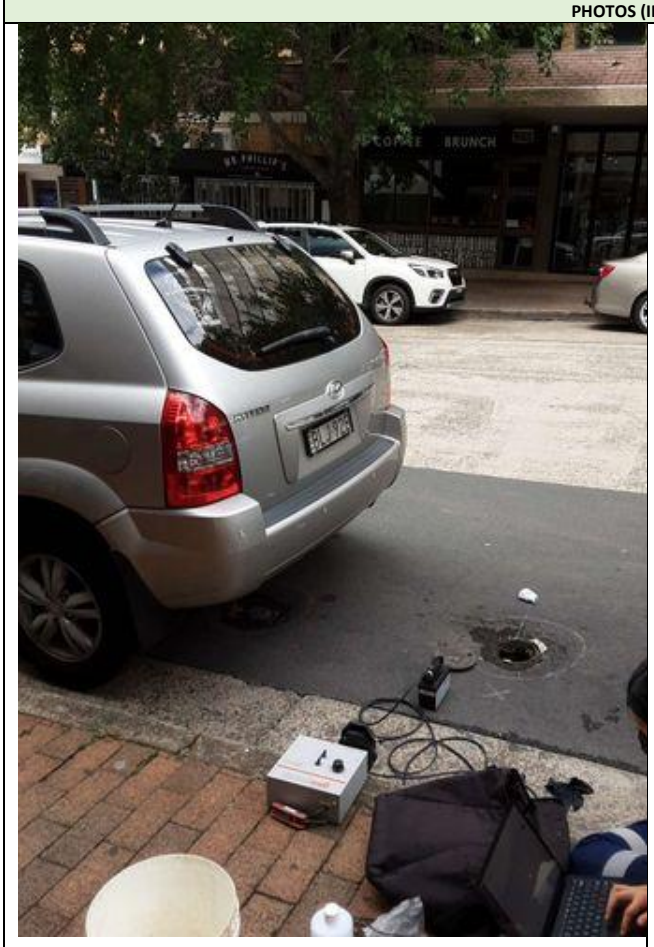


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH004_w
Job No:	SC210108.03	**Date:**	16/2/2023 07:03
Recorded By:	Joy X	**Lat / Long:**	-33.81309,151.0057
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.05
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	level logger data extracted-15.5mbgl			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH004_s
Job No:	SC210108.03	**Date:**	23/1/2023 14:51
Recorded By:	Joy X	**Lat / Long:**	-33.81314,151.00567
Weather:	Overcast		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.05
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	4.75	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	11.4	Well Diameter (mm)	50
Height of Standing Water Column (m)	6.65	Well Annulus (mm)	100
Discharge Water Disposal Method	Other	Minimum Purge Volume	69.825

FIELD PARAMETER MEASUREMENT

Purged dry?	☑ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
23/1	15:00	0.6		4.74	6.74	162.5	83.2	3.2	36			105.95	21.8		
23/1	15:04	1	0.13	4.74	6.68	163.2	78.4	2.46	28			106	21.8		
23/1	15:07	1.3	0.15	4.74	6.71	163.9	77.5	2.22	25.4			106.6	21.8		
23/1	15:10	1.6	0.15	4.74	6.64	165.3	79	2	22.6			107.25	21.4		
23/1	15:13	2	0.13	4.74	6.58	168.8	80.6	1.75	19.6			109.85	21.7		
Other Observations		Colourless, no odour, slightly turbid													

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
				RS06
Analysis/Bottles				
Comment	Bentonite swallow, 1x level logger 6.25 mbgl, Epic install 1x CTD logger at 6.65 mbgl, might need to move to deeper			

PHOTOS (IF TAKEN)

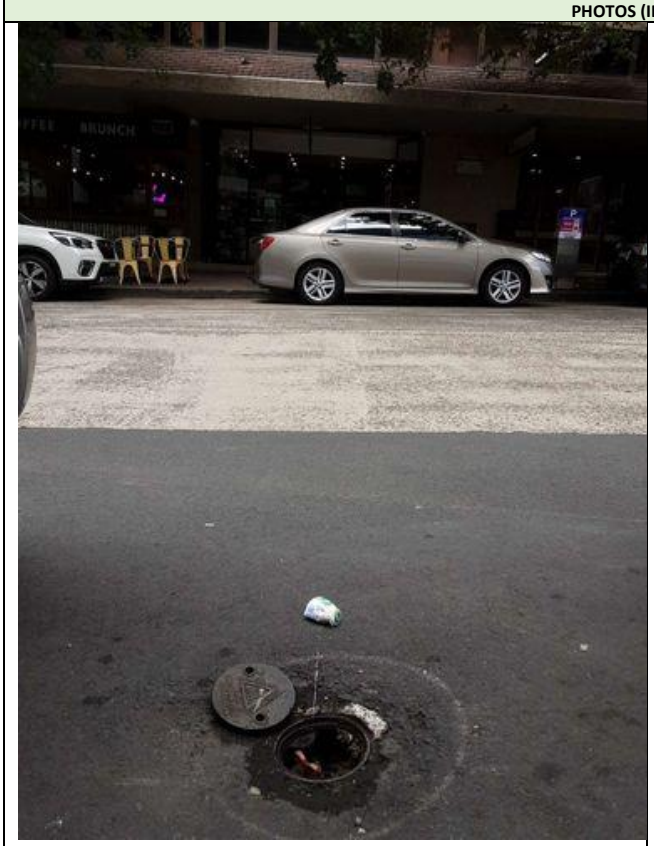


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH003_s
Job No:	SC210108.03	**Date:**	23/1/2023 10:09
Recorded By:	Natalie C	**Lat / Long:**	-33.81464,151.00392
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.02
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Bad	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	6.52	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	10.52	Well Diameter (mm)	50
Height of Standing Water Column (m)	4	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	42

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	1x Level logger 9.2 mbgl, pvc tubing jis cracked, gatic is on (slightly disturbed) but well lid is off because cannot fit, silty bottom			

PHOTOS (IF TAKEN)

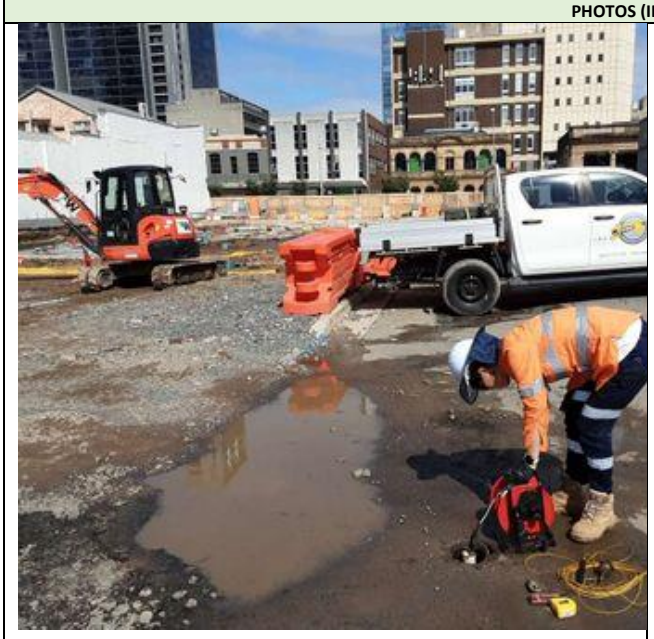


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH001_w
Job No:	SC210108.03	**Date:**	20/1/2023 09:45
Recorded By:	Joy X	**Lat / Long:**	-33.80799,150.98831
Weather:	Rainy		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	BH001 deep/shallow under vehicle, cannot access, check next Tuesday			

PHOTOS (IF TAKEN)

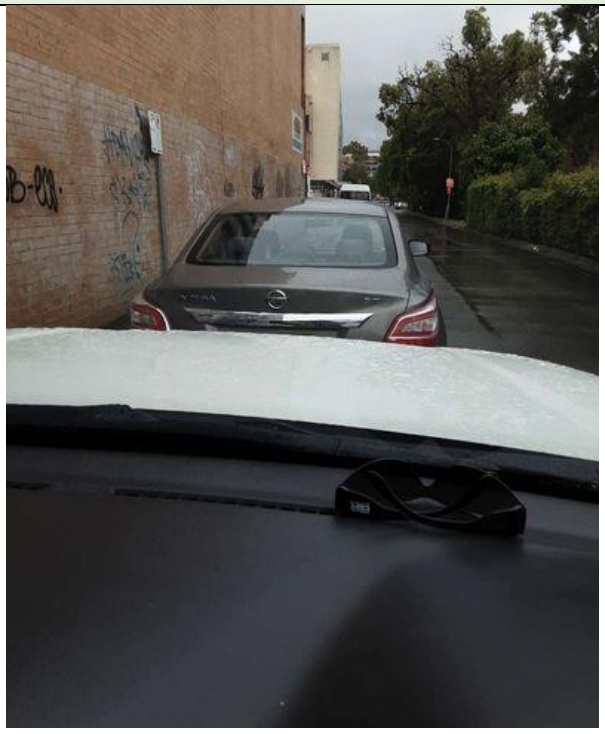


Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ADD_BH02
Job No:	SC210108.03	**Date:**	19/1/2023 09:14
Recorded By:	Natalie C	**Lat / Long:**	-33.82242,151.02165
Weather:	Rainy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.12
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Bailer
Water Level Depth (WL in m BTOC)	11.54	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method	Other	Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
19/1	09:59				6.41	158	102.7	5.66	63.4			102			
Other Observations		Slightly turbid, slightly brown, no odour													

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Depth >30m. Two loggers, one depp 27.3 mbgl and baro logger 0.64 mbgl			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	PM_BH021
Job No:	SC210108.03	**Date:**	23/1/2023 08:42
Recorded By:	Joy X	**Lat / Long:**	-33.81404,151.00487
Weather:	Partly Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.1	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	6.94	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.84	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	61.32

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)

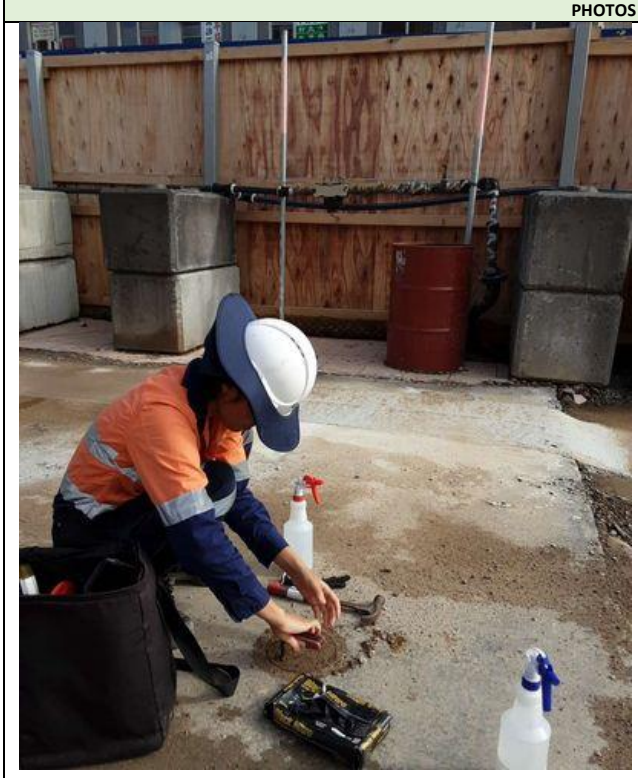


Photo1: Area

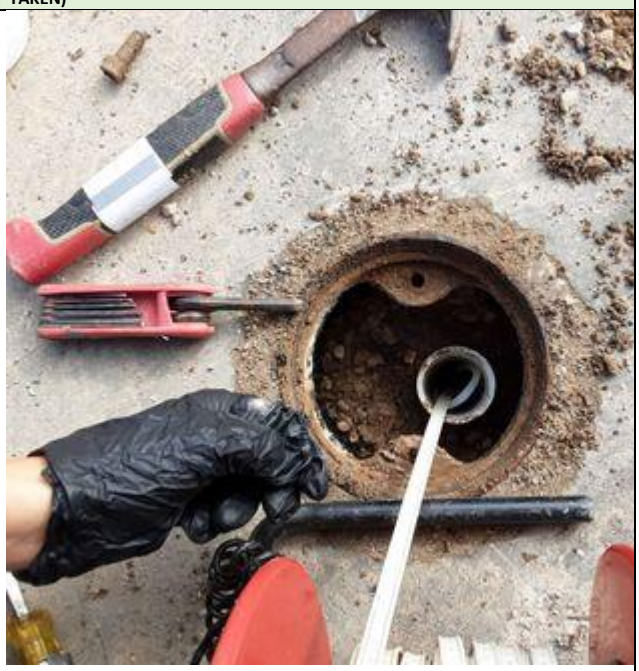


Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	PM_BH018
Job No:	SC210108.03	**Date:**	23/1/2023 09:23
Recorded By:	Natalie C	**Lat / Long:**	-33.81423,151.00424
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	1.56
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	10.41	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	30	Well Diameter (mm)	50
Height of Standing Water Column (m)	19.59	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	205.695

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Well depth >30 m			

PHOTOS (IF TAKEN)

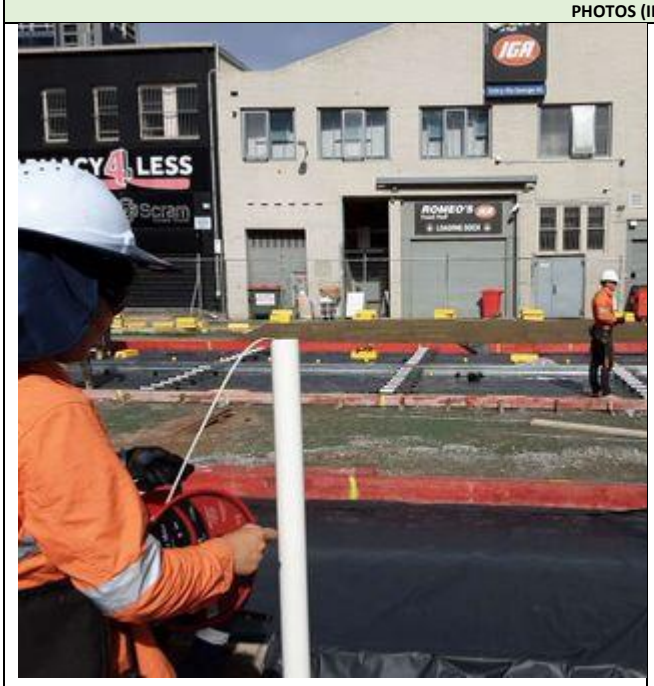


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	PM_BH016
Job No:	SC210108.03	**Date:**	23/1/2023 10:20
Recorded By:	Joy X	**Lat / Long:**	-33.8151,151.00407
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Bad	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Filled up to 25 cm bTOC with sand /gravels			

PHOTOS (IF TAKEN)

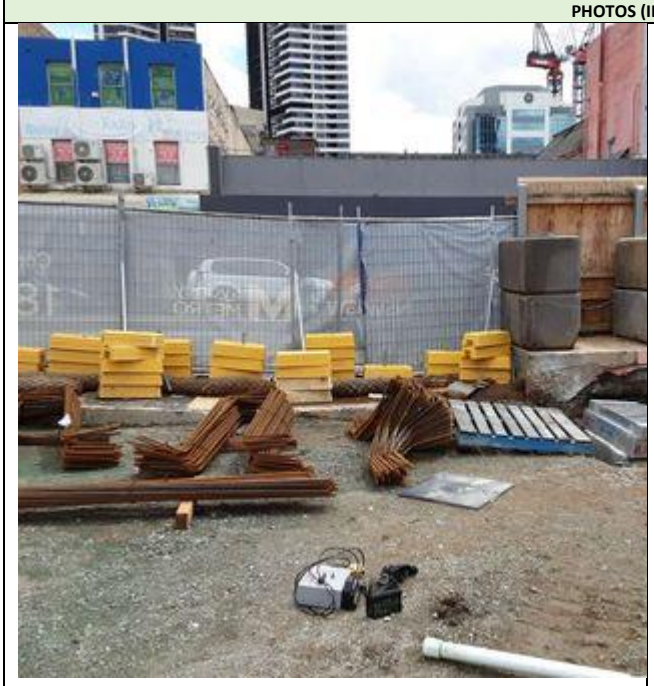


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	PM_BH015
Job No:	SC210108.03	**Date:**	23/1/2023 08:59
Recorded By:	Natalie C	**Lat / Long:**	-33.81386,151.0043
Weather:	Partly cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.18
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	5.595	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	10.1	Well Diameter (mm)	50
Height of Standing Water Column (m)	4.505	Well Annulus (mm)	100
Discharge Water Disposal Method	Other	Minimum Purge Volume	47.304

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
23/1	10:59	0.3		4.82	5.75	920	79.7	0.58	6.6			598	22.1	Clear	No smell
23/1	11:03	1	0.23	4.95	5.51	785	84.7	0.29	3.3			507	22.1		
23/1	11:06	1.3	0.15	5.07	5.47	770	86.6	0.18	2			500.5	22		
23/1	11:10	1.5	0.05	5.2	5.42	755	89.3	0.13	1.5			487.5	21.7		
23/1	11:14	1.5	0	5.31	5.39	747	91.3	0.16	1.8			487.5	21.5		
23/1	11:17	2	0	5.4	5.38	744	92.3	0.19	2.2			481	21.4		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Well had 1.0 m stick up lid, removed for access			

PHOTOS (IF TAKEN)

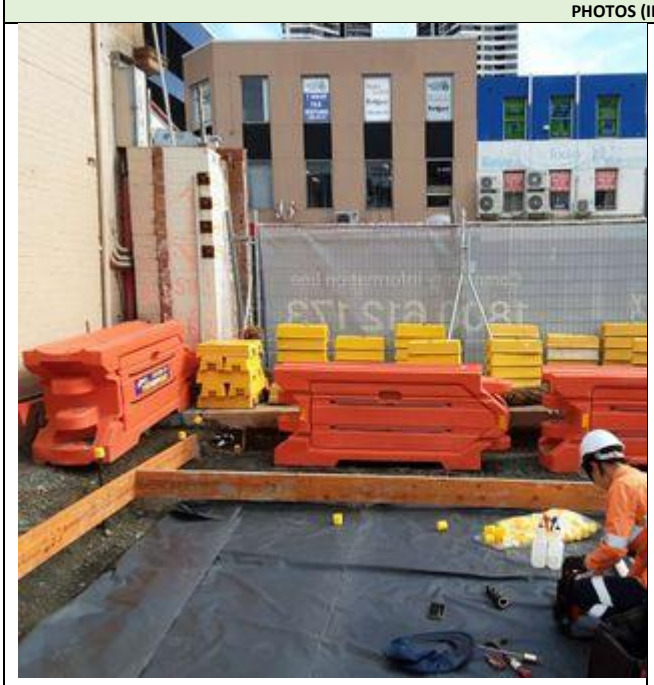


Photo1: Area

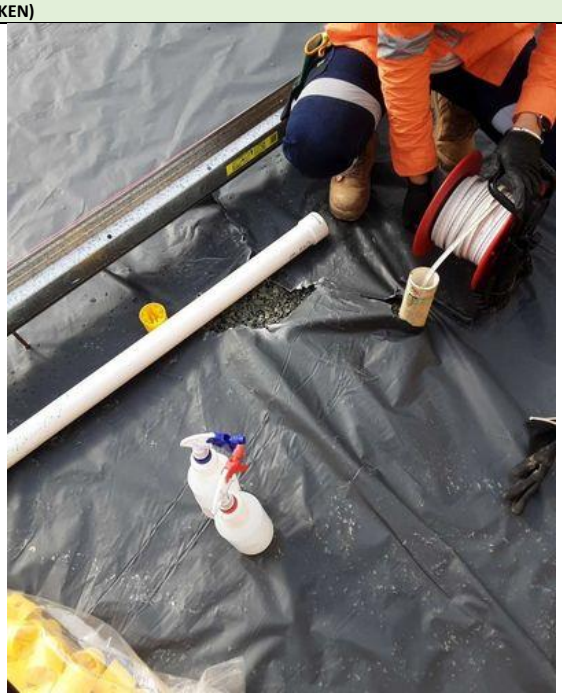


Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	PM_BH014
Job No:	SC210108.03	**Date:**	23/1/2023 11:52
Recorded By:	Joy X	**Lat / Long:**	-33.81551,151.00435
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	4.59	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	5.95	Well Diameter (mm)	50
Height of Standing Water Column (m)	1.36	Well Annulus (mm)	100
Discharge Water Disposal Method	Other	Minimum Purge Volume	14.28

FIELD PARAMETER MEASUREMENT

Purged dry?	☑ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
23/1	11:55	0.4		4.65	6.16	694	71.5	2.77	32.8			448	24		
23/1	11:58	0.6	0.1	4.7	6.12	680	75.1	2.34	27.8			448	23.3		
23/1	12:01	1	0.2	4.75	6.13	683	75.6	2.35	27.1			442	22.9		
23/1	12:04	1.4	0.2	4.78	6.17	684	75.2	2.46	28.9			442	23.1		
Other Observations		No odour, colourless													

WELL SAMPLING

Sampling Method:	Peristatic	**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
		Qc05	Qc05	
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)

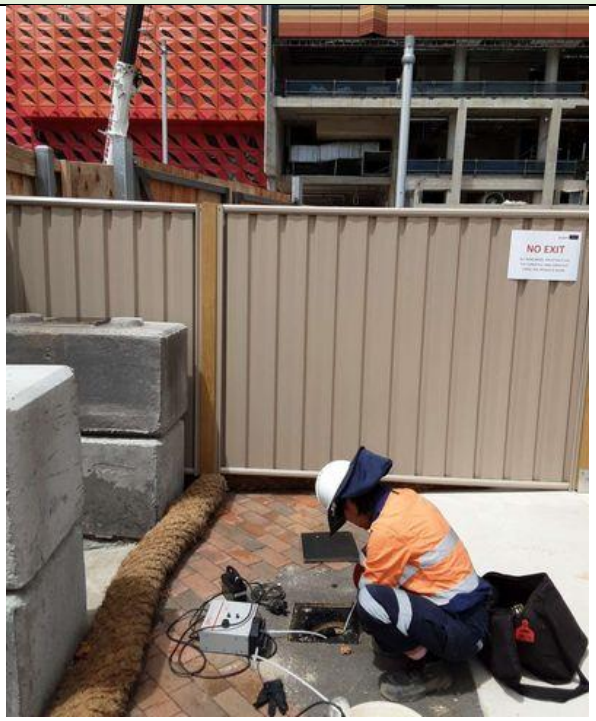


Photo1: Area

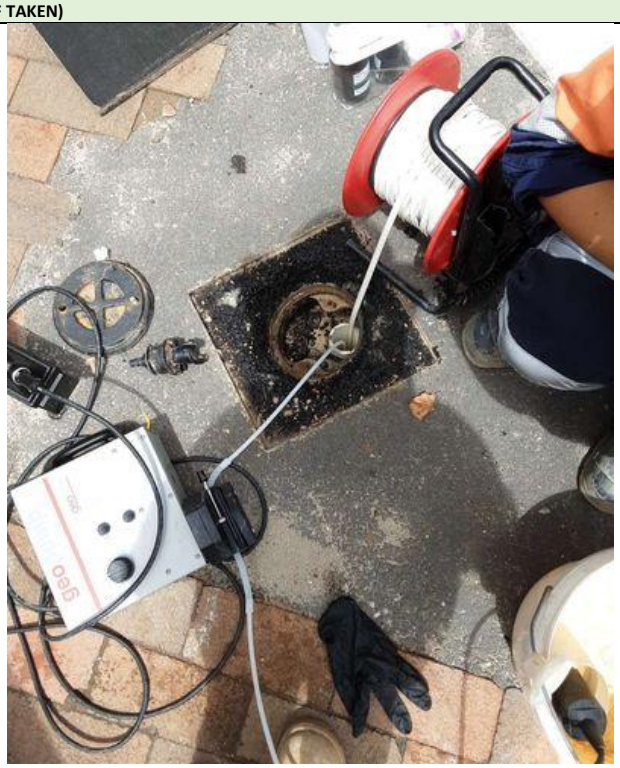


Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	Other: Next to bh701
Job No:	SC210108.03	**Date:**	3/2/2023 10:26
Recorded By:	Joy X	**Lat / Long:**	-33.80897,150.98868
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	3.88	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	10.2	Well Diameter (mm)	50
Height of Standing Water Column (m)	6.32	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	66.36

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
3/2	11:15			4.55	4.52	4,184	-10.5	2.5	29.2			2,723.5	24.2	Clear-slightly brown	No

Other Observations	Swl dropped to 4.55m

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Semi flood inside, east well			

PHOTOS (IF TAKEN)

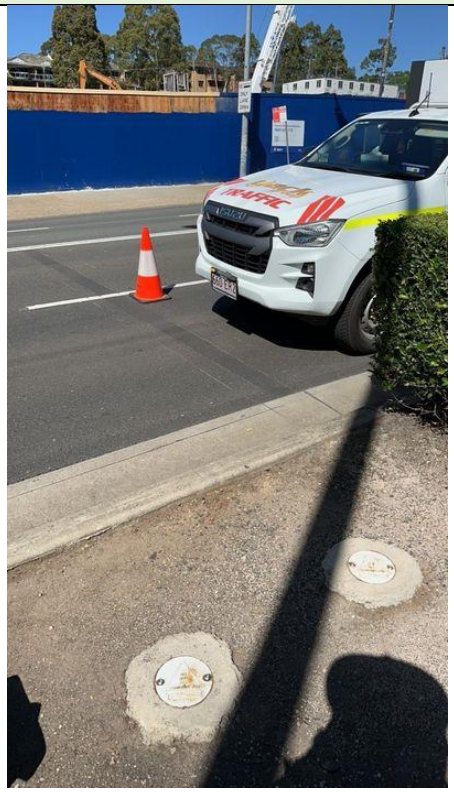


Photo1: Area

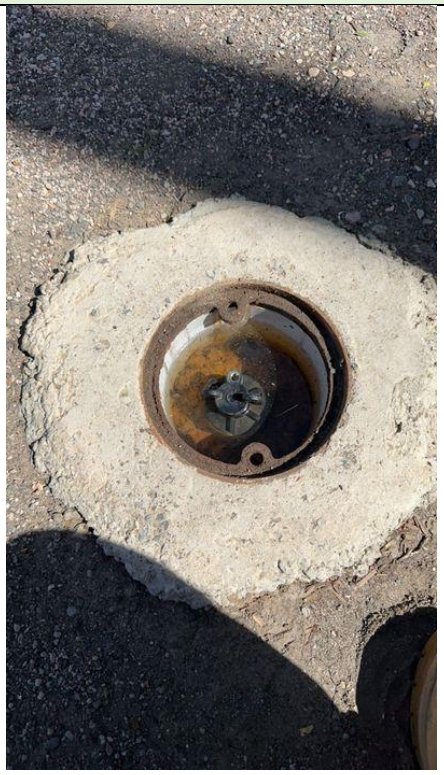


Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	Other: Near bh701, west well
Job No:	SC210108.03	**Date:**	3/2/2023 10:42
Recorded By:	Joy X	**Lat / Long:**	-33.80897,150.98867
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.13
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		Purge Method	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.9	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	1.9	Well Diameter (mm)	50
Height of Standing Water Column (m)	0	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Semi flooded, dry well			

PHOTOS (IF TAKEN)

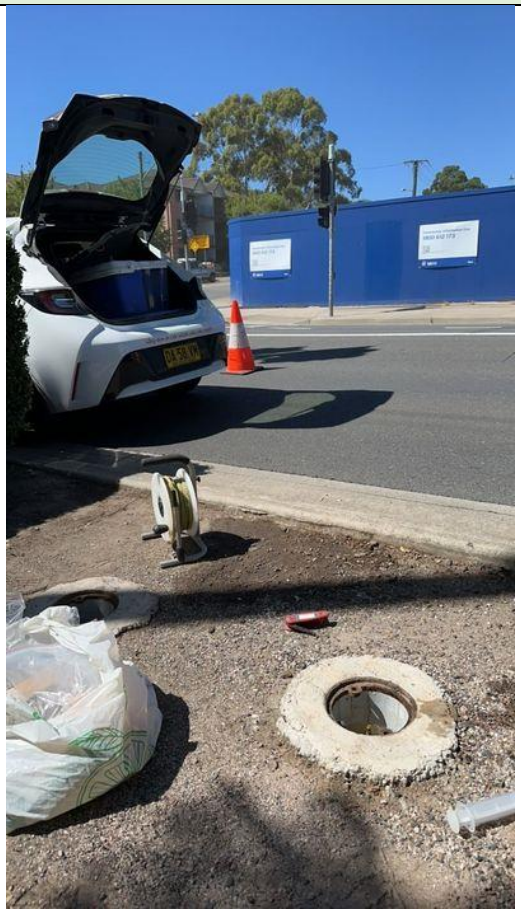


Photo1: Area

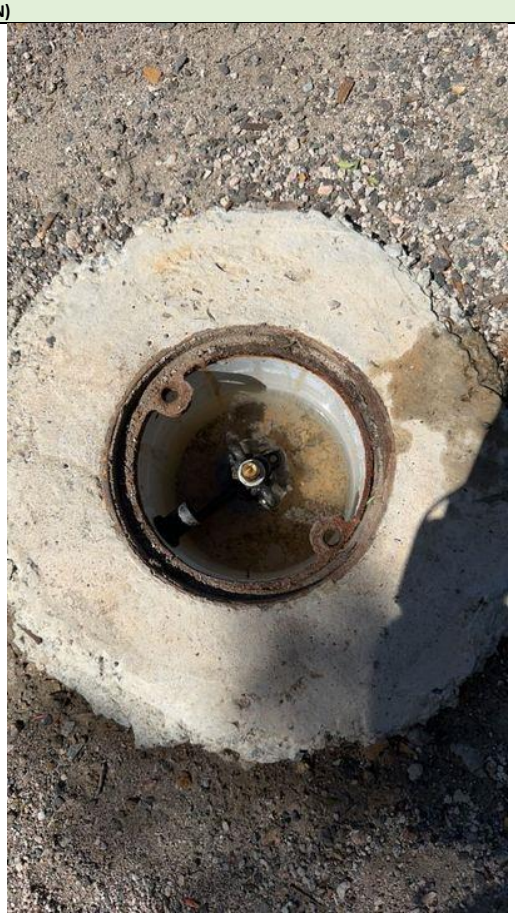


Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	Other: GW01
Job No:	SC210108.03	**Date:**	24/2/2023 07:27
Recorded By:	Joy X	**Lat / Long:**	-33.8279,151.02605
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	0.83	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	6.9	Well Diameter (mm)	50
Height of Standing Water Column (m)	6.07	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	63.735

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
24/2	08:04	0.5		0.92	5	12,656	63.9	0.51	6.3				23.2	Clear	No odour
24/2	08:16	1	0.05	1.23	4.95	12,575	69.7	0.95	11.5				23		
24/2	08:21	1.4	0.08	1.32	4.95	12,560	69	0.9	11				23.5		
24/2	08:25	1.5	0.03	1.35	4.96	12,555	67.3	0.88	10.7				23.6		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No	
		Gauged	☑ Yes ☐ No	
Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
	GW01			
Analysis/Bottles				
Comment	Silty btm			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	Other: GW03
Job No:	SC210108.03	**Date:**	24/2/2023 08:48
Recorded By:	Joy X	**Lat / Long:**	-33.82754,151.02553
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	0.7	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	5.1	Well Diameter (mm)	50
Height of Standing Water Column (m)	4.4	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	46.2

FIELD PARAMETER MEASUREMENT

Purged dry? ☐ Yes At L ☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
24/2	09:06	0.5		0.75	6.81	3,073	-23.5	0.27	3.1				23.1	Clear	No
24/2	09:09	0.6	0.05	0.69	6.79	3,051	-21.6	0.26	3.1				23		
24/2	09:12	1	0.2	0.71	6.79	2,984	-23.8	0.18	2.2				23.5		
24/2	09:16	1.2	0.05	0.73	6.78	3,015	-32.3	0.19	2.2				23.5		
24/2	09:20	0.72	-0.16	1.5	6.81	2,788	-40.9	0.19	2.2				23.6		
24/2	09:24	1.8	0.27	0.73	6.83	2,582	-48.4	0.19	2.2				23.6		
24/2	09:28	2	0.07	0.71	6.86	2,408	-55.9	0.21	2.5				23.4		
24/2	09:32	2.2	0.05	0.74	6.89	2,261	-58.9	0.21	2.5				23.6		
24/2	09:35	2.5	0.15	0.74	6.91	2,144	-56.9	0.22	2.6				23.6		
Other Observations		Slightly turbid													

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Silty btm			

PHOTOS (IF TAKEN)



Photo1: Area

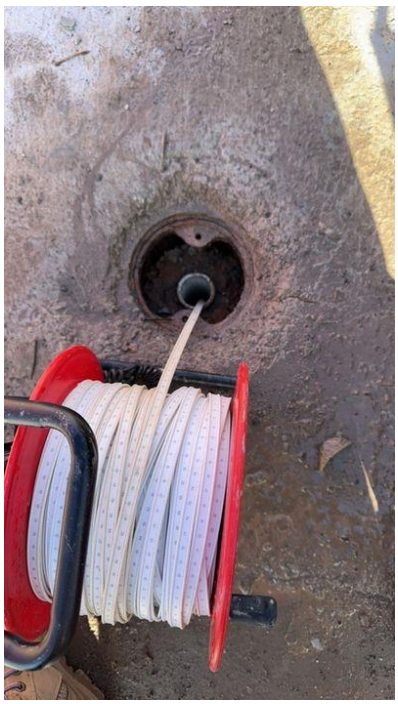


Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	Other: MW06
Job No:	SC210108.03	**Date:**	24/2/2023 13:28
Recorded By:	Joy X	**Lat / Long:**	-33.82921,151.02379
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	0.4	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	5.5	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.1	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	53.55

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
24/2	15:16	0.6		0.71	5.99	11,662	-97.2	0.43	5.5				24.9	Slightly turbid	Sewage smell
24/2	15:19	1.2	0.3	0.84	6.07	9,112	-93	0.86	10.8				25	Clearer than last reading	No odour
24/2	15:22	1.8	0.3	0.88	6.29	5,024	-89.5	1.34	17.6				25.3		
24/2	15:28	2.3	0.1	0.93	6.46	3,270	-83.7	1.17	14.4				25.4		
24/2	15:31	2.8	0.25	0.94	6.43	3,404	-79.5	0.97	12				25.4		
24/2	15:36	3.5	0.14	0.95	6.36	3,750	-75.6	0.69	8.5				25.7		
24/2	15:49	4	0.04	0.85	6.54	1,979	-77.2	0.8	9.6				24.6		
24/2	15:52	4.5	0.25	1.01	6.58	1,838	-80.4	0.69	8.4				24.6		
24/2	15:55	5	0.25	1.12	6.62	1,696	-86.7	0.62	7.4				24.7		
24/2	15:58	5.2	0.07	1.12	6.54	1,923	-86	0.61	7.4				24.8		
24/2	16:01	5.4	0.1	1.13	6.51	1,873	-81.7	0.75	9.3				24.9		
24/2	16:05	5.6	0.07	1.2	6.56	1,797	-79.5	0.85	10.4				24.7		
24/2	16:10	6	0.08	1.28	6.55	1,764	-78.3	0.83	9.8				24.7		
24/2	16:13	6.2	0.1	1.29	6.49	1,899	-78.2	0.78	8.6				24.8		
Other Observations		Clearer less odor as purging, changed pump battery at 6th reading													

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	Other: MW08
Job No:	SC210108.03	**Date:**	24/2/2023 13:49
Recorded By:	Joy X	**Lat / Long:**	-33.82893,151.02407
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	0.6	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	5.9	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.3	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	55.65

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
24/2	14:07	1.5		1.05	6.39	1,281	-139.2	0.28	3.4				24.6	Slightly turbid	No
24/2	14:13	2	0.1	1.24	6.38	1,359	-148.8	0.49	6				24.7		
24/2	14:20	3.5	0.21	1.56	6.37	1,250	-113.9	0.27	3.3				24.1		
24/2	14:23	4	0.25	1.67	6.31	1,676	-114	0.48	5.8				24.6		
24/2	14:29	5	0.2	1.89	6.38	1,052	-130.1	0.66	7.9				24.8		
24/2	14:33	5.5	0.17	1.93	6.37	1,034	-131.4	0.7	8.4				24.8		
24/2	14:36	5.7	0.07	1.94	6.36	1,068	-131.6	0.69	8.3				25.1		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)

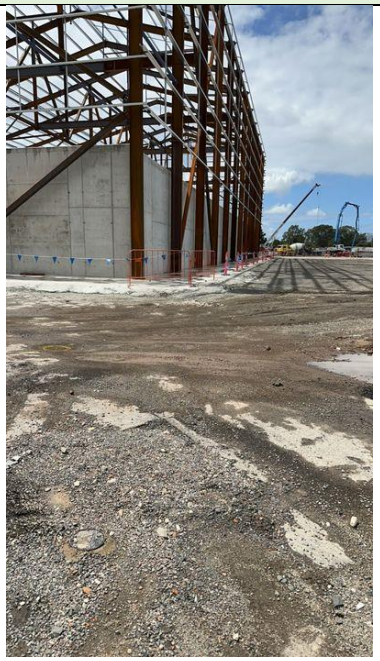


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	MWS2
Job No:	SC210108.03	**Date:**	19/1/2023 12:51
Recorded By:	Joy X	**Lat / Long:**	-33.82267,151.02222
Weather:			

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area

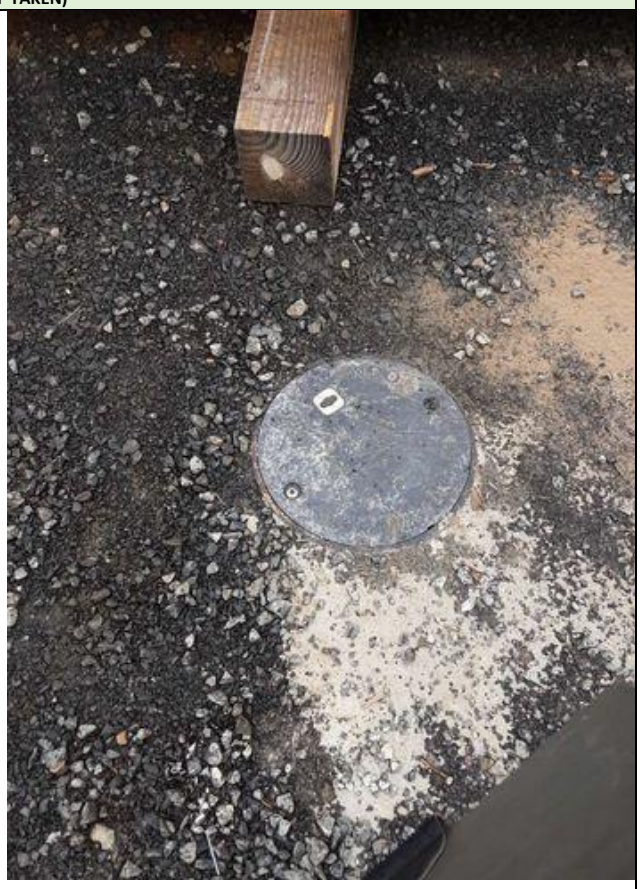


Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	MWS1
Job No:	SC210108.03	**Date:**	19/1/2023 12:44
Recorded By:	Natalie C	**Lat / Long:**	-33.822,151.02231
Weather:	Rainy		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	CNF, near acoustics shed?			

PHOTOS (IF TAKEN)

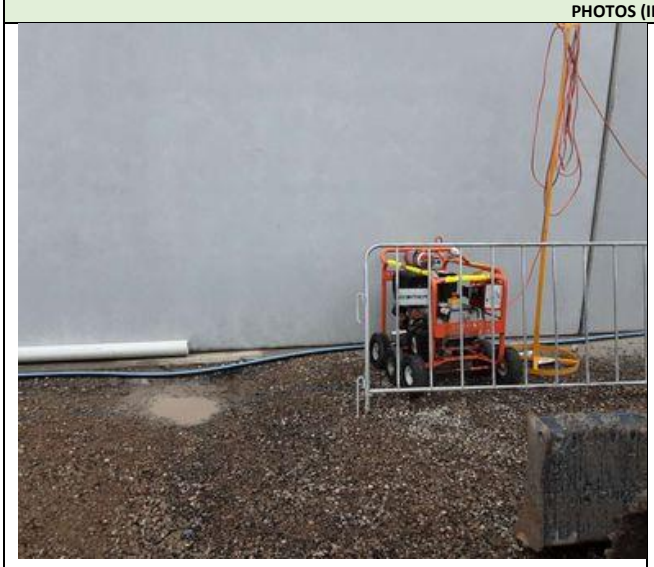


Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	MW74
Job No:	SC210108.03	**Date:**	21/2/2023 09:28
Recorded By:	Joy X	**Lat / Long:**	-33.82992,151.02239
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.9
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	4.08	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	9.95	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.87	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	61.635

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Silty bottom			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GDP
Job No:	SC210108.03	**Date:**	23/1/2023 09:46
Recorded By:	Natalie C	**Lat / Long:**	-33.81433,151.00342
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	1.12
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	7.15	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	10.39	Well Diameter (mm)	50
Height of Standing Water Column (m)	3.24	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	34.02

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Closer to S			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GDP
Job No:	SC210108.03	**Date:**	23/1/2023 10:01
Recorded By:	Natalie C	**Lat / Long:**	-33.8143,151.00339
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	1.27
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Bad	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	7.19	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	12.9	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.71	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	59.955

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Closer to N, some gravels fell in when open lid cap, whole 1m stick ip became loose and ground fill caved in			

PHOTOS (IF TAKEN)

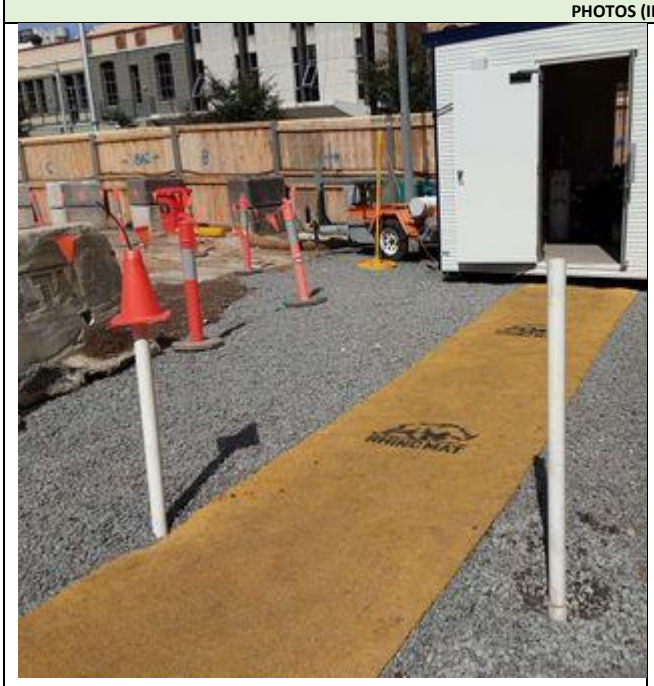


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW9
Job No:	SC210108.03	**Date:**	17/1/2023 15:52
Recorded By:	Joy X	**Lat / Long:**	-33.82952,151.02548
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Covered by vegetation/fabric			

PHOTOS (IF TAKEN)

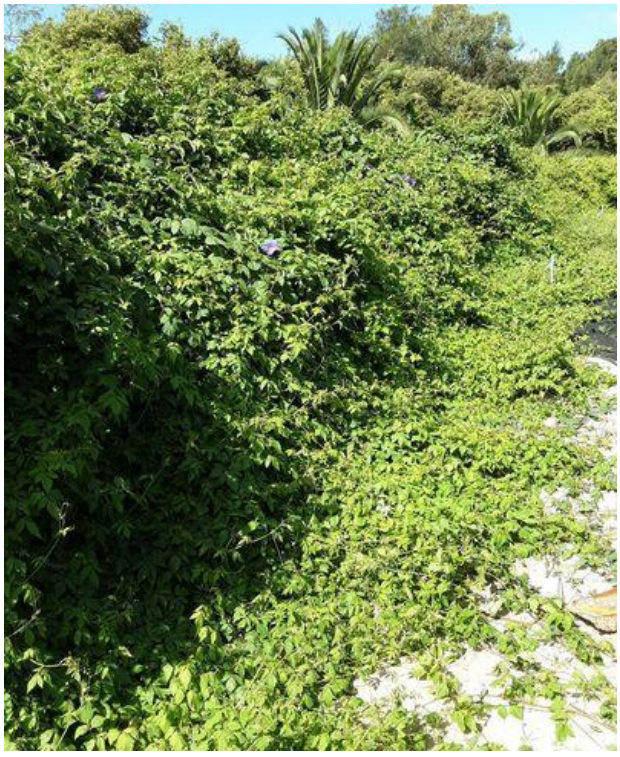


Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW79
Job No:	SC210108.03	**Date:**	23/1/2023 09:07
Recorded By:	Natalie C	**Lat / Long:**	-33.81394,151.004
Weather:	Partly cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.92
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		Purge Method	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	5.78	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	13.575	Well Diameter (mm)	50
Height of Standing Water Column (m)	7.795	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	81.849

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Brown silt at bottom			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW76
Job No:	SC210108.03	**Date:**	16/1/2023 14:52
Recorded By:	Joy X	**Lat / Long:**	-33.82804,151.02177
Weather:	Pc		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.6
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	3.42	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	13.3	Well Diameter (mm)	50
Height of Standing Water Column (m)	9.88	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	103.74

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Next to sand stockpiles			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW47
Job No:	SC210108.03	**Date:**	20/1/2023 10:22
Recorded By:	Joy X	**Lat / Long:**	-33.80853,150.98731
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	7.8	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	17.1	Well Diameter (mm)	50
Height of Standing Water Column (m)	9.3	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	97.65

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW40
Job No:	SC210108.03	**Date:**	20/1/2023 10:37
Recorded By:	Joy X	**Lat / Long:**	-33.80847,150.98671
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Cannot locate			

PHOTOS (IF TAKEN)

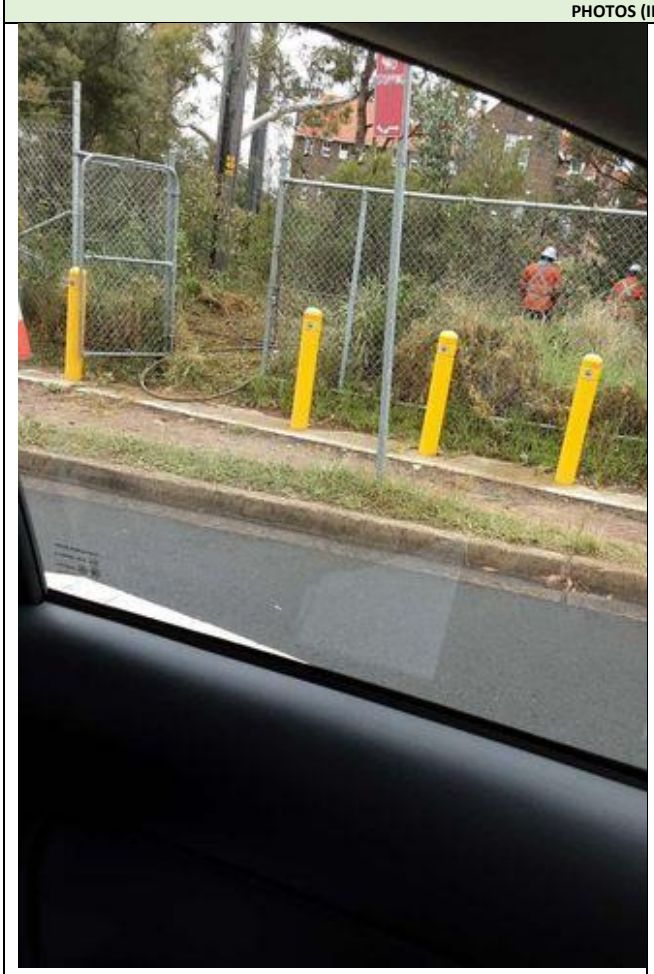


Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW38
Job No:	SC210108.03	**Date:**	20/1/2023 07:41
Recorded By:	Joy X	**Lat / Long:**	-33.80967,150.98849
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		Purge Method	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	8.77	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Baro-0.9m Levellogger-39.6m			

PHOTOS (IF TAKEN)

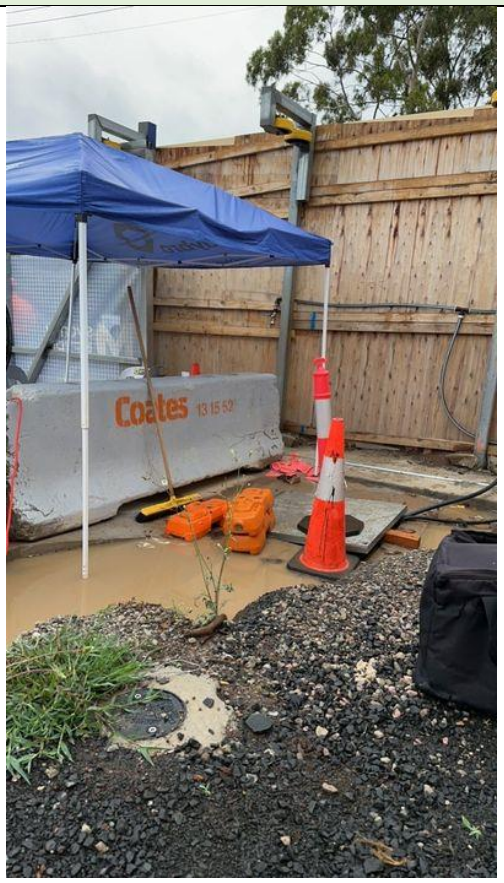


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW37
Job No:	SC210108.03	**Date:**	20/1/2023 10:04
Recorded By:	Joy X	**Lat / Long:**	-33.80869,150.98908
Weather:			

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	In between vehicles, need traffic bollard			

PHOTOS (IF TAKEN)

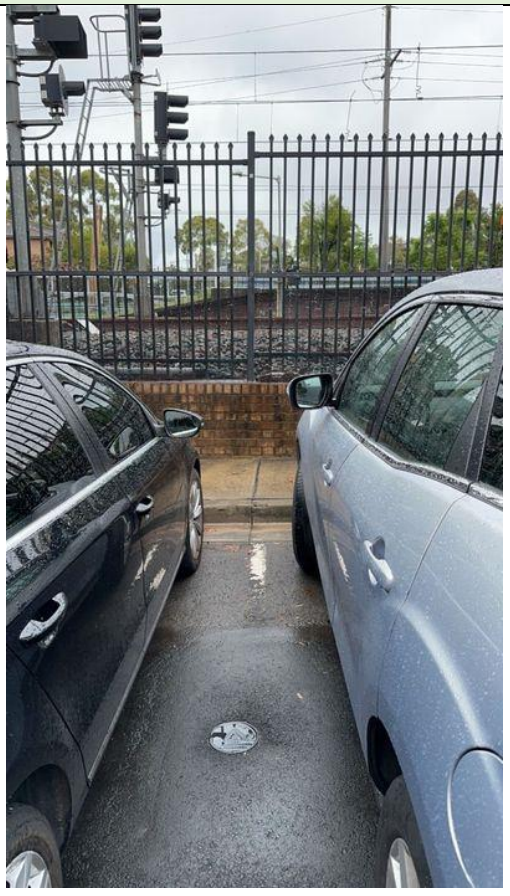


Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW36
Job No:	SC210108.03	**Date:**	20/1/2023 10:53
Recorded By:	Joy X	**Lat / Long:**	-33.81004,150.99088
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	cannot locate, might be under shatters			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW33
Job No:	SC210108.03	**Date:**	23/1/2023 09:33
Recorded By:	Natalie C	**Lat / Long:**	-33.81446,151.00323
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	1.52
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		Purge Method	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	8.74	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	30	Well Diameter (mm)	50
Height of Standing Water Column (m)	21.26	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	223.23

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Depth >30 m			

PHOTOS (IF TAKEN)

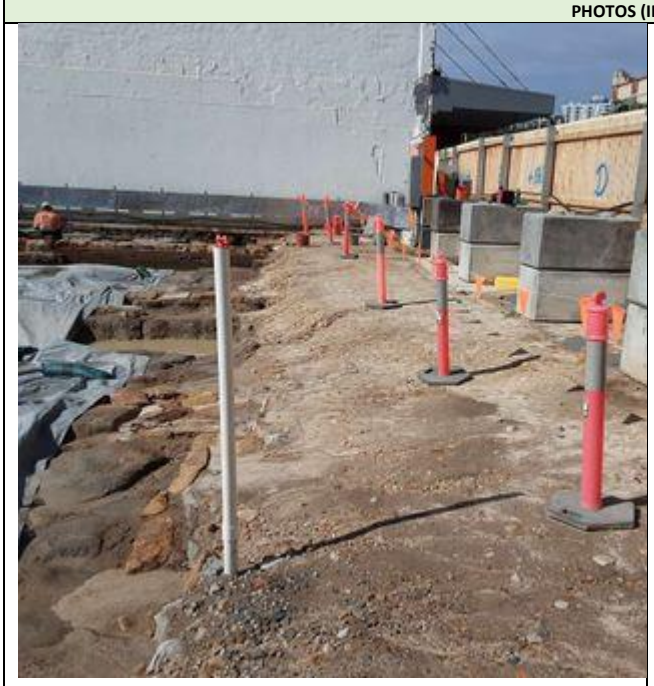


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW32
Job No:	SC210108.03	**Date:**	23/1/2023 09:14
Recorded By:	Natalie C	**Lat / Long:**	-33.81418,151.00423
Weather:	Partly sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	1.43
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	2.03	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	2.03	Well Diameter (mm)	50
Height of Standing Water Column (m)	0	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Labelled as GALC_MW32 but different location. Another well located 2m nearby, no name, possibly PM_BH18. Tubing inside was stuck and seemed to obstruct IP. Possibly wet bottom			

PHOTOS (IF TAKEN)

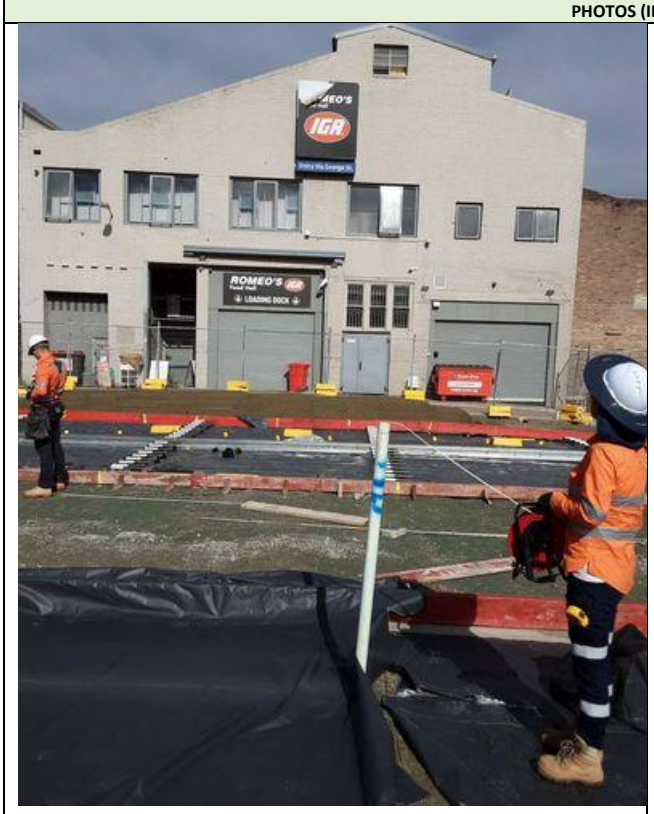


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW32
Job No:	SC210108.03	**Date:**	23/1/2023 09:40
Recorded By:	Natalie C	**Lat / Long:**	-33.81423,151.00335
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	7.2	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	29.13	Well Diameter (mm)	50
Height of Standing Water Column (m)	21.93	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	230.265

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)

Photo1: Area	**Photo 2: Bore condition**

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW26
Job No:	SC210108.03	**Date:**	23/1/2023 14:25
Recorded By:	Natalie C	**Lat / Long:**	-33.81475,151.00559
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Could not open, need different screwdriver with four grooves			

PHOTOS (IF TAKEN)

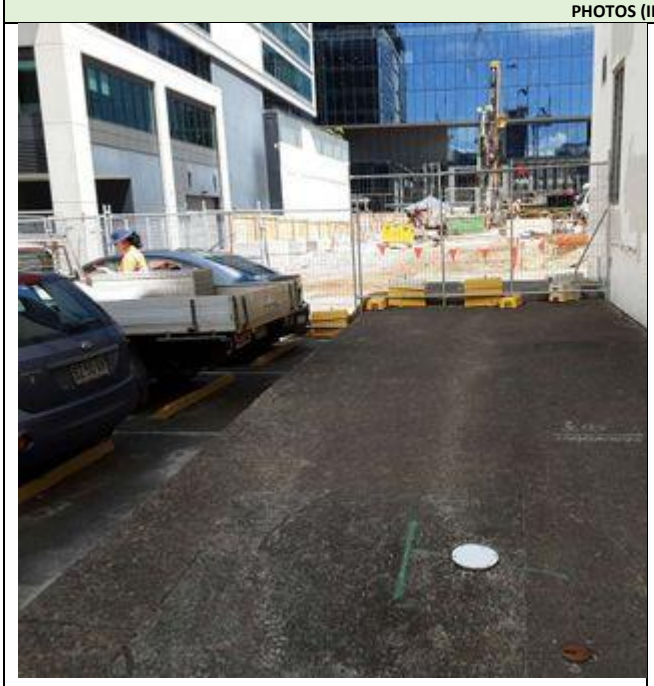


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW18
Job No:	SC210108.03	**Date:**	19/1/2023 07:43
Recorded By:	Joy X	**Lat / Long:**	-33.82569,151.0213
Weather:	Dizzle		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.42
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	1.42	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	6.02	Well Diameter (mm)	50
Height of Standing Water Column (m)	4.6	Well Annulus (mm)	100
Discharge Water Disposal Method	Other	Minimum Purge Volume	48.3

FIELD PARAMETER MEASUREMENT

Purged dry? ☐ Yes At L ☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
19/1	15:27	0.5		1.64	6.65	9,644	-176.7	0.29	3.5			6,272.5	21.3	Grey greenish	Organic
19/1	15:30	1	0.25	1.82	6.36	9,648	-176.5	0.21	2.4			6,266	21.4		
19/1	15:33	1.5	0.25	1.99	6.28	9,563	-186.8	0.15	1.8			6,207.5	21.5		
19/1	15:36	1.8	0.15	2.19	6.23	9,383	-204.5	0.24	2.9			6,090.5	21.4		
19/1	15:39	2	0.1	2.4	6.22	9,252	-213.9	0.4	4.7			6,006	21.4		
19/1	15:42	2.3	0.1	2.54	6.22	9,167	-220.5	0.49	5.8			5,947.5	21.4		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Gteclink logger. Strong organic smell, dark grey colour			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW17
Job No:	SC210108.03	**Date:**	19/1/2023 07:52
Recorded By:	Joy X	**Lat / Long:**	-33.82415,151.02166
Weather:	Windy drizzle		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	1.05
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Bailer
Water Level Depth (WL in m BTOC)	12.41	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	21.9	Well Diameter (mm)	50
Height of Standing Water Column (m)	9.49	Well Annulus (mm)	100
Discharge Water Disposal Method	Other	Minimum Purge Volume	99.645

FIELD PARAMETER MEASUREMENT

Purged dry?	☑ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
19/1	15:02				10.4	8,999	-145.6	2.9	33			5,843	20.3		

Other Observations	Organic odour, dark grey, silty, then less dark grey in next bailer

WELL SAMPLING

Sampling Method:	Bailer	**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW17
Job No:	SC210108.03	**Date:**	19/1/2023 07:58
Recorded By:	Natalie C	**Lat / Long:**	-33.82421,151.02168
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.46
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	13.9	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	22.5	Well Diameter (mm)	50
Height of Standing Water Column (m)	8.6	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	90.3

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	No cap, slightly south of nearby well, could be BH043, no well cap			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW16
Job No:	SC210108.03	**Date:**	19/1/2023 08:06
Recorded By:	Natalie C	**Lat / Long:**	-33.82453,151.02192
Weather:	Rainy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.72
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	10.12	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	22.98	Well Diameter (mm)	50
Height of Standing Water Column (m)	12.86	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	135.03

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Well is lop sided, no well cap			

PHOTOS (IF TAKEN)

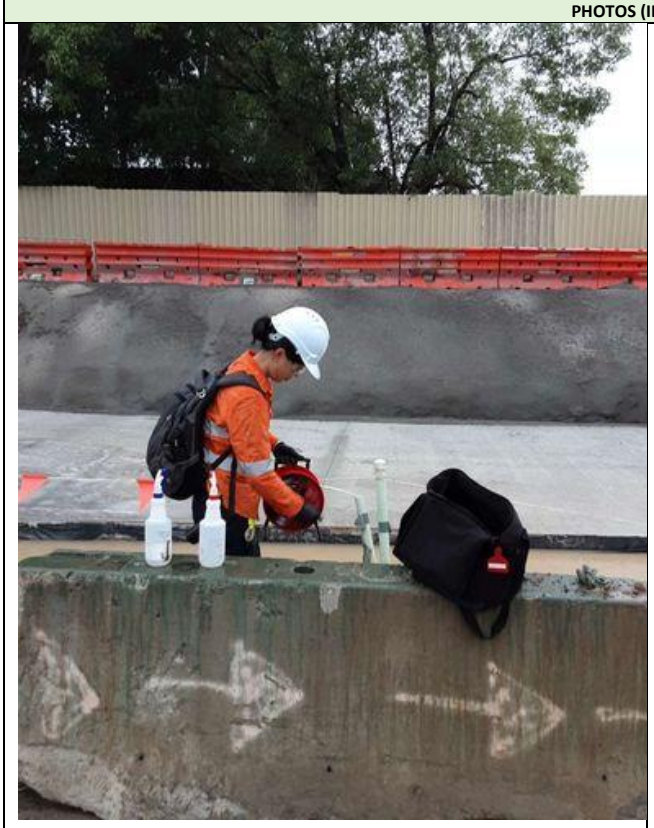


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW14
Job No:	SC210108.03	**Date:**	19/1/2023 07:33
Recorded By:	Joy X	**Lat / Long:**	-33.8259,151.02174
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Cannot locate, new pavement			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW12
Job No:	SC210108.03	**Date:**	16/1/2023 16:24
Recorded By:	Joy X	**Lat / Long:**	-33.82997,151.02368
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.98	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	10.64	Well Diameter (mm)	50
Height of Standing Water Column (m)	8.66	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	90.93

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Solinst level logger 5 in			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ6_MW07
Job No:	SC210108.03	**Date:**	16/1/2023 10:04
Recorded By:	Joy X	**Lat / Long:**	-33.82879,151.02397
Weather:	Partly Cloudy		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Cannot locate, hydrocarbon smell			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ6_MW05
Job No:	SC210108.03	**Date:**	16/1/2023 10:20
Recorded By:	Joy X	**Lat / Long:**	-33.82882,151.02291
Weather:	Partly Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	1.38	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	4.8	Well Diameter (mm)	50
Height of Standing Water Column (m)	3.42	Well Annulus (mm)	100
Discharge Water Disposal Method	Other	Minimum Purge Volume	35.91

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate

Analysis/Bottles	
Comment	Well (re)developed on 16/1 due to highly turbid/silty conditions at bottom, had to raise existing tubing. Purged 18 L, very silty, no odour, slight sheen, grey

PHOTOS (IF TAKEN)



Photo1: Area

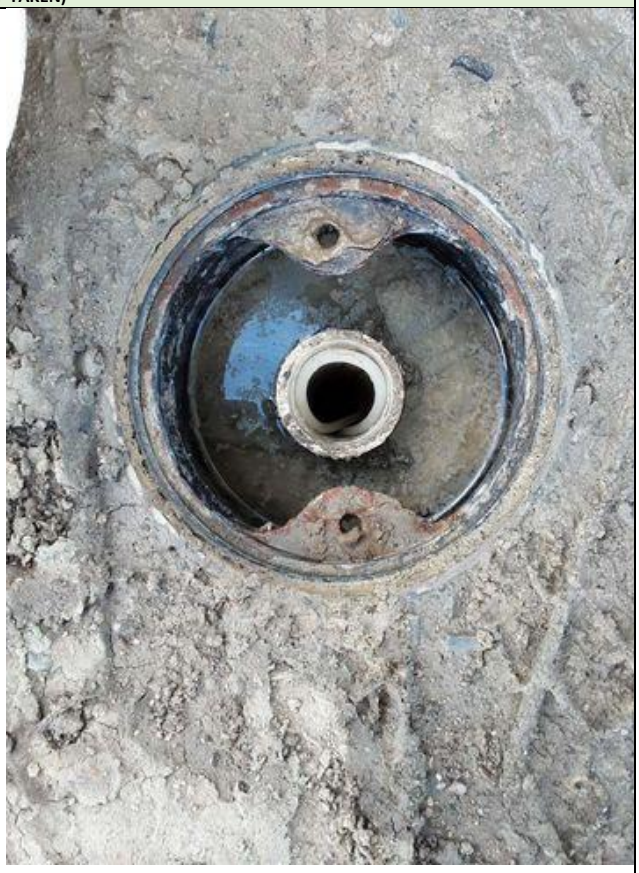


Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ6_MW05
Job No:	SC210108.03	**Date:**	20/1/2023 12:20
Recorded By:	Joy X	**Lat / Long:**	-33.82881,151.02291
Weather:	Partly cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.4	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	6.95	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.55	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	58.275

FIELD PARAMETER MEASUREMENT

Purged dry? ☐ Yes At L ☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
20/1	12:30	0.5		1.62	6.9	1,648	-84.6	0.68	7.7			1,059.5	22.3	Brownish, turbid	No
20/1	12:34	1	0.13	1.75	6.84	1,492	-93.9	0.24	2.9			968.5	22.5		
20/1	12:40	1.5	0.1	2	6.85	1,354	-88.4	1.33	15			877.5	22.2		
20/1	12:45	2	0.1	2.12	6.86	1,317	-91.6	0.53	5.9			851.5	22.4		
20/1	12:48	2.5	0.25	2.2	6.87	1,250	-93.5	0.36	4.1			812.5	22.3		
20/1	12:51	2.9	0.2	2.28	6.87	1,222	-94.9	0.22	2.5			793	22.2		
20/1	12:54	3.2	0.15	2.35	6.37	1,197	-96.1	0.21	2.4			773.5	22.1		
20/1	12:58	3.4	0.05	2.46	6.36	1,172	-96.9	0.2	2.3			767	22.1		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Semi flooded, seems to have two new wells nearby, turbid, brownish			

PHOTOS (IF TAKEN)



Photo1: Area

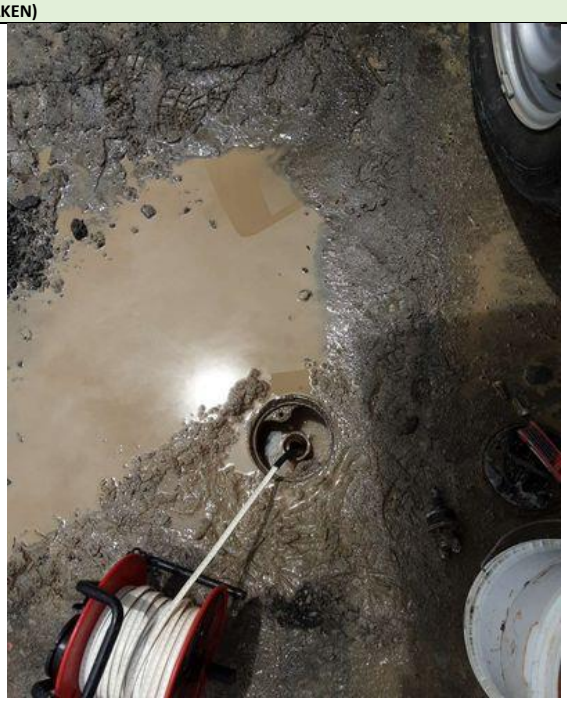


Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ6_MW04
Job No:	SC210108.03	**Date:**	16/1/2023 09:36
Recorded By:	Joy X	**Lat / Long:**	-33.82855,151.02385
Weather:	Partly Cloudy		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Cannot locate covered by asphalt			

PHOTOS (IF TAKEN)





STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Photo1: Area	Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ6_MW03
Job No:	SC210108.03	**Date:**	16/1/2023 14:04
Recorded By:	Joy X	**Lat / Long:**	-33.82816,151.02321
Weather:			

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Covered by stockpiles			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ6_MW01
Job No:	SC210108.03	**Date:**	16/1/2023 10:12
Recorded By:	Natalie C	**Lat / Long:**	-33.82883,151.02342
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Could not locate			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ5_ZN_MW4
Job No:	SC210108.03	**Date:**	21/2/2023 11:52
Recorded By:	Joy X	**Lat / Long:**	-33.83047,151.02206
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.3
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	2.6	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	5.95	Well Diameter (mm)	50
Height of Standing Water Column (m)	3.35	Well Annulus (mm)	100
Discharge Water Disposal Method	Drums	Minimum Purge Volume	35.175

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
21/2	12:12	0.5		2.31	5.22	9,346	24.6	0.34	4.5				23.2	Brownish, slightly turbid to clear	No
21/2	12:17	0.8	0.06	2.29	5.05	9,221	47.6	0.6	7.2				23	Clear	No
21/2	12:20	1	0.1	2.31	5.02	9,220	51.1	0.71	8.6				22.9		
21/2	12:23	1.3	0.15	2.31	4.98	9,233	54.9	0.72	8.6				23.3		
21/2	12:27	1.5	0.05	2.31	4.98	9,233	54.8	0.67	8				23.2		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No	
		Gauged	☑ Yes ☐ No	
Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Silty bottom			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ5_ZN_MW3
Job No:	SC210108.03	**Date:**	21/2/2023 10:44
Recorded By:	Joy X	**Lat / Long:**	-33.83011,151.02226
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.4
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	2.88	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	6	Well Diameter (mm)	50
Height of Standing Water Column (m)	3.12	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	32.76

FIELD PARAMETER MEASUREMENT

Purged dry? ☐ Yes At L ☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
21/2	10:55	0.5		2.98	5.08	24,536	-7.7	0.38	4.6				22	Slightly turbid. Brownish	No
21/2	10:58	0.8	0.15	3.04	5.09	24,444	-9.9	0.64	8.1				22.4		
21/2	11:01	1	0.1	3.11	5.1	24,451	-14.4	0.65	8.2				22.3		
21/2	11:05	1.5	0.13	3.17	5.11	24,419	-18.8	0.62	7.7				22.2		
21/2	11:08	1.8	0.15	3.2	5.12	24,431	-21.3	0.6	7.5				22.2		
21/2	11:11	2	0.1	3.22	5.12	24,426	-22.6	0.61	7.7				22.5		
21/2	11:16	2.5	0.1	3.27	5.12	24,330	-21.7	0.59	7.4				22.2		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
		QA01	QA01	R01
Analysis/Bottles				
Comment	Silty bottom			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Feb

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ5_ZN_MW2
Job No:	SC210108.03	**Date:**	21/2/2023 08:15
Recorded By:	Joy X	**Lat / Long:**	-33.82979,151.02251
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.4
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	3.59	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	5.56	Well Diameter (mm)	50
Height of Standing Water Column (m)	1.97	Well Annulus (mm)	100
Discharge Water Disposal Method	Drums	Minimum Purge Volume	20.685

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
22/2	08:54	0.5		3.8	6.58	17,123	-69.8	0.31	3.6				21.3	Slightly turbid, brownish	No
21/2	08:57	0.7	0	3.84	6.61	16,883	-78.7	0.35	4.1				21.3	Clear	No
21/2	09:01	1.1	0.13	3.92	6.67	15,964	-82.5	0.4	4.7				21.6		
21/2	09:04	1.3	0.1	3.98	6.71	15,491	-90.4	0.43	5.2				22		
21/2	09:06	1.5	0.1	4.01	6.73	15,358	-96	0.44	5.5				22		
21/2	09:09	1.8	0.15	4.04	6.74	15,275	-99.7	0.48	5.8				21.9		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Cap not on.			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ5_MW26
Job No:	SC210108.03	**Date:**	16/1/2023 12:49
Recorded By:	Natalie C	**Lat / Long:**	-33.8295,151.02401
Weather:	Partly cloudy, hot		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	2.43	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	4.75	Well Diameter (mm)	50
Height of Standing Water Column (m)	2.32	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	24.36

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)

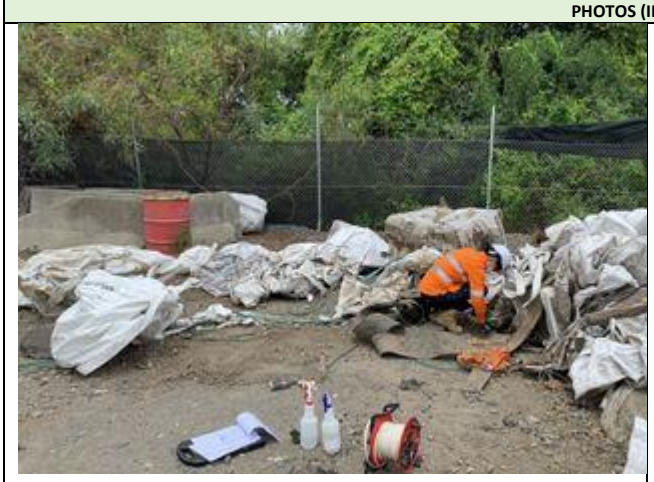


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ5_MW23
Job No:	SC210108.03	**Date:**	16/1/2023 12:34
Recorded By:	Natalie C	**Lat / Long:**	-33.82939,151.02303
Weather:	Partly cloudy, hot		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Could not locate. Likely under stockpile or covered with dust (haul road)			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ5_MW19
Job No:	SC210108.03	**Date:**	17/1/2023 10:27
Recorded By:	Natalie C	**Lat / Long:**	-33.82998,151.02112
Weather:	Partly cloudy, hot		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	2.895	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	5.13	Well Diameter (mm)	50
Height of Standing Water Column (m)	2.235	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	23.469

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ5_MW19
Job No:	SC210108.03	**Date:**	21/2/2023 14:35
Recorded By:	Joy X	**Lat / Long:**	-33.82997,151.02114
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Bad	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	2.9	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	5.1	Well Diameter (mm)	50
Height of Standing Water Column (m)	2.2	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	23.1

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Garlic destroyed. Stickup not accurate			

PHOTOS (IF TAKEN)

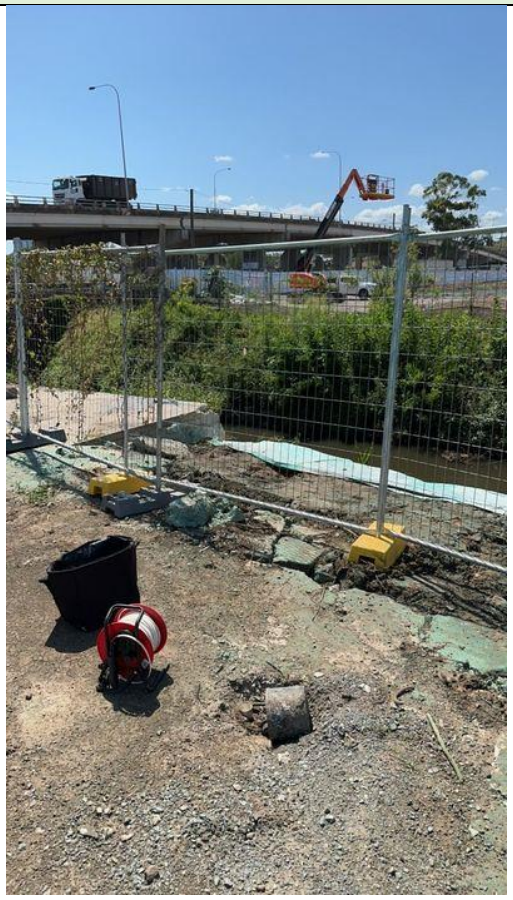


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ5_MW16
Job No:	SC210108.03	**Date:**	16/1/2023 15:28
Recorded By:	Natalie C	**Lat / Long:**	-33.83004,151.02372
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	1.88	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	6.95	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.07	Well Annulus (mm)	100
Discharge Water Disposal Method	Other	Minimum Purge Volume	53.235

FIELD PARAMETER MEASUREMENT

Purged dry?	☑ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
16/1	15:32	0.2		1.99	4.04	4,395	63.73	3.36	38.2			5,817	25.1		
16/1	15:35	0.5	0.15	2.1	5.84	9,500	24.7	1.73	21.1			6,214	24.8		
16/1	15:38	1	0.5	2.26	5.86	9,752	-0.8	1.33	15.8			6,337	24.1		
16/1	15:41	1.5	-0.15	2.37	5.91	9,605	-14.7	0.93	11.3			6,214	23.9		
16/1	15:44	1.8	0	2.51	5.96	9,180	-27.9	0.87	10.6			5,954	23.8		
16/1	15:47	2.3	0.25	2.58	5.98	9,041	-31.7	0.83	10.1			5,882	23.6		
16/1	15:50	2.6	0.1	2.7	6	8,638	-33.7	0.8	9.7			5,596	23.5		
16/1	15:53	3.1	0.25	2.82	6.06	8,049	-39.7	0.85	10.3			5,174	23.3		
16/1	15:56	3.4	0.15	2.92	6.1	7,563	-44	0.94	11.2			4,907	23.3		
16/1	15:59	3.6	0.1	3	6.1	7,375	-48.3	0.84	10			4,777	23.3		
16/1	16:02	4	0.2	3.04	6.11	7,136	-50.2	0.93	11			4,621	23.3		
Other Observations		Slightly turbid, no odour , slightly brown colour													

WELL SAMPLING

Sampling Method:	Peristatic	**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)

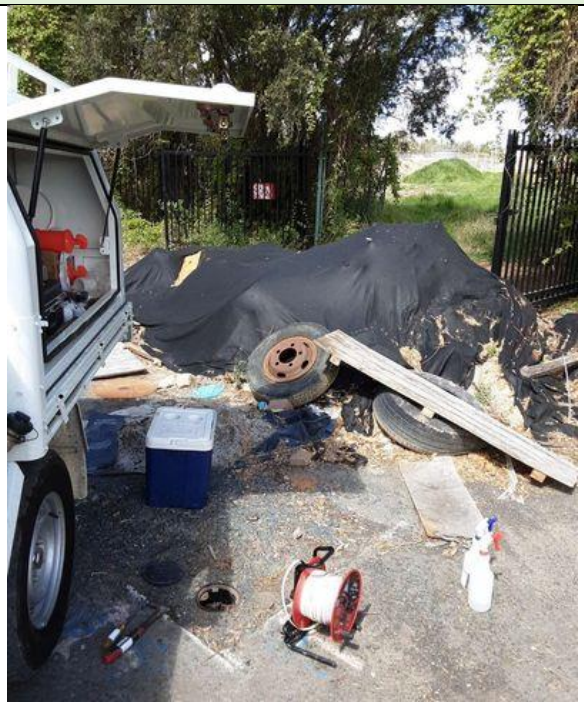


Photo1: Area

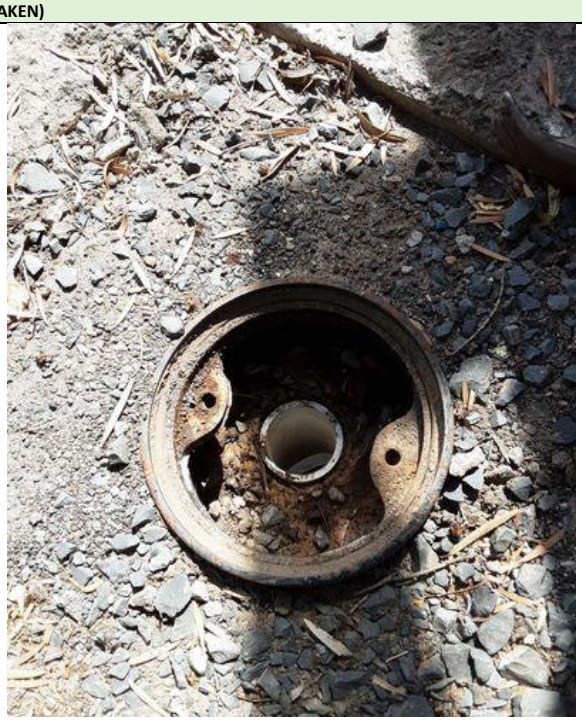


Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ5_MW03
Job No:	SC210108.03	**Date:**	21/2/2023 15:18
Recorded By:	Joy X	**Lat / Long:**	-33.83087,151.02168
Weather:			

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	CNF			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ4e_MW03
Job No:	SC210108.03	**Date:**	18/1/2023 08:56
Recorded By:	Joy X	**Lat / Long:**	-33.82831,151.02755
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.09
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		Purge Method	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	1.36	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	4.26	Well Diameter (mm)	50
Height of Standing Water Column (m)	2.9	Well Annulus (mm)	100
Discharge Water Disposal Method	Other	Minimum Purge Volume	30.45

FIELD PARAMETER MEASUREMENT

Purged dry?	☑ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
18/1	09:18	0.2		1.47	6.43	6,959	82.7	0.75	8.7			4,524	23.1		
18/1	09:21	0.7	0.17	1.47	6.16	6,971	91	0.38	4.4			4,530	23.2		
18/1	09:24	1.4	0.35	1.53	6.09	6,934	97	0.2	2.4			4,504	23.2		
18/1	09:27	1.6	0.1	1.71	6.07	6,902	100.3	0.31	3.8			4,478.5	23.5		
18/1	09:30	2	0.2	1.76	6.04	6,850	102	0.39	4.8			4,446	23.7		
18/1	09:33	2.5	0.25	1.84	6.01	6,697	106.3	0.5	6.1			4,348	23.8		
18/1	09:36	2.8	0.15	1.9	5.97	6,582	108.8	0.53	6.4			4,270	23.9		
18/1	09:40	3.1	0.08	2	5.94	6,223	111.3	0.6	7.3			4,030	23.9		
18/1	09:43	3.5	0.2	2.09	5.93	5,960	115.5	0.66	8			3,867	23.9		
18/1	09:46	3.6	0.05	2.15	5.91	5,901	117.3	0.68	8.2			3,835	23.9		
18/1	09:49	3.8	0.1	2.22	5.86	5,935	120.3	0.74	9			3,861	23.9		
Other Observations		Colourless, no odour													

WELL SAMPLING

Sampling Method:	Peristatic	**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
				RS03
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)

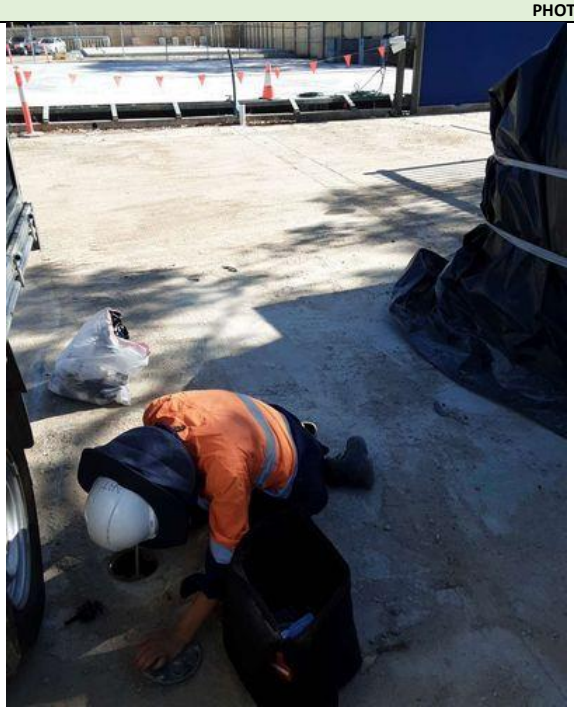


Photo1: Area

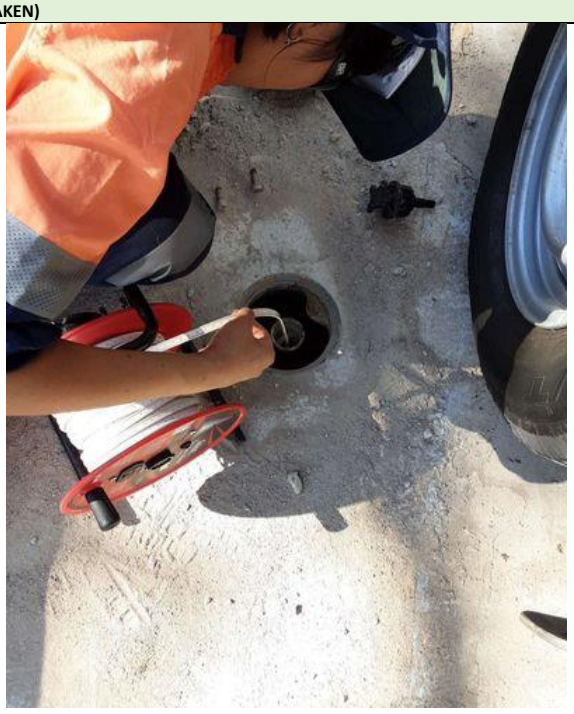


Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ4e_MW02
Job No:	SC210108.03	**Date:**	18/1/2023 11:50
Recorded By:	Joy X	**Lat / Long:**	-33.82853,151.02654
Weather:			

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	**Time**	**Purged**	**Rate**	**SWL**	**pH**	**EC**	**ORP**	**DO**	**DO**	**Tur**	**Sal**	**TDS**	**Temp**	**Colour**	**Odour**
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Covered by stockpilings, cannot access			

PHOTOS (IF TAKEN)

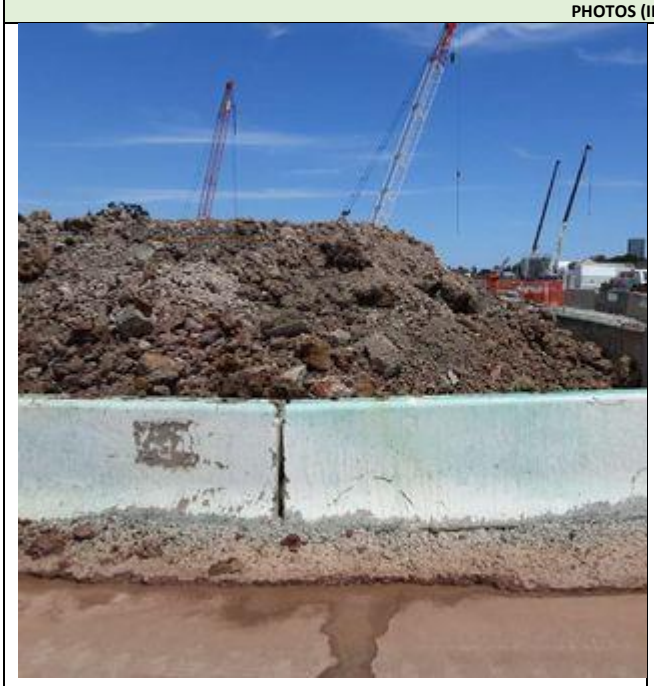


Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ4e_MW01
Job No:	SC210108.03	**Date:**	18/1/2023 10:41
Recorded By:	Natalie C	**Lat / Long:**	-33.82828,151.02652
Weather:	Hot sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	0.52	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	5.94	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.42	Well Annulus (mm)	100
Discharge Water Disposal Method	Other	Minimum Purge Volume	56.91

FIELD PARAMETER MEASUREMENT

Purged dry? ☐ Yes At L ☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
18/1	10:50	0.3		0.8	5.99	14,978	21.7	0.4	4.8			9,724	24.4	Clear	No
18/1	10:53	0.5	0.1	0.9	6	14,730	19.3	0.38	4.7			9,555	24.7		
18/1	10:56	1	0.25	1.03	5.96	14,495	24.4	0.48	6.2			9,412	24.8		
18/1	11:00	1.5	0.13	1.15	5.93	14,400	31.7	0.62	7.8			9,353	24.8		
18/1	11:03	2	0.25	1.22	5.91	14,322	37.1	0.65	8.2			9,308	24.9		
18/1	11:07	2.3	0.08	1.37	5.92	14,177	39.4	0.67	8.4			9,204	24.9		
Other Observations		Semi flooded													

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No	
		Gauged	☑ Yes ☐ No	
Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ3b_MW02
Job No:	SC210108.03	**Date:**	19/1/2023 12:24
Recorded By:	Natalie C	**Lat / Long:**	-33.8237,151.0219
Weather:	Rainy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ3b_MW01
Job No:	SC210108.03	**Date:**	19/1/2023 12:35
Recorded By:	Natalie C	**Lat / Long:**	-33.82171,151.02221
Weather:			

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ2b_MW53
Job No:	SC210108.03	**Date:**	18/1/2023 12:20
Recorded By:	Natalie C	**Lat / Long:**	-33.8286,151.0264
Weather:	Hot		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Covered by haul road			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ2b_BH52
Job No:	SC210108.03	**Date:**	18/1/2023 12:12
Recorded By:	Joy X	**Lat / Long:**	-33.82897,151.02626
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Covered by gravel, cannot access			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ2b_BH39
Job No:	SC210108.03	**Date:**	18/1/2023 12:31
Recorded By:	Joy X	**Lat / Long:**	-33.82935,151.02714
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Cannot locat, covered by stockpile			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ1_BH13
Job No:	SC210108.03	**Date:**	17/1/2023 11:30
Recorded By:	Joy X	**Lat / Long:**	-33.83416,151.02828
Weather:	Partly cloudy hot		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.74
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Bladder
Water Level Depth (WL in m BTOC)	2.88	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	10.6	Well Diameter (mm)	50
Height of Standing Water Column (m)	7.72	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	81.06

FIELD PARAMETER MEASUREMENT

Purged dry?	☑ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
17/1	11:35	0.4		3.08	6.13	33,274	31.2	0.45	5.8			21,580	21.7		
17/1	11:38	0.9	0.25	3.3	6.12	33,385	26.6	0.28	3.6			21,690	21.1		
17/1	11:41	1.3	0.3	3.45	6.11	33,364	23.7	0.33	4.3			21,684	20.9		
17/1	11:44	1.5	0.07	3.57	6.11	33,323	22.2	0.51	6.5			21,664	21		
17/1	11:47	1.7	0.1	3.67	6.13	33,345	20.1	0.57	7.3			21,671	21.2		
Other Observations		Colourless, no odour													

WELL SAMPLING

Sampling Method:	Bladder	**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)

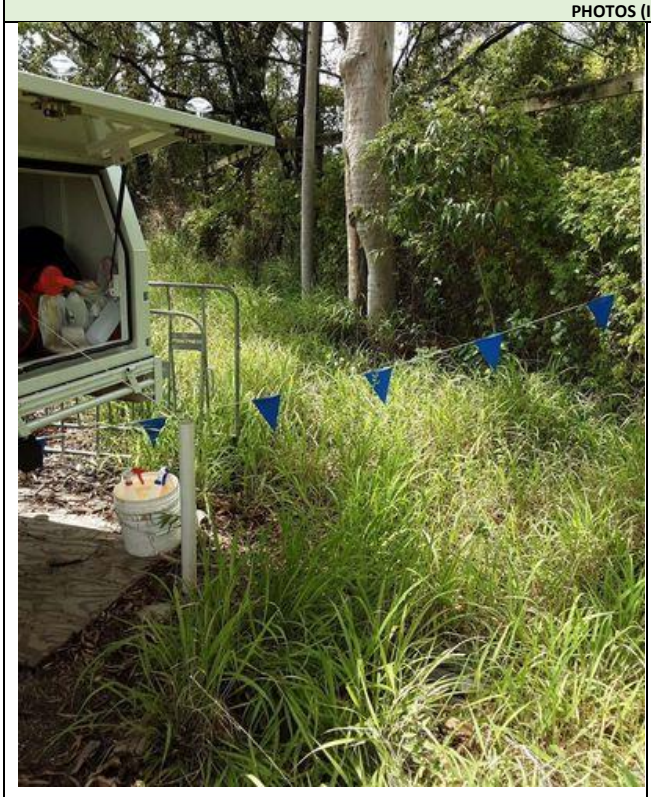


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	
Job No:	SC210108.03	**Date:**	16/1/2023 11:48
Recorded By:	Joy X	**Lat / Long:**	-33.82955,151.02211
Weather:	Pc		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.51
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	2.92	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	11.3	Well Diameter (mm)	50
Height of Standing Water Column (m)	8.38	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	87.99

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Not on list, next to the river, MW15 could be GALC well			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 2 - Jan

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	
Job No:	SC210108.03	**Date:**	16/1/2023 12:18
Recorded By:	Joy X	**Lat / Long:**	-33.82919,151.02224
Weather:	Pc		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.46
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	3.93	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	13.11	Well Diameter (mm)	50
Height of Standing Water Column (m)	9.18	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	96.39

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	MW75 stick up well no well cap, covered by hivis tape			

PHOTOS (IF TAKEN)

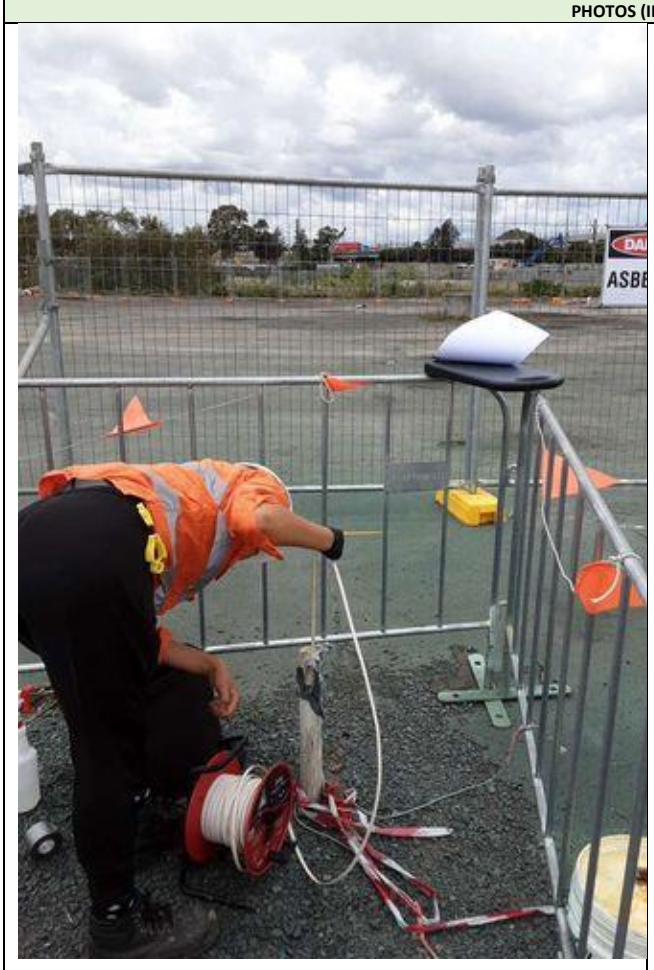


Photo1: Area



Photo 2: Bore condition

April 2023 monitoring event

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV010
Job No:	SC210108.03	**Date:**	24/4/2023 13:43
Recorded By:	Natalie C	**Lat / Long:**	-33.8201,151.02223
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.11
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.87	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	7.08	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.21	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	54.705

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV009
Job No:	SC210108.03	**Date:**	24/4/2023 12:37
Recorded By:	Natalie C	**Lat / Long:**	-33.82003,151.02255
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.12
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	1.97	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	7.11	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.14	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	53.97

FIELD PARAMETER MEASUREMENT

Purged dry?	☑ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
24/4	12:47	0.2		1.97	6.83	2,139	-149.9	0.34	4.1				25.8		
24/4	12:50	0.4	0.1	1.975	6.77	2,066	-180.5	0.21	2.5				25.9		
24/4	12:53	0.5	0.05	1.965	6.75	2,012	-185.9	0.3	3.6				25.8		
24/4	12:56	0.6	0.05	1.98	6.75	2,001	-186.4	0.27	3.3				25.9		
24/4	12:59	1	0.13	1.965	6.74	1,996	-187.5	0.35	4.3				25.8		
24/4	13:02	1.3	0.15	1.965	6.74	2,000	-187.1	0.5	6.3				25.8		
24/4	13:05	1.9	0.3	1.965	6.74	1,996	-188	0.69	8.6				25.8		
24/4	13:08	2.1	0.1	1.97	6.74	1,995	-187.7	0.83	10.3				25.7		
24/4	13:11	2.5	0.2	1.97	6.74	1,989	-187.6	0.98	12.1				25.8		
24/4	13:14	2.7	0.1	1.97	6.74	1,987	-187.2	1.06	13.1				25.9		
24/4	13:17	3.1	0.2	1.97	6.74	1,979	-186.5	1.13	13.9				25.7		
Other Observations		Slight sheen, pale brown, slightly turbid, no odour													

WELL SAMPLING

Sampling Method:	Peristatic	**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ADD_BH02
Job No:	SC210108.03	**Date:**	24/4/2023 11:57
Recorded By:	Natalie C	**Lat / Long:**	-33.8226,151.02176
Weather:	Partly sunny, cool		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	20.92	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	30.54	Well Diameter (mm)	50
Height of Standing Water Column (m)	9.62	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	101.01

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH057_s
Job No:	SC210108.03	**Date:**	24/4/2023 11:23
Recorded By:	Natalie C	**Lat / Long:**	-33.81982,151.02221
Weather:	Partly cloudy, cool		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.18
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.9	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	4.58	Well Diameter (mm)	50
Height of Standing Water Column (m)	2.68	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	28.14

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH057_w
Job No:	SC210108.03	**Date:**	24/4/2023 11:06
Recorded By:	Natalie C	**Lat / Long:**	-33.81985,151.02222
Weather:	Partly sunny, cool		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.22
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	4.33	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	27.51	Well Diameter (mm)	50
Height of Standing Water Column (m)	23.18	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	243.39

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW47
Job No:	SC210108.03	**Date:**	24/4/2023 10:16
Recorded By:	Natalie C	**Lat / Long:**	-33.80867,150.98727
Weather:	Partly cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	9.04	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	14.87	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.83	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	61.215

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	No well cap			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH008_w
Job No:	SC210108.03	**Date:**	24/4/2023 07:08
Recorded By:	Natalie C	**Lat / Long:**	-33.80942,150.99099
Weather:	Cool, sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.15
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	4.85	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	18.05	Well Diameter (mm)	50
Height of Standing Water Column (m)	13.2	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	138.6

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
24/4	08:43	0.2		5.04	6.42	20,108	-134.3	0.34	4				21.7		
24/4	08:46	35	17.4	5.13	6.34	20,233	54.4	0.4	5				22.2		
24/4	08:50	0.5	-8.62	5.1	6.35	20,302	59.6	0.71	8.8				22.5		
24/4	08:53	1	0.25	15.345	6.35	20,260	34.4	1.36	16.7				21.7		
24/4	08:56	1.5	0.25	5.47	6.35	20,140	24.8	1.72	20.9				21.8		
24/4	08:59	1.9	0.2	5.465	6.35	20,007	20.8	1.88	23.3				22		
24/4	09:02	2	0.05	5.465	6.35	19,972	16.9	1.97	24.3				22.3		
Other Observations		Colourless no odour no slick, very slightly silty													

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No	
		Gauged	☑ Yes ☐ No	
Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
		QC05	QC05	
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area

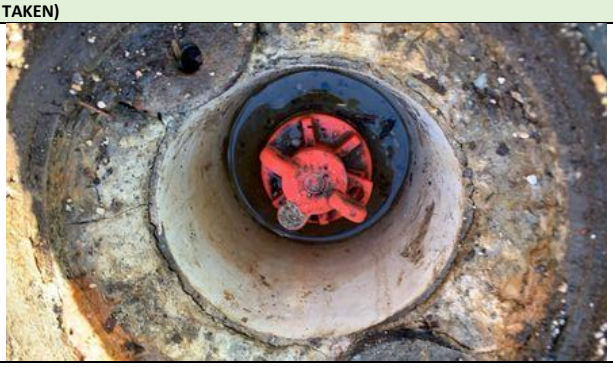


Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH23_w
Job No:	SC210108.03	**Date:**	21/4/2023 11:44
Recorded By:	Joy X	**Lat / Long:**	-33.84357,151.06345
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-
Well Material	-	Screen interval - Top (m BTOC)	-
Well Head Condition	-	Screen interval - Bottom (m BTOC)	-

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Under vehicle. Not accessible			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH22_w
Job No:	SC210108.03	**Date:**	21/4/2023 11:18
Recorded By:	Joy X	**Lat / Long:**	-33.84222,151.05844
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.15
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.4	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	24.845	Well Diameter (mm)	50
Height of Standing Water Column (m)	23.445	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	246.174

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Semi flooded in well			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH03A
Job No:	SC210108.03	**Date:**	21/4/2023 10:12
Recorded By:	Joy X	**Lat / Long:**	-33.80932,150.98974
Weather:	Sunny mostly		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.2
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Bailer
Water Level Depth (WL in m BTOC)	3.627	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	21.765	Well Diameter (mm)	50
Height of Standing Water Column (m)	18.138	Well Annulus (mm)	100
Discharge Water Disposal Method	Drums	Minimum Purge Volume	190.449

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
21/4	10:38				6.76	1,614	62.8	2.04	24.1				23.2	Yellow grey turbid, black sediment	No odour

Other Observations	

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	One bolt missing			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH02_w
Job No:	SC210108.03	**Date:**	21/4/2023 09:20
Recorded By:	Joy X	**Lat / Long:**	-33.8084,150.98627
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Bailer
Water Level Depth (WL in m BTOC)	6.104	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	20.681	Well Diameter (mm)	50
Height of Standing Water Column (m)	14.577	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	153.06

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
21/4	09:35				9.64	1,468	-30.5	2.4	28.2				23.3	Yellow turbid	No

Other Observations

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Logger download			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH004_w
Job No:	SC210108.03	**Date:**	21/4/2023 07:54
Recorded By:	Joy X	**Lat / Long:**	-33.81302,151.00572
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	9.3	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	23.627	Well Diameter (mm)	50
Height of Standing Water Column (m)	14.327	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	150.435

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
21/4	08:07			9.925	6.52	107.8	-110.4	0.68	7.3				19.5	Clear	No odour or sheen
21/4	08:10	0.5	0.25	9.6	6.47	111.5	-125	0.54	5.9				19.6		
21/4	08:13	0.9	0.13	9.64	6.45	116	-129.6	0.55	5.8				19.4		
21/4	08:16	1	0.05	9.7	6.44	116.8	-133.7	0.51	5.4				19.6		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No	
		Gauged	☑ Yes ☐ No	
Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Deep well two logger, black fine sediment			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH004_s
Job No:	SC210108.03	**Date:**	21/4/2023 07:14
Recorded By:	Joy X	**Lat / Long:**	-33.81317,151.00551
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.05
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	4.72	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	11.23	Well Diameter (mm)	50
Height of Standing Water Column (m)	6.51	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	68.355

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
21/4	07:22			4.72	6.71	231.1	69.8	1.1	12.1				19.8		
21/4	07:25	0.5	0.25	4.726	6.6	222	90.1	1.16	12.8				20.2		
21/4	07:28	0.8	0.1	4.726	6.51	222.2	98.8	1.18	13				20.2		
21/4	07:33	1.2	0.1	2.73	6.4	229	105	1.1	12.1				20.2		
21/4	07:36	1.5	0.1	4.74	6.31	244.2	108.1	0.9	11.2				20.2		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Bolts one missing, one loose			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH004_s
Job No:	SC210108.03	**Date:**	20/4/2023 16:17
Recorded By:	Joy X	**Lat / Long:**	-33.81322,151.00568
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.05
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	4.7	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	11.34	Well Diameter (mm)	50
Height of Standing Water Column (m)	6.64	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	69.72

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW79
Job No:	SC210108.03	**Date:**	20/4/2023 15:18
Recorded By:	Natalie C	**Lat / Long:**	-33.81392,151.00406
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.05
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	4.97	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	12.76	Well Diameter (mm)	50
Height of Standing Water Column (m)	7.79	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	81.795

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Copper brown silty at bottom			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	PM_MW018
Job No:	SC210108.03	**Date:**	20/4/2023 15:09
Recorded By:	Natalie C	**Lat / Long:**	-33.8142,151.00423
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	1.24
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	2	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	2.02	Well Diameter (mm)	50
Height of Standing Water Column (m)	0.02	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0.21

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Gamuda needs this to be gatic, silty at bottom, possibly semi filled?			

PHOTOS (IF TAKEN)

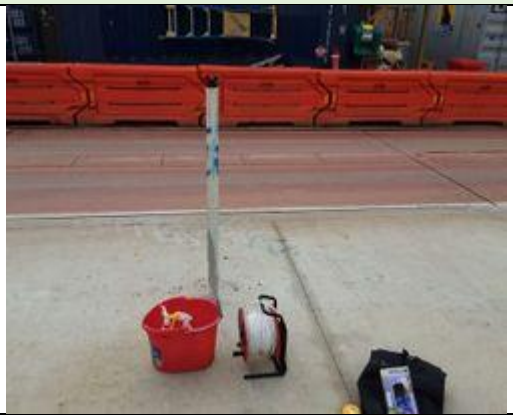


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	PM_MW021
Job No:	SC210108.03	**Date:**	20/4/2023 14:15
Recorded By:	Natalie C	**Lat / Long:**	-33.81405,151.00491
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	1.22	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	6.94	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.72	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	60.06

FIELD PARAMETER MEASUREMENT

Purged dry?	☑ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
20/4	14:19	0.4		1.57	5.84	641	101.4	52	5.8				22.2		
20/4	14:22	0.5	0.05	1.72	5.82	642	105.4	0.35	4				22.3		
20/4	14:24	0.85	0.18	1.845	5.82	640	107.8	0.46	5.3				22.4		
20/4	14:27	1.1	0.13	1.99	5.82	640	111.1	0.42	4.8				22.4		
20/4	14:31	1.5	0.13	2.15	5.81	637	115.9	0.58	6.8				22.5		
20/4	14:34	1.7	0.07	2.26	5.81	636	120.1	0.81	9.4				22.5		
20/4	14:37	1.95	0.13	2.35	5.82	634	123.1	0.95	11				22.5		
20/4	14:40	2.1	0.08	2.45	5.82	630	126.1	1.05	12.1				22.5		
Other Observations		No odour, colourless, no sheen													

WELL SAMPLING

Sampling Method:	Peristatic	**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area

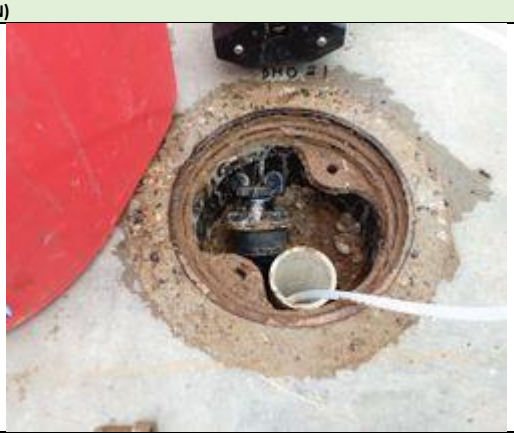


Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	PM_MW021
Job No:	SC210108.03	**Date:**	20/4/2023 13:54
Recorded By:	Natalie C	**Lat / Long:**	-33.81405,151.00487
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.22	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	6.94	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.72	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	60.06

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH003_s
Job No:	SC210108.03	**Date:**	20/4/2023 12:47
Recorded By:	Natalie C	**Lat / Long:**	-33.81453,151.00396
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.7
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Bad	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Fill at 1.32 mTOC. Adjacent well is filled with soil and has tubing and string (possibly logger?) sticking out. Not dipper			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW32
Job No:	SC210108.03	**Date:**	20/4/2023 12:35
Recorded By:	Natalie C	**Lat / Long:**	-33.81428,151.00335
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	7.1	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	29.05	Well Diameter (mm)	50
Height of Standing Water Column (m)	21.95	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	230.475

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW33
Job No:	SC210108.03	**Date:**	20/4/2023 12:27
Recorded By:	Natalie C	**Lat / Long:**	-33.81447,151.00328
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	1.55
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	8.64	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	33.34	Well Diameter (mm)	50
Height of Standing Water Column (m)	24.7	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	259.35

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW26
Job No:	SC210108.03	**Date:**	20/4/2023 12:01
Recorded By:	Natalie C	**Lat / Long:**	-33.81498,151.00549
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Could not open, one screw seems very secured/concreted in			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW26
Job No:	SC210108.03	**Date:**	20/4/2023 11:51
Recorded By:	Natalie C	**Lat / Long:**	-33.815,151.00552
Weather:	Rainy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	9.48	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	31.26	Well Diameter (mm)	50
Height of Standing Water Column (m)	21.78	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	228.69

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	More eastern well of the pair			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH002
Job No:	SC210108.03	**Date:**	20/4/2023 11:15
Recorded By:	Natalie C	**Lat / Long:**	-33.81502,151.00548
Weather:	Rainy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	10.43	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	33.97	Well Diameter (mm)	50
Height of Standing Water Column (m)	23.54	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	247.17

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Solinst logger 28 mbgl			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH004_w
Job No:	SC210108.03	**Date:**	20/4/2023 10:07
Recorded By:	Natalie C	**Lat / Long:**	-33.81311,151.00566
Weather:	Rainy		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Could not access, car parked ontop			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH004_s
Job No:	SC210108.03	**Date:**	20/4/2023 10:05
Recorded By:	Natalie C	**Lat / Long:**	-33.81314,151.00569
Weather:	Raining		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Could not access, car parked ontop			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	PM_MW014
Job No:	SC210108.03	**Date:**	20/4/2023 08:49
Recorded By:	Natalie C	**Lat / Long:**	-33.81517,151.00405
Weather:	Raining		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.065
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	4.13	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	5.96	Well Diameter (mm)	50
Height of Standing Water Column (m)	1.83	Well Annulus (mm)	100
Discharge Water Disposal Method	Other	Minimum Purge Volume	19.215

FIELD PARAMETER MEASUREMENT

Purged dry?	☑ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
20/4	08:54	0.2		4.29	6.19	655	73.6	2.26	25.4				21.3		
20/4	08:57	0.9	0.35	4.32	6.15	613	87.5	2	22.5				21.1		
20/4	09:00	1.2	0.15	4.32	6.13	590	95.9	1.97	22.1				21.1		
20/4	09:03	1.5	0.15	4.335	6.11	582	102.3	2	22.5				21.1		
20/4	09:06	2	0	4.35	6.1	581	104.7	2.1	23.7				21.1		
Other Observations		No colour, no odour, no sheen													

WELL SAMPLING

Sampling Method:	Peristatic	**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW16
Job No:	SC210108.03	**Date:**	19/4/2023 15:06
Recorded By:	Joy X	**Lat / Long:**	-33.82452,151.02192
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Bad	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	13.397	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	22.6	Well Diameter (mm)	50
Height of Standing Water Column (m)	9.203	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	96.63

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Well lop sided, bent, thin well, GL lowered than last time			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW17
Job No:	SC210108.03	**Date:**	19/4/2023 14:49
Recorded By:	Joy X	**Lat / Long:**	-33.82408,151.02171
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.9
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		Purge Method	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	13.458	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	21.6	Well Diameter (mm)	50
Height of Standing Water Column (m)	8.142	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	85.491

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Black suspension no smell			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW18
Job No:	SC210108.03	**Date:**	19/4/2023 13:49
Recorded By:	Joy X	**Lat / Long:**	-33.82577,151.02107
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.4
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Bad	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.765	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	5.9	Well Diameter (mm)	50
Height of Standing Water Column (m)	4.135	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	43.419

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
19/4	13:56	0.5		1.957	5.87	8,873	-125.8	0.23	2.8				23.6	Slightly grey	No
19/4	14:01	1.5	0.2	2.3	6.01	8,721	-154	0.51	6				23.5		
19/4	14:03	2	0.25	2.475	6.07	8,523	-161.8	0.74	9.1				23.4		
19/4	14:06	2.5	0.25	2.631	6.1	8,330	-167.9	1.34	16.3				23.6		
19/4	14:09	2.8	0	2.715	6.13	8,207	-172.9	1.66	20.2				23.6		
19/4	14:12	3.2	0.2	2.83	6.13	8,158	-176	1.85	22.5				23.7		
19/4	14:16	3.5	0.08	3.027	6.13	8,136	-180.4	1.93	23.4				23.6		
19/4	14:19	3.8	0.15	3.15	6.13	8,110	-182.9	1.9	23.1				23.7		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Tubing stickup bent in angle, black suspension from the logger, black suspension organic smell			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV284
Job No:	SC210108.03	**Date:**	19/4/2023 12:08
Recorded By:	Joy X	**Lat / Long:**	-33.82817,151.02404
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Bolt weary one bolt missing cannot access			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH18
Job No:	SC210108.03	**Date:**	19/4/2023 11:55
Recorded By:	Joy X	**Lat / Long:**	-33.82815,151.02401
Weather:			

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Bolt weary cannot access			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW76
Job No:	SC210108.03	**Date:**	19/4/2023 11:45
Recorded By:	Joy X	**Lat / Long:**	-33.82805,151.02179
Weather:			

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Destroyed			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ6_MW05
Job No:	SC210108.03	**Date:**	19/4/2023 10:30
Recorded By:	Joy X	**Lat / Long:**	-33.82884,151.02296
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.945	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	6.92	Well Diameter (mm)	50
Height of Standing Water Column (m)	4.975	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	52.236

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
19/4	10:38	0.5		2.177	6.52	1,608	-147.8	0.2	2.3				23.4	Clear	No odor
19/4	10:41	1.2	0.35	2.443	6.49	1,431	-150.8	0.13	1.6				23.5		
19/4	10:45	1.9	0.18	2.682	6.48	1,390	-150.4	0.21	2.5				23.6		
19/4	10:48	2.2	0.15	2.793	6.48	1,373	-149.9	0.25	2.9				23.6		
19/4	10:51	2.5	0.15	2.942	6.49	1,353	-149.7	0.33	3.9				23.6		
19/4	10:54	3	0.25	3.055	6.52	1,351	-150	0.48	5.7				23.6		
19/4	11:02	4	0.14	3.362	6.78	1,051	-145.6	0.84	10				23.7		
19/4	11:05	4.5	0.17	3.415	6.78	1,003	-130.7	0.89	10.5				23.7		
19/4	11:08	4.5	0	4.435	6.75	973	-120.2	0.93	11				23.7		
19/4	11:10	5	0.5	4.88	6.73	987	-114.4	0.98	11.6				23.6		
19/4	11:15	5.5	0.1	4.538	6.69	1,034	-108.2	1.04	12				23.6		
19/4	11:19	6	0.13	4.605	6.64	1,114	-103.4	1.09	23.7				23.7		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Bolts weary, slight brown			

PHOTOS (IF TAKEN)

Photo1: Area	**Photo 2: Bore condition**

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV083
Job No:	SC210108.03	**Date:**	19/4/2023 10:16
Recorded By:	Joy X	**Lat / Long:**	-33.82854,151.02322
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Cannot locate, covered by stockpile			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH13
Job No:	SC210108.03	**Date:**	19/4/2023 07:44
Recorded By:	Joy X	**Lat / Long:**	-33.82717,151.02488
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.2
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.055	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	7.278	Well Diameter (mm)	50
Height of Standing Water Column (m)	6.223	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	65.343

FIELD PARAMETER MEASUREMENT

Purged dry? ☐ Yes At L ☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
19/4	07:56	0.8		1.108	6.15	11,421	-117	0.27	3				19.9	Clear	Organic
19/4	08:00	1.5	0.18	1.295	6.07	11,664	-110.8	0.27	3.2				20.6		
19/4	08:03	2.1	0.3	1.383	6.06	11,667	-117	0.46	5.4				20.7		
19/4	08:06	2.5	0.2	1.432	6.06	11,650	-121.5	0.63	7.4				20.7		
19/4	08:12	3.2	0.14	1.645	6.06	11,534	-126.4	1.3	15.2				20.8		
19/4	08:17	3.8	0.12	1.768	6.06	11,437	-129.5	1.62	19				21		
19/4	08:22	3.5	0.24	1.86	6.05	11,110	-131.2	1.84	21.5				21.2		
19/4	08:25	3.9	0	1.92	6.05	11,238	-132.7	1.84	21.6				21.2		
19/4	08:29	4.3	0.1	2.055	6.06	11,271	-134.7	1.84	21.5				21.2		
Other Observations		Black mud on logger string													

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Big gatic cover			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV039
Job No:	SC210108.03	**Date:**	18/4/2023 15:31
Recorded By:	Joy X	**Lat / Long:**	-33.82688,151.02168
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	4.812	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	10.32	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.508	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	57.834

FIELD PARAMETER MEASUREMENT

Purged dry? ☐ Yes At L ☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
18/4	15:38	0.2		4.975	6.2	28,115	35.8	0.35	4.3				21.1	Clear	No
18/4	15:41	0.8	0.3	5.1	6.06	27,026	35.1	0.33	4.2				21.1		
18/4	15:46	1	0.04	5.19	6.03	27,242	29.9	0.44	5.6				21.1		
18/4	15:49	1.3	0.15	5.24	6.04	27,696	25.2	0.74	9.2				21		
18/4	15:52	1.6	0.15	5.278	6.03	28,344	22.6	1.04	13.1				21		
18/4	15:56	2.05	0.15	5.31	6.03	29,005	18.2	1.46	18.2				21		
18/4	16:00	2.5	0.11	5.324	6.03	29,414	16.9	1.76	22				21.1		
18/4	16:03	2.8	0.15	5.33	6.03	29,814	14	1.97	24.7				21.1		
18/4	16:06	3.1	0	5.34	6.03	29,958	13.5	2.06	25.8				21.1		
18/4	16:10	3.2	0.03	5.35	6.03	29,976	13.2	2.12	26.5				21.2		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_BH010
Job No:	SC210108.03	**Date:**	18/4/2023 14:41
Recorded By:	Joy X	**Lat / Long:**	-33.82975,151.0275
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		Purge Method	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	5.138	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	27.195	Well Diameter (mm)	50
Height of Standing Water Column (m)	22.057	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	231.6

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Logger reading, onebolt missing, one bolt loose			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV042
Job No:	SC210108.03	**Date:**	18/4/2023 14:02
Recorded By:	Joy X	**Lat / Long:**	-33.82975,151.02751
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	3.678	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	10.380968	Well Diameter (mm)	50
Height of Standing Water Column (m)	6.703	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	70.383

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
18/4	14:08	0.3		3.86	5.52	24,179	17.4	0.66	7.5				20.1	Clear	No
18/4	14:11	1.3	0.5	4.16	5.55	24,286	12.6	0.33	4				20.1		
18/4	14:14	2.1	0.4	4.319	5.56	24,300	19.1	0.34	4.1				20.2		
18/4	14:17	2.3	0.1	4.48	5.57	24,282	41.3	0.53	6.5				20.3		
18/4	14:20	2.5	0.1	4.588	5.57	24,296	71.1	0.83	10				20.4		
18/4	14:23	3	0.25	2.661	5.58	24,257	70.8	1.15	14.1				20.5		
18/4	14:26	3.1	0.05	2.732	5.58	24,277	68.5	1.52	18.5				20.6		
18/4	14:32	3.4	0.05	2.85	5.59	24,344	63.1	1.97	24.2				20.6		
18/4	14:36	3.8	0.13	2.938	5.58	24,351	59.3	2.11	25.6				20.6		
18/4	14:39	3.9	0.05	2.97	5.58	24,355	56.9	2.14	26				20.6		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Logger reading			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ4e_MW03
Job No:	SC210108.03	**Date:**	18/4/2023 12:29
Recorded By:	Joy X	**Lat / Long:**	-33.82835,151.02751
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.35	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	4.26	Well Diameter (mm)	50
Height of Standing Water Column (m)	2.91	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	30.555

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
18/4	12:39	0.5		1.46	5.84	7,216	10.4	0.32	3.2				23.1	Clear	No
18/4	12:43	0.8	0.08	1.61	5.73	6,959	19.4	0.36	4.4				23.2		
18/4	12:46	1	0.1	1.61	5.71	6,915	19.9	0.74	9				23.4		
18/4	12:49	1.5	0.25	1.9	5.68	6,900	21.2	1.56	18.7				23.4		
18/4	12:52	2	0.25	2.02	5.67	6,879	25.9	2.04	24.7				23.5		
18/4	12:55	2.8	0.27	2.14	5.66	6,790	31	2.32	27.9				23.1		
18/4	12:58	3.1	0.08	2.28	5.62	6,394	46.7	2.38	28.7				23.5		
18/4	13:01	3.5		2.39	5.6	5,823	72.7	2.43	29.2				23.5		
18/4	13:05	3.8	-0.45	2.53	5.58	5,678	91.5	2.39	28.7				23.5		
18/4	13:08	4.1	0.15	2.59	5.59	5,787	94.2	2.39	28.6				23.5		
18/4	13:11	4.3	0.1	2.65	5.61	5,933	91.7	2.41	28.9				23.5		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Burried under soil			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ4e_MW01
Job No:	SC210108.03	**Date:**	18/4/2023 10:38
Recorded By:	Joy X	**Lat / Long:**	-33.82829,151.02655
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	0.661	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	5.892	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.231	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	54.927

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
18/4	11:23	0.5		0.84	5.09	21,375	62.3	0.32	3.9				22.5	Clear	No odour
18/4	11:26	1	0.25	1.12	5.16	19,353	41.7	0.71	8.9				22.6		
18/4	11:29	2	0.33	1.37	5.41	17,716	-3.7	2.32	28.8				22.7		
18/4	11:32	2.3	0.15	1.488	5.59	16,992	-18.9	2.72	33.4				22.7		
18/4	11:37	2.5	0.04	1.736	5.74	16,336	-38.5	2.74	33.5				22.7		
18/4	11:40	3	0.25	1.845	5.73	16,479	-38.1	2.75	33.8				22.7		
18/4	11:43	3.2	0.1	1.97	5.72	16,427	-37.1	2.73	33.6				22.9		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Flood with slug in well, organic mell. Higher pressure inside well			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ2b_MW02
Job No:	SC210108.03	**Date:**	18/4/2023 10:02
Recorded By:	Joy X	**Lat / Long:**	-33.82866,151.02674
Weather:	Sunny		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Cannot locate			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ5_MW26
Job No:	SC210108.03	**Date:**	17/4/2023 17:17
Recorded By:	Joy X	**Lat / Long:**	-33.82936,151.02399
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Burried by steels			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV088
Job No:	SC210108.03	**Date:**	17/4/2023 17:09
Recorded By:	Joy X	**Lat / Long:**	-33.82938,151.02198
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Not accessible. The concrete be excavated			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH27
Job No:	SC210108.03	**Date:**	17/4/2023 16:58
Recorded By:	Joy X	**Lat / Long:**	-33.83048,151.02452
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Stockpile on top, na			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH26
Job No:	SC210108.03	**Date:**	17/4/2023 16:52
Recorded By:	Joy X	**Lat / Long:**	-33.83095,151.02424
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)		Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)		Well Diameter (mm)	50
Height of Standing Water Column (m)		Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	0

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☐ Yes ☑ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Not assessble, new pavement for haul road			

PHOTOS (IF TAKEN)



Photo1: Area

Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH25_w
Job No:	SC210108.03	**Date:**	17/4/2023 16:18
Recorded By:	Joy X	**Lat / Long:**	-33.82971,151.02567
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	4.592	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	10.09	Well Diameter (mm)	50
Height of Standing Water Column (m)	5.498	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	57.729

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Logger read			

PHOTOS (IF TAKEN)

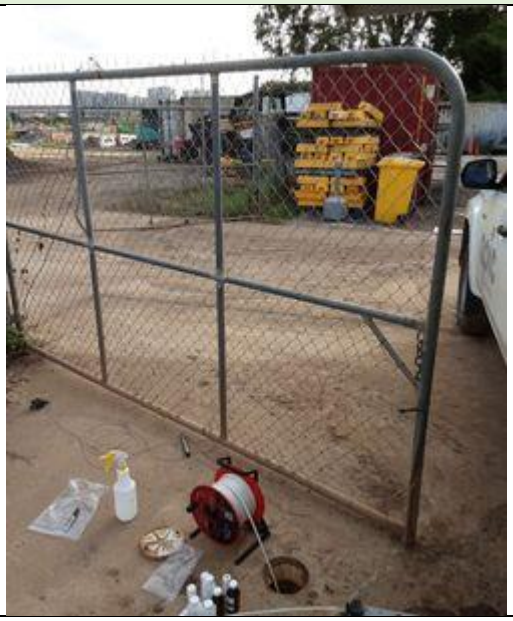


Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_WTP_BH25_s
Job No:	SC210108.03	**Date:**	17/4/2023 15:36
Recorded By:	Joy X	**Lat / Long:**	-33.82972,151.02569
Weather:			

CONSTRUCTION INFORMATION

Well Type		Well stick up (m): (above/below ground level)	-0.1
Well Material		Screen interval - Top (m BTOC)	
Well Head Condition		Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	2.212	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	5.665	Well Diameter (mm)	50
Height of Standing Water Column (m)	3.453	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	36.258

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
17/4	15:47	0.8		2.355	7.1	3,431	-178.3	0.12	1.3				21.9	Clear	No odour
17/4	15:50	1	0.1	2.402	7.06	3,153	-179.5	0.11	1.2				22		
17/4	15:53	1.2	0.1	2.44	7.04	3,072	-180.5	0.24	2.8				22		
17/4	15:56	2.2	0.5	2.485	7.03	3,046	-182	0.4	4.6				22		
17/4	15:59	3	0.27	2.505	7.02	3,007	-183	0.57	6.6				22		
17/4	16:02	3.5	0.25	2.545	7.01	2,981	-183.9	0.73	8.5				22.1		
17/4	16:05	4	0.25	2.57	6.98	3,006	-185.2	1.33	15.4				22.1		
17/4	16:08	4	0	2.59	6.98	3,010	-187	1.37	15.8				22.1		
17/4	16:11	4.5	0.25	2.61	6.98	3,014	-189.7	1.4	16.3				22.1		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Well semi flooded, silt btm grey			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV234
Job No:	SC210108.03	**Date:**	17/4/2023 14:36
Recorded By:	Joy X	**Lat / Long:**	-33.83168,151.02685
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	0.588	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	5.12	Well Diameter (mm)	50
Height of Standing Water Column (m)	4.532	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	47.586

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
17/4	14:43	0.6		0.65	6.14	39,211	-111.4	0.19	2.5				24.1	Clear	Norm
17/4	14:46	1	0.2	0.61	6.16	37,352	-119.6	0.26	3.7				24.3		
17/4	14:50	1.5	0.13	0.62	6.21	35,424	-130	0.77	10.6				24.4		
17/4	14:53	2	0.25	0.62	6.25	34,449	-135.3	1.04	14.2				24.5		
17/4	14:56	2.5	0.25	0.61	6.29	33,558	-140.6	1.25	16.9				24.5		
17/4	15:00	3	0.17	0.63	6.33	32,470	-145.2	1.4	18.9				24.5		
17/4	15:02	3.5	0.25	0.62	6.34	32,261	-145.9	1.42	19.1				24.5		
17/4	15:05	4	0.25	0.61	6.35	32,008	-146.4	1.44	19.4				24.4		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	HDPE tubing in grey and brown color. Organic smell			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV224
Job No:	SC210108.03	**Date:**	17/4/2023 12:22
Recorded By:	Joy X	**Lat / Long:**	-33.83006,151.02365
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	2.665	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	4.425	Well Diameter (mm)	50
Height of Standing Water Column (m)	1.76	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	18.48

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
17/4	12:54	0.8		2.67	6.44	4,828	-109.8	0.13	1.5				21	Clear	No
17/4	13:01	1.8	0.17	2.67	6.39	3,766	-91	0.81	9.3				21.2		
17/4	13:04	2	0.07	2.69	6.38	3,679	-89.8	1.04	11.9				21.3		
17/4	13:07	2.5	0.25	2.67	6.37	3,641	-93.1	1.27	14.6				21.3		
17/4	13:10	2.7	0.1	2.68	6.37	3,619	-96.2	1.51	17.3				21.3		
17/4	13:13	3	0.15	2.67	6.37	3,608	-99.1	1.71	19.6				21.4		
17/4	13:17	3.3	0.1	2.67	6.37	3,595	-101.4	1.87	21.4				21.3		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No	
		Gauged	☑ Yes ☐ No	
Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
	Yes	Yes	Yes	
Analysis/Bottles				
Comment				

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	GALC-MW12
Job No:	SC210108.03	**Date:**	17/4/2023 12:00
Recorded By:	Joy X	**Lat / Long:**	-33.83001,151.02373
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.15
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	2.455	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	10.322	Well Diameter (mm)	50
Height of Standing Water Column (m)	7.867	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	82.605

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Logger lost?			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ5_MW16
Job No:	SC210108.03	**Date:**	17/4/2023 11:28
Recorded By:	Joy X	**Lat / Long:**	-33.83011,151.0237
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.1
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Good	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		Purge Method	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.89	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	6.862	Well Diameter (mm)	50
Height of Standing Water Column (m)	4.972	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	52.206

FIELD PARAMETER MEASUREMENT

Purged dry? ☐ Yes At L ☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
17/4	11:35	0.5		1.89	5.59	10,801	4.2	1.12	13.5				22.5	Clear	No
17/4	11:39	1	0.17	2.31	5.69	9,813	-25.3	1.94	23.2				22.4		
17/4	11:42	1.3	0.1	2.387	5.72	9,312	-40.9	2.27	27				22.4		
17/4	11:46	1.7	0.13	2.45	5.84	8,202	-63.1	2.81	33.3				22.6		
17/4	11:49	2	0.15	2.55	5.89	7,701	-71.4	2.93	34.7				22.7		
17/4	11:52	2.4	0.2	2.655	5.93	7,185	-77.7	2.9	34.3				22.7		
17/4	11:55	2.7	0.15	2.72	5.96	6,982	-80.9	2.98	35.2				22.6		
17/4	11:58	3	0	2.79	5.97	6,761	-81.2	3.01	35.5				22.5		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No	
		Gauged	☑ Yes ☐ No	
Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Grey silt btm			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	SMW_ENV148
Job No:	SC210108.03	**Date:**	17/4/2023 10:57
Recorded By:	Joy X	**Lat / Long:**	-33.8336,151.02739
Weather:	Cloudy		

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	-0.15
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Fair	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	
Water Level Depth (WL in m BTOC)	1.73	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	6.286	Well Diameter (mm)	50
Height of Standing Water Column (m)	4.556	Well Annulus (mm)	100
Discharge Water Disposal Method		Minimum Purge Volume	47.838

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☐ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☐ Yes ☑ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	Silty btm, red. One bolt missing .			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

STANDARD GROUNDWATER SAMPLING FIELD SHEET

Round number: Round 3 - April

Job Name:	Gamuda - Groundwater Monitoring Program	**Well No:**	CZ1_BH13
Job No:	SC210108.03	**Date:**	17/4/2023 09:18
Recorded By:	Joy X	**Lat / Long:**	-33.83409,151.02822
Weather:			

CONSTRUCTION INFORMATION

Well Type	Monitor	Well stick up (m): (above/below ground level)	0.2
Well Material	PVC	Screen interval - Top (m BTOC)	
Well Head Condition	Bad	Screen interval - Bottom (m BTOC)	

WELL PURGING

Measured Levels		**Purge Method**	
LNAPL Level Depth (LL in m BTOC)		Method	Peristatic
Water Level Depth (WL in m BTOC)	2.12	Pump Intake Depth (mBTOC)	
DNAPL Level Depth (DL in m BTOC)		**Minimum Purge Volume Required**	
Total Depth of Well (TD in m BTOC)	9.655	Well Diameter (mm)	50
Height of Standing Water Column (m)	7.535	Well Annulus (mm)	100
Discharge Water Disposal Method	Drum	Minimum Purge Volume	79.119

FIELD PARAMETER MEASUREMENT

Purged dry?	☐ Yes	At L	☑ No

Date	Time	Purged	Rate	SWL	pH	EC	ORP	DO	DO	Tur	Sal	TDS	Temp	Colour	Odour
MM/DD	HH:MM	L		mBTOC		µS/cm	mV	ppm	% Sat	NTU			°C		
17/4	10:06	0.5		2.39	5.99	34,456	7.8	4.11	53.9				20.6	Clear	No odor
17/4	10:09	1	0.25	2.55	6.07	34,577	-0.4	5.05	75				20.6		
17/4	10:13	1.5	0.13	2.69	6.1	34,593	-6.7	5.74	79.9				20.7		
17/4	10:17	1.8	0.1	2.78	6.12	34,592	-9.2	5.09	66.9				20.9		
17/4	10:22	2	0.04	2.862	6.14	34,594	-11.2	6.94	86.3				21.1		
17/4	10:25	2.3	0.15	2.9	6.15	34,611	-11.8	4.67	70.8				21.2		
17/4	10:28	2.5	0.07	3.96	6.15	34,616	-12.9	4.66	60.7				21.3		
17/4	10:33	2.8	0.08	3.023	6.16	34,607	-13.5	4.65	62.8				21.4		
Other Observations															

WELL SAMPLING

Sampling Method:		**Sampled ?**	☑ Yes ☐ No
		Gauged	☑ Yes ☐ No

Sample ID & QC Samples	Primary	Duplicate	Triplicate	Rinsate
Analysis/Bottles				
Comment	No lid, pvc crushed into angle, capped with nitrile glove			

PHOTOS (IF TAKEN)



Photo1: Area



Photo 2: Bore condition

APPENDIX E – LABORATORY DOCUMENTATION

January 2023 monitoring event

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 314602

Client Details

Client	Epic Environmental (Sydney) Pty Ltd
Attention	j Xie
Address	Suite 5, Level 9, 189 Kent Street, SYDNEY, NSW, 2000

Sample Details

Your Reference	**SC210108.03, Sydney Metro WTP**
Number of Samples	6 Water
Date samples received	17/01/2023
Date completed instructions received	17/01/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	25/01/2023
Date of Issue	25/01/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Alexander Mitchell Maclean, Senior Chemist
Diego Bigolin, Inorganics Supervisor
Hannah Nguyen, Metals Supervisor
Liam Timmins, Organic Instruments Team Leader
Loren Bardwell, Development Chemist
Nancy Zhang, Laboratory Manager, Sydney
Steven Luong, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

VOCs in water				
Our Reference	UNITS	314602-1	314602-2	314602-3
Your Reference		SMW_BH083	CZ5_MW16	QC01
Date Sampled		16/01/2023	16/01/2023	16/01/2023
Type of sample		Water	Water	Water
Date extracted	-	18/01/2023	18/01/2023	18/01/2023
Date analysed	-	19/01/2023	19/01/2023	19/01/2023
Dichlorodifluoromethane	µg/L	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10
Vinyl Chloride	µg/L	<10	<10	<10
Bromomethane	µg/L	<10	<10	<10
Chloroethane	µg/L	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1
Chloroform	µg/L	<1	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1
Benzene	µg/L	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1
Toluene	µg/L	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1

VOCs in water				
Our Reference	UNITS	314602-1	314602-2	314602-3
Your Reference		SMW_BH083	CZ5_MW16	QC01
Date Sampled		16/01/2023	16/01/2023	16/01/2023
Type of sample		Water	Water	Water
Bromoform	µg/L	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2
Styrene	µg/L	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1
o-xylene	µg/L	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1	<1
4-isopropyl toluene	µg/L	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1
Hexachlorobutadiene	µg/L	<1	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<1
Surrogate Dibromofluoromethane	%	115	109	111
Surrogate toluene-d8	%	101	102	99
Surrogate 4-BFB	%	111	110	109

SVOC's in water				
Our Reference	UNITS	314602-1	314602-2	314602-3
Your Reference		SMW_BH083	CZ5_MW16	QC01
Date Sampled		16/01/2023	16/01/2023	16/01/2023
Type of sample		Water	Water	Water
Date extracted	-	23/01/2023	23/01/2023	23/01/2023
Date analysed	-	23/01/2023	23/01/2023	23/01/2023
Phenol	µg/L	<2	<2	<2
Bis (2-chloroethyl) ether	µg/L	<5	<5	<5
2-Chlorophenol	µg/L	<2	<2	<2
1,3-Dichlorobenzene	µg/L	<2	<2	<2
1,4-Dichlorobenzene	µg/L	<2	<2	<2
2-Methylphenol	µg/L	<2	<2	<2
1,2-Dichlorobenzene	µg/L	<2	<2	<2
bis-(2-Chloroisopropyl) ether	µg/L	<5	<5	<5
3/4-Methylphenol	µg/L	<4	<4	<4
N-nitrosodi-n-propylamine	µg/L	<5	<5	<5
Hexachloroethane	µg/L	<2	<2	<2
Nitrobenzene	µg/L	<5	<5	<5
Isophorone	µg/L	<5	<5	<5
2,4-Dimethylphenol	µg/L	<2	<2	<2
2-Nitrophenol	µg/L	<2	<2	<2
bis (2-Chloroethoxy) methane	µg/L	<5	<5	<5
2,4-Dichlorophenol	µg/L	<2	<2	<2
1,2,4-Trichlorobenzene	µg/L	<2	<2	<2
Naphthalene	µg/L	<2	<2	<2
4-Chloroaniline	µg/L	<5	<5	<5
4-Chloro-3-methylphenol	µg/L	<10	<10	<10
Hexachlorobutadiene	µg/L	<2	<2	<2
2-Methylnaphthalene	µg/L	<2	<2	<2
Hexachlorocyclopentadiene	µg/L	<5	<5	<5
2,4,6-Trichlorophenol	µg/L	<2	<2	<2
2,4,5-Trichlorophenol	µg/L	<2	<2	<2
2-Chloronaphthalene	µg/L	<2	<2	<2
2-Nitroaniline	µg/L	<5	<5	<5
Dimethyl phthalate	µg/L	<10	<10	<10
2,6-Dinitrotoluene	µg/L	<5	<5	<5
Acenaphthylene	µg/L	<2	<2	<2
3-Nitroaniline	µg/L	<5	<5	<5
Acenaphthene	µg/L	<2	<2	<2
2,4-Dinitrophenol	µg/L	<20	<20	<20

SVOC's in water				
Our Reference	UNITS	314602-1	314602-2	314602-3
Your Reference		SMW_BH083	CZ5_MW16	QC01
Date Sampled		16/01/2023	16/01/2023	16/01/2023
Type of sample		Water	Water	Water
4-Nitrophenol	µg/L	<20	<20	<20
Dibenzofuran	µg/L	<5	<5	<5
Diethylphthalate	µg/L	<10	<10	<10
4-Chlorophenylphenylether	µg/L	<5	<5	<5
4-Nitroaniline	µg/L	<5	<5	<5
Fluorene	µg/L	<2	<2	<2
2-methyl-4,6-dinitrophenol	µg/L	<20	<20	<20
Azobenzene	µg/L	<5	<5	<5
4-Bromophenylphenylether	µg/L	<5	<5	<5
Hexachlorobenzene	µg/L	<2	<2	<2
Pentachlorophenol	µg/L	<10	<10	<10
Phenanthrene	µg/L	<2	<2	<2
Anthracene	µg/L	<2	<2	<2
Carbazole	µg/L	<5	<5	<5
Di-n-butylphthalate	µg/L	<10	<10	<10
Fluoranthene	µg/L	<2	<2	<2
Pyrene	µg/L	<2	<2	<2
Butylbenzylphthalate	µg/L	<10	<10	<10
Bis(2-ethylhexyl) phthalate	µg/L	<50	<50	<50
Benzo(a)anthracene	µg/L	<2	<2	<2
Chrysene	µg/L	<2	<2	<2
Di-n-octylphthalate	µg/L	<10	<10	<10
Benzo(b,j+k)fluoranthene	µg/L	<4	<4	<4
Benzo(a)pyrene	µg/L	<2	<2	<2
Indeno(1,2,3-c,d)pyrene	µg/L	<2	<2	<2
Dibenzo(a,h)anthracene	µg/L	<2	<2	<2
Benzo(g,h,i)perylene	µg/L	<2	<2	<2
Ethylmethanesulfonate	µg/L	<5	<5	<5
Aniline	µg/L	<5	<5	<5
Pentachloroethane	µg/L	<2	<2	<2
Benzyl alcohol	µg/L	<5	<5	<5
Acetophenone	µg/L	<5	<5	<5
N-nitrosomorpholine	µg/L	<5	<5	<5
N-nitrosopiperidine	µg/L	<5	<5	<5
2,6-Dichlorophenol	µg/L	<2	<2	<2
Hexachloropropene-1	µg/L	<2	<2	<2
N-nitroso-n-butylamine	µg/L	<5	<5	<5

SVOC's in water				
Our Reference	UNITS	314602-1	314602-2	314602-3
Your Reference		SMW_BH083	CZ5_MW16	QC01
Date Sampled		16/01/2023	16/01/2023	16/01/2023
Type of sample		Water	Water	Water
Safrole	µg/L	<5	<5	<5
1,2,4,5-Tetrachlorobenzene	µg/L	<2	<2	<2
Trans/Cis-iso-safrole	µg/L	<5	<5	<5
1,3-Dinitrobenzene	µg/L	<5	<5	<5
Pentachlorobenzene	µg/L	<2	<2	<2
1-Naphthylamine	µg/L	<5	<5	<5
2,3,4,6-Tetrachlorophenol	µg/L	<2	<2	<2
2-Naphthylamine	µg/L	<5	<5	<5
5-Nitro-o-toluidine	µg/L	<5	<5	<5
Diphenylamine	µg/L	<5	<5	<5
Phenacetin	µg/L	<5	<5	<5
Pentachloronitrobenzene	µg/L	<5	<5	<5
Dinoseb	µg/L	<10	<10	<10
Methapyrilene	µg/L	<10	<10	<10
p-Dimethylaminoazobenzene	µg/L	<5	<5	<5
2-Acetylaminofluorene	µg/L	<2	<2	<2
7,12-Dimethylbenz(a)anthracene	µg/L	<2	<2	<2
3-Methylcholanthrene	µg/L	<2	<2	<2
a-BHC	µg/L	<2	<2	<2
b-BHC	µg/L	<2	<2	<2
g-BHC	µg/L	<2	<2	<2
d-BHC	µg/L	<2	<2	<2
Heptachlor	µg/L	<2	<2	<2
Aldrin	µg/L	<2	<2	<2
Heptachlor Epoxide	µg/L	<2	<2	<2
g-Chlordane	µg/L	<2	<2	<2
a-Chlordane	µg/L	<2	<2	<2
Endosulfan I	µg/L	<2	<2	<2
p,p'-DDE	µg/L	<2	<2	<2
Dieldrin	µg/L	<2	<2	<2
Endrin	µg/L	<2	<2	<2
p,p'-DDD	µg/L	<2	<2	<2
Endosulfan II	µg/L	<2	<2	<2
Endrin Aldehyde	µg/L	<2	<2	<2
p,p'-DDT	µg/L	<2	<2	<2
Endosulfan Sulphate	µg/L	<2	<2	<2
Endrin Ketone	µg/L	<2	<2	<2

SVOC's in water				
Our Reference		314602-1	314602-2	314602-3
Your Reference	UNITS	SMW_BH083	CZ5_MW16	QC01
Date Sampled		16/01/2023	16/01/2023	16/01/2023
Type of sample		Water	Water	Water
Methoxychlor	µg/L	<2	<2	<2
Dichlorvos	µg/L	<2	<2	<2
Mevinphos	µg/L	<2	<2	<2
Phorate	µg/L	<2	<2	<2
Dimethoate	µg/L	<2	<2	<2
Diazinon (dimpylate)	µg/L	<2	<2	<2
Disulfoton	µg/L	<2	<2	<2
Chloropyriphos-methyl	µg/L	<2	<2	<2
Parathion-methyl	µg/L	<2	<2	<2
Ronnel (fenchlorphos)	µg/L	<2	<2	<2
Fenitrothion	µg/L	<2	<2	<2
Malathion (Maldison)	µg/L	<2	<2	<2
Chloropyriphos	µg/L	<2	<2	<2
Fenthion	µg/L	<2	<2	<2
Parathion (parathion-ethyl)	µg/L	<2	<2	<2
Bromophos Ethyl	µg/L	<2	<2	<2
Methidathion	µg/L	<2	<2	<2
Fenamiphos (Phenamiphos)	µg/L	<2	<2	<2
Ethion	µg/L	<2	<2	<2
Phosalone	µg/L	<2	<2	<2
Azinphos methyl (Guthion)	µg/L	<2	<2	<2
Coumaphos (Co-Ral)	µg/L	<2	<2	<2
Surrogate 2-fluorophenol	%	42	41	38
Surrogate Phenol-d_6	%	35	30	25
Surrogate Nitrobenzene-d_5	%	70	70	61
Surrogate 2-fluorobiphenyl	%	65	65	58
Surrogate 2,4,6-Tribromophenol	%	70	67	58
Surrogate *p*-Terphenyl-d_{14}	%	61	60	60

PFAS in Waters Extended				
Our Reference	UNITS	314602-1	314602-2	314602-3
Your Reference		SMW_BH083	CZ5_MW16	QC01
Date Sampled		16/01/2023	16/01/2023	16/01/2023
Type of sample		Water	Water	Water
Date prepared	-	18/01/2023	18/01/2023	18/01/2023
Date analysed	-	18/01/2023	18/01/2023	18/01/2023
Perfluorobutanesulfonic acid	µg/L	0.09	0.02	0.07
Perfluoropentanesulfonic acid	µg/L	0.08	<0.01	0.08
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.27	0.02	0.26
Perfluoroheptanesulfonic acid	µg/L	0.02	<0.01	0.02
Perfluorooctanesulfonic acid PFOS	µg/L	0.12	<0.01	0.12
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	0.03	<0.02	0.03
Perfluoropentanoic acid	µg/L	0.04	<0.02	0.03
Perfluorohexanoic acid	µg/L	0.24	0.01	0.23
Perfluoroheptanoic acid	µg/L	0.06	<0.01	0.06
Perfluorooctanoic acid PFOA	µg/L	0.06	0.03	0.05
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01
6:2 FTS	µg/L	0.01	<0.01	0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	100	97	102
Surrogate $^{13}C_2$ *PFOA*	%	104	106	103
Extracted ISTD $^{13}C_3$ *PFBS*	%	109	109	108
Extracted ISTD $^{18}O_2$ *PFHxS*	%	108	104	100
Extracted ISTD $^{13}C_4$ *PFOS*	%	110	106	76
Extracted ISTD $^{13}C_4$ *PFBA*	%	76	89	75

PFAS in Waters Extended				
Our Reference	UNITS	314602-1	314602-2	314602-3
Your Reference		SMW_BH083	CZ5_MW16	QC01
Date Sampled		16/01/2023	16/01/2023	16/01/2023
Type of sample		Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	111	113	109
Extracted ISTD $^{13}C_2$ *PFHxA*	%	108	105	102
Extracted ISTD $^{13}C_4$ *PFHpA*	%	99	101	98
Extracted ISTD $^{13}C_4$ *PFOA*	%	111	109	99
Extracted ISTD $^{13}C_5$ *PFNA*	%	109	105	82
Extracted ISTD $^{13}C_2$ *PFDA*	%	109	100	72
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	111	103	80
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	112	100	100
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	91	85	100
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	92	100	87
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	87	90	73
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	98	97	65
Extracted ISTD $^{13}C_8$ *FOSA*	%	111	100	70
Extracted ISTD d_3 *N MeFOSA*	%	107	103	79
Extracted ISTD d_5 *N EtFOSA*	%	107	98	79
Extracted ISTD d_7 *N MeFOSE*	%	126	112	76
Extracted ISTD d_9 *N EtFOSE*	%	117	112	72
Extracted ISTD d_3 *N MeFOSAA*	%	88	87	64
Extracted ISTD d_5 *N EtFOSAA*	%	83	85	59
Total Positive PFHxS & PFOS	µg/L	0.39	0.02	0.38
Total Positive PFOA & PFOS	µg/L	0.18	0.03	0.18
Total Positive PFAS	µg/L	1.0	0.07	0.96

vTRH(C6-C10)/BTEXN in Water						
Our Reference		314602-1	314602-2	314602-3	314602-4	314602-5
Your Reference	UNITS	SMW_BH083	CZ5_MW16	QC01	RS01	TS01
Date Sampled		16/01/2023	16/01/2023	16/01/2023	16/01/2023	16/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	18/01/2023	18/01/2023	18/01/2023	18/01/2023	18/01/2023
Date analysed	-	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	[NA]
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	[NA]
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	[NA]
Benzene	µg/L	<1	<1	<1	<1	20
Toluene	µg/L	<1	<1	<1	1	24
Ethylbenzene	µg/L	<1	<1	<1	<1	23
m+p-xylene	µg/L	<2	<2	<2	<2	23
o-xylene	µg/L	<1	<1	<1	<1	22
Naphthalene	µg/L	<1	<1	<1	<1	[NA]
Surrogate Dibromofluoromethane	%	115	109	111	110	110
Surrogate toluene-d8	%	101	102	99	103	101
Surrogate 4-BFB	%	111	110	109	111	106

vTRH(C6-C10)/BTEXN in Water		
Our Reference		314602-6
Your Reference	UNITS	TB01
Date Sampled		16/01/2023
Type of sample		Water
Date extracted	-	18/01/2023
Date analysed	-	19/01/2023
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	3
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	114
Surrogate toluene-d8	%	101
Surrogate 4-BFB	%	109

svTRH (C10-C40) in Water				
Our Reference	UNITS	314602-1	314602-2	314602-3
Your Reference		SMW_BH083	CZ5_MW16	QC01
Date Sampled		16/01/2023	16/01/2023	16/01/2023
Type of sample		Water	Water	Water
Date extracted	-	23/01/2023	23/01/2023	23/01/2023
Date analysed	-	24/01/2023	24/01/2023	24/01/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	360	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	360	<50	<50
TRH >C_{10} - C_{16}	µg/L	160	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	160	<50	<50
TRH >C_{16} - C_{34}	µg/L	280	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	440	<50	<50
Surrogate o-Terphenyl	%	83	71	69

PAHs in Water				
Our Reference	UNITS	314602-1	314602-2	314602-3
Your Reference		SMW_BH083	CZ5_MW16	QC01
Date Sampled		16/01/2023	16/01/2023	16/01/2023
Type of sample		Water	Water	Water
Date extracted	-	23/01/2023	23/01/2023	23/01/2023
Date analysed	-	23/01/2023	23/01/2023	23/01/2023
Naphthalene	µg/L	<1	<1	<1
Acenaphthylene	µg/L	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1
Fluorene	µg/L	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1
Anthracene	µg/L	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1
Pyrene	µg/L	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1
Chrysene	µg/L	<1	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	61	60	60

Organochlorine Pesticides in Water				
Our Reference	UNITS	314602-1	314602-2	314602-3
Your Reference		SMW_BH083	CZ5_MW16	QC01
Date Sampled		16/01/2023	16/01/2023	16/01/2023
Type of sample		Water	Water	Water
Date extracted	-	23/01/2023	23/01/2023	23/01/2023
Date analysed	-	23/01/2023	23/01/2023	23/01/2023
alpha-BHC	µg/L	<0.2	<0.2	<0.2
HCB	µg/L	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2
Surrogate TCMX	%	63	63	60

OP Pesticides in Water				
Our Reference	UNITS	314602-1	314602-2	314602-3
Your Reference		SMW_BH083	CZ5_MW16	QC01
Date Sampled		16/01/2023	16/01/2023	16/01/2023
Type of sample		Water	Water	Water
Date extracted	-	23/01/2023	23/01/2023	23/01/2023
Date analysed	-	23/01/2023	23/01/2023	23/01/2023
Dichlorvos	µg/L	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2	<0.2
Surrogate TCMX	%	63	63	60

Triazine Herbicides in Water				
Our Reference	UNITS	314602-1	314602-2	314602-3
Your Reference		SMW_BH083	CZ5_MW16	QC01
Date Sampled		16/01/2023	16/01/2023	16/01/2023
Type of sample		Water	Water	Water
Date extracted	-	23/01/2023	23/01/2023	23/01/2023
Date analysed	-	23/01/2023	23/01/2023	23/01/2023
Atrazine	mg/L	<0.002	<0.002	<0.002
Ametryn	mg/L	<0.002	<0.002	<0.002
Cyanazine	mg/L	<0.002	<0.002	<0.002
Hexazinone	mg/L	<0.002	<0.002	<0.002
Irgarol	mg/L	<0.002	<0.002	<0.002
Metribuzin	mg/L	<0.002	<0.002	<0.002
Prometryn	mg/L	<0.002	<0.002	<0.002
Propazine	mg/L	<0.002	<0.002	<0.002
Simazine	mg/L	<0.002	<0.002	<0.002
Terbutryn	mg/L	<0.002	<0.002	<0.002
Terbuthylazine	mg/L	<0.002	<0.002	<0.002
Surrogate p-Terphenyl-d14	%	60	60	60

HM in water - dissolved					
Our Reference	UNITS	314602-1	314602-2	314602-3	314602-4
Your Reference		SMW_BH083	CZ5_MW16	QC01	RS01
Date Sampled		16/01/2023	16/01/2023	16/01/2023	16/01/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Date analysed	-	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Arsenic-Dissolved	µg/L	1	1	1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	<1	<1	<1
Lead-Dissolved	µg/L	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	8	7	8	<1
Zinc-Dissolved	µg/L	21	22	21	<1
Barium-Dissolved	µg/L	39	150	37	<1
Beryllium-Dissolved	µg/L	<0.5	<0.5	<0.5	<0.5
Cobalt-Dissolved	µg/L	21	14	20	<1
Manganese-Dissolved	µg/L	100	130	100	<5
Selenium-Dissolved	µg/L	<1	<1	<1	<1

Metals in Waters - Acid extractable				
Our Reference		314602-1	314602-2	314602-3
Your Reference	UNITS	SMW_BH083	CZ5_MW16	QC01
Date Sampled		16/01/2023	16/01/2023	16/01/2023
Type of sample		Water	Water	Water
Date prepared	-	19/01/2023	19/01/2023	19/01/2023
Date analysed	-	19/01/2023	19/01/2023	19/01/2023
Phosphorus - Total	mg/L	<0.05	0.1	<0.05

Ion Balance				
Our Reference	UNITS	314602-1	314602-2	314602-3
Your Reference		SMW_BH083	CZ5_MW16	QC01
Date Sampled		16/01/2023	16/01/2023	16/01/2023
Type of sample		Water	Water	Water
Date prepared	-	17/01/2023	17/01/2023	17/01/2023
Date analysed	-	17/01/2023	17/01/2023	17/01/2023
Calcium - Dissolved	mg/L	62	40	57
Potassium - Dissolved	mg/L	5.8	32	5.4
Sodium - Dissolved	mg/L	2,300	1,500	2,000
Magnesium - Dissolved	mg/L	210	110	190
Hardness	mgCaCO 3 /L	1,000	560	950
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	80	180	83
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	80	180	83
Sulphate, SO4	mg/L	590	540	570
Chloride, Cl	mg/L	3,600	1,800	3,400
Ionic Balance	%	2.0	7.0	-2.0

Miscellaneous Inorganics				
Our Reference	UNITS	314602-1	314602-2	314602-3
Your Reference		SMW_BH083	CZ5_MW16	QC01
Date Sampled		16/01/2023	16/01/2023	16/01/2023
Type of sample		Water	Water	Water
Date prepared	-	17/01/2023	17/01/2023	17/01/2023
Date analysed	-	17/01/2023	17/01/2023	17/01/2023
pH	pH Units	5.3	6.1	5.4
Electrical Conductivity	µS/cm	12,000	7,400	12,000
Total Dissolved Solids (grav)	mg/L	7,700	4,300	7,200
Dissolved Oxygen*	mg/L	8.5	7.3	8.2
Phosphate as P in water	mg/L	<0.005	<0.005	<0.005
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005
Trivalent Chromium	mg/L	<0.005	<0.005	<0.005
Ammonia as N in water	mg/L	0.27	3.2	0.30
Nitrate as N in water	mg/L	<0.005	<0.005	<0.005
Nitrite as N in water	mg/L	<0.005	<0.005	<0.005
NOx as N in water	mg/L	<0.005	<0.005	<0.005
Total Nitrogen in water	mg/L	0.4	3.4	0.4
TKN in water	mg/L	0.4	3.4	0.4
Organic Nitrogen as N	mg/L	<0.2	<0.2	<0.2

Acid Herbicides in Water				
Our Reference	UNITS	314602-1	314602-2	314602-3
Your Reference		SMW_BH083	CZ5_MW16	QC01
Date Sampled		16/01/2023	16/01/2023	16/01/2023
Type of sample		Water	Water	Water
Date extracted	-	25/01/2023	25/01/2023	25/01/2023
Date analysed	-	25/01/2023	25/01/2023	25/01/2023
Clopyralid	µg/L	<0.5	<0.5	<0.5
3,5-Dichlorobenzoic acid	µg/L	<0.5	<0.5	<0.5
o-chlorophenoxy acetic acid	µg/L	<0.5	<0.5	<0.5
4-CPA	µg/L	<0.5	<0.5	<0.5
Dicamba	µg/L	<0.5	<0.5	<0.5
MCPP	µg/L	<0.5	<0.5	<0.5
MCPA	µg/L	<0.5	<0.5	<0.5
Dichlorprop	µg/L	<0.5	<0.5	<0.5
2,4-D	µg/L	<0.5	<0.5	<0.5
Bromoxynil	µg/L	<0.5	<0.5	<0.5
Triclopyr	µg/L	<0.5	<0.5	<0.5
2,4,5-TP	µg/L	<0.5	<0.5	<0.5
2,4,5-T	µg/L	<0.5	<0.5	<0.5
MCPB	µg/L	<0.5	<0.5	<0.5
Dinoseb	µg/L	<1	<1	<1
2,4-DB	µg/L	<0.5	<0.5	<0.5
Ioxynil	µg/L	<1	<1	<1
Picloram	µg/L	<1	<1	<1
Acifluorfen	µg/L	<2	<2	<2
2,4,6-T	µg/L	<0.5	<0.5	<0.5
2,6-D	µg/L	<0.5	<0.5	<0.5
Bentazon	µg/L	<1	<1	<1
Chloramben	µg/L	<1	<1	<1
Fluroxypyr	µg/L	<1	<1	<1
Surrogate 2.4- DCPA	%	88	90	94

Method ID	Methodology Summary
Ext-061	Analysed by Envirolab Melbourne
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Inorg-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation below:- TDS = EC * 0.6
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Inorg-040	The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% ie total anions = total cations +/-15%.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Inorg-112	Dissolved Oxygen using membrane electrode. Note this analysis should ideally be carried out immediately after sampling.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
Date extracted	-			18/01/2023	1	18/01/2023	19/01/2023		18/01/2023	[NT]
Date analysed	-			19/01/2023	1	19/01/2023	20/01/2023		19/01/2023	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	104	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	1	<1	<1	0	101	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	97	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	94	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	104	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	102	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	102	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	105	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	101	1	115	121	5	106	[NT]
Surrogate toluene-d8	%		Org-023	97	1	101	104	3	97	[NT]
Surrogate 4-BFB	%		Org-023	107	1	111	114	3	107	[NT]

QUALITY CONTROL: SVOC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			23/01/2023	[NT]	[NT]	[NT]	[NT]	23/01/2023	[NT]
Date analysed	-			23/01/2023	[NT]	[NT]	[NT]	[NT]	23/01/2023	[NT]
Phenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	41	[NT]
Bis (2-chloroethyl) ether	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-Chlorophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	71	[NT]
1,3-Dichlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-Dichlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	53	[NT]
2-Methylphenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	70	[NT]
1,2-Dichlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
bis-(2-Chloroisopropyl) ether	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
3/4-Methylphenol	µg/L	4	Org-022/025	<4	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
N-nitrosodi-n-propylamine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachloroethane	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Nitrobenzene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Isophorone	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-Dimethylphenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-Nitrophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
bis (2-Chloroethoxy) methane	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-Dichlorophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-Trichlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Naphthalene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	74	[NT]
4-Chloroaniline	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-Chloro-3-methylphenol	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorobutadiene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-Methylnaphthalene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorocyclopentadiene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,6-Trichlorophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,5-Trichlorophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-Chloronaphthalene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-Nitroaniline	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dimethyl phthalate	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	74	[NT]
2,6-Dinitrotoluene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthylene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
3-Nitroaniline	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	89	[NT]
2,4-Dinitrophenol	µg/L	20	Org-022/025	<20	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-Nitrophenol	µg/L	20	Org-022/025	<20	[NT]	[NT]	[NT]	[NT]	38	[NT]
Dibenzofuran	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diethylphthalate	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	81	[NT]
4-Chlorophenylphenylether	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: SVOC's in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
4-Nitroaniline	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	90	[NT]
2-methyl-4,6-dinitrophenol	µg/L	20	Org-022/025	<20	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Azobenzene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-Bromophenylphenylether	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Pentachlorophenol	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	79	[NT]
Phenanthrene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	100	[NT]
Anthracene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbazole	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Di-n-butylphthalate	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	98	[NT]
Pyrene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	105	[NT]
Butylbenzylphthalate	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bis(2-ethylhexyl) phthalate	µg/L	50	Org-022/025	<50	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)anthracene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	63	[NT]
Di-n-octylphthalate	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(b,j+k)fluoranthene	µg/L	4	Org-022/025	<4	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	94	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethylmethanesulfonate	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aniline	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Pentachloroethane	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzyl alcohol	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acetophenone	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
N-nitrosomorpholine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
N-nitrosopiperidine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,6-Dichlorophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	86	[NT]
Hexachloropropene-1	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
N-nitroso-n-butylamine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Safrole	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4,5-Tetrachlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trans/Cis-iso-safrole	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-Dinitrobenzene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Pentachlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1-Naphthylamine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,3,4,6-Tetrachlorophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: SVOC's in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
2-Naphthylamine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
5-Nitro-o-toluidine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diphenylamine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Phenacetin	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Pentachloronitrobenzene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dinoseb	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Methapyrilene	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
p-Dimethylaminoazobenzene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-Acetylaminofluorene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
7,12-Dimethylbenz(a)anthracene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
3-Methylcholanthrene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-BHC	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	76	[NT]
b-BHC	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	74	[NT]
g-BHC	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
d-BHC	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	75	[NT]
Aldrin	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	77	[NT]
Heptachlor Epoxide	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	76	[NT]
g-Chlordane	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-Chlordane	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
p,p'-DDE	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	80	[NT]
Dieldrin	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	80	[NT]
Endrin	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	78	[NT]
p,p'-DDD	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	100	[NT]
Endosulfan II	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin Aldehyde	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
p,p'-DDT	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	78	[NT]
Endrin Ketone	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Methoxychlor	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dichlorvos	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	81	[NT]
Mevinphos	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Phorate	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dimethoate	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon (dimpylate)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Disulfoton	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloropyriphos-methyl	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Parathion-methyl	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: SVOC's in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Ronnel (fenchlorphos)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	71	[NT]
Fenitrothion	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	67	[NT]
Malathion (Maldison)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	81	[NT]
Chloropyriphos	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	80	[NT]
Fenthion	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Parathion (parathion-ethyl)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	70	[NT]
Bromophos Ethyl	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Methidathion	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fenamiphos (Phenamiphos)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	70	[NT]
Phosalone	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Azinphos methyl (Guthion)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Coumaphos (Co-Ral)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2-fluorophenol	%		Org-022/025	33	[NT]	[NT]	[NT]	[NT]	52	[NT]
Surrogate Phenol-d_6	%		Org-022/025	29	[NT]	[NT]	[NT]	[NT]	38	[NT]
Surrogate Nitrobenzene-d_5	%		Org-022/025	83	[NT]	[NT]	[NT]	[NT]	77	[NT]
Surrogate 2-fluorobiphenyl	%		Org-022/025	77	[NT]	[NT]	[NT]	[NT]	75	[NT]
Surrogate 2,4,6-Tribromophenol	%		Org-022/025	56	[NT]	[NT]	[NT]	[NT]	78	[NT]
Surrogate p-Terphenyl-d_{14}	%		Org-022/025	75	[NT]	[NT]	[NT]	[NT]	71	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	314602-2
Date prepared	-			18/01/2023	1	18/01/2023	18/01/2023		18/01/2023	18/01/2023
Date analysed	-			18/01/2023	1	18/01/2023	18/01/2023		18/01/2023	18/01/2023
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	0.09	0.08	12	99	100
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	0.08	0.08	0	97	107
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	0.27	0.28	4	97	105
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	0.02	0.02	0	99	107
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	0.12	0.12	0	98	101
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	96	95
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	1	0.03	0.03	0	99	102
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	1	0.04	0.04	0	95	98
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	1	0.24	0.26	8	95	98
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	1	0.06	0.06	0	95	101
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	0.06	0.06	0	98	99
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	94	102
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	94	98
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	102	96
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	103	98
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	109	92
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	99	97
4:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	100	108
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	0.01	<0.01	0	98	100
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	105	106
10:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	121	121
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	101	97
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	100	108
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	95	101
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	99	65
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	99	93
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	100	106
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	102	104
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	102	1	100	103	3	103	101
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	102	1	104	106	2	104	102

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	314602-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	102	1	109	109	0	99	106
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	100	1	108	107	1	98	100
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	101	1	110	115	4	99	105
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	103	1	76	73	4	100	85
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	106	1	111	110	1	102	107
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	104	1	108	103	5	102	104
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	101	1	99	100	1	99	97
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	105	1	111	109	2	99	106
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	106	1	109	111	2	104	105
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	107	1	109	118	8	109	108
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	111	1	111	122	9	110	111
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	114	1	112	128	13	117	113
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	123	1	91	105	14	134	77
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	101	1	92	90	2	98	85
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	105	1	87	83	5	99	89
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	105	1	98	99	1	99	95
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	115	1	111	117	5	108	105
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	109	1	107	111	4	103	105
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	111	1	107	109	2	107	105
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	111	1	126	132	5	108	123

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	314602-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	111	1	117	126	7	109	114
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	106	1	88	88	0	104	89
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	97	1	83	85	2	101	89

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
Date extracted	-			18/01/2023	1	18/01/2023	19/01/2023		18/01/2023	[NT]
Date analysed	-			19/01/2023	1	19/01/2023	20/01/2023		19/01/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	<10	<10	0	119	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	<10	<10	0	119	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	105	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	106	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	93	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	104	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	102	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	101	1	115	121	5	106	[NT]
Surrogate toluene-d8	%		Org-023	97	1	101	104	3	97	[NT]
Surrogate 4-BFB	%		Org-023	107	1	111	114	3	107	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	[NT]
Date analysed	-			24/01/2023	1	24/01/2023	24/01/2023		24/01/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	78	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	360	310	15	84	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	86	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	160	340	72	78	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	280	<100	95	84	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	86	[NT]
Surrogate o-Terphenyl	%		Org-020	77	1	83	101	20	85	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			23/01/2023	[NT]	[NT]	[NT]	[NT]	23/01/2023	[NT]
Date analysed	-			23/01/2023	[NT]	[NT]	[NT]	[NT]	23/01/2023	[NT]
Naphthalene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	74	[NT]
Acenaphthylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Fluorene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Phenanthrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	63	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	75	[NT]	[NT]	[NT]	[NT]	71	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			23/01/2023	[NT]	[NT]	[NT]	[NT]	23/01/2023	[NT]
Date analysed	-			23/01/2023	[NT]	[NT]	[NT]	[NT]	23/01/2023	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	76	[NT]
HCB	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	131	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	75	[NT]
delta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	77	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	76	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	80	[NT]
Dieldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	80	[NT]
Endrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	78	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	100	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	78	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	72	[NT]	[NT]	[NT]	[NT]	77	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			23/01/2023	[NT]	[NT]	[NT]	[NT]	23/01/2023	[NT]
Date analysed	-			23/01/2023	[NT]	[NT]	[NT]	[NT]	23/01/2023	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	81	[NT]
Dimethoate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	71	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	67	[NT]
Malathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	81	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	80	[NT]
Parathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	70	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	70	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	72	[NT]	[NT]	[NT]	[NT]	77	[NT]

QUALITY CONTROL: Triazine Herbicides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	
Date extracted	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	[NT]
Date analysed	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	[NT]
Atrazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	76	[NT]
Ametryn	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Cyanazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Hexazinone	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Irgarol	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Metribuzin	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Prometryn	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	62	[NT]
Propazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	74	[NT]
Simazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Terbutryn	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Terbuthylazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	75	1	60	60	0	70	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
Date prepared	-			19/01/2023	[NT]	[NT]	[NT]	[NT]	19/01/2023	[NT]
Date analysed	-			19/01/2023	[NT]	[NT]	[NT]	[NT]	19/01/2023	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	87	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	96	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Barium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	87	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	[NT]	[NT]	[NT]	[NT]	95	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	[NT]	[NT]	[NT]	[NT]	85	[NT]
Selenium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: Metals in Waters - Acid extractable					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			19/01/2023	[NT]	[NT]	[NT]	[NT]	19/01/2023	[NT]
Date analysed	-			19/01/2023	[NT]	[NT]	[NT]	[NT]	19/01/2023	[NT]
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	107	[NT]

QUALITY CONTROL: Ion Balance						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			17/01/2023	[NT]	[NT]	[NT]	[NT]	17/01/2023	[NT]
Date analysed	-			17/01/2023	[NT]	[NT]	[NT]	[NT]	17/01/2023	[NT]
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	88	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	88	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	92	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	87	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	97	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	[NT]	[NT]	[NT]	[NT]	87	[NT]
Chloride, Cl	mg/L	1	Inorg-081	<1	[NT]	[NT]	[NT]	[NT]	85	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			17/01/2023	[NT]	[NT]	[NT]	[NT]	17/01/2023	[NT]
Date analysed	-			17/01/2023	[NT]	[NT]	[NT]	[NT]	17/01/2023	[NT]
pH	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	99	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	<5	[NT]	[NT]	[NT]	[NT]	116	[NT]
Dissolved Oxygen*	mg/L	0.1	Inorg-112	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	<0.005	[NT]	[NT]	[NT]	[NT]	96	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	[NT]	[NT]	[NT]	[NT]	101	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	[NT]	[NT]	[NT]	[NT]	107	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	[NT]	[NT]	[NT]	[NT]	90	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	[NT]	[NT]	[NT]	[NT]	87	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	<0.005	[NT]	[NT]	[NT]	[NT]	90	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	[NT]	[NT]	[NT]	[NT]	87	[NT]
TKN in water	mg/L	0.1	Inorg-062	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Organic Nitrogen as N	mg/L	0.2	Inorg-055/062/127	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: Acid Herbicides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			25/01/2023	[NT]	[NT]	[NT]	[NT]	25/01/2023	[NT]
Date analysed	-			25/01/2023	[NT]	[NT]	[NT]	[NT]	25/01/2023	[NT]
Clopyralid	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	86	[NT]
3,5-Dichlorobenzoic acid	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
o-chlorophenoxy acetic acid	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-CPA	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dicamba	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
MCPP	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
MCPA	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dichlorprop	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-D	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	118	[NT]
Bromoxynil	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Triclopyr	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,5-TP	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,5-T	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	130	[NT]
MCPB	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dinoseb	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-DB	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ioxynil	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Picloram	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acifluorfen	µg/L	2	Ext-061	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,6-T	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,6-D	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bentazon	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloramben	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluroxypyr	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2.4- DCPA	%		Ext-061	80	[NT]	[NT]	[NT]	[NT]	70	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Total metals: no unfiltered, preserved sample was received, therefore analysis was conducted from the unpreserved sample bottle.
Note: there is a possibility some elements may be underestimated.

Dissolved Metals: For the determination of dissolved metals in #2, the unpreserved sample was filtered through 0.45um filter at the lab due to the appearance
of colloids and/or sediment in the supplied HNO3 bottle (it appears the sample has not been field filtered).
Note: there is a possibility some elements may be underestimated.

vTRH & BTEXN in Water NEPM - The trip spike has not been prepared/supplied by Envirolab. As such, we cannot determine the %recovery of the trip spike and the on-column result has been reported.

Acid Herbicides in Water - analysed by Envirolab Mel, report no 35470.

epic ENVIRONMENTAL

Chain of Custody Record

ENVIROLAB

Project No:	SC210108.03
Project/Site:	Sydney Metro WTP
Project Manager:	PAT.
Sampled By:	JX. NC
Phone:	426205616
Page:	1 of 1
Number of Eskies:	

Lab:	~~ENVIRON~~
Lab Quote No:	
Lab Batch No:	
Date Results Required:	
Sample Disposal After:	NO

CONTAINER TYPE & PRESERVATIVE

LAB ID	SAMPLE ID	DATE	MATRIX	Soil / Solid: 150-250ml Glass Jar	Soil / Solid: 200ml Plastic Jar	Soil / Solid: - Plastic bag	Water / Liquid: 2x40ml Amber Vial	Water / Liquid: 100-500ml Amber Bottle	Water / Liquid: 60ml Metals	Water / Liquid: 60ml Nutrients	Water / Liquid: 250-500ml Plastic (Unpreserved)	Water / Liquid: 60-250ml Plastic (PFAS)	Other	WQ Parameters: pH, EC ORP, DO, TDS, Alkalinity, Hardness	Major Ions	Extended Metals suite - UltraTrace: 15 metals NEPM Suite	Nutrients (Trace)	TRH + BTEXN	PAH	OCP / OPP	Herbicides	VOC / SVOC	PFAS	Cr(III,VI)	C6; C10		HOLD
1	SMW_BH083	16.01.23	W											X	X	X	X	X	X	X	X	X	X	X			
2	CBS_MW16	16.01.23	W											X	X	X	X	X	X	X	X	X	X	X			
~~3~~	~~SMW_BH084~~	~~16.01.23~~	W											X	X	X	X	X	X	X	X	X	X	X			
3	QC01	—	W											X	X	X	X	X	X	X	X	X	X	X			
4	RS01	—	W													X		X									
5	TS01	—	W													X		X							X		
6	TB01	—	W													X		X							X		
			W																					

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	Epic Environmental (Sydney) Pty Ltd
Attention	j Xie

Sample Login Details

Your reference	SC210108.03, Sydney Metro WTP
Envirolab Reference	314602
Date Sample Received	17/01/2023
Date Instructions Received	17/01/2023
Date Results Expected to be Reported	25/01/2023

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	6 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	4
Cooling Method	Ice
Sampling Date Provided	YES

Comments

RS01 - vTRH/BTEX/Metals only

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	VOCs in water	SVOC's in water	PFAS in Waters Extended	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHsin Water	Organochlorine Pesticides in Water	OP Pesticides in Water	HM in water - dissolved	Metals in Waters -Acid extractable	Calcium - Dissolved	Potassium - Dissolved	Sodium - Dissolved	Magnesium - Dissolved	Hardness	Hydroxide Alkalinity (OH-) as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Total Alkalinity as CaCO3	Sulphate, SO4	Chloride, Cl	Ionic Balance	pH	Electrical Conductivity	Total Dissolved Solids(grav)	Dissolved Oxygen*	Phosphate as P in water	Hexavalent Chromium, Cr6+	Trivalent Chromium	Ammonia as N in water	Nitrate as N in water	Nitrite as N in water	NOx as N in water	Total Nitrogen in water	TKN in water	Organic Nitrogen as N	Acid Herbicides in Water
SMW_BH083	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CZ5_MW16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
QC01	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RS01				✓					✓																												
TS01				✓																																
TB01				✓																																

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 314652

Client Details

Client	Epic Environmental (Sydney) Pty Ltd
Attention	Patrick Carroll, j Xie
Address	Suite 5, Level 9, 189 Kent Street, SYDNEY, NSW, 2000

Sample Details

Your Reference	**SC210108.03, Sydney Metro WTP**
Number of Samples	8 Water
Date samples received	18/01/2023
Date completed instructions received	18/01/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	25/01/2023
Date of Issue	25/01/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Ashley Miller, Development Chemist
Diego Bigolin, Inorganics Supervisor
Hannah Nguyen, Metals Supervisor
Kyle Gavrily, Senior Chemist
Loren Bardwell, Development Chemist
Nancy Zhang, Laboratory Manager, Sydney
Steven Luong, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

VOCs in water						
Our Reference		314652-1	314652-2	314652-3	314652-4	314652-5
Your Reference	UNITS	SMW_ENV224	CZ1-BH13	SMW-ENV236	SMW-ENV234	SMW-WTP-BH25-S
Date Sampled		17/01/2023	17/01/2023	17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	18/01/2023	18/01/2023	18/01/2023	18/01/2023	18/01/2023
Date analysed	-	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Dichlorodifluoromethane	µg/L	<10	<10	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10	<10	<10
Vinyl Chloride	µg/L	<10	<10	<10	<10	<10
Bromomethane	µg/L	<10	<10	<10	<10	<10
Chloroethane	µg/L	<10	<10	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1	<1	<1
Chloroform	µg/L	<1	<1	<1	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1	<1	<1
Benzene	µg/L	<1	<1	<1	<1	2
Dibromomethane	µg/L	<1	<1	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1	<1	810
Ethylbenzene	µg/L	<1	<1	<1	<1	<1

VOCs in water						
Our Reference		314652-1	314652-2	314652-3	314652-4	314652-5
Your Reference	UNITS	SMW_ENV224	CZ1-BH13	SMW-ENV236	SMW-ENV234	SMW-WTP-BH25-S
Date Sampled		17/01/2023	17/01/2023	17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water	Water	Water
Bromoform	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
Styrene	µg/L	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1	<1	<1
o-xylene	µg/L	<1	<1	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1	<1	27
Sec-butyl benzene	µg/L	<1	<1	<1	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1	<1	<1	52
4-isopropyl toluene	µg/L	<1	<1	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1	<1	2
n-butyl benzene	µg/L	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1	<1	3
Hexachlorobutadiene	µg/L	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	113	120	109	118	103
Surrogate toluene-d8	%	100	104	101	103	98
Surrogate 4-BFB	%	110	112	109	113	95

vTRH(C6-C10)/BTEXN in Water						
Our Reference		314652-1	314652-2	314652-3	314652-4	314652-5
Your Reference	UNITS	SMW_ENV224	CZ1-BH13	SMW-ENV236	SMW-ENV234	SMW-WTP-BH25-S
Date Sampled		17/01/2023	17/01/2023	17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	18/01/2023	18/01/2023	18/01/2023	18/01/2023	18/01/2023
Date analysed	-	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	1,000
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	1,000
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	1,000
Benzene	µg/L	<1	<1	<1	<1	2
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	113	120	109	118	103
Surrogate toluene-d8	%	100	104	101	103	98
Surrogate 4-BFB	%	110	112	109	113	95

vTRH(C6-C10)/BTEXN in Water				
Our Reference		314652-6	314652-7	314652-8
Your Reference	UNITS	RS02	TS03	TB03
Date Sampled		17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water
Date extracted	-	18/01/2023	18/01/2023	18/01/2023
Date analysed	-	19/01/2023	19/01/2023	19/01/2023
TRH C_6 - C_9	µg/L	<10	[NA]	<10
TRH C_6 - C_{10}	µg/L	<10	[NA]	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	[NA]	<10
Benzene	µg/L	<1	21	<1
Toluene	µg/L	1	22	3
Ethylbenzene	µg/L	<1	23	<1
m+p-xylene	µg/L	<2	23	<2
o-xylene	µg/L	<1	23	<1
Naphthalene	µg/L	<1	[NA]	<1
Surrogate Dibromofluoromethane	%	119	113	109
Surrogate toluene-d8	%	108	98	99
Surrogate 4-BFB	%	113	107	109

svTRH (C10-C40) in Water						
Our Reference		314652-1	314652-2	314652-3	314652-4	314652-5
Your Reference	UNITS	SMW_ENV224	CZ1-BH13	SMW-ENV236	SMW-ENV234	SMW-WTP-BH25-S
Date Sampled		17/01/2023	17/01/2023	17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
Date analysed	-	24/01/2023	24/01/2023	24/01/2023	24/01/2023	24/01/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	860	<50	70
TRH C_{15} - C_{28}	µg/L	<100	<100	4,100	<100	650
TRH C_{29} - C_{36}	µg/L	<100	<100	160	<100	130
Total +ve TRH (C10-C36)	µg/L	<50	<50	5,200	<50	850
TRH >C_{10} - C_{16}	µg/L	<50	<50	1,500	<50	76
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	1,500	<50	76
TRH >C_{16} - C_{34}	µg/L	<100	<100	3,600	<100	690
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	5,100	<50	760
Surrogate o-Terphenyl	%	83	105	118	60	83

PAHs in Water						
Our Reference		314652-1	314652-2	314652-3	314652-4	314652-5
Your Reference	UNITS	SMW_ENV224	CZ1-BH13	SMW-ENV236	SMW-ENV234	SMW-WTP-BH25-S
Date Sampled		17/01/2023	17/01/2023	17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
Date analysed	-	23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
Naphthalene	µg/L	<1	<1	<1	<1	<1
Acenaphthylene	µg/L	<1	<1	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1	<1	<1
Fluorene	µg/L	<1	<1	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1	<1	<1
Anthracene	µg/L	<1	<1	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1	<1	<1
Pyrene	µg/L	<1	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1	<1	<1
Chrysene	µg/L	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	71	62	64	65	60

Organochlorine Pesticides in Water						
Our Reference		314652-1	314652-2	314652-3	314652-4	314652-5
Your Reference	UNITS	SMW_ENV224	CZ1-BH13	SMW-ENV236	SMW-ENV234	SMW-WTP-BH25-S
Date Sampled		17/01/2023	17/01/2023	17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
Date analysed	-	23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
alpha-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
HCB	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	75	63	65	68	65

OP Pesticides in Water						
Our Reference		314652-1	314652-2	314652-3	314652-4	314652-5
Your Reference	UNITS	SMW_ENV224	CZ1-BH13	SMW-ENV236	SMW-ENV234	SMW-WTP-BH25-S
Date Sampled		17/01/2023	17/01/2023	17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
Date analysed	-	23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
Dichlorvos	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	75	63	65	68	65

Triazine Herbicides in Water						
Our Reference		314652-1	314652-2	314652-3	314652-4	314652-5
Your Reference	UNITS	SMW_ENV224	CZ1-BH13	SMW-ENV236	SMW-ENV234	SMW-WTP-BH25-S
Date Sampled		17/01/2023	17/01/2023	17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
Date analysed	-	23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
Atrazine	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Ametryn	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Cyanazine	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Hexazinone	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Irgarol	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Metribuzin	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Prometryn	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Propazine	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Simazine	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Terbutryn	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Terbuthylazine	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Surrogate p-Terphenyl-d14	%	71	62	64	65	60

SVOC's in water						
Our Reference		314652-1	314652-2	314652-3	314652-4	314652-5
Your Reference	UNITS	SMW_ENV224	CZ1-BH13	SMW-ENV236	SMW-ENV234	SMW-WTP-BH25-S
Date Sampled		17/01/2023	17/01/2023	17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
Date analysed	-	23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
Phenol	µg/L	<2	<10	<2	<2	<2
Bis (2-chloroethyl) ether	µg/L	<5	<5	<5	<5	<5
2-Chlorophenol	µg/L	<2	<2	<2	<2	3
1,3-Dichlorobenzene	µg/L	<2	<2	<2	<2	10
1,4-Dichlorobenzene	µg/L	<2	<10	<2	<2	53
2-Methylphenol	µg/L	<2	<2	<2	<2	<2
1,2-Dichlorobenzene	µg/L	<2	<2	<2	<2	<2
bis-(2-Chloroisopropyl) ether	µg/L	<5	<5	<5	<5	<5
3/4-Methylphenol	µg/L	<4	<4	<4	<4	<4
N-nitrosodi-n-propylamine	µg/L	<5	<5	<5	<5	<5
Hexachloroethane	µg/L	<2	<2	<2	<2	<2
Nitrobenzene	µg/L	<5	<5	<5	<5	<5
Isophorone	µg/L	<5	<5	<5	<5	<5
2,4-Dimethylphenol	µg/L	<2	<2	<2	<2	<2
2-Nitrophenol	µg/L	<2	<2	<2	<2	<2
bis (2-Chloroethoxy) methane	µg/L	<5	<5	<5	<5	<5
2,4-Dichlorophenol	µg/L	<2	<2	<2	<2	<2
1,2,4-Trichlorobenzene	µg/L	<2	<2	<2	<2	3
Naphthalene	µg/L	<2	<2	<2	<2	<2
4-Chloroaniline	µg/L	<5	<5	<5	<5	<5
4-Chloro-3-methylphenol	µg/L	<10	<10	<10	<10	<10
Hexachlorobutadiene	µg/L	<2	<2	<2	<2	<2
2-Methylnaphthalene	µg/L	<2	<2	<2	<2	<2
Hexachlorocyclopentadiene	µg/L	<5	<5	<5	<5	<5
2,4,6-Trichlorophenol	µg/L	<2	<2	<2	<2	<2
2,4,5-Trichlorophenol	µg/L	<2	<2	<2	<2	<2
2-Chloronaphthalene	µg/L	<2	<2	<2	<2	<2
2-Nitroaniline	µg/L	<5	<5	<5	<5	<5
Dimethyl phthalate	µg/L	<10	<10	<10	<10	<10
2,6-Dinitrotoluene	µg/L	<5	<5	<5	<5	<5
Acenaphthylene	µg/L	<2	<2	<2	<2	<2
3-Nitroaniline	µg/L	<5	<5	<5	<5	<5
Acenaphthene	µg/L	<2	<2	<2	<2	<2
2,4-Dinitrophenol	µg/L	<20	<20	<20	<20	<20

SVOC's in water						
Our Reference		314652-1	314652-2	314652-3	314652-4	314652-5
Your Reference	UNITS	SMW_ENV224	CZ1-BH13	SMW-ENV236	SMW-ENV234	SMW-WTP-BH25-S
Date Sampled		17/01/2023	17/01/2023	17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water	Water	Water
4-Nitrophenol	µg/L	<20	<100	<20	<20	<20
Dibenzofuran	µg/L	<5	<5	<5	<5	<5
Diethylphthalate	µg/L	<10	<10	<10	<10	<10
4-Chlorophenylphenylether	µg/L	<5	<5	<5	<5	<5
4-Nitroaniline	µg/L	<5	<5	<5	<5	<5
Fluorene	µg/L	<2	<2	<2	<2	<2
2-methyl-4,6-dinitrophenol	µg/L	<20	<20	<20	<20	<20
Azobenzene	µg/L	<5	<5	<5	<5	<5
4-Bromophenylphenylether	µg/L	<5	<5	<5	<5	<5
Hexachlorobenzene	µg/L	<2	<2	<2	<2	<2
Pentachlorophenol	µg/L	<10	<10	<10	<10	<10
Phenanthrene	µg/L	<2	<2	<2	<2	<2
Anthracene	µg/L	<2	<2	<2	<2	<2
Carbazole	µg/L	<5	<5	<5	<5	<5
Di-n-butylphthalate	µg/L	<10	<10	<10	<10	<10
Fluoranthene	µg/L	<2	<2	<2	<2	<2
Pyrene	µg/L	<2	<2	<2	<2	<2
Butylbenzylphthalate	µg/L	<10	<10	<10	<10	<10
Bis(2-ethylhexyl) phthalate	µg/L	<50	<50	<50	<50	<50
Benzo(a)anthracene	µg/L	<2	<2	<2	<2	<2
Chrysene	µg/L	<2	<2	<2	<2	<2
Di-n-octylphthalate	µg/L	<10	<10	<10	<10	<10
Benzo(b,j+k)fluoranthene	µg/L	<4	<4	<4	<4	<4
Benzo(a)pyrene	µg/L	<2	<2	<2	<2	<2
Indeno(1,2,3-c,d)pyrene	µg/L	<2	<2	<2	<2	<2
Dibenzo(a,h)anthracene	µg/L	<2	<2	<2	<2	<2
Benzo(g,h,i)perylene	µg/L	<2	<2	<2	<2	<2
Ethylmethanesulfonate	µg/L	<5	<5	<5	<5	<5
Aniline	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	µg/L	<2	<2	<2	<2	<2
Benzyl alcohol	µg/L	<5	<5	<5	<5	<5
Acetophenone	µg/L	<5	<5	<5	<5	<5
N-nitrosomorpholine	µg/L	<5	<5	<5	<5	<5
N-nitrosopiperidine	µg/L	<5	<5	<5	<5	<5
2,6-Dichlorophenol	µg/L	<2	<2	<2	<2	<2
Hexachloropropene-1	µg/L	<2	<2	<2	<2	<2
N-nitroso-n-butylamine	µg/L	<5	<5	<5	<5	<5

SVOC's in water						
Our Reference		314652-1	314652-2	314652-3	314652-4	314652-5
Your Reference	UNITS	SMW_ENV224	CZ1-BH13	SMW-ENV236	SMW-ENV234	SMW-WTP-BH25-S
Date Sampled		17/01/2023	17/01/2023	17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water	Water	Water
Safrole	µg/L	<5	<5	<5	<5	<5
1,2,4,5-Tetrachlorobenzene	µg/L	<2	<2	<2	<2	<2
Trans/Cis-iso-safrole	µg/L	<5	<5	<5	<5	<5
1,3-Dinitrobenzene	µg/L	<5	<5	<5	<5	<5
Pentachlorobenzene	µg/L	<2	<2	<2	<2	<2
1-Naphthylamine	µg/L	<5	<5	<5	<5	<5
2,3,4,6-Tetrachlorophenol	µg/L	<2	<2	<2	<2	<2
2-Naphthylamine	µg/L	<5	<5	<5	<5	<5
5-Nitro-o-toluidine	µg/L	<5	<5	<5	<5	<5
Diphenylamine	µg/L	<5	<5	<5	<5	<5
Phenacetin	µg/L	<5	<5	<5	<5	<5
Pentachloronitrobenzene	µg/L	<5	<5	<5	<5	<5
Dinoseb	µg/L	<10	<10	<10	<10	<10
Methapyrilene	µg/L	<10	<10	<10	<10	<10
p-Dimethylaminoazobenzene	µg/L	<5	<5	<5	<5	<5
2-Acetylaminofluorene	µg/L	<2	<2	<2	<2	<2
7,12-Dimethylbenz(a)anthracene	µg/L	<2	<2	<2	<2	<2
3-Methylcholanthrene	µg/L	<2	<2	<2	<2	<2
a-BHC	µg/L	<2	<2	<2	<2	<2
b-BHC	µg/L	<2	<2	<2	<2	<2
g-BHC	µg/L	<2	<2	<2	<2	<2
d-BHC	µg/L	<2	<2	<2	<2	<2
Heptachlor	µg/L	<2	<2	<2	<2	<2
Aldrin	µg/L	<2	<2	<2	<2	<2
Heptachlor Epoxide	µg/L	<2	<2	<2	<2	<2
g-Chlordane	µg/L	<2	<2	<2	<2	<2
a-Chlordane	µg/L	<2	<2	<2	<2	<2
Endosulfan I	µg/L	<2	<2	<2	<2	<2
p,p'-DDE	µg/L	<2	<2	<2	<2	<2
Dieldrin	µg/L	<2	<2	<2	<2	<2
Endrin	µg/L	<2	<2	<2	<2	<2
p,p'-DDD	µg/L	<2	<2	<2	<2	<2
Endosulfan II	µg/L	<2	<2	<2	<2	<2
Endrin Aldehyde	µg/L	<2	<2	<2	<2	<2
p,p'-DDT	µg/L	<2	<2	<2	<2	<2
Endosulfan Sulphate	µg/L	<2	<2	<2	<2	<2
Endrin Ketone	µg/L	<2	<2	<2	<2	<2

SVOC's in water						
Our Reference		314652-1	314652-2	314652-3	314652-4	314652-5
Your Reference	UNITS	SMW_ENV224	CZ1-BH13	SMW-ENV236	SMW-ENV234	SMW-WTP-BH25-S
Date Sampled		17/01/2023	17/01/2023	17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water	Water	Water
Methoxychlor	µg/L	<2	<2	<2	<2	<2
Dichlorvos	µg/L	<2	<2	<2	<2	<2
Mevinphos	µg/L	<2	<2	<2	<2	<2
Phorate	µg/L	<2	<2	<2	<2	<2
Dimethoate	µg/L	<2	<2	<2	<2	<2
Diazinon (dimpylate)	µg/L	<2	<2	<2	<2	<2
Disulfoton	µg/L	<2	<2	<2	<2	<2
Chloropyriphos-methyl	µg/L	<2	<2	<2	<2	<2
Parathion-methyl	µg/L	<2	<2	<2	<2	<2
Ronnel (fenchlorphos)	µg/L	<2	<2	<2	<2	<2
Fenitrothion	µg/L	<2	<2	<2	<2	<2
Malathion (Maldison)	µg/L	<2	<2	<2	<2	<2
Chloropyriphos	µg/L	<2	<2	<2	<2	<2
Fenthion	µg/L	<2	<2	<2	<2	<2
Parathion (parathion-ethyl)	µg/L	<2	<2	<2	<2	<2
Bromophos Ethyl	µg/L	<2	<2	<2	<2	<2
Methidathion	µg/L	<2	<2	<2	<2	<2
Fenamiphos (Phenamiphos)	µg/L	<2	<2	<2	<2	<2
Ethion	µg/L	<2	<2	<2	<2	<2
Phosalone	µg/L	<2	<2	<2	<2	<2
Azinphos methyl (Guthion)	µg/L	<2	<2	<2	<2	<2
Coumaphos (Co-Ral)	µg/L	<2	<2	<2	<2	<2
Surrogate 2-fluorophenol	%	48	42	45	50	41
Surrogate Phenol-d_6	%	35	32	37	41	31
Surrogate Nitrobenzene-d_5	%	81	68	66	75	71
Surrogate 2-fluorobiphenyl	%	78	64	66	71	68
Surrogate 2,4,6-Tribromophenol	%	78	61	75	68	69
Surrogate *p*-Terphenyl-d_{14}	%	71	62	64	65	60

HM in water - dissolved						
Our Reference		314652-1	314652-2	314652-3	314652-4	314652-5
Your Reference	UNITS	SMW_ENV224	CZ1-BH13	SMW-ENV236	SMW-ENV234	SMW-WTP-BH25-S
Date Sampled		17/01/2023	17/01/2023	17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Date analysed	-	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Arsenic-Dissolved	µg/L	1	6	4	9	7
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	<1	<1	<1	<1
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	7	3	20	<1	<1
Zinc-Dissolved	µg/L	1	9	39	<1	5
Barium-Dissolved	µg/L	28	61	29	110	500
Beryllium-Dissolved	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt-Dissolved	µg/L	4	5	69	7	<1
Manganese-Dissolved	µg/L	900	310	150	1,800	220
Selenium-Dissolved	µg/L	<1	<1	<1	<1	<1

Metals in Waters - Acid extractable						
Our Reference		314652-1	314652-2	314652-3	314652-4	314652-5
Your Reference	UNITS	SMW_ENV224	CZ1-BH13	SMW-ENV236	SMW-ENV234	SMW-WTP-BH25-S
Date Sampled		17/01/2023	17/01/2023	17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Date analysed	-	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Phosphorus - Total	mg/L	<0.05	0.2	<0.05	<0.05	0.1

Ion Balance						
Our Reference		314652-1	314652-2	314652-3	314652-4	314652-5
Your Reference	UNITS	SMW_ENV224	CZ1-BH13	SMW-ENV236	SMW-ENV234	SMW-WTP-BH25-S
Date Sampled		17/01/2023	17/01/2023	17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	18/01/2023	18/01/2023	18/01/2023	18/01/2023	18/01/2023
Date analysed	-	18/01/2023	18/01/2023	18/01/2023	18/01/2023	18/01/2023
Calcium - Dissolved	mg/L	620	680	170	890	220
Potassium - Dissolved	mg/L	10	94	11	100	19
Sodium - Dissolved	mg/L	270	7,100	4,700	11,000	330
Magnesium - Dissolved	mg/L	70	740	960	1,800	110
Hardness	mgCaCO 3 /L	1,800	4,800	4,400	9,600	1,000
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5	<5	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	480	760	110	570	1,100
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5	<5	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	480	760	110	570	1,100
Sulphate, SO4	mg/L	1,300	740	2,000	1,500	330
Chloride, Cl	mg/L	430	11,000	8,900	19,000	260
Ionic Balance	%	-1.0	8.0	0	6.0	-3.0

PFAS in Waters Extended						
Our Reference		314652-1	314652-2	314652-3	314652-4	314652-5
Your Reference	UNITS	SMW_ENV224	CZ1-BH13	SMW-ENV236	SMW-ENV234	SMW-WTP-BH25-S
Date Sampled		17/01/2023	17/01/2023	17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Date analysed	-	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Perfluorobutanesulfonic acid	µg/L	0.01	<0.01	<0.01	<0.01	0.03
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	0.02
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.03	<0.01	<0.01	<0.01	0.07
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	<0.01	<0.01	<0.01	0.02
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	0.03	<0.02	<0.02	<0.02	0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.02	<0.01	<0.01	<0.01	0.03
Perfluoroheptanoic acid	µg/L	0.01	<0.01	<0.01	<0.01	0.03
Perfluorooctanoic acid PFOA	µg/L	0.03	<0.01	<0.01	<0.01	0.03
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.02	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.04	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.04	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	99	101	99	100	99
Surrogate $^{13}C_2$ *PFOA*	%	101	100	108	106	105
Extracted ISTD $^{13}C_3$ *PFBS*	%	107	103	102	104	105
Extracted ISTD $^{18}O_2$ *PFHxS*	%	100	102	103	101	103
Extracted ISTD $^{13}C_4$ *PFOS*	%	104	103	104	103	107
Extracted ISTD $^{13}C_4$ *PFBA*	%	89	84	59	74	48

PFAS in Waters Extended						
Our Reference		314652-1	314652-2	314652-3	314652-4	314652-5
Your Reference	UNITS	SMW_ENV224	CZ1-BH13	SMW-ENV236	SMW-ENV234	SMW-WTP-BH25-S
Date Sampled		17/01/2023	17/01/2023	17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	104	89	97	86	94
Extracted ISTD $^{13}C_2$ *PFHxA*	%	102	85	98	80	104
Extracted ISTD $^{13}C_4$ *PFHpA*	%	104	88	102	81	108
Extracted ISTD $^{13}C_4$ *PFOA*	%	107	90	109	83	114
Extracted ISTD $^{13}C_5$ *PFNA*	%	104	90	104	83	115
Extracted ISTD $^{13}C_2$ *PFDA*	%	101	87	96	81	113
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	103	91	98	81	111
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	106	94	91	84	113
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	77	74	70	64	76
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	104	63	100	58	120
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	101	50	100	47	123
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	105	56	74	54	126
Extracted ISTD $^{13}C_8$ *FOSA*	%	104	93	92	86	92
Extracted ISTD d_3 *N MeFOSA*	%	101	97	95	95	100
Extracted ISTD d_5 *N EtFOSA*	%	102	96	94	93	102
Extracted ISTD d_7 *N MeFOSE*	%	111	105	102	103	106
Extracted ISTD d_9 *N EtFOSE*	%	99	96	102	100	104
Extracted ISTD d_3 *N MeFOSAA*	%	101	55	64	43	94
Extracted ISTD d_5 *N EtFOSAA*	%	98	55	60	44	101
Total Positive PFHxS & PFOS	µg/L	0.04	<0.01	<0.01	<0.01	0.09
Total Positive PFOA & PFOS	µg/L	0.04	<0.01	<0.01	<0.01	0.05
Total Positive PFAS	µg/L	0.14	<0.01	<0.01	<0.01	0.25

Miscellaneous Inorganics						
Our Reference		314652-1	314652-2	314652-3	314652-4	314652-5
Your Reference	UNITS	SMW_ENV224	CZ1-BH13	SMW-ENV236	SMW-ENV234	SMW-WTP-BH25-S
Date Sampled		17/01/2023	17/01/2023	17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	18/01/2023	18/01/2023	18/01/2023	18/01/2023	18/01/2023
Date analysed	-	18/01/2023	18/01/2023	18/01/2023	18/01/2023	18/01/2023
pH	pH Units	6.5	6.3	5.4	6.4	7.3
Electrical Conductivity	µS/cm	4,100	35,000	27,000	51,000	3,300
Total Dissolved Solids (grav)	mg/L	3,200	26,000	18,000	38,000	2,000
Dissolved Oxygen*	mg/L	8.2	8.3	8.5	7.8	8.4
Phosphate as P in water	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trivalent Chromium	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Ammonia as N in water	mg/L	0.96	2.0	0.18	1.9	1.7
Nitrate as N in water	mg/L	0.01	<0.005	<0.005	0.005	0.02
Nitrite as N in water	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
NOx as N in water	mg/L	0.01	<0.005	<0.005	0.007	0.02
Total Nitrogen in water	mg/L	1.3	2.2	0.3	1.8	17
TKN in water	mg/L	1.3	2.2	0.3	1.8	17
Organic Nitrogen as N	mg/L	0.4	<0.2	<0.2	<0.2	15

Acid Herbicides in Water						
Our Reference		314652-1	314652-2	314652-3	314652-4	314652-5
Your Reference	UNITS	SMW_ENV224	CZ1-BH13	SMW-ENV236	SMW-ENV234	SMW-WTP-BH25-S
Date Sampled		17/01/2023	17/01/2023	17/01/2023	17/01/2023	17/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023
Date analysed	-	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023
Clopyralid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
3,5-Dichlorobenzoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
o-chlorophenoxy acetic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4-CPA	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Dicamba	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MCPP	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MCPA	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorprop	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoxynil	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Triclopyr	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-TP	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-T	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MCPB	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Dinoseb	µg/L	<1	<1	<1	<1	<1
2,4-DB	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ioxynil	µg/L	<1	<1	<1	<1	<1
Picloram	µg/L	<1	<1	<1	<1	<1
Acifluorfen	µg/L	<2	<2	<2	<2	<2
2,4,6-T	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-D	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bentazon	µg/L	<1	<1	<1	<1	<1
Chloramben	µg/L	<1	<1	<1	<1	<1
Fluroxypyr	µg/L	<1	<1	<1	<1	<1
Surrogate 2.4- DCPA	%	82	86	120	82	76

Method ID	Methodology Summary
Ext-061	Analysed by Envirolab Melbourne
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Inorg-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation below:- TDS = EC * 0.6
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Inorg-040	The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% ie total anions = total cations +/-15%.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Inorg-112	Dissolved Oxygen using membrane electrode. Note this analysis should ideally be carried out immediately after sampling.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
Date extracted	-			18/01/2023	[NT]	[NT]	[NT]	[NT]	18/01/2023	[NT]
Date analysed	-			19/01/2023	[NT]	[NT]	[NT]	[NT]	19/01/2023	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	107	[NT]	[NT]	[NT]	[NT]	106	[NT]
Surrogate toluene-d8	%		Org-023	101	[NT]	[NT]	[NT]	[NT]	97	[NT]
Surrogate 4-BFB	%		Org-023	109	[NT]	[NT]	[NT]	[NT]	107	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
Date extracted	-			18/01/2023	6	18/01/2023	18/01/2023		18/01/2023	[NT]
Date analysed	-			19/01/2023	6	19/01/2023	19/01/2023		19/01/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	6	<10	<10	0	119	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	6	<10	<10	0	119	[NT]
Benzene	µg/L	1	Org-023	<1	6	<1	<1	0	105	[NT]
Toluene	µg/L	1	Org-023	<1	6	1	<1	0	106	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	6	<1	<1	0	93	[NT]
m+p-xylene	µg/L	2	Org-023	<2	6	<2	<2	0	104	[NT]
o-xylene	µg/L	1	Org-023	<1	6	<1	<1	0	102	[NT]
Naphthalene	µg/L	1	Org-023	<1	6	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	101	6	119	111	7	106	[NT]
Surrogate toluene-d8	%		Org-023	97	6	108	100	8	97	[NT]
Surrogate 4-BFB	%		Org-023	107	6	113	109	4	107	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	[NT]
Date analysed	-			24/01/2023	1	24/01/2023	24/01/2023		24/01/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	78	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	<100	0	106	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	129	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	<50	<50	0	78	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	106	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	129	[NT]
Surrogate o-Terphenyl	%		Org-020	83	1	83	66	23	78	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	314652-2
Date extracted	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	23/01/2023
Date analysed	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	23/01/2023
Naphthalene	µg/L	1	Org-022/025	<1	1	<1	<1	0	74	65
Acenaphthylene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	1	<1	<1	0	89	81
Fluorene	µg/L	1	Org-022/025	<1	1	<1	<1	0	90	82
Phenanthrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	100	86
Anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	1	<1	<1	0	98	88
Pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	105	91
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	1	<1	<1	0	63	63
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	94	94
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	75	1	71	61	15	71	60

QUALITY CONTROL: Organochlorine Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	314652-2
Date extracted	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	23/01/2023
Date analysed	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	23/01/2023
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	76	68
HCB	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	131	117
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	75	67
delta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	77	69
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	76	66
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	80	70
Dieldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	80	71
Endrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	78	61
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	100	88
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	78	70
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	72	1	75	65	14	77	64

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	314652-2
Date extracted	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	23/01/2023
Date analysed	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	23/01/2023
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	81	74
Dimethoate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	71	63
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	67	60
Malathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	81	73
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	80	72
Parathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	70	64
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	70	62
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	72	1	75	65	14	77	64

QUALITY CONTROL: Triazine Herbicides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	
Date extracted	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	[NT]
Date analysed	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	[NT]
Atrazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	76	[NT]
Ametryn	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Cyanazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Hexazinone	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Irgarol	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Metribuzin	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Prometryn	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	62	[NT]
Propazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	74	[NT]
Simazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Terbutryn	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Terbuthylazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	75	1	71	60	17	70	[NT]

QUALITY CONTROL: Triazine Herbicides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	314652-2
Date extracted	-			[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	23/01/2023
Date analysed	-			[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	23/01/2023
Atrazine	mg/L	0.002	Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	66
Prometryn	mg/L	0.002	Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	60
Propazine	mg/L	0.002	Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	64
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	117

QUALITY CONTROL: SVOC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	314652-2
Date extracted	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	23/01/2023
Date analysed	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	23/01/2023
Phenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	41	36
Bis (2-chloroethyl) ether	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2-Chlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	71	67
1,3-Dichlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
1,4-Dichlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	53	45
2-Methylphenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	70	67
1,2-Dichlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
bis-(2-Chloroisopropyl) ether	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
3/4-Methylphenol	µg/L	4	Org-022/025	<4	1	<4	<4	0	[NT]	[NT]
N-nitrosodi-n-propylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Hexachloroethane	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Nitrobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Isophorone	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,4-Dimethylphenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2-Nitrophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
bis (2-Chloroethoxy) methane	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,4-Dichlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
1,2,4-Trichlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Naphthalene	µg/L	2	Org-022/025	<2	1	<2	<2	0	74	65
4-Chloroaniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
4-Chloro-3-methylphenol	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2-Methylnaphthalene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Hexachlorocyclopentadiene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,4,6-Trichlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2,4,5-Trichlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2-Chloronaphthalene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2-Nitroaniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Dimethyl phthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	74	66
2,6-Dinitrotoluene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Acenaphthylene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
3-Nitroaniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Acenaphthene	µg/L	2	Org-022/025	<2	1	<2	<2	0	89	81
2,4-Dinitrophenol	µg/L	20	Org-022/025	<20	1	<20	<20	0	[NT]	[NT]
4-Nitrophenol	µg/L	20	Org-022/025	<20	1	<20	<20	0	38	32
Dibenzofuran	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Diethylphthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	81	74
4-Chlorophenylphenylether	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]

QUALITY CONTROL: SVOC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	314652-2
4-Nitroaniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Fluorene	µg/L	2	Org-022/025	<2	1	<2	<2	0	90	82
2-methyl-4,6-dinitrophenol	µg/L	20	Org-022/025	<20	1	<20	<20	0	[NT]	[NT]
Azobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
4-Bromophenylphenylether	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Hexachlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Pentachlorophenol	µg/L	10	Org-022/025	<10	1	<10	<10	0	79	66
Phenanthrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	100	86
Anthracene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Carbazole	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Di-n-butylphthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Fluoranthene	µg/L	2	Org-022/025	<2	1	<2	<2	0	98	88
Pyrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	105	91
Butylbenzylphthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Bis(2-ethylhexyl) phthalate	µg/L	50	Org-022/025	<50	1	<50	<50	0	[NT]	[NT]
Benzo(a)anthracene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Chrysene	µg/L	2	Org-022/025	<2	1	<2	<2	0	63	60
Di-n-octylphthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	µg/L	4	Org-022/025	<4	1	<4	<4	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	94	86
Indeno(1,2,3-c,d)pyrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Ethylmethanesulfonate	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Aniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Pentachloroethane	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Benzyl alcohol	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Acetophenone	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
N-nitrosomorpholine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
N-nitrosopiperidine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,6-Dichlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	86	77
Hexachloropropene-1	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
N-nitroso-n-butylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Safrole	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
1,2,4,5-Tetrachlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Trans/Cis-iso-safrole	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
1,3-Dinitrobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Pentachlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
1-Naphthylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,3,4,6-Tetrachlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]

QUALITY CONTROL: SVOC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	314652-2
2-Naphthylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
5-Nitro-o-toluidine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Diphenylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Phenacetin	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Pentachloronitrobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Dinoseb	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Methapyrilene	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
p-Dimethylaminoazobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2-Acetylaminofluorene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
7,12-Dimethylbenz(a)anthracene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
3-Methylcholanthrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
a-BHC	µg/L	2	Org-022/025	<2	1	<2	<2	0	76	68
b-BHC	µg/L	2	Org-022/025	<2	1	<2	<2	0	74	66
g-BHC	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
d-BHC	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Heptachlor	µg/L	2	Org-022/025	<2	1	<2	<2	0	75	67
Aldrin	µg/L	2	Org-022/025	<2	1	<2	<2	0	77	69
Heptachlor Epoxide	µg/L	2	Org-022/025	<2	1	<2	<2	0	76	66
g-Chlordane	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
a-Chlordane	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Endosulfan I	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
p,p'-DDE	µg/L	2	Org-022/025	<2	1	<2	<2	0	80	70
Dieldrin	µg/L	2	Org-022/025	<2	1	<2	<2	0	80	71
Endrin	µg/L	2	Org-022/025	<2	1	<2	<2	0	78	61
p,p'-DDD	µg/L	2	Org-022/025	<2	1	<2	<2	0	100	86
Endosulfan II	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Endrin Aldehyde	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
p,p'-DDT	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	2	Org-022/025	<2	1	<2	<2	0	78	70
Endrin Ketone	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Methoxychlor	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Dichlorvos	µg/L	2	Org-022/025	<2	1	<2	<2	0	81	74
Mevinphos	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Phorate	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Dimethoate	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Diazinon (dimpylate)	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Disulfoton	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Chloropyriphos-methyl	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Parathion-methyl	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]

QUALITY CONTROL: SVOC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	314652-2
Ronnel (fenchlorphos)	µg/L	2	Org-022/025	<2	1	<2	<2	0	71	63
Fenitrothion	µg/L	2	Org-022/025	<2	1	<2	<2	0	67	60
Malathion (Maldison)	µg/L	2	Org-022/025	<2	1	<2	<2	0	81	73
Chloropyriphos	µg/L	2	Org-022/025	<2	1	<2	<2	0	80	72
Fenthion	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Parathion (parathion-ethyl)	µg/L	2	Org-022/025	<2	1	<2	<2	0	70	64
Bromophos Ethyl	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Methidathion	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Fenamiphos (Phenamiphos)	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Ethion	µg/L	2	Org-022/025	<2	1	<2	<2	0	70	62
Phosalone	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Azinphos methyl (Guthion)	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Coumaphos (Co-Ral)	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Surrogate 2-fluorophenol	%		Org-022/025	33	1	48	45	6	52	45
Surrogate Phenol-d_6	%		Org-022/025	29	1	35	34	3	38	35
Surrogate Nitrobenzene-d_5	%		Org-022/025	83	1	81	71	13	77	69
Surrogate 2-fluorobiphenyl	%		Org-022/025	77	1	78	65	18	75	62
Surrogate 2,4,6-Tribromophenol	%		Org-022/025	56	1	78	65	18	78	66
Surrogate *p*-Terphenyl-d_{14}	%		Org-022/025	75	1	71	61	15	71	117

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	314652-2
Date prepared	-			19/01/2023	1	19/01/2023	19/01/2023		19/01/2023	19/01/2023
Date analysed	-			19/01/2023	1	19/01/2023	19/01/2023		19/01/2023	19/01/2023
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	1	1	0	93	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	93	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	87	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	92	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	93	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	96	72
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	7	7	0	90	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	1	1	0	91	[NT]
Barium-Dissolved	µg/L	1	Metals-022	<1	1	28	28	0	87	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	1	<0.5	<0.5	0	95	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	<1	1	4	4	0	90	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	1	900	920	2	85	[NT]
Selenium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	96	[NT]

QUALITY CONTROL: Metals in Waters - Acid extractable					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			19/01/2023	[NT]	[NT]	[NT]	[NT]	19/01/2023	[NT]
Date analysed	-			19/01/2023	[NT]	[NT]	[NT]	[NT]	19/01/2023	[NT]
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	108	[NT]

QUALITY CONTROL: Ion Balance						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			18/01/2023	1	18/01/2023	18/01/2023		18/01/2023	[NT]
Date analysed	-			18/01/2023	1	18/01/2023	18/01/2023		18/01/2023	[NT]
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	620	620	0	88	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	10	10	0	88	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	270	270	0	92	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	70	71	1	87	[NT]
Hardness	mgCaCO 3 /L	3	Metals-020	[NT]	1	1800	1800	0	[NT]	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	[NT]		[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	480	[NT]		[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	[NT]		[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	480	[NT]		97	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	1	1300	[NT]		102	[NT]
Chloride, Cl	mg/L	1	Inorg-081	<1	1	430	[NT]		97	[NT]
Ionic Balance	%		Inorg-040	[NT]	1	-1.0	[NT]		[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	314652-2
Date prepared	-			19/01/2023	1	19/01/2023	19/01/2023		19/01/2023	19/01/2023
Date analysed	-			19/01/2023	1	19/01/2023	19/01/2023		19/01/2023	19/01/2023
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	0.01	0.01	0	99	96
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	102	100
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	0.03	0.02	40	107	100
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	106	104
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	0.01	0.02	67	99	98
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	92	110
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	1	0.03	0.03	0	103	98
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	102	97
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	1	0.02	0.02	0	103	97
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	1	0.01	0.01	0	104	99
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	0.03	0.02	40	105	101
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	101	96
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	102	100
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	103	97
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	103	99
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	102	99
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	105	98
4:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	112	100
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	105	95
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	101	101
10:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	106	124
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	102	100
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	108	104
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	104	102
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	104	99
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	103	99
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	104	103
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	107	109
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	99	1	99	100	1	98	99
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	105	1	101	101	0	104	104

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	314652-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	102	1	107	108	1	102	103
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	101	1	100	102	2	100	99
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	103	1	104	103	1	104	103
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	102	1	89	92	3	100	81
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	104	1	104	106	2	101	88
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	101	1	102	102	0	99	85
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	102	1	104	105	1	100	85
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	104	1	107	107	0	101	86
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	107	1	104	111	7	104	88
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	103	1	101	102	1	102	86
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	107	1	103	110	7	102	88
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	106	1	106	107	1	102	89
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	87	1	77	88	13	81	71
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	98	1	104	102	2	94	69
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	106	1	101	100	1	99	52
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	112	1	105	107	2	109	54
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	109	1	104	108	4	103	88
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	101	1	101	105	4	99	94
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	101	1	102	104	2	98	92
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	105	1	111	107	4	100	92

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	314652-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	104	1	99	99	0	102	96
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	107	1	101	106	5	108	54
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	113	1	98	104	6	109	52

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	314652-2
Date prepared	-			18/01/2023	1	18/01/2023	18/01/2023		18/01/2023	18/01/2023
Date analysed	-			18/01/2023	1	18/01/2023	18/01/2023		18/01/2023	18/01/2023
pH	pH Units		Inorg-001	[NT]	1	6.5	[NT]		99	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	1	4100	[NT]		105	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	<5	1	3200	[NT]		116	[NT]
Dissolved Oxygen*	mg/L	0.1	Inorg-112	<0.1	1	8.2	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	<0.005	1	<0.005	[NT]		[NT]	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	<0.005	0	106	76
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	0.96	[NT]		115	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.01	[NT]		113	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	[NT]		100	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.01	[NT]		113	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	1.3	1.3	0	87	85
TKN in water	mg/L	0.1	Inorg-062	<0.1	1	1.3	[NT]		[NT]	[NT]
Organic Nitrogen as N	mg/L	0.2	Inorg-055/062/127	<0.2	1	0.4	[NT]		[NT]	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	2	18/01/2023	18/01/2023		[NT]	[NT]
Date analysed	-			[NT]	2	18/01/2023	18/01/2023		[NT]	[NT]
pH	pH Units		Inorg-001	[NT]	2	6.3	[NT]		[NT]	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	[NT]	2	35000	[NT]		[NT]	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	[NT]	2	26000	[NT]		[NT]	[NT]
Dissolved Oxygen*	mg/L	0.1	Inorg-112	[NT]	2	8.3	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	[NT]	2	<0.005	<0.005	0	[NT]	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	[NT]	2	<0.005	[NT]		[NT]	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	[NT]	2	2.0	1.9	5	[NT]	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	[NT]	2	<0.005	<0.005	0	[NT]	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	[NT]	2	<0.005	<0.005	0	[NT]	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	[NT]	2	<0.005	<0.005	0	[NT]	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	[NT]	2	2.2	[NT]		[NT]	[NT]
TKN in water	mg/L	0.1	Inorg-062	[NT]	2	2.2	[NT]		[NT]	[NT]
Organic Nitrogen as N	mg/L	0.2	Inorg-055/062/127	[NT]	2	<0.2	[NT]		[NT]	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	4	18/01/2023	18/01/2023		[NT]	[NT]
Date analysed	-			[NT]	4	18/01/2023	18/01/2023		[NT]	[NT]
pH	pH Units		Inorg-001	[NT]	4	6.4	[NT]		[NT]	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	[NT]	4	51000	[NT]		[NT]	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	[NT]	4	38000	41000	8	[NT]	[NT]
Dissolved Oxygen*	mg/L	0.1	Inorg-112	[NT]	4	7.8	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	[NT]	4	<0.005	[NT]		[NT]	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	[NT]	4	<0.005	[NT]		[NT]	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	[NT]	4	1.9	[NT]		[NT]	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	[NT]	4	0.005	[NT]		[NT]	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	[NT]	4	<0.005	[NT]		[NT]	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	[NT]	4	0.007	[NT]		[NT]	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	[NT]	4	1.8	[NT]		[NT]	[NT]
TKN in water	mg/L	0.1	Inorg-062	[NT]	4	1.8	[NT]		[NT]	[NT]
Organic Nitrogen as N	mg/L	0.2	Inorg-055/062/127	[NT]	4	<0.2	[NT]		[NT]	[NT]

QUALITY CONTROL: Acid Herbicides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			25/01/2023	[NT]	[NT]	[NT]	[NT]	25/01/2023	[NT]
Date analysed	-			25/01/2023	[NT]	[NT]	[NT]	[NT]	25/01/2023	[NT]
Clopyralid	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	86	[NT]
3,5-Dichlorobenzoic acid	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
o-chlorophenoxy acetic acid	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-CPA	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dicamba	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
MCPP	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
MCPA	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dichlorprop	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-D	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	118	[NT]
Bromoxynil	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Triclopyr	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,5-TP	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,5-T	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	130	[NT]
MCPB	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dinoseb	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-DB	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ioxynil	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Picloram	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acifluorfen	µg/L	2	Ext-061	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,6-T	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,6-D	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bentazon	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloramben	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluroxypyr	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2.4- DCPA	%		Ext-061	80	[NT]	[NT]	[NT]	[NT]	70	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

Dissolved Metals: no filtered, preserved sample was received, therefore the unpreserved sample was filtered through 0.45µm filter at the lab.
Note: there is a possibility some elements may be underestimated.

vTRH & BTEXN in Water NEPM - The trip spike has not been prepared/supplied by Envirolab. As such, we cannot determine the %recovery of the trip spike and the on-column result has been reported.

SVOC's in water - The PQL(s) for 314652-2 has been raised due to the low spike recovery/recoveries. This may reflect other samples where similar in matrix and similar analytical interferences occur.

Acid Herbicides in Water - analysed by Envirolab VIC, report no 35471.

!! Please do not test arsenic (bottle provided) !!
→on hold

epic ENVIRONMENTAL

Chain of Custody Record

Project No:	SC210108.03
Project/Site:	Sydney Metro WTP
Project Manager:	Patrick Carroll
Sampled By:	JX
Phone:	426205616
Page:	1 of 1
Number of Eskies:	2

Lab:	Envirolab
Lab Quote No:	
Lab Batch No:	
Date Results Required:	
Sample Disposal After:	

LAB ID	SAMPLE ID	DATE	MATRIX	CONTAINER TYPE & PRESERVATIVE										ANALYSIS REQUIRED														HOLD
				Soil / Solid			Water / Liquid						Other	WQ Parameters: pH, EC ORP, DO, TDS, Alkalinity, Hardness	Major Ions	Extended Metals suite - UltraTrace: 15 metals NEPM Suite	Nutrients (Trace)	TRH + BTEXN	PAH	OCP / OPP	Herbicides	VOC / SVOC	PFAS	Cr speciation	C6, C10		
				150-250ml Glass Jar	200ml Plastic Jar	- Plastic bag	2x 40ml Amber Vial	100-500ml Amber Bottle	60ml Metals	60ml Nutrients	250-500ml Plastic (Unpreserved)	60-250ml Plastic (PFAS)																
1	SMW-ENV224	17/1	W											X				X						X	X		
2	CZI-BH13		W											X				X						X	X		
3	SMW-ENV236		W											X				X						X	X		
4	SMW-ENV234		W											X				X						X	X		
5	SMW-WTP_BH25_S		W											X				X						X	X		
6	RS02		W													X		X							X		
7	TS03		W															X							X		
8	TB03		W															X							X		
			W																					

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	Epic Environmental (Sydney) Pty Ltd
Attention	Patrick Carroll, j Xie

Sample Login Details

Your reference	SC210108.03, Sydney Metro WTP
Envirolab Reference	314652
Date Sample Received	18/01/2023
Date Instructions Received	18/01/2023
Date Results Expected to be Reported	25/01/2023

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	8 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	18
Cooling Method	Ice
Sampling Date Provided	YES

Comments

RS02 - vTRH/BTEX as Vials received only

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	VOCs in water	SVOC's in water	PFAS in Waters Extended	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHsin Water	Organochlorine Pesticides in Water	OP Pesticides in Water	HM in water - dissolved	Metals in Waters -Acid extractable	Calcium - Dissolved	Potassium - Dissolved	Sodium - Dissolved	Magnesium - Dissolved	Hardness	Hydroxide Alkalinity (OH-) as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Total Alkalinity as CaCO3	Sulphate, SO4	Chloride, Cl	Ionic Balance	pH	Electrical Conductivity	Total Dissolved Solids(grav)	Dissolved Oxygen*	Phosphate as P in water	Hexavalent Chromium, Cr6+	Trivalent Chromium	Ammonia as N in water	Nitrate as N in water	Nitrite as N in water	NOx as N in water	Total Nitrogen in water	TKN in water	Organic Nitrogen as N	Acid Herbicides in Water
SMW_ENV224	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CZ1-BH13	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SMW-ENV236	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SMW-ENV234	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SMW-WTP-BH25-S	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RS02				✓																																
TS03				✓																																
TB03				✓																																

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 314784

Client Details

Client	Epic Environmental (Sydney) Pty Ltd
Attention	Patrick Carroll
Address	Suite 5, Level 9, 189 Kent Street, SYDNEY, NSW, 2000

Sample Details

Your Reference	**SC210108.03, Sydney Metro WTP**
Number of Samples	6 Water
Date samples received	19/01/2023
Date completed instructions received	19/01/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	30/01/2023
Date of Issue	30/01/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Ashley Miller, Development Chemist
Diego Bigolin, Inorganics Supervisor
Hannah Nguyen, Metals Supervisor
Josh Williams, Organics and LC Supervisor
Kyle Gavrily, Senior Chemist
Loren Bardwell, Development Chemist
Nancy Zhang, Laboratory Manager, Sydney
Priya Samarawickrama, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

VOCs in water				
Our Reference	UNITS	314784-1	314784-2	314784-3
Your Reference		CZ4e_MW03	CZ4e_MW01	SMW_ENV042
Date Sampled		18/01/2023	18/01/2023	18/01/2023
Type of sample		Water	Water	Water
Date extracted	-	20/01/2023	20/01/2023	20/01/2023
Date analysed	-	21/01/2023	21/01/2023	21/01/2023
Dichlorodifluoromethane	µg/L	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10
Vinyl Chloride	µg/L	<10	<10	<10
Bromomethane	µg/L	<10	<10	<10
Chloroethane	µg/L	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1
Chloroform	µg/L	<1	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1
Benzene	µg/L	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1
Toluene	µg/L	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1

VOCs in water				
Our Reference	UNITS	314784-1	314784-2	314784-3
Your Reference		CZ4e_MW03	CZ4e_MW01	SMW_ENV042
Date Sampled		18/01/2023	18/01/2023	18/01/2023
Type of sample		Water	Water	Water
Bromoform	µg/L	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2
Styrene	µg/L	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1
o-xylene	µg/L	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1	<1
4-isopropyl toluene	µg/L	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1
Hexachlorobutadiene	µg/L	<1	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<1
Surrogate Dibromofluoromethane	%	118	105	101
Surrogate toluene-d8	%	107	101	101
Surrogate 4-BFB	%	109	103	102

SVOC's in water				
Our Reference	UNITS	314784-1	314784-2	314784-3
Your Reference		CZ4e_MW03	CZ4e_MW01	SMW_ENV042
Date Sampled		18/01/2023	18/01/2023	18/01/2023
Type of sample		Water	Water	Water
Date extracted	-	27/01/2023	27/01/2023	27/01/2023
Date analysed	-	27/01/2023	27/01/2023	27/01/2023
Phenol	µg/L	<2	<2	<2
Bis (2-chloroethyl) ether	µg/L	<5	<5	<5
2-Chlorophenol	µg/L	<2	<2	<2
1,3-Dichlorobenzene	µg/L	<2	<2	<2
1,4-Dichlorobenzene	µg/L	<2	<2	<2
2-Methylphenol	µg/L	<2	<2	<2
1,2-Dichlorobenzene	µg/L	<2	<2	<2
bis-(2-Chloroisopropyl) ether	µg/L	<5	<5	<5
3/4-Methylphenol	µg/L	<4	<4	<4
N-nitrosodi-n-propylamine	µg/L	<5	<5	<5
Hexachloroethane	µg/L	<2	<2	<2
Nitrobenzene	µg/L	<5	<5	<5
Isophorone	µg/L	<5	<5	<5
2,4-Dimethylphenol	µg/L	<2	<2	<2
2-Nitrophenol	µg/L	<2	<2	<2
bis (2-Chloroethoxy) methane	µg/L	<5	<5	<5
2,4-Dichlorophenol	µg/L	<2	<2	<2
1,2,4-Trichlorobenzene	µg/L	<2	<2	<2
Naphthalene	µg/L	<2	<2	<2
4-Chloroaniline	µg/L	<5	<5	<5
4-Chloro-3-methylphenol	µg/L	<10	<10	<10
Hexachlorobutadiene	µg/L	<2	<2	<2
2-Methylnaphthalene	µg/L	<2	<2	<2
Hexachlorocyclopentadiene	µg/L	<5	<5	<5
2,4,6-Trichlorophenol	µg/L	<2	<2	<2
2,4,5-Trichlorophenol	µg/L	<2	<2	<2
2-Chloronaphthalene	µg/L	<2	<2	<2
2-Nitroaniline	µg/L	<5	<5	<5
Dimethyl phthalate	µg/L	<10	<10	<10
2,6-Dinitrotoluene	µg/L	<5	<5	<5
Acenaphthylene	µg/L	<2	<2	<2
3-Nitroaniline	µg/L	<5	<5	<5
Acenaphthene	µg/L	<2	<2	<2
2,4-Dinitrophenol	µg/L	<20	<20	<20

SVOC's in water				
Our Reference	UNITS	314784-1	314784-2	314784-3
Your Reference		CZ4e_MW03	CZ4e_MW01	SMW_ENV042
Date Sampled		18/01/2023	18/01/2023	18/01/2023
Type of sample		Water	Water	Water
4-Nitrophenol	µg/L	<20	<20	<20
Dibenzofuran	µg/L	<5	<5	<5
Diethylphthalate	µg/L	<10	<10	<10
4-Chlorophenylphenylether	µg/L	<5	<5	<5
4-Nitroaniline	µg/L	<5	<5	<5
Fluorene	µg/L	<2	<2	<2
2-methyl-4,6-dinitrophenol	µg/L	<20	<20	<20
Azobenzene	µg/L	<5	<5	<5
4-Bromophenylphenylether	µg/L	<5	<5	<5
Hexachlorobenzene	µg/L	<2	<2	<2
Pentachlorophenol	µg/L	<10	<10	<10
Phenanthrene	µg/L	<2	<2	<2
Anthracene	µg/L	<2	<2	<2
Carbazole	µg/L	<5	<5	<5
Di-n-butylphthalate	µg/L	<10	<10	<10
Fluoranthene	µg/L	<2	<2	<2
Pyrene	µg/L	<2	<2	<2
Butylbenzylphthalate	µg/L	<10	<10	<10
Bis(2-ethylhexyl) phthalate	µg/L	<50	<50	<50
Benzo(a)anthracene	µg/L	<2	<2	<2
Chrysene	µg/L	<2	<2	<2
Di-n-octylphthalate	µg/L	<10	<10	<10
Benzo(b,j+k)fluoranthene	µg/L	<4	<4	<4
Benzo(a)pyrene	µg/L	<2	<2	<2
Indeno(1,2,3-c,d)pyrene	µg/L	<2	<2	<2
Dibenzo(a,h)anthracene	µg/L	<2	<2	<2
Benzo(g,h,i)perylene	µg/L	<2	<2	<2
Ethylmethanesulfonate	µg/L	<5	<5	<5
Aniline	µg/L	<5	<5	<5
Pentachloroethane	µg/L	<2	<2	<2
Benzyl alcohol	µg/L	<5	<5	<5
Acetophenone	µg/L	<5	<5	<5
N-nitrosomorpholine	µg/L	<5	<5	<5
N-nitrosopiperidine	µg/L	<5	<5	<5
2,6-Dichlorophenol	µg/L	<2	<2	<2
Hexachloropropene-1	µg/L	<2	<2	<2
N-nitroso-n-butylamine	µg/L	<5	<5	<5

SVOC's in water				
Our Reference	UNITS	314784-1	314784-2	314784-3
Your Reference		CZ4e_MW03	CZ4e_MW01	SMW_ENV042
Date Sampled		18/01/2023	18/01/2023	18/01/2023
Type of sample		Water	Water	Water
Safrole	µg/L	<5	<5	<5
1,2,4,5-Tetrachlorobenzene	µg/L	<2	<2	<2
Trans/Cis-iso-safrole	µg/L	<5	<5	<5
1,3-Dinitrobenzene	µg/L	<5	<5	<5
Pentachlorobenzene	µg/L	<2	<2	<2
1-Naphthylamine	µg/L	<5	<5	<5
2,3,4,6-Tetrachlorophenol	µg/L	<2	<2	<2
2-Naphthylamine	µg/L	<5	<5	<5
5-Nitro-o-toluidine	µg/L	<5	<5	<5
Diphenylamine	µg/L	<5	<5	<5
Phenacetin	µg/L	<5	<5	<5
Pentachloronitrobenzene	µg/L	<5	<5	<5
Dinoseb	µg/L	<10	<10	<10
Methapyrilene	µg/L	<10	<10	<10
p-Dimethylaminoazobenzene	µg/L	<5	<5	<5
2-Acetylaminofluorene	µg/L	<2	<2	<2
7,12-Dimethylbenz(a)anthracene	µg/L	<2	<2	<2
3-Methylcholanthrene	µg/L	<2	<2	<2
a-BHC	µg/L	<2	<2	<2
b-BHC	µg/L	<2	<2	<2
g-BHC	µg/L	<2	<2	<2
d-BHC	µg/L	<2	<2	<2
Heptachlor	µg/L	<2	<2	<2
Aldrin	µg/L	<2	<2	<2
Heptachlor Epoxide	µg/L	<2	<2	<2
g-Chlordane	µg/L	<2	<2	<2
a-Chlordane	µg/L	<2	<2	<2
Endosulfan I	µg/L	<2	<2	<2
p,p'-DDE	µg/L	<2	<2	<2
Dieldrin	µg/L	<2	<2	<2
Endrin	µg/L	<2	<2	<2
p,p'-DDD	µg/L	<2	<2	<2
Endosulfan II	µg/L	<2	<2	<2
Endrin Aldehyde	µg/L	<2	<2	<2
p,p'-DDT	µg/L	<2	<2	<2
Endosulfan Sulphate	µg/L	<2	<2	<2
Endrin Ketone	µg/L	<2	<2	<2

SVOC's in water				
Our Reference	UNITS	314784-1	314784-2	314784-3
Your Reference		CZ4e_MW03	CZ4e_MW01	SMW_ENV042
Date Sampled		18/01/2023	18/01/2023	18/01/2023
Type of sample		Water	Water	Water
Methoxychlor	µg/L	<2	<2	<2
Dichlorvos	µg/L	<2	<2	<2
Mevinphos	µg/L	<2	<2	<2
Phorate	µg/L	<2	<2	<2
Dimethoate	µg/L	<2	<2	<2
Diazinon (dimpylate)	µg/L	<2	<2	<2
Disulfoton	µg/L	<2	<2	<2
Chloropyriphos-methyl	µg/L	<2	<2	<2
Parathion-methyl	µg/L	<2	<2	<2
Ronnel (fenchlorphos)	µg/L	<2	<2	<2
Fenitrothion	µg/L	<2	<2	<2
Malathion (Maldison)	µg/L	<2	<2	<2
Chloropyriphos	µg/L	<2	<2	<2
Fenthion	µg/L	<2	<2	<2
Parathion (parathion-ethyl)	µg/L	<2	<2	<2
Bromophos Ethyl	µg/L	<2	<2	<2
Methidathion	µg/L	<2	<2	<2
Fenamiphos (Phenamiphos)	µg/L	<2	<2	<2
Ethion	µg/L	<2	<2	<2
Phosalone	µg/L	<2	<2	<2
Azinphos methyl (Guthion)	µg/L	<2	<2	<2
Coumaphos (Co-Ral)	µg/L	<2	<2	<2
Surrogate 2-fluorophenol	%	20	48	49
Surrogate Phenol-d_6	%	25	36	37
Surrogate Nitrobenzene-d_5	%	78	74	77
Surrogate 2-fluorobiphenyl	%	69	69	70
Surrogate 2,4,6-Tribromophenol	%	44	71	68
Surrogate *p*-Terphenyl-d_{14}	%	70	67	65

PFAS in Waters Extended				
Our Reference	UNITS	314784-1	314784-2	314784-3
Your Reference		CZ4e_MW03	CZ4e_MW01	SMW_ENV042
Date Sampled		18/01/2023	18/01/2023	18/01/2023
Type of sample		Water	Water	Water
Date prepared	-	20/01/2023	20/01/2023	20/01/2023
Date analysed	-	20/01/2023	20/01/2023	20/01/2023
Perfluorobutanesulfonic acid	µg/L	0.04	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	0.02	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.04	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.03	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	99	96	96
Surrogate $^{13}C_2$ *PFOA*	%	129	127	123
Extracted ISTD $^{13}C_3$ *PFBS*	%	93	96	93
Extracted ISTD $^{18}O_2$ *PFHxS*	%	120	124	125
Extracted ISTD $^{13}C_4$ *PFOS*	%	111	113	111
Extracted ISTD $^{13}C_4$ *PFBA*	%	95	82	87

PFAS in Waters Extended				
Our Reference	UNITS	314784-1	314784-2	314784-3
Your Reference		CZ4e_MW03	CZ4e_MW01	SMW_ENV042
Date Sampled		18/01/2023	18/01/2023	18/01/2023
Type of sample		Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	102	98	91
Extracted ISTD $^{13}C_2$ *PFHxA*	%	101	102	94
Extracted ISTD $^{13}C_4$ *PFHpA*	%	117	118	114
Extracted ISTD $^{13}C_4$ *PFOA*	%	93	94	93
Extracted ISTD $^{13}C_5$ *PFNA*	%	109	109	106
Extracted ISTD $^{13}C_2$ *PFDA*	%	119	114	113
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	122	127	119
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	123	114	107
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	145	136	102
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	113	107	94
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	124	122	119
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	119	130	118
Extracted ISTD $^{13}C_8$ *FOSA*	%	122	124	119
Extracted ISTD d_3 *N MeFOSA*	%	125	125	123
Extracted ISTD d_5 *N EtFOSA*	%	120	120	120
Extracted ISTD d_7 *N MeFOSE*	%	154	150	147
Extracted ISTD d_9 *N EtFOSE*	%	125	120	123
Extracted ISTD d_3 *N MeFOSAA*	%	119	116	105
Extracted ISTD d_5 *N EtFOSAA*	%	122	118	103
Total Positive PFHxS & PFOS	µg/L	0.05	<0.01	<0.01
Total Positive PFOA & PFOS	µg/L	0.01	<0.01	<0.01
Total Positive PFAS	µg/L	0.15	<0.01	<0.01

vTRH(C6-C10)/BTEXN in Water						
Our Reference		314784-1	314784-2	314784-3	314784-4	314784-5
Your Reference	UNITS	CZ4e_MW03	CZ4e_MW01	SMW_ENV042	RS03	TB04
Date Sampled		18/01/2023	18/01/2023	18/01/2023	18/01/2023	18/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	20/01/2023	20/01/2023	20/01/2023	20/01/2023	20/01/2023
Date analysed	-	21/01/2023	21/01/2023	21/01/2023	21/01/2023	21/01/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	4
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	118	105	101	104	97
Surrogate toluene-d8	%	107	101	101	103	100
Surrogate 4-BFB	%	109	103	102	104	100

vTRH(C6-C10)/BTEXN in Water		
Our Reference		314784-6
Your Reference	UNITS	TS04
Date Sampled		18/01/2023
Type of sample		Water
Date extracted	-	20/01/2023
Date analysed	-	21/01/2023
Benzene	µg/L	20
Toluene	µg/L	25
Ethylbenzene	µg/L	22
m+p-xylene	µg/L	22
o-xylene	µg/L	21
Surrogate Dibromofluoromethane	%	100
Surrogate toluene-d8	%	100
Surrogate 4-BFB	%	105

svTRH (C10-C40) in Water				
Our Reference	UNITS	314784-1	314784-2	314784-3
Your Reference		CZ4e_MW03	CZ4e_MW01	SMW_ENV042
Date Sampled		18/01/2023	18/01/2023	18/01/2023
Type of sample		Water	Water	Water
Date extracted	-	27/01/2023	27/01/2023	27/01/2023
Date analysed	-	28/01/2023	28/01/2023	28/01/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	140	230	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	140	230	<50
TRH >C_{10} - C_{16}	µg/L	<50	100	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	100	<50
TRH >C_{16} - C_{34}	µg/L	150	200	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	150	300	<50
Surrogate o-Terphenyl	%	88	89	75

PAHs in Water				
Our Reference	UNITS	314784-1	314784-2	314784-3
Your Reference		CZ4e_MW03	CZ4e_MW01	SMW_ENV042
Date Sampled		18/01/2023	18/01/2023	18/01/2023
Type of sample		Water	Water	Water
Date extracted	-	27/01/2023	27/01/2023	27/01/2023
Date analysed	-	27/01/2023	27/01/2023	27/01/2023
Naphthalene	µg/L	<1	<1	<1
Acenaphthylene	µg/L	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1
Fluorene	µg/L	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1
Anthracene	µg/L	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1
Pyrene	µg/L	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1
Chrysene	µg/L	<1	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	61	67	65

Organochlorine Pesticides in Water				
Our Reference	UNITS	314784-1	314784-2	314784-3
Your Reference		CZ4e_MW03	CZ4e_MW01	SMW_ENV042
Date Sampled		18/01/2023	18/01/2023	18/01/2023
Type of sample		Water	Water	Water
Date extracted	-	27/01/2023	27/01/2023	27/01/2023
Date analysed	-	27/01/2023	27/01/2023	27/01/2023
alpha-BHC	µg/L	<0.2	<0.2	<0.2
HCB	µg/L	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2
Surrogate TCMX	%	69	68	58

OP Pesticides in Water				
Our Reference	UNITS	314784-1	314784-2	314784-3
Your Reference		CZ4e_MW03	CZ4e_MW01	SMW_ENV042
Date Sampled		18/01/2023	18/01/2023	18/01/2023
Type of sample		Water	Water	Water
Date extracted	-	27/01/2023	27/01/2023	27/01/2023
Date analysed	-	27/01/2023	27/01/2023	27/01/2023
Dichlorvos	µg/L	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2	<0.2
Surrogate TCMX	%	69	68	58

HM in water - dissolved					
Our Reference	UNITS	314784-1	314784-2	314784-3	314784-4
Your Reference		CZ4e_MW03	CZ4e_MW01	SMW_ENV042	RS03
Date Sampled		18/01/2023	18/01/2023	18/01/2023	18/01/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	24/01/2023	24/01/2023	24/01/2023	24/01/2023
Date analysed	-	24/01/2023	24/01/2023	24/01/2023	24/01/2023
Arsenic-Dissolved	µg/L	<1	3	5	<1
Cadmium-Dissolved	µg/L	0.2	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1
Copper-Dissolved	µg/L	1	<1	950	<1
Lead-Dissolved	µg/L	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	18	12	13	<1
Zinc-Dissolved	µg/L	34	27	21	<1
Barium-Dissolved	µg/L	48	40	34	<1
Beryllium-Dissolved	µg/L	<0.5	<0.5	<0.5	<0.5
Cobalt-Dissolved	µg/L	30	16	11	<1
Manganese-Dissolved	µg/L	2,700	1,400	250	<5
Selenium-Dissolved	µg/L	<1	<1	<1	<1

Metals in Waters - Acid extractable				
Our Reference	UNITS	314784-1	314784-2	314784-3
Your Reference		CZ4e_MW03	CZ4e_MW01	SMW_ENV042
Date Sampled		18/01/2023	18/01/2023	18/01/2023
Type of sample		Water	Water	Water
Date prepared	-	23/01/2023	23/01/2023	23/01/2023
Date analysed	-	23/01/2023	23/01/2023	23/01/2023
Phosphorus - Total	mg/L	0.1	<0.05	<0.05

Ion Balance				
Our Reference	UNITS	314784-1	314784-2	314784-3
Your Reference		CZ4e_MW03	CZ4e_MW01	SMW_ENV042
Date Sampled		18/01/2023	18/01/2023	18/01/2023
Type of sample		Water	Water	Water
Date prepared	-	19/01/2023	19/01/2023	19/01/2023
Date analysed	-	19/01/2023	19/01/2023	19/01/2023
Calcium - Dissolved	mg/L	86	190	200
Potassium - Dissolved	mg/L	4	9.6	15
Sodium - Dissolved	mg/L	1,000	1,900	4,200
Magnesium - Dissolved	mg/L	120	280	760
Hardness	mgCaCO 3 /L	700	1,600	3,600
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	190	400	25
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	190	400	25
Sulphate, SO4	mg/L	900	1,400	1,100
Chloride, Cl	mg/L	1,600	3,600	8,300
Ionic Balance	%	-7.0	-8.0	0

Miscellaneous Inorganics					
Our Reference	UNITS	314784-1	314784-2	314784-3	314784-4
Your Reference		CZ4e_MW03	CZ4e_MW01	SMW_ENV042	RS03
Date Sampled		18/01/2023	18/01/2023	18/01/2023	18/01/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Date analysed	-	19/01/2023	19/01/2023	19/01/2023	19/01/2023
pH	pH Units	6.7	6.5	5.3	[NA]
Electrical Conductivity	µS/cm	6,800	13,000	26,000	[NA]
Total Dissolved Solids (grav)	mg/L	3,700	9,300	13,000	[NA]
Dissolved Oxygen*	mg/L	8.9	9.1	8.5	[NA]
Phosphate as P in water	mg/L	0.01	<0.005	<0.005	[NA]
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005	<0.005
Trivalent Chromium	mg/L	<0.005	<0.005	<0.005	[NA]
Ammonia as N in water	mg/L	0.061	0.11	1.5	[NA]
Nitrate as N in water	mg/L	0.01	<0.005	<0.005	[NA]
Nitrite as N in water	mg/L	<0.005	<0.005	<0.005	[NA]
NOx as N in water	mg/L	0.01	<0.005	<0.005	[NA]
Total Nitrogen in water	mg/L	0.1	0.2	1.5	[NA]
TKN in water	mg/L	0.1	0.2	1.5	[NA]
Organic Nitrogen as N	mg/L	<0.2	<0.2	<0.2	[NA]

Acid Herbicides in Water				
Our Reference	UNITS	314784-1	314784-2	314784-3
Your Reference		CZ4e_MW03	CZ4e_MW01	SMW_ENV042
Date Sampled		18/01/2023	18/01/2023	18/01/2023
Type of sample		Water	Water	Water
Date extracted	-	24/01/2023	24/01/2023	24/01/2023
Date analysed	-	25/01/2023	25/01/2023	25/01/2023
Clopyralid	µg/L	<0.5	<0.5	<0.5
3,5-Dichlorobenzoic acid	µg/L	<0.5	<0.5	<0.5
o-chlorophenoxy acetic acid	µg/L	<0.5	<0.5	<0.5
4-CPA	µg/L	<0.5	<0.5	<0.5
Dicamba	µg/L	<0.5	<0.5	<0.5
MCPP	µg/L	<0.5	<0.5	<0.5
MCPA	µg/L	<0.5	<0.5	<0.5
Dichlorprop	µg/L	<0.5	<0.5	<0.5
2,4-D	µg/L	<0.5	<0.5	<0.5
Bromoxynil	µg/L	<0.5	<0.5	<0.5
Triclopyr	µg/L	<0.5	<0.5	<0.5
2,4,5-TP	µg/L	<0.5	<0.5	<0.5
2,4,5-T	µg/L	<0.5	<0.5	<0.5
MCPB	µg/L	<0.5	<0.5	<0.5
Dinoseb	µg/L	<1	<1	<1
2,4-DB	µg/L	<0.5	<0.5	<0.5
Ioxynil	µg/L	<1	<1	<1
Picloram	µg/L	<1	<1	<1
Acifluorfen	µg/L	<2	<2	<2
2,4,6-T	µg/L	<0.5	<0.5	<0.5
2,6-D	µg/L	<0.5	<0.5	<0.5
Bentazon	µg/L	<1	<1	<1
Chloramben	µg/L	<1	<1	<1
Fluroxypyr	µg/L	<1	<1	<1
Surrogate 2.4- DCPA	%	64	86	94

Triazine Herbicides in Water				
Our Reference	UNITS	314784-1	314784-2	314784-3
Your Reference		CZ4e_MW03	CZ4e_MW01	SMW_ENV042
Date Sampled		18/01/2023	18/01/2023	18/01/2023
Type of sample		Water	Water	Water
Date extracted	-	27/01/2023	27/01/2023	27/01/2023
Date analysed	-	27/01/2023	27/01/2023	27/01/2023
Atrazine	mg/L	<0.002	<0.002	<0.002
Ametryn	mg/L	<0.002	<0.002	<0.002
Cyanazine	mg/L	<0.002	<0.002	<0.002
Hexazinone	mg/L	<0.002	<0.002	<0.002
Irgarol	mg/L	<0.002	<0.002	<0.002
Metribuzin	mg/L	<0.002	<0.002	<0.002
Prometryn	mg/L	<0.002	<0.002	<0.002
Propazine	mg/L	<0.002	<0.002	<0.002
Simazine	mg/L	<0.002	<0.002	<0.002
Terbutryn	mg/L	<0.002	<0.002	<0.002
Terbuthylazine	mg/L	<0.002	<0.002	<0.002
Surrogate p-Terphenyl-d14	%	61	67	65

Method ID	Methodology Summary
Ext-061	Analysed by Envirolab Melbourne
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Inorg-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation below:- TDS = EC * 0.6
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Inorg-040	The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% ie total anions = total cations +/-15%.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Inorg-112	Dissolved Oxygen using membrane electrode. Note this analysis should ideally be carried out immediately after sampling.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
Date extracted	-			20/01/2023	1	20/01/2023	23/01/2023		20/01/2023	[NT]
Date analysed	-			21/01/2023	1	21/01/2023	24/01/2023		21/01/2023	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	106	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	1	<1	<1	0	105	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	107	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	95	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	100	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	106	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	107	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	109	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	100	1	118	100	17	99	[NT]
Surrogate toluene-d8	%		Org-023	102	1	107	100	7	97	[NT]
Surrogate 4-BFB	%		Org-023	98	1	109	106	3	100	[NT]

QUALITY CONTROL: SVOC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Date analysed	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Phenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	71	[NT]
Bis (2-chloroethyl) ether	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-Chlorophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	79	[NT]
1,3-Dichlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-Dichlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	67	[NT]
2-Methylphenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	78	[NT]
1,2-Dichlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
bis-(2-Chloroisopropyl) ether	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
3/4-Methylphenol	µg/L	4	Org-022/025	<4	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
N-nitrosodi-n-propylamine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachloroethane	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Nitrobenzene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Isophorone	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-Dimethylphenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-Nitrophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
bis (2-Chloroethoxy) methane	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-Dichlorophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-Trichlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Naphthalene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	78	[NT]
4-Chloroaniline	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-Chloro-3-methylphenol	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorobutadiene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-Methylnaphthalene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorocyclopentadiene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,6-Trichlorophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,5-Trichlorophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-Chloronaphthalene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-Nitroaniline	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dimethyl phthalate	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	70	[NT]
2,6-Dinitrotoluene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthylene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
3-Nitroaniline	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	87	[NT]
2,4-Dinitrophenol	µg/L	20	Org-022/025	<20	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-Nitrophenol	µg/L	20	Org-022/025	<20	[NT]	[NT]	[NT]	[NT]	40	[NT]
Dibenzofuran	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diethylphthalate	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	77	[NT]
4-Chlorophenylphenylether	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: SVOC's in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
4-Nitroaniline	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	88	[NT]
2-methyl-4,6-dinitrophenol	µg/L	20	Org-022/025	<20	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Azobenzene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-Bromophenylphenylether	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Pentachlorophenol	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	75	[NT]
Phenanthrene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	96	[NT]
Anthracene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbazole	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Di-n-butylphthalate	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	94	[NT]
Pyrene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	115	[NT]
Butylbenzylphthalate	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bis(2-ethylhexyl) phthalate	µg/L	50	Org-022/025	<50	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)anthracene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	63	[NT]
Di-n-octylphthalate	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(b,j+k)fluoranthene	µg/L	4	Org-022/025	<4	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	98	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethylmethanesulfonate	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aniline	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Pentachloroethane	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzyl alcohol	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acetophenone	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
N-nitrosomorpholine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
N-nitrosopiperidine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,6-Dichlorophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	83	[NT]
Hexachloropropene-1	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
N-nitroso-n-butylamine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Safrole	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4,5-Tetrachlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trans/Cis-iso-safrole	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-Dinitrobenzene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Pentachlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1-Naphthylamine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,3,4,6-Tetrachlorophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: SVOC's in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
2-Naphthylamine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
5-Nitro-o-toluidine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diphenylamine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Phenacetin	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Pentachloronitrobenzene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dinoseb	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Methapyrilene	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
p-Dimethylaminoazobenzene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-Acetylaminofluorene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
7,12-Dimethylbenz(a)anthracene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
3-Methylcholanthrene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-BHC	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	64	[NT]
b-BHC	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	60	[NT]
g-BHC	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
d-BHC	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	60	[NT]
Aldrin	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	71	[NT]
Heptachlor Epoxide	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	68	[NT]
g-Chlordane	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-Chlordane	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
p,p'-DDE	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	76	[NT]
Dieldrin	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	77	[NT]
Endrin	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	60	[NT]
p,p'-DDD	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	90	[NT]
Endosulfan II	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin Aldehyde	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
p,p'-DDT	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	68	[NT]
Endrin Ketone	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Methoxychlor	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dichlorvos	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	76	[NT]
Mevinphos	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Phorate	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dimethoate	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon (dimpylate)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Disulfoton	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloropyriphos-methyl	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Parathion-methyl	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: SVOC's in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Ronnel (fenchlorphos)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	65	[NT]
Fenitrothion	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	69	[NT]
Malathion (Maldison)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	71	[NT]
Chloropyriphos	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	76	[NT]
Fenthion	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Parathion (parathion-ethyl)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	76	[NT]
Bromophos Ethyl	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Methidathion	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fenamiphos (Phenamiphos)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	80	[NT]
Phosalone	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Azinphos methyl (Guthion)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Coumaphos (Co-Ral)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2-fluorophenol	%		Org-022/025	44	[NT]	[NT]	[NT]	[NT]	67	[NT]
Surrogate Phenol-d_6	%		Org-022/025	29	[NT]	[NT]	[NT]	[NT]	73	[NT]
Surrogate Nitrobenzene-d_5	%		Org-022/025	76	[NT]	[NT]	[NT]	[NT]	71	[NT]
Surrogate 2-fluorobiphenyl	%		Org-022/025	68	[NT]	[NT]	[NT]	[NT]	71	[NT]
Surrogate 2,4,6-Tribromophenol	%		Org-022/025	70	[NT]	[NT]	[NT]	[NT]	79	[NT]
Surrogate p-Terphenyl-d_{14}	%		Org-022/025	69	[NT]	[NT]	[NT]	[NT]	66	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	314784-2
Date prepared	-			20/01/2023	1	20/01/2023	20/01/2023		20/01/2023	20/01/2023
Date analysed	-			20/01/2023	1	20/01/2023	20/01/2023		20/01/2023	20/01/2023
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	0.04	0.03	29	112	103
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	0.02	0.03	40	97	87
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	0.04	0.04	0	101	89
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	114	106
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	0.01	<0.01	0	105	93
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	105	100
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	101	92
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	100	94
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	1	0.03	0.03	0	107	95
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	110	99
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	112	101
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	118	100
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	100	92
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	95	93
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	105	94
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	131	128
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	93	83
4:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	99	94
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	106	95
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	109	102
10:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	114	112
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	108	94
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	108	96
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	110	101
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	98	88
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	118	101
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	110	100
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	112	108
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	99	1	99	100	1	99	99
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	126	1	129	133	3	131	132

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	314784-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	98	1	93	94	1	96	95
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	123	1	120	122	2	117	124
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	108	1	111	110	1	105	111
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	116	1	95	93	2	110	78
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	114	1	102	103	1	106	98
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	104	1	101	102	1	101	96
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	114	1	117	116	1	113	119
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	95	1	93	89	4	88	90
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	105	1	109	111	2	101	106
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	120	1	119	115	3	115	120
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	128	1	122	119	2	115	118
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	120	1	123	115	7	109	115
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	133	1	145	121	18	119	143
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	123	1	113	116	3	118	102
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	126	1	124	131	5	123	120
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	125	1	119	116	3	123	119
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	113	1	122	121	1	107	121
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	119	1	125	120	4	118	125
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	117	1	120	118	2	114	122
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	145	1	154	152	1	144	156

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	314784-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	129	1	125	122	2	118	131
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	121	1	119	116	3	116	109
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	123	1	122	122	0	122	115

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
Date extracted	-			20/01/2023	1	20/01/2023	23/01/2023		20/01/2023	[NT]
Date analysed	-			21/01/2023	1	21/01/2023	24/01/2023		21/01/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	<10	<10	0	110	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	<10	<10	0	110	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	104	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	111	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	111	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	112	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	109	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	100	1	118	100	17	99	[NT]
Surrogate toluene-d8	%		Org-023	102	1	107	100	7	97	[NT]
Surrogate 4-BFB	%		Org-023	98	1	109	106	3	100	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Date analysed	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	118	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	114	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	118	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	114	[NT]
Surrogate o-Terphenyl	%		Org-020	85	[NT]	[NT]	[NT]	[NT]	106	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Date analysed	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Naphthalene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	78	[NT]
Acenaphthylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Fluorene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Phenanthrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	117	[NT]
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	63	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	69	[NT]	[NT]	[NT]	[NT]	66	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Date analysed	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	68	[NT]
HCB	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	110	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	61	[NT]
delta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	89	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	96	[NT]
Dieldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	96	[NT]
Endrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	60	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	102	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	70	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	72	[NT]	[NT]	[NT]	[NT]	72	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Date analysed	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	78	[NT]
Dimethoate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	81	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	83	[NT]
Malathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	87	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	94	[NT]
Parathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	89	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	100	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	72	[NT]	[NT]	[NT]	[NT]	72	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date prepared	-			24/01/2023	1	24/01/2023	24/01/2023		24/01/2023	[NT]
Date analysed	-			24/01/2023	1	24/01/2023	24/01/2023		24/01/2023	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		104	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	0.2	[NT]		102	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		103	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	1	[NT]		100	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		100	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	91	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	18	[NT]		98	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	34	[NT]		101	[NT]
Barium-Dissolved	µg/L	1	Metals-022	<1	1	48	[NT]		100	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	1	<0.5	[NT]		94	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	<1	1	30	[NT]		100	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	1	2700	[NT]		99	[NT]
Selenium-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		86	[NT]

QUALITY CONTROL: Metals in Waters - Acid extractable						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			23/01/2023	[NT]	[NT]	[NT]	[NT]	23/01/2023	[NT]
Date analysed	-			23/01/2023	[NT]	[NT]	[NT]	[NT]	23/01/2023	[NT]
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: Ion Balance						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	314784-2
Date prepared	-			19/01/2023	1	19/01/2023	19/01/2023		19/01/2023	19/01/2023
Date analysed	-			19/01/2023	1	19/01/2023	19/01/2023		19/01/2023	19/01/2023
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	86	88	2	105	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	4	4	0	94	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	1000	1000	0	93	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	120	120	0	106	[NT]
Hardness	mgCaCO 3 /L	3	Metals-020	[NT]	1	700	720	3	[NT]	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	[NT]		[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	190	[NT]		[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	[NT]		[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	190	[NT]		97	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	1	900	930	3	103	#
Chloride, Cl	mg/L	1	Inorg-081	<1	1	1600	1600	0	100	#
Ionic Balance	%		Inorg-040	[NT]	1	-7.0	[NT]		[NT]	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	314784-2
Date prepared	-			19/01/2023	1	19/01/2023	19/01/2023		19/01/2023	19/01/2023
Date analysed	-			19/01/2023	1	19/01/2023	19/01/2023		19/01/2023	19/01/2023
pH	pH Units		Inorg-001	[NT]	1	6.7	[NT]		99	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	1	6800	[NT]		104	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	<5	1	3700	[NT]		97	[NT]
Dissolved Oxygen*	mg/L	0.1	Inorg-112	<0.1	1	8.9	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	<0.005	1	0.01	[NT]		98	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	<0.005	0	111	86
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	0.061	[NT]		104	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.01	[NT]		106	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	[NT]		108	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.01	[NT]		106	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	0.1	[NT]		91	[NT]
TKN in water	mg/L	0.1	Inorg-062	<0.1	1	0.1	[NT]		[NT]	[NT]
Organic Nitrogen as N	mg/L	0.2	Inorg-055/062/127	<0.2	1	<0.2	[NT]		[NT]	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	3	19/01/2023	19/01/2023		[NT]	[NT]
Date analysed	-			[NT]	3	19/01/2023	19/01/2023		[NT]	[NT]
pH	pH Units		Inorg-001	[NT]	3	5.3	[NT]		[NT]	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	[NT]	3	26000	[NT]		[NT]	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	[NT]	3	13000	15000	14	[NT]	[NT]
Dissolved Oxygen*	mg/L	0.1	Inorg-112	[NT]	3	8.5	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	[NT]	3	<0.005	[NT]		[NT]	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	[NT]	3	<0.005	[NT]		[NT]	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	[NT]	3	1.5	[NT]		[NT]	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	[NT]	3	<0.005	[NT]		[NT]	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	[NT]	3	<0.005	[NT]		[NT]	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	[NT]	3	<0.005	[NT]		[NT]	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	[NT]	3	1.5	[NT]		[NT]	[NT]
TKN in water	mg/L	0.1	Inorg-062	[NT]	3	1.5	[NT]		[NT]	[NT]
Organic Nitrogen as N	mg/L	0.2	Inorg-055/062/127	[NT]	3	<0.2	[NT]		[NT]	[NT]

QUALITY CONTROL: Acid Herbicides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			24/01/2023	[NT]	[NT]	[NT]	[NT]	24/01/2023	[NT]
Date analysed	-			25/01/2023	[NT]	[NT]	[NT]	[NT]	25/01/2023	[NT]
Clopyralid	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	98	[NT]
3,5-Dichlorobenzoic acid	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
o-chlorophenoxy acetic acid	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-CPA	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dicamba	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
MCPP	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
MCPA	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dichlorprop	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-D	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	118	[NT]
Bromoxynil	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Triclopyr	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,5-TP	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,5-T	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	140	[NT]
MCPB	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dinoseb	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-DB	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ioxynil	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Picloram	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acifluorfen	µg/L	2	Ext-061	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,6-T	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,6-D	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bentazon	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloramben	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluroxypyr	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2.4- DCPA	%		Ext-061	78	[NT]	[NT]	[NT]	[NT]	74	[NT]

QUALITY CONTROL: Triazine Herbicides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Date analysed	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Atrazine	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	98	[NT]
Ametryn	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Cyanazine	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexazinone	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Irgarol	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Metribuzin	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Prometryn	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	113	[NT]
Propazine	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	94	[NT]
Simazine	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Terbutryn	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Terbuthylazine	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	69	[NT]	[NT]	[NT]	[NT]	66	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

vTRH & BTEXN in Water NEPM - The trip spike has not been prepared/supplied by Envirolab. As such, we cannot determine the %recovery of the trip spike and the on-column result has been reported.

ION_BALANCE: # Percent recovery is not applicable due to the high concentration of the analyte/s in the sample/s. However an acceptable recovery was obtained for the LCS.

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

Total metals: no unfiltered, preserved sample was received, therefore analysis was conducted from the unpreserved sample bottle. Note: there is a possibility some elements may be underestimated.

Acid Herbicides in Water - analysed by Envirolab VIC, report no 35526.

* Please do not test arsenic → on hold

epic ENVIRONMENTAL

Chain of Custody Record

Project No:	SC210108.03
Project/Site:	Sydney Metro WTP
Project Manager:	Patrick Carroll
Sampled By:	JX
Phone:	426205616
Page:	1 of 1
Number of Eskies:	1

Lab:	Envirolab
Lab Quote No:	
Lab Batch No:	
Date Results Required:	
Sample Disposal After:	

LAB ID	SAMPLE ID	DATE	MATRIX	CONTAINER TYPE & PRESERVATIVE: Soil / Solid 150-250ml Glass Jar	Soil / Solid 200ml Plastic Jar	Soil / Solid Plastic bag	Water / Liquid 2x 40ml Amber Vial	Water / Liquid 100-500ml Amber Bottle	Water / Liquid 60ml Metals	Water / Liquid 60ml Nutrients	Water / Liquid 250-500ml Plastic (Unpreserved)	Water / Liquid 60-250ml Plastic (PFAS)	Other	ANALYSIS REQUIRED: WQ Parameters: pH, EC ORP, DO, TDS, Alkalinity, Hardness	Major Ions	Extended Metals suite - UltraTrace: 15 metals NEPM Suite	Nutrients (Trace)	TRH + BTEXN	PAH	OCP / OPP	Herbicides	VOC / SVOC	PFAS	Cr speciation		TRH, BTEXN, C6, C10	HOLD
1	CZ4E_MW03	18/1	W											X										X			
2	CZ4E_MW01	1	W											X										X			
3	SMW_ENV042	1	W											X										X			
4	RS03		W													X		X									
5	TB04		W																							X	
6	TS04		W																							X	
			W																						

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 314907

Client Details

Client	Epic Environmental (Sydney) Pty Ltd
Attention	Patrick Carroll
Address	Suite 5, Level 9, 189 Kent Street, SYDNEY, NSW, 2000

Sample Details

Your Reference	**SC210108.03, Sydney Metro WTP**
Number of Samples	5 Water
Date samples received	20/01/2023
Date completed instructions received	20/01/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	30/01/2023
Date of Issue	30/01/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Ashley Miller, Development Chemist
Josh Williams, Organics and LC Supervisor
Kyle Gavrily, Senior Chemist
Liam Timmins, Organic Instruments Team Leader
Loren Bardwell, Development Chemist
Nancy Zhang, Laboratory Manager, Sydney
Priya Samarawickrama, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

VOCs in water				
Our Reference		314907-1	314907-2	314907-5
Your Reference	UNITS	SMW_WTP_BH13	CZ6_MW05	Rinsate
Date Sampled		20/01/2023	20/01/2023	20/01/2023
Type of sample		Water	Water	Water
Date extracted	-	23/01/2023	23/01/2023	23/01/2023
Date analysed	-	24/01/2023	24/01/2023	24/01/2023
Dichlorodifluoromethane	µg/L	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10
Vinyl Chloride	µg/L	<10	<10	<10
Bromomethane	µg/L	<10	<10	<10
Chloroethane	µg/L	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1
Chloroform	µg/L	<1	<1	1
2,2-dichloropropane	µg/L	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1
Benzene	µg/L	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1
Toluene	µg/L	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1

VOCs in water				
Our Reference		314907-1	314907-2	314907-5
Your Reference	UNITS	SMW_WTP_BH13	CZ6_MW05	Rinsate
Date Sampled		20/01/2023	20/01/2023	20/01/2023
Type of sample		Water	Water	Water
Bromoform	µg/L	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2
Styrene	µg/L	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1
o-xylene	µg/L	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1	<1
4-isopropyl toluene	µg/L	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1
Hexachlorobutadiene	µg/L	<1	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<1
Surrogate Dibromofluoromethane	%	102	101	95
Surrogate toluene-d8	%	98	101	97
Surrogate 4-BFB	%	103	106	103

SVOC's in water			
Our Reference		314907-1	314907-2
Your Reference	UNITS	SMW_WTP_BH13	CZ6_MW05
Date Sampled		20/01/2023	20/01/2023
Type of sample		Water	Water
Date extracted	-	27/01/2023	27/01/2023
Date analysed	-	27/01/2023	27/01/2023
Phenol	µg/L	<2	<2
Bis (2-chloroethyl) ether	µg/L	<5	<5
2-Chlorophenol	µg/L	<2	<2
1,3-Dichlorobenzene	µg/L	<2	<2
1,4-Dichlorobenzene	µg/L	<2	<2
2-Methylphenol	µg/L	<2	<2
1,2-Dichlorobenzene	µg/L	<2	<2
bis-(2-Chloroisopropyl) ether	µg/L	<5	<5
3/4-Methylphenol	µg/L	<4	<4
N-nitrosodi-n-propylamine	µg/L	<5	<5
Hexachloroethane	µg/L	<2	<2
Nitrobenzene	µg/L	<5	<5
Isophorone	µg/L	<5	<5
2,4-Dimethylphenol	µg/L	<2	<2
2-Nitrophenol	µg/L	<2	<2
bis (2-Chloroethoxy) methane	µg/L	<5	<5
2,4-Dichlorophenol	µg/L	<2	<2
1,2,4-Trichlorobenzene	µg/L	<2	<2
Naphthalene	µg/L	<2	2
4-Chloroaniline	µg/L	<5	<5
4-Chloro-3-methylphenol	µg/L	<10	<10
Hexachlorobutadiene	µg/L	<2	<2
2-Methylnaphthalene	µg/L	<2	<2
Hexachlorocyclopentadiene	µg/L	<5	<5
2,4,6-Trichlorophenol	µg/L	<2	<2
2,4,5-Trichlorophenol	µg/L	<2	<2
2-Chloronaphthalene	µg/L	<2	<2
2-Nitroaniline	µg/L	<5	<5
Dimethyl phthalate	µg/L	<10	<10
2,6-Dinitrotoluene	µg/L	<5	<5
Acenaphthylene	µg/L	<2	<2
3-Nitroaniline	µg/L	<5	<5
Acenaphthene	µg/L	<2	<2
2,4-Dinitrophenol	µg/L	<20	<20

SVOC's in water			
Our Reference		314907-1	314907-2
Your Reference	UNITS	SMW_WTP_BH13	CZ6_MW05
Date Sampled		20/01/2023	20/01/2023
Type of sample		Water	Water
4-Nitrophenol	µg/L	<20	<20
Dibenzofuran	µg/L	<5	<5
Diethylphthalate	µg/L	<10	<10
4-Chlorophenylphenylether	µg/L	<5	<5
4-Nitroaniline	µg/L	<5	<5
Fluorene	µg/L	<2	<2
2-methyl-4,6-dinitrophenol	µg/L	<20	<20
Azobenzene	µg/L	<5	<5
4-Bromophenylphenylether	µg/L	<5	<5
Hexachlorobenzene	µg/L	<2	<2
Pentachlorophenol	µg/L	<10	<10
Phenanthrene	µg/L	<2	<2
Anthracene	µg/L	<2	<2
Carbazole	µg/L	<5	<5
Di-n-butylphthalate	µg/L	<10	<10
Fluoranthene	µg/L	<2	<2
Pyrene	µg/L	<2	<2
Butylbenzylphthalate	µg/L	<10	<10
Bis(2-ethylhexyl) phthalate	µg/L	<50	<50
Benzo(a)anthracene	µg/L	<2	<2
Chrysene	µg/L	<2	<2
Di-n-octylphthalate	µg/L	<10	<10
Benzo(b,j+k)fluoranthene	µg/L	<4	<4
Benzo(a)pyrene	µg/L	<2	<2
Indeno(1,2,3-c,d)pyrene	µg/L	<2	<2
Dibenzo(a,h)anthracene	µg/L	<2	<2
Benzo(g,h,i)perylene	µg/L	<2	<2
Ethylmethanesulfonate	µg/L	<5	<5
Aniline	µg/L	<5	<5
Pentachloroethane	µg/L	<2	<2
Benzyl alcohol	µg/L	<5	<5
Acetophenone	µg/L	<5	<5
N-nitrosomorpholine	µg/L	<5	<5
N-nitrosopiperidine	µg/L	<5	<5
2,6-Dichlorophenol	µg/L	<2	<2
Hexachloropropene-1	µg/L	<2	<2
N-nitroso-n-butylamine	µg/L	<5	<5

SVOC's in water			
Our Reference		314907-1	314907-2
Your Reference	UNITS	SMW_WTP_BH13	CZ6_MW05
Date Sampled		20/01/2023	20/01/2023
Type of sample		Water	Water
Safrole	µg/L	<5	<5
1,2,4,5-Tetrachlorobenzene	µg/L	<2	<2
Trans/Cis-iso-safrole	µg/L	<5	<5
1,3-Dinitrobenzene	µg/L	<5	<5
Pentachlorobenzene	µg/L	<2	<2
1-Naphthylamine	µg/L	<5	<5
2,3,4,6-Tetrachlorophenol	µg/L	<2	<2
2-Naphthylamine	µg/L	<5	<5
5-Nitro-o-toluidine	µg/L	<5	<5
Diphenylamine	µg/L	<5	<5
Phenacetin	µg/L	<5	<5
Pentachloronitrobenzene	µg/L	<5	<5
Dinoseb	µg/L	<10	<10
Methapyrilene	µg/L	<10	<10
p-Dimethylaminoazobenzene	µg/L	<5	<5
2-Acetylaminofluorene	µg/L	<2	<2
7,12-Dimethylbenz(a)anthracene	µg/L	<2	<2
3-Methylcholanthrene	µg/L	<2	<2
a-BHC	µg/L	<2	<2
b-BHC	µg/L	<2	<2
g-BHC	µg/L	<2	<2
d-BHC	µg/L	<2	<2
Heptachlor	µg/L	<2	<2
Aldrin	µg/L	<2	<2
Heptachlor Epoxide	µg/L	<2	<2
g-Chlordane	µg/L	<2	<2
a-Chlordane	µg/L	<2	<2
Endosulfan I	µg/L	<2	<2
p,p'-DDE	µg/L	<2	<2
Dieldrin	µg/L	<2	<2
Endrin	µg/L	<2	<2
p,p'-DDD	µg/L	<2	<2
Endosulfan II	µg/L	<2	<2
Endrin Aldehyde	µg/L	<2	<2
p,p'-DDT	µg/L	<2	<2
Endosulfan Sulphate	µg/L	<2	<2
Endrin Ketone	µg/L	<2	<2

SVOC's in water			
Our Reference		314907-1	314907-2
Your Reference	UNITS	SMW_WTP_BH13	CZ6_MW05
Date Sampled		20/01/2023	20/01/2023
Type of sample		Water	Water
Methoxychlor	µg/L	<2	<2
Dichlorvos	µg/L	<2	<2
Mevinphos	µg/L	<2	<2
Phorate	µg/L	<2	<2
Dimethoate	µg/L	<2	<2
Diazinon (dimpylate)	µg/L	<2	<2
Disulfoton	µg/L	<2	<2
Chloropyriphos-methyl	µg/L	<2	<2
Parathion-methyl	µg/L	<2	<2
Ronnel (fenchlorphos)	µg/L	<2	<2
Fenitrothion	µg/L	<2	<2
Malathion (Maldison)	µg/L	<2	<2
Chloropyriphos	µg/L	<2	<2
Fenthion	µg/L	<2	<2
Parathion (parathion-ethyl)	µg/L	<2	<2
Bromophos Ethyl	µg/L	<2	<2
Methidathion	µg/L	<2	<2
Fenamiphos (Phenamiphos)	µg/L	<2	<2
Ethion	µg/L	<2	<2
Phosalone	µg/L	<2	<2
Azinphos methyl (Guthion)	µg/L	<2	<2
Coumaphos (Co-Ral)	µg/L	<2	<2
Surrogate 2-fluorophenol	%	42	44
Surrogate Phenol-d_6	%	32	30
Surrogate Nitrobenzene-d_5	%	72	75
Surrogate 2-fluorobiphenyl	%	67	67
Surrogate 2,4,6-Tribromophenol	%	65	71
Surrogate *p*-Terphenyl-d_{14}	%	63	68

vTRH(C6-C10)/BTEXN in Water						
Our Reference		314907-1	314907-2	314907-3	314907-4	314907-5
Your Reference	UNITS	SMW_WTP_BH13	CZ6_MW05	TS07	TB07	Rinsate
Date Sampled		20/01/2023	20/01/2023	20/01/2023	20/01/2023	20/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
Date analysed	-	24/01/2023	24/01/2023	24/01/2023	24/01/2023	24/01/2023
TRH C_6 - C_9	µg/L	<10	<10	[NA]	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	[NA]	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	[NA]	<10	<10
Benzene	µg/L	<1	<1	98%	<1	<1
Toluene	µg/L	<1	<1	107%	<1	<1
Ethylbenzene	µg/L	<1	<1	110%	<1	<1
m+p-xylene	µg/L	<2	<2	110%	<2	<2
o-xylene	µg/L	<1	<1	104%	<1	<1
Naphthalene	µg/L	<1	2	[NT]	<1	<1
Surrogate Dibromofluoromethane	%	102	101	99	109	95
Surrogate toluene-d8	%	98	101	102	106	97
Surrogate 4-BFB	%	103	106	103	108	103

svTRH (C10-C40) in Water			
Our Reference		314907-1	314907-2
Your Reference	UNITS	SMW_WTP_BH13	CZ6_MW05
Date Sampled		20/01/2023	20/01/2023
Type of sample		Water	Water
Date extracted	-	27/01/2023	27/01/2023
Date analysed	-	28/01/2023	28/01/2023
TRH C_{10} - C_{14}	µg/L	<50	160
TRH C_{15} - C_{28}	µg/L	<100	1,200
TRH C_{29} - C_{36}	µg/L	<100	140
Total +ve TRH (C10-C36)	µg/L	<50	1,500
TRH >C_{10} - C_{16}	µg/L	<50	320
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	320
TRH >C_{16} - C_{34}	µg/L	<100	1,100
TRH >C_{34} - C_{40}	µg/L	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	1,400
Surrogate o-Terphenyl	%	81	#

PAHs in Water			
Our Reference		314907-1	314907-2
Your Reference	UNITS	SMW_WTP_BH13	CZ6_MW05
Date Sampled		20/01/2023	20/01/2023
Type of sample		Water	Water
Date extracted	-	27/01/2023	27/01/2023
Date analysed	-	27/01/2023	27/01/2023
Naphthalene	µg/L	<1	2
Acenaphthylene	µg/L	<1	<1
Acenaphthene	µg/L	<1	1
Fluorene	µg/L	<1	<1
Phenanthrene	µg/L	<1	<1
Anthracene	µg/L	<1	<1
Fluoranthene	µg/L	<1	<1
Pyrene	µg/L	<1	<1
Benzo(a)anthracene	µg/L	<1	<1
Chrysene	µg/L	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2
Benzo(a)pyrene	µg/L	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	3.1
Surrogate p-Terphenyl-d14	%	63	68

Organochlorine Pesticides in Water			
Our Reference	UNITS	314907-1	314907-2
Your Reference		SMW_WTP_BH13	CZ6_MW05
Date Sampled		20/01/2023	20/01/2023
Type of sample		Water	Water
Date extracted	-	27/01/2023	27/01/2023
Date analysed	-	27/01/2023	27/01/2023
alpha-BHC	µg/L	<0.2	<0.2
HCB	µg/L	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2
Surrogate TCMX	%	66	65

OP Pesticides in Water			
Our Reference	UNITS	314907-1	314907-2
Your Reference		SMW_WTP_BH13	CZ6_MW05
Date Sampled		20/01/2023	20/01/2023
Type of sample		Water	Water
Date extracted	-	27/01/2023	27/01/2023
Date analysed	-	27/01/2023	27/01/2023
Dichlorvos	µg/L	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2
Surrogate TCMX	%	66	65

HM in water - dissolved				
Our Reference		314907-1	314907-2	314907-5
Your Reference	UNITS	SMW_WTP_BH13	CZ6_MW05	Rinsate
Date Sampled		20/01/2023	20/01/2023	20/01/2023
Type of sample		Water	Water	Water
Date prepared	-	24/01/2023	24/01/2023	24/01/2023
Date analysed	-	24/01/2023	24/01/2023	24/01/2023
Arsenic-Dissolved	µg/L	1	7	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1
Copper-Dissolved	µg/L	<1	<1	<1
Lead-Dissolved	µg/L	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	3	<1	<1
Zinc-Dissolved	µg/L	100	3	<1
Barium-Dissolved	µg/L	88	230	<1
Beryllium-Dissolved	µg/L	<0.5	<0.5	<0.5
Cobalt-Dissolved	µg/L	12	<1	<1
Manganese-Dissolved	µg/L	170	79	<5
Selenium-Dissolved	µg/L	<1	<1	<1

Metals in Waters - Acid extractable			
Our Reference		314907-1	314907-2
Your Reference	UNITS	SMW_WTP_BH13	CZ6_MW05
Date Sampled		20/01/2023	20/01/2023
Type of sample		Water	Water
Date prepared	-	24/01/2023	24/01/2023
Date analysed	-	24/01/2023	24/01/2023
Phosphorus - Total	mg/L	<0.05	0.1

Ion Balance			
Our Reference	UNITS	314907-1	314907-2
Your Reference		SMW_WTP_BH13	CZ6_MW05
Date Sampled		20/01/2023	20/01/2023
Type of sample		Water	Water
Date prepared	-	23/01/2023	23/01/2023
Date analysed	-	23/01/2023	23/01/2023
Calcium - Dissolved	mg/L	36	20
Potassium - Dissolved	mg/L	8.0	2
Sodium - Dissolved	mg/L	1,100	210
Magnesium - Dissolved	mg/L	120	20
Hardness	mgCaCO 3 /L	600	130
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	270	310
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	270	310
Sulphate, SO4	mg/L	250	38
Chloride, Cl	mg/L	2,000	170
Ionic Balance	%	-8.0	1.0

Miscellaneous Inorganics			
Our Reference	UNITS	314907-1	314907-2
Your Reference		SMW_WTP_BH13	CZ6_MW05
Date Sampled		20/01/2023	20/01/2023
Type of sample		Water	Water
Date prepared	-	20/01/2023	20/01/2023
Date analysed	-	20/01/2023	20/01/2023
pH	pH Units	6.8	7.1
Electrical Conductivity	µS/cm	7,400	1,200
Total Dissolved Solids (grav)	mg/L	4,600	820
Dissolved Oxygen*	mg/L	8.8	8.8
Phosphate as P in water	mg/L	<0.005	<0.005
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005
Trivalent Chromium	mg/L	<0.005	<0.005
Ammonia as N in water	mg/L	0.028	0.41
Nitrate as N in water	mg/L	<0.005	<0.005
Nitrite as N in water	mg/L	<0.005	<0.005
NOx as N in water	mg/L	<0.005	<0.005
Total Nitrogen in water	mg/L	0.1	0.6
TKN in water	mg/L	0.1	0.6
Organic Nitrogen as N	mg/L	<0.2	<0.2
Redox Potential*	mV	303	253

Acid Herbicides in Water			
Our Reference		314907-1	314907-2
Your Reference	UNITS	SMW_WTP_BH13	CZ6_MW05
Date Sampled		20/01/2023	20/01/2023
Type of sample		Water	Water
Date extracted	-	24/01/2023	24/01/2023
Date analysed	-	25/01/2023	25/01/2023
Clopyralid	µg/L	<0.5	<0.5
3,5-Dichlorobenzoic acid	µg/L	<0.5	<0.5
o-chlorophenoxy acetic acid	µg/L	<0.5	<0.5
4-CPA	µg/L	<0.5	<0.5
Dicamba	µg/L	<0.5	<0.5
MCPP	µg/L	<0.5	<0.5
MCPA	µg/L	<0.5	<0.5
Dichlorprop	µg/L	<0.5	<0.5
2,4-D	µg/L	<0.5	<0.5
Bromoxynil	µg/L	<0.5	<0.5
Triclopyr	µg/L	<0.5	<0.5
2,4,5-TP	µg/L	<0.5	<0.5
2,4,5-T	µg/L	<0.5	<0.5
MCPB	µg/L	<0.5	<0.5
Dinoseb	µg/L	<1	<1
2,4-DB	µg/L	<0.5	<0.5
Ioxynil	µg/L	<1	<1
Picloram	µg/L	<1	<1
Acifluorfen	µg/L	<2	<2
2,4,6-T	µg/L	<0.5	<0.5
2,6-D	µg/L	<0.5	<0.5
Bentazon	µg/L	<1	<1
Chloramben	µg/L	<1	<1
Fluroxypyr	µg/L	<1	<1
Surrogate 2.4- DCPA	%	90	80

Triazine Herbicides in Water			
Our Reference		314907-1	314907-2
Your Reference	UNITS	SMW_WTP_BH13	CZ6_MW05
Date Sampled		20/01/2023	20/01/2023
Type of sample		Water	Water
Date extracted	-	27/01/2023	27/01/2023
Date analysed	-	27/01/2023	27/01/2023
Atrazine	mg/L	<0.002	<0.002
Ametryn	mg/L	<0.002	<0.002
Cyanazine	mg/L	<0.002	<0.002
Hexazinone	mg/L	<0.002	<0.002
Irgarol	mg/L	<0.002	<0.002
Metribuzin	mg/L	<0.002	<0.002
Prometryn	mg/L	<0.002	<0.002
Propazine	mg/L	<0.002	<0.002
Simazine	mg/L	<0.002	<0.002
Terbutryn	mg/L	<0.002	<0.002
Terbuthylazine	mg/L	<0.002	<0.002
Surrogate p-Terphenyl-d14	%	63	68

PFAS in Waters Extended			
Our Reference		314907-1	314907-2
Your Reference	UNITS	SMW_WTP_BH13	CZ6_MW05
Date Sampled		20/01/2023	20/01/2023
Type of sample		Water	Water
Date prepared	-	23/01/2023	23/01/2023
Date analysed	-	23/01/2023	23/01/2023
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	0.03
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	0.04
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	0.02
Perfluoroheptanoic acid	µg/L	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	98	97
Surrogate $^{13}C_2$ *PFOA*	%	114	113
Extracted ISTD $^{13}C_3$ *PFBS*	%	98	98
Extracted ISTD $^{18}O_2$ *PFHxS*	%	112	117
Extracted ISTD $^{13}C_4$ *PFOS*	%	109	114
Extracted ISTD $^{13}C_4$ *PFBA*	%	93	62

PFAS in Waters Extended			
Our Reference		314907-1	314907-2
Your Reference	UNITS	SMW_WTP_BH13	CZ6_MW05
Date Sampled		20/01/2023	20/01/2023
Type of sample		Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	103	107
Extracted ISTD $^{13}C_2$ *PFHxA*	%	107	117
Extracted ISTD $^{13}C_4$ *PFHpA*	%	112	127
Extracted ISTD $^{13}C_4$ *PFOA*	%	105	117
Extracted ISTD $^{13}C_5$ *PFNA*	%	107	118
Extracted ISTD $^{13}C_2$ *PFDA*	%	116	124
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	116	120
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	110	115
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	104	110
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	102	159
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	108	150
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	116	140
Extracted ISTD $^{13}C_8$ *FOSA*	%	112	113
Extracted ISTD d_3 *N MeFOSA*	%	106	110
Extracted ISTD d_5 *N EtFOSA*	%	102	99
Extracted ISTD d_7 *N MeFOSE*	%	115	119
Extracted ISTD d_9 *N EtFOSE*	%	103	102
Extracted ISTD d_3 *N MeFOSAA*	%	105	119
Extracted ISTD d_5 *N EtFOSAA*	%	105	124
Total Positive PFHxS & PFOS	µg/L	0.01	0.07
Total Positive PFOA & PFOS	µg/L	<0.01	0.05
Total Positive PFAS	µg/L	0.01	0.09

Method ID	Methodology Summary
Ext-061	Analysed by Envirolab Melbourne
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Inorg-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation below:- TDS = EC * 0.6
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Inorg-035	Analysed using an electrode. Please note that the results for water analyses are indicative only, samples are ideally analysed on collection.
Inorg-040	The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% ie total anions = total cations +/-15%.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Inorg-112	Dissolved Oxygen using membrane electrode. Note this analysis should ideally be carried out immediately after sampling.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			23/01/2023	1	23/01/2023	24/01/2023		23/01/2023	[NT]
Date analysed	-			24/01/2023	1	24/01/2023	25/01/2023		24/01/2023	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	92	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	1	<1	<1	0	87	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	86	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	87	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	88	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	90	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	86	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	87	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	104	1	102	97	5	101	[NT]
Surrogate toluene-d8	%		Org-023	102	1	98	97	1	101	[NT]
Surrogate 4-BFB	%		Org-023	107	1	103	103	0	103	[NT]

QUALITY CONTROL: SVOC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Date analysed	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Phenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	71	[NT]
Bis (2-chloroethyl) ether	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-Chlorophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	79	[NT]
1,3-Dichlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-Dichlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	67	[NT]
2-Methylphenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	78	[NT]
1,2-Dichlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
bis-(2-Chloroisopropyl) ether	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
3/4-Methylphenol	µg/L	4	Org-022/025	<4	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
N-nitrosodi-n-propylamine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachloroethane	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Nitrobenzene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Isophorone	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-Dimethylphenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-Nitrophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
bis (2-Chloroethoxy) methane	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-Dichlorophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-Trichlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Naphthalene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	78	[NT]
4-Chloroaniline	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-Chloro-3-methylphenol	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorobutadiene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-Methylnaphthalene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorocyclopentadiene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,6-Trichlorophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,5-Trichlorophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-Chloronaphthalene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-Nitroaniline	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dimethyl phthalate	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	70	[NT]
2,6-Dinitrotoluene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthylene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
3-Nitroaniline	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	87	[NT]
2,4-Dinitrophenol	µg/L	20	Org-022/025	<20	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-Nitrophenol	µg/L	20	Org-022/025	<20	[NT]	[NT]	[NT]	[NT]	40	[NT]
Dibenzofuran	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diethylphthalate	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	77	[NT]
4-Chlorophenylphenylether	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: SVOC's in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
4-Nitroaniline	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	88	[NT]
2-methyl-4,6-dinitrophenol	µg/L	20	Org-022/025	<20	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Azobenzene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-Bromophenylphenylether	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Pentachlorophenol	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	75	[NT]
Phenanthrene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	96	[NT]
Anthracene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbazole	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Di-n-butylphthalate	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	94	[NT]
Pyrene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	115	[NT]
Butylbenzylphthalate	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bis(2-ethylhexyl) phthalate	µg/L	50	Org-022/025	<50	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)anthracene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	63	[NT]
Di-n-octylphthalate	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(b,j+k)fluoranthene	µg/L	4	Org-022/025	<4	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	98	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethylmethanesulfonate	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aniline	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Pentachloroethane	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzyl alcohol	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acetophenone	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
N-nitrosomorpholine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
N-nitrosopiperidine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,6-Dichlorophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	83	[NT]
Hexachloropropene-1	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
N-nitroso-n-butylamine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Safrole	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4,5-Tetrachlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trans/Cis-iso-safrole	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-Dinitrobenzene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Pentachlorobenzene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1-Naphthylamine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,3,4,6-Tetrachlorophenol	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: SVOC's in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
2-Naphthylamine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
5-Nitro-o-toluidine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diphenylamine	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Phenacetin	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Pentachloronitrobenzene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dinoseb	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Methapyrilene	µg/L	10	Org-022/025	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
p-Dimethylaminoazobenzene	µg/L	5	Org-022/025	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-Acetylaminofluorene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
7,12-Dimethylbenz(a)anthracene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
3-Methylcholanthrene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-BHC	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	64	[NT]
b-BHC	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	60	[NT]
g-BHC	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
d-BHC	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	60	[NT]
Aldrin	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	71	[NT]
Heptachlor Epoxide	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	68	[NT]
g-Chlordane	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-Chlordane	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
p,p'-DDE	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	76	[NT]
Dieldrin	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	77	[NT]
Endrin	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	60	[NT]
p,p'-DDD	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	90	[NT]
Endosulfan II	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin Aldehyde	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
p,p'-DDT	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	68	[NT]
Endrin Ketone	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Methoxychlor	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dichlorvos	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	76	[NT]
Mevinphos	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Phorate	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dimethoate	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon (dimpylate)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Disulfoton	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloropyriphos-methyl	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Parathion-methyl	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: SVOC's in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Ronnel (fenchlorphos)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	65	[NT]
Fenitrothion	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	69	[NT]
Malathion (Maldison)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	71	[NT]
Chloropyriphos	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	76	[NT]
Fenthion	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Parathion (parathion-ethyl)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	76	[NT]
Bromophos Ethyl	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Methidathion	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fenamiphos (Phenamiphos)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	80	[NT]
Phosalone	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Azinphos methyl (Guthion)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Coumaphos (Co-Ral)	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2-fluorophenol	%		Org-022/025	44	[NT]	[NT]	[NT]	[NT]	67	[NT]
Surrogate Phenol-d_6	%		Org-022/025	29	[NT]	[NT]	[NT]	[NT]	73	[NT]
Surrogate Nitrobenzene-d_5	%		Org-022/025	76	[NT]	[NT]	[NT]	[NT]	71	[NT]
Surrogate 2-fluorobiphenyl	%		Org-022/025	68	[NT]	[NT]	[NT]	[NT]	71	[NT]
Surrogate 2,4,6-Tribromophenol	%		Org-022/025	70	[NT]	[NT]	[NT]	[NT]	79	[NT]
Surrogate p-Terphenyl-d_{14}	%		Org-022/025	69	[NT]	[NT]	[NT]	[NT]	66	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			23/01/2023	1	23/01/2023	24/01/2023		23/01/2023	[NT]
Date analysed	-			24/01/2023	1	24/01/2023	25/01/2023		24/01/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	<10	<10	0	92	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	<10	<10	0	92	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	90	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	90	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	94	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	94	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	91	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	104	1	102	97	5	101	[NT]
Surrogate toluene-d8	%		Org-023	102	1	98	97	1	101	[NT]
Surrogate 4-BFB	%		Org-023	107	1	103	103	0	103	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Date analysed	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	118	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	114	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	118	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	114	[NT]
Surrogate o-Terphenyl	%		Org-020	85	[NT]	[NT]	[NT]	[NT]	106	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Date analysed	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Naphthalene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	78	[NT]
Acenaphthylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Fluorene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Phenanthrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	117	[NT]
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	63	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	69	[NT]	[NT]	[NT]	[NT]	66	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Date analysed	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	68	[NT]
HCB	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	110	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	61	[NT]
delta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	89	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	96	[NT]
Dieldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	96	[NT]
Endrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	60	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	102	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	70	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	72	[NT]	[NT]	[NT]	[NT]	72	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Date analysed	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	78	[NT]
Dimethoate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	81	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	83	[NT]
Malathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	87	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	94	[NT]
Parathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	89	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	100	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	72	[NT]	[NT]	[NT]	[NT]	72	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			24/01/2023	[NT]	[NT]	[NT]	[NT]	24/01/2023	[NT]
Date analysed	-			24/01/2023	[NT]	[NT]	[NT]	[NT]	24/01/2023	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	91	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Barium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	[NT]	[NT]	[NT]	[NT]	93	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	[NT]	[NT]	[NT]	[NT]	95	[NT]
Selenium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]

QUALITY CONTROL: Metals in Waters - Acid extractable					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			24/01/2023	[NT]	[NT]	[NT]	[NT]	24/01/2023	[NT]
Date analysed	-			24/01/2023	[NT]	[NT]	[NT]	[NT]	24/01/2023	[NT]
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	114	[NT]

QUALITY CONTROL: Ion Balance						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			23/01/2023	[NT]	[NT]	[NT]	[NT]	23/01/2023	[NT]
Date analysed	-			23/01/2023	[NT]	[NT]	[NT]	[NT]	23/01/2023	[NT]
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	105	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	94	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	93	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	106	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	97	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Chloride, Cl	mg/L	1	Inorg-081	<1	[NT]	[NT]	[NT]	[NT]	86	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date prepared	-			20/01/2023	[NT]	[NT]	[NT]	[NT]	20/01/2023	[NT]
Date analysed	-			20/01/2023	[NT]	[NT]	[NT]	[NT]	20/01/2023	[NT]
pH	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	98	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	<5	[NT]	[NT]	[NT]	[NT]	106	[NT]
Dissolved Oxygen*	mg/L	0.1	Inorg-112	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	<0.005	[NT]	[NT]	[NT]	[NT]	99	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	[NT]	[NT]	[NT]	[NT]	114	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	[NT]	[NT]	[NT]	[NT]	116	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	[NT]	[NT]	[NT]	[NT]	111	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	[NT]	[NT]	[NT]	[NT]	108	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	<0.005	[NT]	[NT]	[NT]	[NT]	111	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	[NT]	[NT]	[NT]	[NT]	91	[NT]
TKN in water	mg/L	0.1	Inorg-062	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Organic Nitrogen as N	mg/L	0.2	Inorg-055/062/127	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Redox Potential*	mV		Inorg-035	[NT]	[NT]	[NT]	[NT]	[NT]	87	[NT]

QUALITY CONTROL: Acid Herbicides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			24/01/2023	[NT]	[NT]	[NT]	[NT]	24/01/2023	[NT]
Date analysed	-			25/01/2023	[NT]	[NT]	[NT]	[NT]	25/01/2023	[NT]
Clopyralid	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	98	[NT]
3,5-Dichlorobenzoic acid	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
o-chlorophenoxy acetic acid	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-CPA	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dicamba	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
MCPP	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
MCPA	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dichlorprop	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-D	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	118	[NT]
Bromoxynil	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Triclopyr	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,5-TP	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,5-T	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	140	[NT]
MCPB	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dinoseb	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-DB	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ioxynil	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Picloram	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acifluorfen	µg/L	2	Ext-061	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,6-T	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,6-D	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bentazon	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloramben	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluroxypyr	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2.4- DCPA	%		Ext-061	78	[NT]	[NT]	[NT]	[NT]	74	[NT]

QUALITY CONTROL: Triazine Herbicides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Date analysed	-			27/01/2023	[NT]	[NT]	[NT]	[NT]	27/01/2023	[NT]
Atrazine	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	98	[NT]
Ametryn	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Cyanazine	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexazinone	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Irgarol	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Metribuzin	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Prometryn	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	113	[NT]
Propazine	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	94	[NT]
Simazine	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Terbutryn	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Terbuthylazine	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	69	[NT]	[NT]	[NT]	[NT]	66	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date prepared	-			23/01/2023	[NT]	[NT]	[NT]	[NT]	23/01/2023	[NT]
Date analysed	-			23/01/2023	[NT]	[NT]	[NT]	[NT]	23/01/2023	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	108	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	103	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	103	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	103	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	101	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	105	[NT]
4:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	109	[NT]
6:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	115	[NT]
8:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	111	[NT]
10:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	115	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	106	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	100	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	112	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	108	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	104	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	112	[NT]	[NT]	[NT]	[NT]	111	[NT]

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	109	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	110	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	110	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	112	[NT]	[NT]	[NT]	[NT]	110	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	108	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	111	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	116	[NT]	[NT]	[NT]	[NT]	112	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	110	[NT]	[NT]	[NT]	[NT]	111	[NT]

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	100	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	116	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	109	[NT]	[NT]	[NT]	[NT]	112	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

Total metals: no unfiltered, preserved sample was received, therefore analysis was conducted from the unpreserved sample bottle. Note: there is a possibility some elements may be underestimated.

Acid Herbicides in Water - analysed by Envirolab VIC, report no 35528.

TRH Water(C10-C40) NEPM - # Percent recovery for the surrogate is not possible to report as the high concentration of analytes in sample 314907-2 have caused interference.

epic ENVIRONMENTAL

ENVIROLAB

Chain of Custody Record

Project No:	SC210108.03
Project/Site:	Sydney Metro WTP
Project Manager:	Patrick
Sampled By:	JX
Phone:	426205616
Page:	1 of 1
Number of Eskies:	1

Lab:	
Lab Quote No:	
Lab Batch No:	
Date Results Required:	
Sample Disposal After:	

LAB ID	SAMPLE ID	DATE	MATRIX	CONTAINER TYPE & PRESERVATIVE: Soil / Solid 150-250ml Glass Jar	Soil / Solid 200ml Plastic Jar	Soil / Solid - Plastic bag	Water / Liquid 2x 40ml Amber Vial	Water / Liquid 100-500ml Amber Bottle	Water / Liquid 60ml Metals	Water / Liquid 60ml Nutrients	Water / Liquid 250-500ml Plastic (Unpreserved)	Water / Liquid 60-250ml Plastic (PFAS)	Other	ANALYSIS REQUIRED: WQ Parameters: pH, EC ORP, DO, TDS, Alkalinity, Hardness	Major Ions	Extended Metals suite - UltraTrace: 15 metals NEPM Suite	Nutrients (Trace)	TRH + BTEXN	PAH	OCP / OPP	Herbicides	VOC / SVOC	PFAS	Cr Speciation	C6 - C10		HOLD
1	SMW_WTP_BH13	20/01/2023	W											X				X						X			
1 CR	~~SMW_WTP_BH13~~		W											X										X			
2 3	CZ6_MW05	—	W															X							X		
3 4	TS01	—	W															X							X		
4 5	TB0807	—	W													X		X				X					
5 6	Rinsate	—	W																								

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 314911

Client Details

Client	Epic Environmental (Sydney) Pty Ltd
Attention	Patrick Carroll
Address	Suite 5, Level 9, 189 Kent Street, SYDNEY, NSW, 2000

Sample Details

Your Reference	**SC210108.03, Sydney Metro WTP**
Number of Samples	9 Water
Date samples received	20/01/2023
Date completed instructions received	20/01/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	31/01/2023
Date of Issue	31/01/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Alexander Mitchell Maclean, Senior Chemist
Diego Bigolin, Inorganics Supervisor
Josh Williams, Organics and LC Supervisor
Kyle Gavrily, Senior Chemist
Loren Bardwell, Development Chemist
Nancy Zhang, Laboratory Manager, Sydney
Priya Samarawickrama, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

VOCs in water						
Our Reference	UNITS	314911-1	314911-2	314911-3	314911-4	314911-5
Your Reference		GALC-MW18	GALC-MW17	SMW-ADD-BH02	SMW-ENV009	QC03
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	24/01/2023	24/01/2023	24/01/2023	24/01/2023	24/01/2023
Date analysed	-	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023
Dichlorodifluoromethane	µg/L	<10	<10	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10	<10	<10
Vinyl Chloride	µg/L	<10	<10	<10	<10	<10
Bromomethane	µg/L	<10	<10	<10	<10	<10
Chloroethane	µg/L	<10	<10	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1	<1	<1
Chloroform	µg/L	<1	<1	<1	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1	<1	<1
Benzene	µg/L	<1	<1	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	1	<1	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1

VOCs in water						
Our Reference	UNITS	314911-1	314911-2	314911-3	314911-4	314911-5
Your Reference		GALC-MW18	GALC-MW17	SMW-ADD-BH02	SMW-ENV009	QC03
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water	Water
Bromoform	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
Styrene	µg/L	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1	<1	<1
o-xylene	µg/L	<1	<1	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1	<1	<1	<1
4-isopropyl toluene	µg/L	<1	<1	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1	<1	<1
Hexachlorobutadiene	µg/L	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	99	91	99	99	98
Surrogate toluene-d8	%	100	99	100	98	99
Surrogate 4-BFB	%	102	105	102	102	102

VOCs in water			
Our Reference	UNITS	314911-6	314911-9
Your Reference		RS04	SMW-ENV039
Date Sampled		19/01/2023	19/01/2023
Type of sample		Water	Water
Date extracted	-	24/01/2023	24/01/2023
Date analysed	-	25/01/2023	25/01/2023
Dichlorodifluoromethane	µg/L	<10	<10
Chloromethane	µg/L	<10	<10
Vinyl Chloride	µg/L	<10	<10
Bromomethane	µg/L	<10	<10
Chloroethane	µg/L	<10	<10
Trichlorofluoromethane	µg/L	<10	<10
1,1-Dichloroethene	µg/L	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1
1,1-dichloroethane	µg/L	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1
Bromochloromethane	µg/L	<1	<1
Chloroform	µg/L	1	<1
2,2-dichloropropane	µg/L	<1	<1
1,2-dichloroethane	µg/L	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1
1,1-dichloropropene	µg/L	<1	<1
Cyclohexane	µg/L	<1	<1
Carbon tetrachloride	µg/L	<1	<1
Benzene	µg/L	<1	<1
Dibromomethane	µg/L	<1	<1
1,2-dichloropropane	µg/L	<1	<1
Trichloroethene	µg/L	<1	<1
Bromodichloromethane	µg/L	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1
Toluene	µg/L	<1	<1
1,3-dichloropropane	µg/L	<1	<1
Dibromochloromethane	µg/L	<1	<1
1,2-dibromoethane	µg/L	<1	<1
Tetrachloroethene	µg/L	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1
Chlorobenzene	µg/L	<1	<1
Ethylbenzene	µg/L	<1	<1

VOCs in water			
Our Reference	UNITS	314911-6	314911-9
Your Reference		RS04	SMW-ENV039
Date Sampled		19/01/2023	19/01/2023
Type of sample		Water	Water
Bromoform	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
Styrene	µg/L	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1
o-xylene	µg/L	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1
Isopropylbenzene	µg/L	<1	<1
Bromobenzene	µg/L	<1	<1
n-propyl benzene	µg/L	<1	<1
2-chlorotoluene	µg/L	<1	<1
4-chlorotoluene	µg/L	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1
Tert-butyl benzene	µg/L	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1
Sec-butyl benzene	µg/L	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1
4-isopropyl toluene	µg/L	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1
n-butyl benzene	µg/L	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1
Hexachlorobutadiene	µg/L	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	97	100
Surrogate toluene-d8	%	97	98
Surrogate 4-BFB	%	102	103

SVOC's in water						
Our Reference		314911-1	314911-2	314911-3	314911-4	314911-5
Your Reference	UNITS	GALC-MW18	GALC-MW17	SMW-ADD-BH02	SMW-ENV009	QC03
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	30/01/2023	30/01/2023	30/01/2023	30/01/2023	30/01/2023
Date analysed	-	30/01/2023	30/01/2023	30/01/2023	30/01/2023	30/01/2023
Phenol	µg/L	<2	4	<2	<2	<2
Bis (2-chloroethyl) ether	µg/L	<5	<5	<5	<5	<5
2-Chlorophenol	µg/L	<2	<2	<2	<2	<2
1,3-Dichlorobenzene	µg/L	<2	<2	<2	<2	<2
1,4-Dichlorobenzene	µg/L	<2	<2	<2	<2	<2
2-Methylphenol	µg/L	<2	<2	<2	<2	<2
1,2-Dichlorobenzene	µg/L	<2	<2	<2	<2	<2
bis-(2-Chloroisopropyl) ether	µg/L	<5	<5	<5	<5	<5
3/4-Methylphenol	µg/L	<4	<4	<4	<4	<4
N-nitrosodi-n-propylamine	µg/L	<5	<5	<5	<5	<5
Hexachloroethane	µg/L	<2	<2	<2	<2	<2
Nitrobenzene	µg/L	<5	<5	<5	<5	<5
Isophorone	µg/L	<5	<5	<5	<5	<5
2,4-Dimethylphenol	µg/L	<2	<2	<2	<2	<2
2-Nitrophenol	µg/L	<2	<2	<2	<2	<2
bis (2-Chloroethoxy) methane	µg/L	<5	<5	<5	<5	<5
2,4-Dichlorophenol	µg/L	<2	<2	<2	<2	<2
1,2,4-Trichlorobenzene	µg/L	<2	<2	<2	<2	<2
Naphthalene	µg/L	<2	<2	<2	<2	<2
4-Chloroaniline	µg/L	<5	<5	<5	<5	<5
4-Chloro-3-methylphenol	µg/L	<10	<10	<10	<10	<10
Hexachlorobutadiene	µg/L	<2	<2	<2	<2	<2
2-Methylnaphthalene	µg/L	<2	<2	<2	<2	<2
Hexachlorocyclopentadiene	µg/L	<5	<5	<5	<5	<5
2,4,6-Trichlorophenol	µg/L	<2	<2	<2	<2	<2
2,4,5-Trichlorophenol	µg/L	<2	<2	<2	<2	<2
2-Chloronaphthalene	µg/L	<2	<2	<2	<2	<2
2-Nitroaniline	µg/L	<5	<5	<5	<5	<5
Dimethyl phthalate	µg/L	<10	<10	<10	<10	<10
2,6-Dinitrotoluene	µg/L	<5	<5	<5	<5	<5
Acenaphthylene	µg/L	<2	<2	<2	<2	<2
3-Nitroaniline	µg/L	<5	<5	<5	<5	<5
Acenaphthene	µg/L	<2	<2	<2	<2	<2
2,4-Dinitrophenol	µg/L	<20	<20	<20	<20	<20

SVOC's in water						
Our Reference		314911-1	314911-2	314911-3	314911-4	314911-5
Your Reference	UNITS	GALC-MW18	GALC-MW17	SMW-ADD-BH02	SMW-ENV009	QC03
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water	Water
4-Nitrophenol	µg/L	<20	<20	<20	<20	<20
Dibenzofuran	µg/L	<5	<5	<5	<5	<5
Diethylphthalate	µg/L	<10	<10	<10	<10	<10
4-Chlorophenylphenylether	µg/L	<5	<5	<5	<5	<5
4-Nitroaniline	µg/L	<5	<5	<5	<5	<5
Fluorene	µg/L	<2	<2	<2	<2	<2
2-methyl-4,6-dinitrophenol	µg/L	<20	<20	<20	<20	<20
Azobenzene	µg/L	<5	<5	<5	<5	<5
4-Bromophenylphenylether	µg/L	<5	<5	<5	<5	<5
Hexachlorobenzene	µg/L	<2	<2	<2	<2	<2
Pentachlorophenol	µg/L	<10	<10	<10	<10	<10
Phenanthrene	µg/L	<2	<2	<2	<2	<2
Anthracene	µg/L	<2	<2	<2	<2	<2
Carbazole	µg/L	<5	<5	<5	<5	<5
Di-n-butylphthalate	µg/L	<10	<10	<10	<10	<10
Fluoranthene	µg/L	<2	<2	<2	<2	<2
Pyrene	µg/L	<2	<2	<2	<2	<2
Butylbenzylphthalate	µg/L	<10	<10	<10	<10	<10
Bis(2-ethylhexyl) phthalate	µg/L	<50	<50	<50	<50	<50
Benzo(a)anthracene	µg/L	<2	<2	<2	<2	<2
Chrysene	µg/L	<2	<2	<2	<2	<2
Di-n-octylphthalate	µg/L	<10	<10	<10	<10	<10
Benzo(b,j+k)fluoranthene	µg/L	<4	<4	<4	<4	<4
Benzo(a)pyrene	µg/L	<2	<2	<2	<2	<2
Indeno(1,2,3-c,d)pyrene	µg/L	<2	<2	<2	<2	<2
Dibenzo(a,h)anthracene	µg/L	<2	<2	<2	<2	<2
Benzo(g,h,i)perylene	µg/L	<2	<2	<2	<2	<2
Ethylmethanesulfonate	µg/L	<5	<5	<5	<5	<5
Aniline	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	µg/L	<2	<2	<2	<2	<2
Benzyl alcohol	µg/L	<5	<5	<5	<5	<5
Acetophenone	µg/L	10	330	<5	<5	<5
N-nitrosomorpholine	µg/L	<5	<5	<5	<5	<5
N-nitrosopiperidine	µg/L	<5	<5	<5	<5	<5
2,6-Dichlorophenol	µg/L	<2	<2	<2	<2	<2
Hexachloropropene-1	µg/L	<2	<2	<2	<2	<2
N-nitroso-n-butylamine	µg/L	<5	<5	<5	<5	<5

SVOC's in water						
Our Reference		314911-1	314911-2	314911-3	314911-4	314911-5
Your Reference	UNITS	GALC-MW18	GALC-MW17	SMW-ADD-BH02	SMW-ENV009	QC03
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water	Water
Safrole	µg/L	<5	<5	<5	<5	<5
1,2,4,5-Tetrachlorobenzene	µg/L	<2	<2	<2	<2	<2
Trans/Cis-iso-safrole	µg/L	<5	<5	<5	<5	<5
1,3-Dinitrobenzene	µg/L	<5	<5	<5	<5	<5
Pentachlorobenzene	µg/L	<2	<2	<2	<2	<2
1-Naphthylamine	µg/L	<5	<5	<5	<5	<5
2,3,4,6-Tetrachlorophenol	µg/L	<2	<2	<2	<2	<2
2-Naphthylamine	µg/L	<5	<5	<5	<5	<5
5-Nitro-o-toluidine	µg/L	<5	<5	<5	<5	<5
Diphenylamine	µg/L	<5	<5	<5	<5	<5
Phenacetin	µg/L	<5	<5	<5	<5	<5
Pentachloronitrobenzene	µg/L	<5	<5	<5	<5	<5
Dinoseb	µg/L	<10	<10	<10	<10	<10
Methapyrilene	µg/L	<10	<10	<10	<10	<10
p-Dimethylaminoazobenzene	µg/L	<5	<5	<5	<5	<5
2-Acetylaminofluorene	µg/L	<2	<2	<2	<2	<2
7,12-Dimethylbenz(a)anthracene	µg/L	<2	<2	<2	<2	<2
3-Methylcholanthrene	µg/L	<2	<2	<2	<2	<2
a-BHC	µg/L	<2	<2	<2	<2	<2
b-BHC	µg/L	<2	<2	<2	<2	<2
g-BHC	µg/L	<2	<2	<2	<2	<2
d-BHC	µg/L	<2	<2	<2	<2	<2
Heptachlor	µg/L	<2	<2	<2	<2	<2
Aldrin	µg/L	<2	<2	<2	<2	<2
Heptachlor Epoxide	µg/L	<2	<2	<2	<2	<2
g-Chlordane	µg/L	<2	<2	<2	<2	<2
a-Chlordane	µg/L	<2	<2	<2	<2	<2
Endosulfan I	µg/L	<2	<2	<2	<2	<2
p,p'-DDE	µg/L	<2	<2	<2	<2	<2
Dieldrin	µg/L	<2	<2	<2	<2	<2
Endrin	µg/L	<2	<2	<2	<2	<2
p,p'-DDD	µg/L	<2	<2	<2	<2	<2
Endosulfan II	µg/L	<2	<2	<2	<2	<2
Endrin Aldehyde	µg/L	<2	<2	<2	<2	<2
p,p'-DDT	µg/L	<2	<2	<2	<2	<2
Endosulfan Sulphate	µg/L	<2	<2	<2	<2	<2
Endrin Ketone	µg/L	<2	<2	<2	<2	<2

SVOC's in water						
Our Reference		314911-1	314911-2	314911-3	314911-4	314911-5
Your Reference	UNITS	GALC-MW18	GALC-MW17	SMW-ADD-BH02	SMW-ENV009	QC03
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water	Water
Methoxychlor	µg/L	<2	<2	<2	<2	<2
Dichlorvos	µg/L	<2	<2	<2	<2	<2
Mevinphos	µg/L	<2	<2	<2	<2	<2
Phorate	µg/L	<2	<2	<2	<2	<2
Dimethoate	µg/L	<2	<2	<2	<2	<2
Diazinon (dimpylate)	µg/L	<2	<2	<2	<2	<2
Disulfoton	µg/L	<2	<2	<2	<2	<2
Chloropyriphos-methyl	µg/L	<2	<2	<2	<2	<2
Parathion-methyl	µg/L	<2	<2	<2	<2	<2
Ronnel (fenchlorphos)	µg/L	<2	<2	<2	<2	<2
Fenitrothion	µg/L	<2	<2	<2	<2	<2
Malathion (Maldison)	µg/L	<2	<2	<2	<2	<2
Chloropyriphos	µg/L	<2	<2	<2	<2	<2
Fenthion	µg/L	<2	<2	<2	<2	<2
Parathion (parathion-ethyl)	µg/L	<2	<2	<2	<2	<2
Bromophos Ethyl	µg/L	<2	<2	<2	<2	<2
Methidathion	µg/L	<2	<2	<2	<2	<2
Fenamiphos (Phenamiphos)	µg/L	<2	<2	<2	<2	<2
Ethion	µg/L	<2	<2	<2	<2	<2
Phosalone	µg/L	<2	<2	<2	<2	<2
Azinphos methyl (Guthion)	µg/L	<2	<2	<2	<2	<2
Coumaphos (Co-Ral)	µg/L	<2	<2	<2	<2	<2
Surrogate 2-fluorophenol	%	58	49	49	65	57
Surrogate Phenol-d_6	%	43	35	32	49	40
Surrogate Nitrobenzene-d_5	%	89	79	74	83	85
Surrogate 2-fluorobiphenyl	%	84	81	66	79	86
Surrogate 2,4,6-Tribromophenol	%	83	56	64	77	74
Surrogate p-Terphenyl-d_{14}	%	75	72	62	70	82

SVOC's in water		
Our Reference		314911-9
Your Reference	UNITS	SMW-ENV039
Date Sampled		19/01/2023
Type of sample		Water
Date extracted	-	30/01/2023
Date analysed	-	30/01/2023
Phenol	µg/L	<2
Bis (2-chloroethyl) ether	µg/L	<5
2-Chlorophenol	µg/L	<2
1,3-Dichlorobenzene	µg/L	<2
1,4-Dichlorobenzene	µg/L	<2
2-Methylphenol	µg/L	<2
1,2-Dichlorobenzene	µg/L	<2
bis-(2-Chloroisopropyl) ether	µg/L	<5
3/4-Methylphenol	µg/L	<4
N-nitrosodi-n-propylamine	µg/L	<5
Hexachloroethane	µg/L	<2
Nitrobenzene	µg/L	<5
Isophorone	µg/L	<5
2,4-Dimethylphenol	µg/L	<2
2-Nitrophenol	µg/L	<2
bis (2-Chloroethoxy) methane	µg/L	<5
2,4-Dichlorophenol	µg/L	<2
1,2,4-Trichlorobenzene	µg/L	<2
Naphthalene	µg/L	<2
4-Chloroaniline	µg/L	<5
4-Chloro-3-methylphenol	µg/L	<10
Hexachlorobutadiene	µg/L	<2
2-Methylnaphthalene	µg/L	<2
Hexachlorocyclopentadiene	µg/L	<5
2,4,6-Trichlorophenol	µg/L	<2
2,4,5-Trichlorophenol	µg/L	<2
2-Chloronaphthalene	µg/L	<2
2-Nitroaniline	µg/L	<5
Dimethyl phthalate	µg/L	<10
2,6-Dinitrotoluene	µg/L	<5
Acenaphthylene	µg/L	<2
3-Nitroaniline	µg/L	<5
Acenaphthene	µg/L	<2
2,4-Dinitrophenol	µg/L	<20

SVOC's in water		
Our Reference	UNITS	314911-9
Your Reference		SMW-ENV039
Date Sampled		19/01/2023
Type of sample		Water
4-Nitrophenol	µg/L	<20
Dibenzofuran	µg/L	<5
Diethylphthalate	µg/L	<10
4-Chlorophenylphenylether	µg/L	<5
4-Nitroaniline	µg/L	<5
Fluorene	µg/L	<2
2-methyl-4,6-dinitrophenol	µg/L	<20
Azobenzene	µg/L	<5
4-Bromophenylphenylether	µg/L	<5
Hexachlorobenzene	µg/L	<2
Pentachlorophenol	µg/L	<10
Phenanthrene	µg/L	<2
Anthracene	µg/L	<2
Carbazole	µg/L	<5
Di-n-butylphthalate	µg/L	<10
Fluoranthene	µg/L	<2
Pyrene	µg/L	<2
Butylbenzylphthalate	µg/L	<10
Bis(2-ethylhexyl) phthalate	µg/L	<50
Benzo(a)anthracene	µg/L	<2
Chrysene	µg/L	<2
Di-n-octylphthalate	µg/L	<10
Benzo(b,j+k)fluoranthene	µg/L	<4
Benzo(a)pyrene	µg/L	<2
Indeno(1,2,3-c,d)pyrene	µg/L	<2
Dibenzo(a,h)anthracene	µg/L	<2
Benzo(g,h,i)perylene	µg/L	<2
Ethylmethanesulfonate	µg/L	<5
Aniline	µg/L	<5
Pentachloroethane	µg/L	<2
Benzyl alcohol	µg/L	<5
Acetophenone	µg/L	<5
N-nitrosomorpholine	µg/L	<5
N-nitrosopiperidine	µg/L	<5
2,6-Dichlorophenol	µg/L	<2
Hexachloropropene-1	µg/L	<2
N-nitroso-n-butylamine	µg/L	<5

SVOC's in water		
Our Reference		314911-9
Your Reference	UNITS	SMW-ENV039
Date Sampled		19/01/2023
Type of sample		Water
Safrole	µg/L	<5
1,2,4,5-Tetrachlorobenzene	µg/L	<2
Trans/Cis-iso-safrole	µg/L	<5
1,3-Dinitrobenzene	µg/L	<5
Pentachlorobenzene	µg/L	<2
1-Naphthylamine	µg/L	<5
2,3,4,6-Tetrachlorophenol	µg/L	<2
2-Naphthylamine	µg/L	<5
5-Nitro-o-toluidine	µg/L	<5
Diphenylamine	µg/L	<5
Phenacetin	µg/L	<5
Pentachloronitrobenzene	µg/L	<5
Dinoseb	µg/L	<10
Methapyrilene	µg/L	<10
p-Dimethylaminoazobenzene	µg/L	<5
2-Acetylaminofluorene	µg/L	<2
7,12-Dimethylbenz(a)anthracene	µg/L	<2
3-Methylcholanthrene	µg/L	<2
a-BHC	µg/L	<2
b-BHC	µg/L	<2
g-BHC	µg/L	<2
d-BHC	µg/L	<2
Heptachlor	µg/L	<2
Aldrin	µg/L	<2
Heptachlor Epoxide	µg/L	<2
g-Chlordane	µg/L	<2
a-Chlordane	µg/L	<2
Endosulfan I	µg/L	<2
p,p'-DDE	µg/L	<2
Dieldrin	µg/L	<2
Endrin	µg/L	<2
p,p'-DDD	µg/L	<2
Endosulfan II	µg/L	<2
Endrin Aldehyde	µg/L	<2
p,p'-DDT	µg/L	<2
Endosulfan Sulphate	µg/L	<2
Endrin Ketone	µg/L	<2

SVOC's in water		
Our Reference		314911-9
Your Reference	UNITS	SMW-ENV039
Date Sampled		19/01/2023
Type of sample		Water
Methoxychlor	µg/L	<2
Dichlorvos	µg/L	<2
Mevinphos	µg/L	<2
Phorate	µg/L	<2
Dimethoate	µg/L	<2
Diazinon (dimpylate)	µg/L	<2
Disulfoton	µg/L	<2
Chloropyriphos-methyl	µg/L	<2
Parathion-methyl	µg/L	<2
Ronnel (fenchlorphos)	µg/L	<2
Fenitrothion	µg/L	<2
Malathion (Maldison)	µg/L	<2
Chloropyriphos	µg/L	<2
Fenthion	µg/L	<2
Parathion (parathion-ethyl)	µg/L	<2
Bromophos Ethyl	µg/L	<2
Methidathion	µg/L	<2
Fenamiphos (Phenamiphos)	µg/L	<2
Ethion	µg/L	<2
Phosalone	µg/L	<2
Azinphos methyl (Guthion)	µg/L	<2
Coumaphos (Co-Ral)	µg/L	<2
Surrogate 2-fluorophenol	%	51
Surrogate Phenol-d_6	%	34
Surrogate Nitrobenzene-d_5	%	77
Surrogate 2-fluorobiphenyl	%	72
Surrogate 2,4,6-Tribromophenol	%	66
Surrogate p-Terphenyl-d_{14}	%	68

vTRH(C6-C10)/BTEXN in Water						
Our Reference		314911-1	314911-2	314911-3	314911-4	314911-5
Your Reference	UNITS	GALC-MW18	GALC-MW17	SMW-ADD-BH02	SMW-ENV009	QC03
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	24/01/2023	24/01/2023	24/01/2023	24/01/2023	24/01/2023
Date analysed	-	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	99	91	99	99	98
Surrogate toluene-d8	%	100	99	100	98	99
Surrogate 4-BFB	%	102	105	102	102	102

vTRH(C6-C10)/BTEXN in Water					
Our Reference		314911-6	314911-7	314911-8	314911-9
Your Reference	UNITS	RS04	TS05	TB05	SMW-ENV039
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	24/01/2023	24/01/2023	24/01/2023	24/01/2023
Date analysed	-	25/01/2023	25/01/2023	25/01/2023	25/01/2023
TRH C_6 - C_9	µg/L	<10	[NA]	<10	<10
TRH C_6 - C_{10}	µg/L	<10	[NA]	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	[NA]	<10	<10
Benzene	µg/L	<1	114%	<1	<1
Toluene	µg/L	<1	116%	6	<1
Ethylbenzene	µg/L	<1	115%	<1	<1
m+p-xylene	µg/L	<2	112%	<2	<2
o-xylene	µg/L	<1	111%	<1	<1
Naphthalene	µg/L	<1	[NA]	<1	<1
Surrogate Dibromofluoromethane	%	97	104	99	100
Surrogate toluene-d8	%	97	101	100	98
Surrogate 4-BFB	%	102	101	103	103

svTRH (C10-C40) in Water						
Our Reference		314911-1	314911-2	314911-3	314911-4	314911-5
Your Reference	UNITS	GALC-MW18	GALC-MW17	SMW-ADD-BH02	SMW-ENV009	QC03
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	30/01/2023	30/01/2023	30/01/2023	30/01/2023	30/01/2023
Date analysed	-	31/01/2023	31/01/2023	31/01/2023	31/01/2023	31/01/2023
TRH C_{10} - C_{14}	µg/L	110	770	89	<50	<50
TRH C_{15} - C_{28}	µg/L	210	420	220	220	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	310	1,200	300	220	<50
TRH >C_{10} - C_{16}	µg/L	120	860	130	50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	120	860	130	50	<50
TRH >C_{16} - C_{34}	µg/L	180	330	200	250	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	300	1,200	330	300	<50
Surrogate o-Terphenyl	%	96	82	76	84	81

svTRH (C10-C40) in Water		
Our Reference		314911-9
Your Reference	UNITS	SMW-ENV039
Date Sampled		19/01/2023
Type of sample		Water
Date extracted	-	30/01/2023
Date analysed	-	31/01/2023
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
Total +ve TRH (C10-C36)	µg/L	<50
TRH >C_{10} - C_{16}	µg/L	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Total +ve TRH (>C10-C40)	µg/L	<50
Surrogate o-Terphenyl	%	84

PAHs in Water						
Our Reference	UNITS	314911-1	314911-2	314911-3	314911-4	314911-5
Your Reference		GALC-MW18	GALC-MW17	SMW-ADD-BH02	SMW-ENV009	QC03
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	30/01/2023	30/01/2023	30/01/2023	30/01/2023	30/01/2023
Date analysed	-	30/01/2023	30/01/2023	30/01/2023	30/01/2023	30/01/2023
Naphthalene	µg/L	<1	<1	<1	<1	<1
Acenaphthylene	µg/L	<1	<1	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1	<1	<1
Fluorene	µg/L	<1	<1	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1	<1	<1
Anthracene	µg/L	<1	<1	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1	<1	<1
Pyrene	µg/L	<1	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1	<1	<1
Chrysene	µg/L	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	75	72	62	70	82

PAHs in Water		
Our Reference		314911-9
Your Reference	UNITS	SMW-ENV039
Date Sampled		19/01/2023
Type of sample		Water
Date extracted	-	30/01/2023
Date analysed	-	30/01/2023
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b,j+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	68

Organochlorine Pesticides in Water						
Our Reference	UNITS	314911-1	314911-2	314911-3	314911-4	314911-5
Your Reference		GALC-MW18	GALC-MW17	SMW-ADD-BH02	SMW-ENV009	QC03
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	30/01/2023	30/01/2023	30/01/2023	30/01/2023	30/01/2023
Date analysed	-	30/01/2023	30/01/2023	30/01/2023	30/01/2023	30/01/2023
alpha-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
HCB	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	80	77	67	79	76

Organochlorine Pesticides in Water		
Our Reference		314911-9
Your Reference	UNITS	SMW-ENV039
Date Sampled		19/01/2023
Type of sample		Water
Date extracted	-	30/01/2023
Date analysed	-	30/01/2023
alpha-BHC	µg/L	<0.2
HCB	µg/L	<0.2
beta-BHC	µg/L	<0.2
gamma-BHC	µg/L	<0.2
Heptachlor	µg/L	<0.2
delta-BHC	µg/L	<0.2
Aldrin	µg/L	<0.2
Heptachlor Epoxide	µg/L	<0.2
gamma-Chlordane	µg/L	<0.2
alpha-Chlordane	µg/L	<0.2
Endosulfan I	µg/L	<0.2
pp-DDE	µg/L	<0.2
Dieldrin	µg/L	<0.2
Endrin	µg/L	<0.2
Endosulfan II	µg/L	<0.2
pp-DDD	µg/L	<0.2
Endrin Aldehyde	µg/L	<0.2
pp-DDT	µg/L	<0.2
Endosulfan Sulphate	µg/L	<0.2
Methoxychlor	µg/L	<0.2
Surrogate TCMX	%	71

OP Pesticides in Water						
Our Reference		314911-1	314911-2	314911-3	314911-4	314911-5
Your Reference	UNITS	GALC-MW18	GALC-MW17	SMW-ADD-BH02	SMW-ENV009	QC03
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	30/01/2023	30/01/2023	30/01/2023	30/01/2023	30/01/2023
Date analysed	-	30/01/2023	30/01/2023	30/01/2023	30/01/2023	30/01/2023
Dichlorvos	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	80	77	67	79	76

OP Pesticides in Water		
Our Reference		314911-9
Your Reference	UNITS	SMW-ENV039
Date Sampled		19/01/2023
Type of sample		Water
Date extracted	-	30/01/2023
Date analysed	-	30/01/2023
Dichlorvos	µg/L	<0.2
Dimethoate	µg/L	<0.2
Diazinon	µg/L	<0.2
Chlorpyriphos-methyl	µg/L	<0.2
Ronnel	µg/L	<0.2
Fenitrothion	µg/L	<0.2
Malathion	µg/L	<0.2
Chlorpyriphos	µg/L	<0.2
Parathion	µg/L	<0.2
Bromophos ethyl	µg/L	<0.2
Ethion	µg/L	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2
Surrogate TCMX	%	71

HM in water - dissolved						
Our Reference		314911-1	314911-2	314911-3	314911-4	314911-5
Your Reference	UNITS	GALC-MW18	GALC-MW17	SMW-ADD-BH02	SMW-ENV009	QC03
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	24/01/2023	24/01/2023	24/01/2023	24/01/2023	24/01/2023
Date analysed	-	24/01/2023	24/01/2023	24/01/2023	24/01/2023	24/01/2023
Arsenic-Dissolved	µg/L	<1	2	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	13	<1	<1	<1
Copper-Dissolved	µg/L	<1	14	9	<1	<1
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	1	5	4	<1	<1
Zinc-Dissolved	µg/L	<1	1	82	<1	<1
Barium-Dissolved	µg/L	38	630	6	740	730
Beryllium-Dissolved	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt-Dissolved	µg/L	5	7	<1	<1	<1
Manganese-Dissolved	µg/L	900	<5	11	930	970
Selenium-Dissolved	µg/L	<1	2	<1	<1	<1

HM in water - dissolved			
Our Reference		314911-6	314911-9
Your Reference	UNITS	RS04	SMW-ENV039
Date Sampled		19/01/2023	19/01/2023
Type of sample		Water	Water
Date prepared	-	24/01/2023	24/01/2023
Date analysed	-	24/01/2023	24/01/2023
Arsenic-Dissolved	µg/L	<1	4
Cadmium-Dissolved	µg/L	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1
Copper-Dissolved	µg/L	<1	2
Lead-Dissolved	µg/L	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05
Nickel-Dissolved	µg/L	<1	3
Zinc-Dissolved	µg/L	1	9
Barium-Dissolved	µg/L	<1	34
Beryllium-Dissolved	µg/L	<0.5	<0.5
Cobalt-Dissolved	µg/L	<1	26
Manganese-Dissolved	µg/L	<5	1,400
Selenium-Dissolved	µg/L	<1	<1

Metals in Waters - Acid extractable						
Our Reference		314911-1	314911-2	314911-3	314911-4	314911-5
Your Reference	UNITS	GALC-MW18	GALC-MW17	SMW-ADD-BH02	SMW-ENV009	QC03
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023
Date analysed	-	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023
Phosphorus - Total	mg/L	<0.05	0.1	0.1	0.3	0.4

Metals in Waters - Acid extractable		
Our Reference		314911-9
Your Reference	UNITS	SMW-ENV039
Date Sampled		19/01/2023
Type of sample		Water
Date prepared	-	25/01/2023
Date analysed	-	25/01/2023
Phosphorus - Total	mg/L	0.06

Ion Balance						
Our Reference		314911-1	314911-2	314911-3	314911-4	314911-5
Your Reference	UNITS	GALC-MW18	GALC-MW17	SMW-ADD-BH02	SMW-ENV009	QC03
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
Date analysed	-	23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
Calcium - Dissolved	mg/L	55	190	4	110	110
Potassium - Dissolved	mg/L	6.7	230	1	16	16
Sodium - Dissolved	mg/L	2,000	1,200	13	210	220
Magnesium - Dissolved	mg/L	97	0.7	1	53	53
Hardness	mgCaCO 3 /L	540	470	14	490	490
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5	<5	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	310	320	16	720	730
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	69	<5	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	310	390	16	720	730
Sulphate, SO4	mg/L	630	220	5	49	50
Chloride, Cl	mg/L	2,500	2,900	30	180	190
Ionic Balance	%	4.0	-18	-17	-3.0	-3.0

Ion Balance		
Our Reference		314911-9
Your Reference	UNITS	SMW-ENV039
Date Sampled		19/01/2023
Type of sample		Water
Date prepared	-	23/01/2023
Date analysed	-	23/01/2023
Calcium - Dissolved	mg/L	270
Potassium - Dissolved	mg/L	19
Sodium - Dissolved	mg/L	7,100
Magnesium - Dissolved	mg/L	660
Hardness	mgCaCO 3 /L	3,400
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	420
Carbonate Alkalinity as $CaCO_3$	mg/L	<5
Total Alkalinity as $CaCO_3$	mg/L	420
Sulphate, SO4	mg/L	1,700
Chloride, Cl	mg/L	9,600
Ionic Balance	%	9.0

Miscellaneous Inorganics						
Our Reference	UNITS	314911-1	314911-2	314911-3	314911-4	314911-5
Your Reference		GALC-MW18	GALC-MW17	SMW-ADD-BH02	SMW-ENV009	QC03
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
Date analysed	-	23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
pH	pH Units	6.6	9.1	6.3	7.2	7.3
Electrical Conductivity	µS/cm	9,200	9,600	140	2,000	2,000
Total Dissolved Solids (grav)	mg/L	5,400	5,900	100	1,100	1,100
Dissolved Oxygen*	mg/L	7.6	7.8	8.0	8.1	7.7
Phosphate as P in water	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	0.02	<0.005	<0.005	<0.005
Trivalent Chromium	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Ammonia as N in water	mg/L	<0.005	0.40	0.028	9.6	10
Nitrate as N in water	mg/L	<0.005	0.70	0.35	<0.005	<0.005
Nitrite as N in water	mg/L	<0.005	0.012	0.008	<0.005	<0.005
NOx as N in water	mg/L	<0.005	0.70	0.4	<0.005	<0.005
Total Nitrogen in water	mg/L	0.2	1.4	0.6	12	11
TKN in water	mg/L	0.2	0.7	0.2	12	11
Organic Nitrogen as N	mg/L	<0.2	<0.2	<0.2	2.1	1.1
Redox Potential*	mV	240	218	219	251	241

Miscellaneous Inorganics		
Our Reference		314911-9
Your Reference	UNITS	SMW-ENV039
Date Sampled		19/01/2023
Type of sample		Water
Date prepared	-	23/01/2023
Date analysed	-	23/01/2023
pH	pH Units	6.7
Electrical Conductivity	µS/cm	31,000
Total Dissolved Solids (grav)	mg/L	22,000
Dissolved Oxygen*	mg/L	7.6
Phosphate as P in water	mg/L	<0.005
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005
Trivalent Chromium	mg/L	<0.005
Ammonia as N in water	mg/L	0.90
Nitrate as N in water	mg/L	<0.005
Nitrite as N in water	mg/L	<0.005
NOx as N in water	mg/L	<0.005
Total Nitrogen in water	mg/L	0.7
TKN in water	mg/L	0.7
Organic Nitrogen as N	mg/L	<0.2
Redox Potential*	mV	280

Acid Herbicides in Water						
Our Reference		314911-1	314911-2	314911-3	314911-4	314911-5
Your Reference	UNITS	GALC-MW18	GALC-MW17	SMW-ADD-BH02	SMW-ENV009	QC03
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	24/01/2023	24/01/2023	24/01/2023	24/01/2023	24/01/2023
Date analysed	-	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023
Clopyralid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
3,5-Dichlorobenzoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
o-chlorophenoxy acetic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4-CPA	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Dicamba	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MCPP	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MCPA	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorprop	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoxynil	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Triclopyr	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-TP	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-T	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MCPB	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Dinoseb	µg/L	<1	<1	<1	<1	<1
2,4-DB	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ioxynil	µg/L	<1	<1	<1	<1	<1
Picloram	µg/L	<1	<1	<1	<1	<1
Acifluorfen	µg/L	<2	<2	<2	<2	<2
2,4,6-T	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-D	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bentazon	µg/L	<1	<1	<1	<1	<1
Chloramben	µg/L	<1	<1	<1	<1	<1
Fluroxypyr	µg/L	<1	<1	<1	<1	<1
Surrogate 2.4- DCPA	%	86	84	88	84	82

Acid Herbicides in Water		
Our Reference		314911-9
Your Reference	UNITS	SMW-ENV039
Date Sampled		19/01/2023
Type of sample		Water
Date extracted	-	24/01/2023
Date analysed	-	25/01/2023
Clopyralid	µg/L	<0.5
3,5-Dichlorobenzoic acid	µg/L	<0.5
o-chlorophenoxy acetic acid	µg/L	<0.5
4-CPA	µg/L	<0.5
Dicamba	µg/L	<0.5
MCPP	µg/L	<0.5
MCPA	µg/L	<0.5
Dichlorprop	µg/L	<0.5
2,4-D	µg/L	<0.5
Bromoxynil	µg/L	<0.5
Triclopyr	µg/L	<0.5
2,4,5-TP	µg/L	<0.5
2,4,5-T	µg/L	<0.5
MCPB	µg/L	<0.5
Dinoseb	µg/L	<1
2,4-DB	µg/L	<0.5
Ioxynil	µg/L	<1
Picloram	µg/L	<1
Acifluorfen	µg/L	<2
2,4,6-T	µg/L	<0.5
2,6-D	µg/L	<0.5
Bentazon	µg/L	<1
Chloramben	µg/L	<1
Fluroxypyr	µg/L	<1
Surrogate 2.4- DCPA	%	68

Triazine Herbicides in Water						
Our Reference		314911-1	314911-2	314911-3	314911-4	314911-5
Your Reference	UNITS	GALC-MW18	GALC-MW17	SMW-ADD-BH02	SMW-ENV009	QC03
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	30/01/2023	30/01/2023	30/01/2023	30/01/2023	30/01/2023
Date analysed	-	30/01/2023	30/01/2023	30/01/2023	30/01/2023	30/01/2023
Atrazine	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Ametryn	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Cyanazine	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Hexazinone	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Irgarol	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Metribuzin	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Prometryn	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Propazine	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Simazine	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Terbutryn	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Terbuthylazine	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Surrogate p-Terphenyl-d14	%	75	72	62	70	82

Triazine Herbicides in Water		
Our Reference		314911-9
Your Reference	UNITS	SMW-ENV039
Date Sampled		19/01/2023
Type of sample		Water
Date extracted	-	30/01/2023
Date analysed	-	30/01/2023
Atrazine	mg/L	<0.002
Ametryn	mg/L	<0.002
Cyanazine	mg/L	<0.002
Hexazinone	mg/L	<0.002
Irgarol	mg/L	<0.002
Metribuzin	mg/L	<0.002
Prometryn	mg/L	<0.002
Propazine	mg/L	<0.002
Simazine	mg/L	<0.002
Terbutryn	mg/L	<0.002
Terbuthylazine	mg/L	<0.002
Surrogate p-Terphenyl-d14	%	68

PFAS in Waters Extended						
Our Reference		314911-1	314911-2	314911-3	314911-4	314911-5
Your Reference	UNITS	GALC-MW18	GALC-MW17	SMW-ADD-BH02	SMW-ENV009	QC03
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
Date analysed	-	23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	0.01	0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	<0.01	0.01	0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01	0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	0.04	0.04
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	98	99	101	102	100
Surrogate $^{13}C_2$ *PFOA*	%	120	122	119	126	123
Extracted ISTD $^{13}C_3$ *PFBS*	%	100	104	107	100	98
Extracted ISTD $^{18}O_2$ *PFHxS*	%	107	109	114	112	112
Extracted ISTD $^{13}C_4$ *PFOS*	%	102	108	108	106	110
Extracted ISTD $^{13}C_4$ *PFBA*	%	66	86	115	65	67

PFAS in Waters Extended						
Our Reference	UNITS	314911-1	314911-2	314911-3	314911-4	314911-5
Your Reference		GALC-MW18	GALC-MW17	SMW-ADD-BH02	SMW-ENV009	QC03
Date Sampled		19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	95	102	115	105	105
Extracted ISTD $^{13}C_2$ *PFHxA*	%	102	104	112	112	119
Extracted ISTD $^{13}C_4$ *PFHpA*	%	105	109	109	113	113
Extracted ISTD $^{13}C_4$ *PFOA*	%	104	104	110	106	107
Extracted ISTD $^{13}C_5$ *PFNA*	%	102	114	114	115	114
Extracted ISTD $^{13}C_2$ *PFDA*	%	108	121	118	122	123
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	96	120	126	123	127
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	89	115	116	108	116
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	55	90	101	79	89
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	95	104	122	128	129
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	105	108	123	133	134
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	115	106	116	120	115
Extracted ISTD $^{13}C_8$ *FOSA*	%	110	103	101	106	107
Extracted ISTD d_3 *N MeFOSA*	%	102	96	94	99	102
Extracted ISTD d_5 *N EtFOSA*	%	90	104	99	100	102
Extracted ISTD d_7 *N MeFOSE*	%	107	121	118	122	122
Extracted ISTD d_9 *N EtFOSE*	%	95	106	102	106	106
Extracted ISTD d_3 *N MeFOSAA*	%	91	96	116	113	116
Extracted ISTD d_5 *N EtFOSAA*	%	88	101	111	108	110
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01	0.02	0.01
Total Positive PFOA & PFOS	µg/L	<0.01	<0.01	<0.01	0.01	0.01
Total Positive PFAS	µg/L	<0.01	<0.01	<0.01	0.07	0.08

PFAS in Waters Extended		
Our Reference		314911-9
Your Reference	UNITS	SMW-ENV039
Date Sampled		19/01/2023
Type of sample		Water
Date prepared	-	23/01/2023
Date analysed	-	23/01/2023
Perfluorobutanesulfonic acid	µg/L	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02
Perfluorobutanoic acid	µg/L	<0.02
Perfluoropentanoic acid	µg/L	<0.02
Perfluorohexanoic acid	µg/L	<0.01
Perfluoroheptanoic acid	µg/L	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01
Perfluorononanoic acid	µg/L	<0.01
Perfluorodecanoic acid	µg/L	<0.02
Perfluoroundecanoic acid	µg/L	<0.02
Perfluorododecanoic acid	µg/L	<0.05
Perfluorotridecanoic acid	µg/L	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5
4:2 FTS	µg/L	<0.01
6:2 FTS	µg/L	<0.01
8:2 FTS	µg/L	<0.02
10:2 FTS	µg/L	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	100
Surrogate $^{13}C_2$ *PFOA*	%	124
Extracted ISTD $^{13}C_3$ *PFBS*	%	92
Extracted ISTD $^{18}O_2$ *PFHxS*	%	110
Extracted ISTD $^{13}C_4$ *PFOS*	%	106
Extracted ISTD $^{13}C_4$ *PFBA*	%	84

PFAS in Waters Extended		
Our Reference		314911-9
Your Reference	UNITS	SMW-ENV039
Date Sampled		19/01/2023
Type of sample		Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	90
Extracted ISTD $^{13}C_2$ *PFHxA*	%	94
Extracted ISTD $^{13}C_4$ *PFHpA*	%	99
Extracted ISTD $^{13}C_4$ *PFOA*	%	96
Extracted ISTD $^{13}C_5$ *PFNA*	%	103
Extracted ISTD $^{13}C_2$ *PFDA*	%	107
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	106
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	97
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	70
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	65
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	91
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	100
Extracted ISTD $^{13}C_8$ *FOSA*	%	99
Extracted ISTD d_3 *N MeFOSA*	%	98
Extracted ISTD d_5 *N EtFOSA*	%	96
Extracted ISTD d_7 *N MeFOSE*	%	120
Extracted ISTD d_9 *N EtFOSE*	%	99
Extracted ISTD d_3 *N MeFOSAA*	%	78
Extracted ISTD d_5 *N EtFOSAA*	%	79
Total Positive PFHxS & PFOS	µg/L	<0.01
Total Positive PFOA & PFOS	µg/L	<0.01
Total Positive PFAS	µg/L	<0.01

Method ID	Methodology Summary
Ext-061	Analysed by Envirolab Melbourne
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Inorg-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation below:- TDS = EC * 0.6
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Inorg-035	Analysed using an electrode. Please note that the results for water analyses are indicative only, samples are ideally analysed on collection.
Inorg-040	The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% ie total anions = total cations +/-15%.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Inorg-112	Dissolved Oxygen using membrane electrode. Note this analysis should ideally be carried out immediately after sampling.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			24/01/2023	1	24/01/2023	25/01/2023		24/01/2023	[NT]
Date analysed	-			25/01/2023	1	25/01/2023	25/01/2023		25/01/2023	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	118	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	1	<1	<1	0	119	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	112	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	'	1	<1	<1	0	117	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	110	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	115	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	1	1	1	0	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	116	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	114	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	98	1	99	100	1	96	[NT]
Surrogate toluene-d8	%		Org-023	99	1	100	98	2	97	[NT]
Surrogate 4-BFB	%		Org-023	101	1	102	99	3	103	[NT]

QUALITY CONTROL: SVOC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	314911-2
Date extracted	-			30/01/2023	1	30/01/2023	30/01/2023		30/01/2023	30/01/2023
Date analysed	-			30/01/2023	1	30/01/2023	30/01/2023		30/01/2023	30/01/2023
Phenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	36	28
Bis (2-chloroethyl) ether	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2-Chlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	73	51
1,3-Dichlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
1,4-Dichlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	63	65
2-Methylphenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	67	63
1,2-Dichlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
bis-(2-Chloroisopropyl) ether	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
3/4-Methylphenol	µg/L	4	Org-022/025	<4	1	<4	<4	0	[NT]	[NT]
N-nitrosodi-n-propylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Hexachloroethane	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Nitrobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Isophorone	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,4-Dimethylphenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2-Nitrophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
bis (2-Chloroethoxy) methane	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,4-Dichlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
1,2,4-Trichlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Naphthalene	µg/L	2	Org-022/025	<2	1	<2	<2	0	86	76
4-Chloroaniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
4-Chloro-3-methylphenol	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2-Methylnaphthalene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Hexachlorocyclopentadiene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,4,6-Trichlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2,4,5-Trichlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2-Chloronaphthalene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2-Nitroaniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Dimethyl phthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	86	68
2,6-Dinitrotoluene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Acenaphthylene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
3-Nitroaniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Acenaphthene	µg/L	2	Org-022/025	<2	1	<2	<2	0	93	87
2,4-Dinitrophenol	µg/L	20	Org-022/025	<20	1	<20	<20	0	[NT]	[NT]
4-Nitrophenol	µg/L	20	Org-022/025	<20	1	<20	<20	0	30	40
Dibenzofuran	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Diethylphthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	89	79
4-Chlorophenylphenylether	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]

QUALITY CONTROL: SVOC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	314911-2
4-Nitroaniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Fluorene	µg/L	2	Org-022/025	<2	1	<2	<2	0	95	90
2-methyl-4,6-dinitrophenol	µg/L	20	Org-022/025	<20	1	<20	<20	0	[NT]	[NT]
Azobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
4-Bromophenylphenylether	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Hexachlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Pentachlorophenol	µg/L	10	Org-022/025	<10	1	<10	<10	0	73	[NT]
Phenanthrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	100	92
Anthracene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Carbazole	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Di-n-butylphthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Fluoranthene	µg/L	2	Org-022/025	<2	1	<2	<2	0	100	94
Pyrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	107	101
Butylbenzylphthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Bis(2-ethylhexyl) phthalate	µg/L	50	Org-022/025	<50	1	<50	<50	0	[NT]	[NT]
Benzo(a)anthracene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Chrysene	µg/L	2	Org-022/025	<2	1	<2	<2	0	67	65
Di-n-octylphthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	µg/L	4	Org-022/025	<4	1	<4	<4	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	100	92
Indeno(1,2,3-c,d)pyrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Ethylmethanesulfonate	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Aniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Pentachloroethane	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Benzyl alcohol	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Acetophenone	µg/L	5	Org-022/025	<5	1	10	10	0	[NT]	[NT]
N-nitrosomorpholine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
N-nitrosopiperidine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,6-Dichlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	96	77
Hexachloropropene-1	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
N-nitroso-n-butylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Safrole	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
1,2,4,5-Tetrachlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Trans/Cis-iso-safrole	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
1,3-Dinitrobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Pentachlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
1-Naphthylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,3,4,6-Tetrachlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]

QUALITY CONTROL: SVOC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	314911-2
2-Naphthylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
5-Nitro-o-toluidine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Diphenylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Phenacetin	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Pentachloronitrobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Dinoseb	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Methapyrilene	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
p-Dimethylaminoazobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2-Acetylaminofluorene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
7,12-Dimethylbenz(a)anthracene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
3-Methylcholanthrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
a-BHC	µg/L	2	Org-022/025	<2	1	<2	<2	0	82	78
b-BHC	µg/L	2	Org-022/025	<2	1	<2	<2	0	78	74
g-BHC	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
d-BHC	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Heptachlor	µg/L	2	Org-022/025	<2	1	<2	<2	0	71	67
Aldrin	µg/L	2	Org-022/025	<2	1	<2	<2	0	79	71
Heptachlor Epoxide	µg/L	2	Org-022/025	<2	1	<2	<2	0	76	72
g-Chlordane	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
a-Chlordane	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Endosulfan I	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
p,p'-DDE	µg/L	2	Org-022/025	<2	1	<2	<2	0	84	80
Dieldrin	µg/L	2	Org-022/025	<2	1	<2	<2	0	82	78
Endrin	µg/L	2	Org-022/025	<2	1	<2	<2	0	68	80
p,p'-DDD	µg/L	2	Org-022/025	<2	1	<2	<2	0	62	66
Endosulfan II	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Endrin Aldehyde	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
p,p'-DDT	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	2	Org-022/025	<2	1	<2	<2	0	84	90
Endrin Ketone	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Methoxychlor	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Dichlorvos	µg/L	2	Org-022/025	<2	1	<2	<2	0	97	60
Mevinphos	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Phorate	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Dimethoate	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Diazinon (dimpylate)	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Disulfoton	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Chloropyriphos-methyl	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Parathion-methyl	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]

QUALITY CONTROL: SVOC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	314911-2
Ronnel (fenchlorphos)	µg/L	2	Org-022/025	<2	1	<2	<2	0	73	69
Fenitrothion	µg/L	2	Org-022/025	<2	1	<2	<2	0	65	71
Malathion (Maldison)	µg/L	2	Org-022/025	<2	1	<2	<2	0	83	[NT]
Chloropyriphos	µg/L	2	Org-022/025	<2	1	<2	<2	0	86	80
Fenthion	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Parathion (parathion-ethyl)	µg/L	2	Org-022/025	<2	1	<2	<2	0	64	74
Bromophos Ethyl	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Methidathion	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Fenamiphos (Phenamiphos)	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Ethion	µg/L	2	Org-022/025	<2	1	<2	<2	0	76	74
Phosalone	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Azinphos methyl (Guthion)	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Coumaphos (Co-Ral)	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Surrogate 2-fluorophenol	%		Org-022/025	52	1	58	59	2	51	24
Surrogate Phenol-d_6	%		Org-022/025	31	1	43	39	10	34	30
Surrogate Nitrobenzene-d_5	%		Org-022/025	92	1	89	88	1	83	80
Surrogate 2-fluorobiphenyl	%		Org-022/025	86	1	84	81	4	90	83
Surrogate 2,4,6-Tribromophenol	%		Org-022/025	81	1	83	82	1	81	[NT]
Surrogate *p*-Terphenyl-d_{14}	%		Org-022/025	81	1	75	71	5	78	72

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			24/01/2023	1	24/01/2023	25/01/2023		24/01/2023	[NT]
Date analysed	-			25/01/2023	1	25/01/2023	25/01/2023		25/01/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	<10	<10	0	113	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	<10	<10	0	113	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	118	[NT]
Toluene	µg/L	1	Org-023	<1	1	1	1	0	112	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	113	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	115	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	114	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	98	1	99	100	1	96	[NT]
Surrogate toluene-d8	%		Org-023	99	1	100	98	2	97	[NT]
Surrogate 4-BFB	%		Org-023	101	1	102	99	3	103	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			30/01/2023	1	30/01/2023	30/01/2023		30/01/2023	[NT]
Date analysed	-			31/01/2023	1	31/01/2023	31/01/2023		31/01/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	110	92	18	112	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	210	180	15	116	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	129	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	120	97	21	112	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	180	170	6	116	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	129	[NT]
Surrogate o-Terphenyl	%		Org-020	109	1	96	80	18	115	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	314911-2
Date extracted	-			30/01/2023	1	30/01/2023	30/01/2023		30/01/2023	30/01/2023
Date analysed	-			30/01/2023	1	30/01/2023	30/01/2023		30/01/2023	30/01/2023
Naphthalene	µg/L	1	Org-022/025	<1	1	<1	<1	0	86	76
Acenaphthylene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	1	<1	<1	0	93	87
Fluorene	µg/L	1	Org-022/025	<1	1	<1	<1	0	95	90
Phenanthrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	100	92
Anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	1	<1	<1	0	100	94
Pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	107	101
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	1	<1	<1	0	67	65
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	100	92
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	81	1	75	71	5	78	72

QUALITY CONTROL: Organochlorine Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	314911-2
Date extracted	-			30/01/2023	1	30/01/2023	30/01/2023		30/01/2023	30/01/2023
Date analysed	-			30/01/2023	1	30/01/2023	30/01/2023		30/01/2023	30/01/2023
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	82	78
HCB	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	138	131
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	71	67
delta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	79	71
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	76	72
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	84	80
Dieldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	82	78
Endrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	68	80
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	62	66
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	84	90
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	84	1	80	75	6	86	78

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	314911-2
Date extracted	-			30/01/2023	1	30/01/2023	30/01/2023		30/01/2023	30/01/2023
Date analysed	-			30/01/2023	1	30/01/2023	30/01/2023		30/01/2023	30/01/2023
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	97	60
Dimethoate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	73	69
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	65	71
Malathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	83	#
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	86	80
Parathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	64	74
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	76	74
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	84	1	80	75	6	86	78

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	314911-2
Date prepared	-			24/01/2023	1	24/01/2023	24/01/2023		24/01/2023	24/01/2023
Date analysed	-			24/01/2023	1	24/01/2023	24/01/2023		24/01/2023	24/01/2023
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	95	99
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	98	97
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	95	94
Copper-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	99	95
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	101	97
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	101	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	1	1	0	98	97
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	94	91
Barium-Dissolved	µg/L	1	Metals-022	<1	1	38	38	0	96	#
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	1	<0.5	<0.5	0	82	83
Cobalt-Dissolved	µg/L	1	Metals-022	<1	1	5	5	0	94	93
Manganese-Dissolved	µg/L	5	Metals-022	<5	1	900	900	0	94	93
Selenium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	93	90

QUALITY CONTROL: Metals in Waters - Acid extractable						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			25/01/2023	1	25/01/2023	25/01/2023		25/01/2023	[NT]
Date analysed	-			25/01/2023	1	25/01/2023	25/01/2023		25/01/2023	[NT]
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	1	<0.05	0.08	46	115	[NT]

QUALITY CONTROL: Ion Balance						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	314911-2
Date prepared	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	23/01/2023
Date analysed	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	23/01/2023
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	55	56	2	94	#
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	6.7	6.8	1	89	#
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	2000	2000	0	111	#
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	97	100	3	95	85
Hardness	mgCaCO 3 /L	3	Metals-020	[NT]	1	540	550	2	[NT]	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	[NT]		[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	310	[NT]		[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	[NT]		[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	310	[NT]		99	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	1	630	620	2	90	[NT]
Chloride, Cl	mg/L	1	Inorg-081	<1	1	2500	2400	4	101	[NT]
Ionic Balance	%		Inorg-040	[NT]	1	4.0	[NT]		[NT]	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	314911-2
Date prepared	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	23/01/2023
Date analysed	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	23/01/2023
pH	pH Units		Inorg-001	[NT]	1	6.6	[NT]		99	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	1	9200	[NT]		97	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	<5	1	5400	5300	2	95	[NT]
Dissolved Oxygen*	mg/L	0.1	Inorg-112	<0.1	1	7.6	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	<0.005	1	<0.005	<0.005	0	103	109
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	<0.005	0	99	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	<0.005	<0.005	0	116	98
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	<0.005	0	108	115
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	<0.005	0	107	105
NOx as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	<0.005	0	108	115
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	0.2	[NT]		91	98
TKN in water	mg/L	0.1	Inorg-062	<0.1	1	0.2	[NT]		[NT]	[NT]
Organic Nitrogen as N	mg/L	0.2	Inorg-055/062/127	<0.2	1	<0.2	[NT]		[NT]	[NT]
Redox Potential*	mV		Inorg-035	[NT]	1	240	[NT]		87	[NT]

QUALITY CONTROL: Acid Herbicides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			24/01/2023	[NT]	[NT]	[NT]	[NT]	24/01/2023	[NT]
Date analysed	-			25/01/2023	[NT]	[NT]	[NT]	[NT]	25/01/2023	[NT]
Clopyralid	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	98	[NT]
3,5-Dichlorobenzoic acid	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
o-chlorophenoxy acetic acid	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-CPA	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dicamba	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
MCPP	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
MCPA	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dichlorprop	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-D	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	118	[NT]
Bromoxynil	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Triclopyr	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,5-TP	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,5-T	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	140	[NT]
MCPB	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dinoseb	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-DB	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ioxynil	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Picloram	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acifluorfen	µg/L	2	Ext-061	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,6-T	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,6-D	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bentazon	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloramben	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluroxypyr	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2.4- DCPA	%		Ext-061	78	[NT]	[NT]	[NT]	[NT]	74	[NT]

QUALITY CONTROL: Triazine Herbicides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	314911-2
Date extracted	-			30/01/2023	1	30/01/2023	30/01/2023		30/01/2023	30/01/2023
Date analysed	-			30/01/2023	1	30/01/2023	30/01/2023		30/01/2023	30/01/2023
Atrazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	84	80
Ametryn	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Cyanazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Hexazinone	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Irgarol	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Metribuzin	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Prometryn	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	73	87
Propazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	82	75
Simazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Terbutryn	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Terbuthylazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	81	1	75	71	5	78	72

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	[NT]
Date analysed	-			23/01/2023	1	23/01/2023	23/01/2023		23/01/2023	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	104	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	110	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	112	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	119	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	100	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	98	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	109	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	100	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	107	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	105	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	108	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	101	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	99	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	98	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	102	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	97	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	112	[NT]
4:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	111	[NT]
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	116	[NT]
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	110	[NT]
10:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	120	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	109	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	109	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	109	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	93	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	120	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	108	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	109	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	99	1	98	97	1	96	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	112	1	120	125	4	116	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	105	1	100	101	1	102	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	106	1	107	105	2	97	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	105	1	102	105	3	105	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	114	1	66	62	6	111	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	113	1	95	96	1	112	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	105	1	102	100	2	104	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	104	1	105	107	2	98	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	106	1	104	101	3	101	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	111	1	102	102	0	106	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	113	1	108	115	6	108	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	113	1	96	94	2	110	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	108	1	89	87	2	108	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	81	1	55	54	2	89	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	111	1	95	94	1	107	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	108	1	105	102	3	108	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	118	1	115	121	5	106	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	108	1	110	114	4	101	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	99	1	102	102	0	96	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	97	1	90	92	2	95	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	113	1	107	104	3	108	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	105	1	95	99	4	99	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	117	1	91	89	2	104	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	114	1	88	88	0	106	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

vTRH & BTEXN in Water NEPM - The trip spike has not been prepared/supplied by Envirolab. As such, we cannot determine the %recovery of the trip spike and the on-column result has been reported.

Acid Herbicides in Water - analysed by Envirolab VIC, report no 35529.

Total metals: no unfiltered, preserved sample was received, therefore analysis was conducted from the unpreserved sample bottle. Note: there is a possibility some elements may be underestimated.

Ion Balance:
Percent recovery is not applicable due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

8 HM in water - dissolved - # Percent recovery is not applicable due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

SVOC/OP in water - # Percent recovery for the matrix spike is not possible to report due to interference from analytes (other than those being tested) in sample/s 314911-2.

The mass inbalance may be caused by other ions that have not been measured.

Please hold for arsenic testing

~~please send QC04, and one trip blank/spike pair to~~

epic ENVIRONMENTAL

Chain of Custody Record

Project No:	SC210108.03
Project/Site:	Sydney Metro WTP
Project Manager:	Patrick Carroll
Sampled By:	JX
Phone:	426205616
Page:	1 of 1
Number of Eskies:	2

Lab:	~~Epic~~ Enviolab
Lab Quote No:	
Lab Batch No:	
Date Results Required:	
Sample Disposal After:	

LAB ID	SAMPLE ID	DATE	MATRIX	CONTAINER TYPE & PRESERVATIVE: Soil / Solid 150-250ml Glass Jar	Soil / Solid 200ml Plastic Jar	Soil / Solid - Plastic bag	Water / Liquid 2x 40ml Amber Vial	Water / Liquid 100-500ml Amber Bottle	Water / Liquid 60ml Metals	Water / Liquid 60ml Nutrients	Water / Liquid 250-500ml Plastic (Unpreserved)	Water / Liquid 60-250ml Plastic (PFAS)	Other	ANALYSIS REQUIRED: WQ Parameters: pH, EC ORP, DO, TDS, Alkalinity, Hardness	Major Ions	Extended Metals suite - UltraTrace: 15 metals NEPM Suite	Nutrients (Trace)	TRH + BTEXN	PAH	OCP / OPP	Herbicides	VOC / SVOC	PFAS	Cr speciation	CB, C10		HOLD
1	GALC_SMW18	19/1	W											X										X			
2	GALC_MW17		W											X										X			
3	SMW_ADD_BH02		W											X										X			
4	SMW_ENV009		W											X										X			
5	QC03		W											X										X			
6	RS04		W													X		X									
7	TS05		W																						X		
8	TB05		W																						X		
9	SMW_ENV039	19/1	W											X										X			
			W																				

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 315085

Client Details

Client	Epic Environmental (Sydney) Pty Ltd
Attention	Patrick Carroll
Address	Suite 5, Level 9, 189 Kent Street, SYDNEY, NSW, 2000

Sample Details

Your Reference	**SC210108.03, Sydney Metro WTP**
Number of Samples	7 Water
Date samples received	24/01/2023
Date completed instructions received	24/01/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	01/02/2023
Date of Issue	01/02/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Alexander Mitchell Maclean, Senior Chemist
Diego Bigolin, Inorganics Supervisor
Hannah Nguyen, Metals Supervisor
Ken Nguyen, Senior Customer Service
Kyle Gavrily, Senior Chemist
Nancy Zhang, Laboratory Manager, Sydney
Nick Sarlamis, Assistant Operation Manager

Authorised By



Nancy Zhang, Laboratory Manager

VOCs in water					
Our Reference		315085-1	315085-2	315085-3	315085-4
Your Reference	UNITS	SMW-BH004_S	PM_BH015	PM_BH014	QC05
Date Sampled		23/01/2023	23/01/2023	23/01/2023	23/01/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	25/01/2023	25/01/2023	25/01/2023	25/01/2023
Date analysed	-	25/01/2023	26/01/2023	26/01/2023	26/01/2023
Dichlorodifluoromethane	µg/L	<10	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10	<10
Vinyl Chloride	µg/L	<10	<10	<10	<10
Bromomethane	µg/L	<10	<10	<10	<10
Chloroethane	µg/L	<10	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1	<1
Chloroform	µg/L	<1	1	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1	<1
Benzene	µg/L	<1	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1	<1
Tetrachloroethene	µg/L	1	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1

VOCs in water					
Our Reference		315085-1	315085-2	315085-3	315085-4
Your Reference	UNITS	SMW-BH004_S	PM_BH015	PM_BH014	QC05
Date Sampled		23/01/2023	23/01/2023	23/01/2023	23/01/2023
Type of sample		Water	Water	Water	Water
Bromoform	µg/L	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2
Styrene	µg/L	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1	<1
o-xylene	µg/L	<1	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1	<1	<1
4-isopropyl toluene	µg/L	<1	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1	<1
Hexachlorobutadiene	µg/L	<1	<1	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	102	100	100	100
Surrogate toluene-d8	%	101	100	100	99
Surrogate 4-BFB	%	97	96	94	96

SVOC's in water					
Our Reference	UNITS	315085-1	315085-2	315085-3	315085-4
Your Reference		SMW-BH004_S	PM_BH015	PM_BH014	QC05
Date Sampled		23/01/2023	23/01/2023	23/01/2023	23/01/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	27/01/2023	27/01/2023	27/01/2023	27/01/2023
Date analysed	-	27/01/2023	27/01/2023	27/01/2023	27/01/2023
Phenol	µg/L	<2	<2	<2	<2
Bis (2-chloroethyl) ether	µg/L	<5	<5	<5	<5
2-Chlorophenol	µg/L	<2	<2	<2	<2
1,3-Dichlorobenzene	µg/L	<2	<2	<2	<2
1,4-Dichlorobenzene	µg/L	<2	<2	<2	<2
2-Methylphenol	µg/L	<2	<2	<2	<2
1,2-Dichlorobenzene	µg/L	<2	<2	<2	<2
bis-(2-Chloroisopropyl) ether	µg/L	<5	<5	<5	<5
3/4-Methylphenol	µg/L	<4	<4	<4	<4
N-nitrosodi-n-propylamine	µg/L	<5	<5	<5	<5
Hexachloroethane	µg/L	<2	<2	<2	<2
Nitrobenzene	µg/L	<5	<5	<5	<5
Isophorone	µg/L	<5	<5	<5	<5
2,4-Dimethylphenol	µg/L	<2	<2	<2	<2
2-Nitrophenol	µg/L	<2	<2	<2	<2
bis (2-Chloroethoxy) methane	µg/L	<5	<5	<5	<5
2,4-Dichlorophenol	µg/L	<2	<2	<2	<2
1,2,4-Trichlorobenzene	µg/L	<2	<2	<2	<2
Naphthalene	µg/L	<2	<2	<2	<2
4-Chloroaniline	µg/L	<5	<5	<5	<5
4-Chloro-3-methylphenol	µg/L	<10	<10	<10	<10
Hexachlorobutadiene	µg/L	<2	<2	<2	<2
2-Methylnaphthalene	µg/L	<2	<2	<2	<2
Hexachlorocyclopentadiene	µg/L	<5	<5	<5	<5
2,4,6-Trichlorophenol	µg/L	<2	<2	<2	<2
2,4,5-Trichlorophenol	µg/L	<2	<2	<2	<2
2-Chloronaphthalene	µg/L	<2	<2	<2	<2
2-Nitroaniline	µg/L	<5	<5	<5	<5
Dimethyl phthalate	µg/L	<10	<10	<10	<10
2,6-Dinitrotoluene	µg/L	<5	<5	<5	<5
Acenaphthylene	µg/L	<2	<2	<2	<2
3-Nitroaniline	µg/L	<5	<5	<5	<5
Acenaphthene	µg/L	<2	<2	<2	<2
2,4-Dinitrophenol	µg/L	<20	<20	<20	<20

SVOC's in water					
Our Reference	UNITS	315085-1	315085-2	315085-3	315085-4
Your Reference		SMW-BH004_S	PM_BH015	PM_BH014	QC05
Date Sampled		23/01/2023	23/01/2023	23/01/2023	23/01/2023
Type of sample		Water	Water	Water	Water
4-Nitrophenol	µg/L	<20	<20	<20	<20
Dibenzofuran	µg/L	<5	<5	<5	<5
Diethylphthalate	µg/L	<10	<10	<10	<10
4-Chlorophenylphenylether	µg/L	<5	<5	<5	<5
4-Nitroaniline	µg/L	<5	<5	<5	<5
Fluorene	µg/L	<2	<2	<2	<2
2-methyl-4,6-dinitrophenol	µg/L	<20	<20	<20	<20
Azobenzene	µg/L	<5	<5	<5	<5
4-Bromophenylphenylether	µg/L	<5	<5	<5	<5
Hexachlorobenzene	µg/L	<2	<2	<2	<2
Pentachlorophenol	µg/L	<10	<10	<10	<10
Phenanthrene	µg/L	<2	<2	<2	<2
Anthracene	µg/L	<2	<2	<2	<2
Carbazole	µg/L	<5	<5	<5	<5
Di-n-butylphthalate	µg/L	<10	<10	<10	<10
Fluoranthene	µg/L	<2	<2	<2	<2
Pyrene	µg/L	<2	<2	<2	<2
Butylbenzylphthalate	µg/L	<10	<10	<10	<10
Bis(2-ethylhexyl) phthalate	µg/L	<50	<50	<50	<50
Benzo(a)anthracene	µg/L	<2	<2	<2	<2
Chrysene	µg/L	<2	<2	<2	<2
Di-n-octylphthalate	µg/L	<10	<10	<10	<10
Benzo(b,j+k)fluoranthene	µg/L	<4	<4	<4	<4
Benzo(a)pyrene	µg/L	<2	<2	<2	<2
Indeno(1,2,3-c,d)pyrene	µg/L	<2	<2	<2	<2
Dibenzo(a,h)anthracene	µg/L	<2	<2	<2	<2
Benzo(g,h,i)perylene	µg/L	<2	<2	<2	<2
Ethylmethanesulfonate	µg/L	<5	<5	<5	<5
Aniline	µg/L	<5	<5	<5	<5
Pentachloroethane	µg/L	<2	<2	<2	<2
Benzyl alcohol	µg/L	<5	<5	<5	<5
Acetophenone	µg/L	<5	<5	<5	<5
N-nitrosomorpholine	µg/L	<5	<5	<5	<5
N-nitrosopiperidine	µg/L	<5	<5	<5	<5
2,6-Dichlorophenol	µg/L	<2	<2	<2	<2
Hexachloropropene-1	µg/L	<2	<2	<2	<2
N-nitroso-n-butylamine	µg/L	<5	<5	<5	<5

SVOC's in water					
Our Reference		315085-1	315085-2	315085-3	315085-4
Your Reference	UNITS	SMW-BH004_S	PM_BH015	PM_BH014	QC05
Date Sampled		23/01/2023	23/01/2023	23/01/2023	23/01/2023
Type of sample		Water	Water	Water	Water
Safrole	µg/L	<5	<5	<5	<5
1,2,4,5-Tetrachlorobenzene	µg/L	<2	<2	<2	<2
Trans/Cis-iso-safrole	µg/L	<5	<5	<5	<5
1,3-Dinitrobenzene	µg/L	<5	<5	<5	<5
Pentachlorobenzene	µg/L	<2	<2	<2	<2
1-Naphthylamine	µg/L	<5	<5	<5	<5
2,3,4,6-Tetrachlorophenol	µg/L	<2	<2	<2	<2
2-Naphthylamine	µg/L	<5	<5	<5	<5
5-Nitro-o-toluidine	µg/L	<5	<5	<5	<5
Diphenylamine	µg/L	<5	<5	<5	<5
Phenacetin	µg/L	<5	<5	<5	<5
Pentachloronitrobenzene	µg/L	<5	<5	<5	<5
Dinoseb	µg/L	<10	<10	<10	<10
Methapyrilene	µg/L	<10	<10	<10	<10
p-Dimethylaminoazobenzene	µg/L	<5	<5	<5	<5
2-Acetylaminofluorene	µg/L	<2	<2	<2	<2
7,12-Dimethylbenz(a)anthracene	µg/L	<2	<2	<2	<2
3-Methylcholanthrene	µg/L	<2	<2	<2	<2
a-BHC	µg/L	<2	<2	<2	<2
b-BHC	µg/L	<2	<2	<2	<2
g-BHC	µg/L	<2	<2	<2	<2
d-BHC	µg/L	<2	<2	<2	<2
Heptachlor	µg/L	<2	<2	<2	<2
Aldrin	µg/L	<2	<2	<2	<2
Heptachlor Epoxide	µg/L	<2	<2	<2	<2
g-Chlordane	µg/L	<2	<2	<2	<2
a-Chlordane	µg/L	<2	<2	<2	<2
Endosulfan I	µg/L	<2	<2	<2	<2
p,p'-DDE	µg/L	<2	<2	<2	<2
Dieldrin	µg/L	<2	<2	<2	<2
Endrin	µg/L	<2	<2	<2	<2
p,p'-DDD	µg/L	<2	<2	<2	<2
Endosulfan II	µg/L	<2	<2	<2	<2
Endrin Aldehyde	µg/L	<2	<2	<2	<2
p,p'-DDT	µg/L	<2	<2	<2	<2
Endosulfan Sulphate	µg/L	<2	<2	<2	<2
Endrin Ketone	µg/L	<2	<2	<2	<2

SVOC's in water					
Our Reference		315085-1	315085-2	315085-3	315085-4
Your Reference	UNITS	SMW-BH004_S	PM_BH015	PM_BH014	QC05
Date Sampled		23/01/2023	23/01/2023	23/01/2023	23/01/2023
Type of sample		Water	Water	Water	Water
Methoxychlor	µg/L	<2	<2	<2	<2
Dichlorvos	µg/L	<2	<2	<2	<2
Mevinphos	µg/L	<2	<2	<2	<2
Phorate	µg/L	<2	<2	<2	<2
Dimethoate	µg/L	<2	<2	<2	<2
Diazinon (dimpylate)	µg/L	<2	<2	<2	<2
Disulfoton	µg/L	<2	<2	<2	<2
Chloropyriphos-methyl	µg/L	<2	<2	<2	<2
Parathion-methyl	µg/L	<2	<2	<2	<2
Ronnel (fenchlorphos)	µg/L	<2	<2	<2	<2
Fenitrothion	µg/L	<2	<2	<2	<2
Malathion (Maldison)	µg/L	<2	<2	<2	<2
Chloropyriphos	µg/L	<2	<2	<2	<2
Fenthion	µg/L	<2	<2	<2	<2
Parathion (parathion-ethyl)	µg/L	<2	<2	<2	<2
Bromophos Ethyl	µg/L	<2	<2	<2	<2
Methidathion	µg/L	<2	<2	<2	<2
Fenamiphos (Phenamiphos)	µg/L	<2	<2	<2	<2
Ethion	µg/L	<2	<2	<2	<2
Phosalone	µg/L	<2	<2	<2	<2
Azinphos methyl (Guthion)	µg/L	<2	<2	<2	<2
Coumaphos (Co-Ral)	µg/L	<2	<2	<2	<2
Surrogate 2-fluorophenol	%	40	39	38	45
Surrogate Phenol-d_6	%	27	31	27	34
Surrogate Nitrobenzene-d_5	%	65	64	63	68
Surrogate 2-fluorobiphenyl	%	60	58	59	64
Surrogate 2,4,6-Tribromophenol	%	63	60	59	64
Surrogate *p*-Terphenyl-d_{14}	%	60	61	62	63

vTRH(C6-C10)/BTEXN in Water						
Our Reference		315085-1	315085-2	315085-3	315085-4	315085-5
Your Reference	UNITS	SMW-BH004_S	PM_BH015	PM_BH014	QC05	RS06
Date Sampled		23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023
Date analysed	-	25/01/2023	26/01/2023	26/01/2023	26/01/2023	26/01/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	102	100	100	100	100
Surrogate toluene-d8	%	101	100	100	99	98
Surrogate 4-BFB	%	97	96	94	96	96

vTRH(C6-C10)/BTEXN in Water			
Our Reference		315085-6	315085-7
Your Reference	UNITS	TS	TB
Date Sampled		23/01/2023	23/01/2023
Type of sample		Water	Water
Date extracted	-	25/01/2023	25/01/2023
Date analysed	-	26/01/2023	26/01/2023
TRH C_6 - C_9	µg/L	[NA]	<10
TRH C_6 - C_{10}	µg/L	[NA]	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	[NA]	<10
Benzene	µg/L	108%	<1
Toluene	µg/L	106%	<1
Ethylbenzene	µg/L	111%	<1
m+p-xylene	µg/L	105%	<2
o-xylene	µg/L	103%	<1
Naphthalene	µg/L	[NA]	<1
Surrogate Dibromofluoromethane	%	103	100
Surrogate toluene-d8	%	101	99
Surrogate 4-BFB	%	95	95

svTRH (C10-C40) in Water					
Our Reference	UNITS	315085-1	315085-2	315085-3	315085-4
Your Reference		SMW-BH004_S	PM_BH015	PM_BH014	QC05
Date Sampled		23/01/2023	23/01/2023	23/01/2023	23/01/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	27/01/2023	27/01/2023	27/01/2023	27/01/2023
Date analysed	-	28/01/2023	28/01/2023	28/01/2023	28/01/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50
Surrogate o-Terphenyl	%	68	75	75	70

PAHs in Water					
Our Reference	UNITS	315085-1	315085-2	315085-3	315085-4
Your Reference		SMW-BH004_S	PM_BH015	PM_BH014	QC05
Date Sampled		23/01/2023	23/01/2023	23/01/2023	23/01/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	27/01/2023	27/01/2023	27/01/2023	27/01/2023
Date analysed	-	27/01/2023	27/01/2023	27/01/2023	27/01/2023
Naphthalene	µg/L	<1	<1	<1	<1
Acenaphthylene	µg/L	<1	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1	<1
Fluorene	µg/L	<1	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1	<1
Anthracene	µg/L	<1	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1	<1
Pyrene	µg/L	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1	<1
Chrysene	µg/L	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	60	61	62	63

Organochlorine Pesticides in Water					
Our Reference	UNITS	315085-1	315085-2	315085-3	315085-4
Your Reference		SMW-BH004_S	PM_BH015	PM_BH014	QC05
Date Sampled		23/01/2023	23/01/2023	23/01/2023	23/01/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	27/01/2023	27/01/2023	27/01/2023	27/01/2023
Date analysed	-	27/01/2023	27/01/2023	27/01/2023	27/01/2023
alpha-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
HCB	µg/L	<0.2	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	67	62	62	64

OP Pesticides in Water					
Our Reference	UNITS	315085-1	315085-2	315085-3	315085-4
Your Reference		SMW-BH004_S	PM_BH015	PM_BH014	QC05
Date Sampled		23/01/2023	23/01/2023	23/01/2023	23/01/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	27/01/2023	27/01/2023	27/01/2023	27/01/2023
Date analysed	-	27/01/2023	27/01/2023	27/01/2023	27/01/2023
Dichlorvos	µg/L	<0.2	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	67	62	62	64

HM in water - dissolved						
Our Reference	UNITS	315085-1	315085-2	315085-3	315085-4	315085-5
Your Reference		SMW-BH004_S	PM_BH015	PM_BH014	QC05	RS06
Date Sampled		23/01/2023	23/01/2023	23/01/2023	23/01/2023	23/01/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023
Date analysed	-	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023
Arsenic-Dissolved	µg/L	<1	<1	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	32	<1	1	<1	<1
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	2	2	1	<1	<1
Zinc-Dissolved	µg/L	18	20	5	3	<1
Barium-Dissolved	µg/L	53	120	83	74	<1
Beryllium-Dissolved	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt-Dissolved	µg/L	3	1	<1	<1	<1
Manganese-Dissolved	µg/L	30	28	<5	<5	<5
Selenium-Dissolved	µg/L	2	<1	3	3	<1

Metals in Waters - Acid extractable					
Our Reference		315085-1	315085-2	315085-3	315085-4
Your Reference	UNITS	SMW-BH004_S	PM_BH015	PM_BH014	QC05
Date Sampled		23/01/2023	23/01/2023	23/01/2023	23/01/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	25/01/2023	25/01/2023	25/01/2023	25/01/2023
Date analysed	-	25/01/2023	25/01/2023	25/01/2023	25/01/2023
Phosphorus - Total	mg/L	<0.05	<0.05	<0.05	<0.05

Ion Balance					
Our Reference		315085-1	315085-2	315085-3	315085-4
Your Reference	UNITS	SMW-BH004_S	PM_BH015	PM_BH014	QC05
Date Sampled		23/01/2023	23/01/2023	23/01/2023	23/01/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	24/01/2023	24/01/2023	24/01/2023	24/01/2023
Date analysed	-	24/01/2023	24/01/2023	24/01/2023	24/01/2023
Calcium - Dissolved	mg/L	12	5	5.5	5.5
Potassium - Dissolved	mg/L	3	<0.5	2	2
Sodium - Dissolved	mg/L	29	110	120	110
Magnesium - Dissolved	mg/L	5	10	7.8	7.8
Hardness	mgCaCO 3 /L	50	55	46	46
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	50	26	97	96
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	50	26	97	96
Sulphate, SO4	mg/L	24	22	120	120
Chloride, Cl	mg/L	28	200	61	60
Ionic Balance	%	1.0	-4.0	-1.0	-1.0

Miscellaneous Inorganics					
Our Reference	UNITS	315085-1	315085-2	315085-3	315085-4
Your Reference		SMW-BH004_S	PM_BH015	PM_BH014	QC05
Date Sampled		23/01/2023	23/01/2023	23/01/2023	23/01/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	24/01/2023	24/01/2023	24/01/2023	24/01/2023
Date analysed	-	24/01/2023	24/01/2023	24/01/2023	24/01/2023
pH	pH Units	6.6	5.9	6.7	6.7
Electrical Conductivity	µS/cm	290	790	700	700
Total Dissolved Solids (grav)	mg/L	170	380	390	390
Dissolved Oxygen*	mg/L	9.5	8.5	9.1	9.2
Phosphate as P in water	mg/L	0.009	<0.005	<0.005	<0.005
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005	<0.005
Trivalent Chromium	mg/L	<0.005	<0.005	<0.005	<0.005
Ammonia as N in water	mg/L	<0.005	0.008	<0.005	<0.005
Nitrate as N in water	mg/L	3.4	0.01	3.2	3.3
Nitrite as N in water	mg/L	0.01	<0.005	<0.005	<0.005
NOx as N in water	mg/L	3.5	0.02	3.2	3.3
Total Nitrogen in water	mg/L	4.2	0.1	4.0	4.0
TKN in water	mg/L	0.8	<0.1	0.7	0.7
Organic Nitrogen as N	mg/L	0.8	<0.2	0.7	0.7
Redox Potential*	mV	236	254	239	234

Acid Herbicides in Water					
Our Reference	UNITS	315085-1	315085-2	315085-3	315085-4
Your Reference		SMW-BH004_S	PM_BH015	PM_BH014	QC05
Date Sampled		23/01/2023	23/01/2023	23/01/2023	23/01/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	30/01/2023	30/01/2023	30/01/2023	30/01/2023
Date analysed	-	30/01/2023	30/01/2023	30/01/2023	30/01/2023
Clopyralid	µg/L	<0.5	<0.5	<0.5	<0.5
3,5-Dichlorobenzoic acid	µg/L	<0.5	<0.5	<0.5	<0.5
o-chlorophenoxy acetic acid	µg/L	<0.5	<0.5	<0.5	<0.5
4-CPA	µg/L	<0.5	<0.5	<0.5	<0.5
Dicamba	µg/L	<0.5	<0.5	<0.5	<0.5
MCPP	µg/L	<0.5	<0.5	<0.5	<0.5
MCPA	µg/L	<0.5	<0.5	<0.5	<0.5
Dichlorprop	µg/L	<0.5	<0.5	<0.5	<0.5
2,4-D	µg/L	<0.5	<0.5	<0.5	<0.5
Bromoxynil	µg/L	<0.5	<0.5	<0.5	<0.5
Triclopyr	µg/L	<0.5	<0.5	<0.5	<0.5
2,4,5-TP	µg/L	<0.5	<0.5	<0.5	<0.5
2,4,5-T	µg/L	<0.5	<0.5	<0.5	<0.5
MCPB	µg/L	<0.5	<0.5	<0.5	<0.5
Dinoseb	µg/L	<1	<1	<1	<1
2,4-DB	µg/L	<0.5	<0.5	<0.5	<0.5
Ioxynil	µg/L	<1	<1	<1	<1
Picloram	µg/L	<1	<1	<1	<1
Acifluorfen	µg/L	<2	<2	<2	<2
2,4,6-T	µg/L	<0.5	<0.5	<0.5	<0.5
2,6-D	µg/L	<0.5	<0.5	<0.5	<0.5
Bentazon	µg/L	<1	<1	<1	<1
Chloramben	µg/L	<1	<1	<1	<1
Fluroxypyr	µg/L	<1	<1	<1	<1
Surrogate 2.4- DCPA	%	70	76	78	86

Triazine Herbicides in Water					
Our Reference	UNITS	315085-1	315085-2	315085-3	315085-4
Your Reference		SMW-BH004_S	PM_BH015	PM_BH014	QC05
Date Sampled		23/01/2023	23/01/2023	23/01/2023	23/01/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	27/01/2023	27/01/2023	27/01/2023	27/01/2023
Date analysed	-	27/01/2023	27/01/2023	27/01/2023	27/01/2023
Atrazine	mg/L	<0.002	<0.002	<0.002	<0.002
Ametryn	mg/L	<0.002	<0.002	<0.002	<0.002
Cyanazine	mg/L	<0.002	<0.002	<0.002	<0.002
Hexazinone	mg/L	<0.002	<0.002	<0.002	<0.002
Irgarol	mg/L	<0.002	<0.002	<0.002	<0.002
Metribuzin	mg/L	<0.002	<0.002	<0.002	<0.002
Prometryn	mg/L	<0.002	<0.002	<0.002	<0.002
Propazine	mg/L	<0.002	<0.002	<0.002	<0.002
Simazine	mg/L	<0.002	<0.002	<0.002	<0.002
Terbutryn	mg/L	<0.002	<0.002	<0.002	<0.002
Terbuthylazine	mg/L	<0.002	<0.002	<0.002	<0.002
Surrogate p-Terphenyl-d14	%	60	61	62	63

PFAS in Waters Extended					
Our Reference	UNITS	315085-1	315085-2	315085-3	315085-4
Your Reference		SMW-BH004_S	PM_BH015	PM_BH014	QC05
Date Sampled		23/01/2023	23/01/2023	23/01/2023	23/01/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	24/01/2023	24/01/2023	25/01/2023	24/01/2023
Date analysed	-	24/01/2023	24/01/2023	25/01/2023	24/01/2023
Perfluorobutanesulfonic acid	µg/L	0.01	<0.01	0.08	0.1
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	0.03	0.03
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	0.18	0.19
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	0.14	0.15
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	0.06	0.06
Perfluoropentanoic acid	µg/L	<0.02	<0.02	0.23	0.26
Perfluorohexanoic acid	µg/L	0.02	<0.01	0.24	0.25
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	0.07	0.08
Perfluorooctanoic acid PFOA	µg/L	0.02	<0.01	0.11	0.11
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	101	100	100	104
Surrogate $^{13}C_2$ *PFOA*	%	102	101	105	106
Extracted ISTD $^{13}C_3$ *PFBS*	%	107	105	105	108
Extracted ISTD $^{18}O_2$ *PFHxS*	%	108	103	111	107
Extracted ISTD $^{13}C_4$ *PFOS*	%	105	105	109	103
Extracted ISTD $^{13}C_4$ *PFBA*	%	94	102	95	98

PFAS in Waters Extended					
Our Reference	UNITS	315085-1	315085-2	315085-3	315085-4
Your Reference		SMW-BH004_S	PM_BH015	PM_BH014	QC05
Date Sampled		23/01/2023	23/01/2023	23/01/2023	23/01/2023
Type of sample		Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	105	104	102	104
Extracted ISTD $^{13}C_2$ *PFHxA*	%	101	101	104	100
Extracted ISTD $^{13}C_4$ *PFHpA*	%	111	108	110	108
Extracted ISTD $^{13}C_4$ *PFOA*	%	104	103	104	101
Extracted ISTD $^{13}C_5$ *PFNA*	%	103	100	108	100
Extracted ISTD $^{13}C_2$ *PFDA*	%	113	110	105	107
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	110	109	113	116
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	117	114	123	117
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	122	120	99	121
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	114	106	103	104
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	112	111	111	110
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	121	124	115	124
Extracted ISTD $^{13}C_8$ *FOSA*	%	112	112	109	115
Extracted ISTD d_3 *N MeFOSA*	%	107	106	106	107
Extracted ISTD d_5 *N EtFOSA*	%	103	104	106	104
Extracted ISTD d_7 *N MeFOSE*	%	105	107	112	105
Extracted ISTD d_9 *N EtFOSE*	%	107	104	106	103
Extracted ISTD d_3 *N MeFOSAA*	%	111	113	115	111
Extracted ISTD d_5 *N EtFOSAA*	%	118	114	112	115
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	0.31	0.34
Total Positive PFOA & PFOS	µg/L	0.02	<0.01	0.24	0.26
Total Positive PFAS	µg/L	0.05	<0.01	1.1	1.2

Method ID	Methodology Summary
Ext-061	Analysed by Envirolab Melbourne
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Inorg-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation below:- TDS = EC * 0.6
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Inorg-035	Analysed using an electrode. Please note that the results for water analyses are indicative only, samples are ideally analysed on collection.
Inorg-040	The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% ie total anions = total cations +/-15%.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Inorg-112	Dissolved Oxygen using membrane electrode. Note this analysis should ideally be carried out immediately after sampling.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			25/01/2023	2	25/01/2023	31/01/2023		25/01/2023	[NT]
Date analysed	-			25/01/2023	2	26/01/2023	31/01/2023		25/01/2023	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	2	<10	<10	0	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	2	<10	<10	0	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	2	<10	<10	0	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	2	<10	<10	0	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	2	<10	<10	0	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	2	<10	<10	0	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	2	<1	<1	0	110	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	2	1	1	0	115	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	2	<1	<1	0	101	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	2	<1	<1	0	116	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	2	<1	<1	0	104	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	2	<1	<1	0	111	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	2	<1	<1	0	114	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	2	<1	<1	0	115	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	2	<2	<2	0	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
o-xylene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	100	2	100	102	2	98	[NT]
Surrogate toluene-d8	%		Org-023	100	2	100	100	0	98	[NT]
Surrogate 4-BFB	%		Org-023	98	2	96	101	5	99	[NT]

QUALITY CONTROL: SVOC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	315085-2
Date extracted	-			27/01/2023	1	27/01/2023	27/01/2023		27/01/2023	31/01/2023
Date analysed	-			27/01/2023	1	27/01/2023	27/01/2023		27/01/2023	31/01/2023
Phenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	71	39
Bis (2-chloroethyl) ether	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2-Chlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	79	75
1,3-Dichlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
1,4-Dichlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	67	61
2-Methylphenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	78	67
1,2-Dichlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
bis-(2-Chloroisopropyl) ether	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
3/4-Methylphenol	µg/L	4	Org-022/025	<4	1	<4	<4	0	[NT]	[NT]
N-nitrosodi-n-propylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Hexachloroethane	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Nitrobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Isophorone	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,4-Dimethylphenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2-Nitrophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
bis (2-Chloroethoxy) methane	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,4-Dichlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
1,2,4-Trichlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Naphthalene	µg/L	2	Org-022/025	<2	1	<2	<2	0	78	84
4-Chloroaniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
4-Chloro-3-methylphenol	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2-Methylnaphthalene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Hexachlorocyclopentadiene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,4,6-Trichlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2,4,5-Trichlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2-Chloronaphthalene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2-Nitroaniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Dimethyl phthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	70	82
2,6-Dinitrotoluene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Acenaphthylene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
3-Nitroaniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Acenaphthene	µg/L	2	Org-022/025	<2	1	<2	<2	0	87	97
2,4-Dinitrophenol	µg/L	20	Org-022/025	<20	1	<20	<20	0	[NT]	[NT]
4-Nitrophenol	µg/L	20	Org-022/025	<20	1	<20	<20	0	40	40
Dibenzofuran	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Diethylphthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	77	89
4-Chlorophenylphenylether	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]

QUALITY CONTROL: SVOC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	315085-2
4-Nitroaniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Fluorene	µg/L	2	Org-022/025	<2	1	<2	<2	0	88	97
2-methyl-4,6-dinitrophenol	µg/L	20	Org-022/025	<20	1	<20	<20	0	[NT]	[NT]
Azobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
4-Bromophenylphenylether	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Hexachlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Pentachlorophenol	µg/L	10	Org-022/025	<10	1	<10	<10	0	75	77
Phenanthrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	96	106
Anthracene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Carbazole	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Di-n-butylphthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Fluoranthene	µg/L	2	Org-022/025	<2	1	<2	<2	0	94	102
Pyrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	115	105
Butylbenzylphthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Bis(2-ethylhexyl) phthalate	µg/L	50	Org-022/025	<50	1	<50	<50	0	[NT]	[NT]
Benzo(a)anthracene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Chrysene	µg/L	2	Org-022/025	<2	1	<2	<2	0	63	63
Di-n-octylphthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	µg/L	4	Org-022/025	<4	1	<4	<4	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	98	94
Indeno(1,2,3-c,d)pyrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Ethylmethanesulfonate	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Aniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Pentachloroethane	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Benzyl alcohol	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Acetophenone	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
N-nitrosomorpholine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
N-nitrosopiperidine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,6-Dichlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	83	91
Hexachloropropene-1	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
N-nitroso-n-butylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Safrole	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
1,2,4,5-Tetrachlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Trans/Cis-iso-safrole	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
1,3-Dinitrobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Pentachlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
1-Naphthylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,3,4,6-Tetrachlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]

QUALITY CONTROL: SVOC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	315085-2
2-Naphthylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
5-Nitro-o-toluidine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Diphenylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Phenacetin	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Pentachloronitrobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Dinoseb	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Methapyrilene	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
p-Dimethylaminoazobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2-Acetylaminofluorene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
7,12-Dimethylbenz(a)anthracene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
3-Methylcholanthrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
a-BHC	µg/L	2	Org-022/025	<2	1	<2	<2	0	64	82
b-BHC	µg/L	2	Org-022/025	<2	1	<2	<2	0	60	80
g-BHC	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
d-BHC	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Heptachlor	µg/L	2	Org-022/025	<2	1	<2	<2	0	60	79
Aldrin	µg/L	2	Org-022/025	<2	1	<2	<2	0	71	79
Heptachlor Epoxide	µg/L	2	Org-022/025	<2	1	<2	<2	0	68	78
g-Chlordane	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
a-Chlordane	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Endosulfan I	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
p,p'-DDE	µg/L	2	Org-022/025	<2	1	<2	<2	0	76	86
Dieldrin	µg/L	2	Org-022/025	<2	1	<2	<2	0	77	84
Endrin	µg/L	2	Org-022/025	<2	1	<2	<2	0	60	82
p,p'-DDD	µg/L	2	Org-022/025	<2	1	<2	<2	0	90	106
Endosulfan II	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Endrin Aldehyde	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
p,p'-DDT	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	2	Org-022/025	<2	1	<2	<2	0	68	82
Endrin Ketone	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Methoxychlor	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Dichlorvos	µg/L	2	Org-022/025	<2	1	<2	<2	0	76	87
Mevinphos	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Phorate	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Dimethoate	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Diazinon (dimpylate)	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Disulfoton	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Chloropyriphos-methyl	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Parathion-methyl	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]

QUALITY CONTROL: SVOC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	315085-2
Ronnel (fenchlorphos)	µg/L	2	Org-022/025	<2	1	<2	<2	0	65	73
Fenitrothion	µg/L	2	Org-022/025	<2	1	<2	<2	0	69	71
Malathion (Maldison)	µg/L	2	Org-022/025	<2	1	<2	<2	0	71	87
Chloropyriphos	µg/L	2	Org-022/025	<2	1	<2	<2	0	76	86
Fenthion	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Parathion (parathion-ethyl)	µg/L	2	Org-022/025	<2	1	<2	<2	0	76	74
Bromophos Ethyl	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Methidathion	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Fenamiphos (Phenamiphos)	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Ethion	µg/L	2	Org-022/025	<2	1	<2	<2	0	80	74
Phosalone	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Azinphos methyl (Guthion)	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Coumaphos (Co-Ral)	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Surrogate 2-fluorophenol	%		Org-022/025	44	1	40	37	8	67	51
Surrogate Phenol-d_6	%		Org-022/025	29	1	27	27	0	73	36
Surrogate Nitrobenzene-d_5	%		Org-022/025	76	1	65	64	2	71	83
Surrogate 2-fluorobiphenyl	%		Org-022/025	68	1	60	59	2	71	85
Surrogate 2,4,6-Tribromophenol	%		Org-022/025	70	1	63	62	2	79	76
Surrogate p-Terphenyl-d_{14}	%		Org-022/025	69	1	60	60	0	66	74

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			25/01/2023	2	25/01/2023	31/01/2023		25/01/2023	[NT]
Date analysed	-			25/01/2023	2	26/01/2023	31/01/2023		25/01/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	2	<10	<10	0	113	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	2	<10	<10	0	113	[NT]
Benzene	µg/L	1	Org-023	<1	2	<1	<1	0	110	[NT]
Toluene	µg/L	1	Org-023	<1	2	<1	<1	0	115	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	2	<1	<1	0	112	[NT]
m+p-xylene	µg/L	2	Org-023	<2	2	<2	<2	0	114	[NT]
o-xylene	µg/L	1	Org-023	<1	2	<1	<1	0	111	[NT]
Naphthalene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	100	2	100	102	2	98	[NT]
Surrogate toluene-d8	%		Org-023	100	2	100	100	0	98	[NT]
Surrogate 4-BFB	%		Org-023	98	2	96	101	5	99	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			27/01/2023	1	27/01/2023	27/01/2023		27/01/2023	[NT]
Date analysed	-			27/01/2023	1	28/01/2023	28/01/2023		27/01/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	118	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	<100	0	112	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	114	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	<50	<50	0	118	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	112	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	114	[NT]
Surrogate o-Terphenyl	%		Org-020	85	1	68	75	10	106	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	315085-2
Date extracted	-			01/02/2023	1	27/01/2023	27/01/2023		27/01/2023	01/02/2023
Date analysed	-			01/02/2023	1	27/01/2023	27/01/2023		27/01/2023	01/02/2023
Naphthalene	µg/L	1	Org-022/025	<1	1	<1	<1	0	78	84
Acenaphthylene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	1	<1	<1	0	85	97
Fluorene	µg/L	1	Org-022/025	<1	1	<1	<1	0	86	97
Phenanthrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	114	106
Anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	1	<1	<1	0	114	102
Pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	117	105
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	1	<1	<1	0	63	63
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	94	94
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	60	1	60	60	0	70	74

QUALITY CONTROL: Organochlorine Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	315085-2
Date extracted	-			01/02/2023	1	27/01/2023	27/01/2023		27/01/2023	01/02/2023
Date analysed	-			01/02/2023	1	27/01/2023	27/01/2023		27/01/2023	01/02/2023
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	68	82
HCB	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	110	80
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	61	79
delta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	89	79
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	84	78
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	96	86
Dieldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	96	84
Endrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	60	82
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	102	106
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	70	82
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	72	1	67	60	11	72	81

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	315085-2
Date extracted	-			01/02/2023	1	27/01/2023	27/01/2023		27/01/2023	01/02/2023
Date analysed	-			01/02/2023	1	27/01/2023	27/01/2023		27/01/2023	01/02/2023
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	78	87
Dimethoate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	81	73
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	83	71
Malathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	87	87
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	94	86
Parathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	89	74
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	100	74
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	72	1	67	60	11	72	81

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	315085-3
Date prepared	-			25/01/2023	1	25/01/2023	25/01/2023		25/01/2023	25/01/2023
Date analysed	-			25/01/2023	1	25/01/2023	25/01/2023		25/01/2023	25/01/2023
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		96	96
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	[NT]		103	104
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		104	103
Copper-Dissolved	µg/L	1	Metals-022	<1	1	32	[NT]		95	93
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		94	91
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	116	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	2	[NT]		97	94
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	18	[NT]		96	94
Barium-Dissolved	µg/L	1	Metals-022	<1	1	53	[NT]		100	96
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	1	<0.5	[NT]		87	88
Cobalt-Dissolved	µg/L	1	Metals-022	<1	1	3	[NT]		97	95
Manganese-Dissolved	µg/L	5	Metals-022	<5	1	30	[NT]		108	105
Selenium-Dissolved	µg/L	1	Metals-022	<1	1	2	[NT]		96	96

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	2	25/01/2023	25/01/2023		[NT]	[NT]
Date analysed	-			[NT]	2	25/01/2023	25/01/2023		[NT]	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	[NT]	2	<1	<1	0	[NT]	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	[NT]	2	<0.1	<0.1	0	[NT]	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	[NT]	2	<1	<1	0	[NT]	[NT]
Copper-Dissolved	µg/L	1	Metals-022	[NT]	2	<1	<1	0	[NT]	[NT]
Lead-Dissolved	µg/L	1	Metals-022	[NT]	2	<1	<1	0	[NT]	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	[NT]	2	<0.05	[NT]		[NT]	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	[NT]	2	2	3	40	[NT]	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	[NT]	2	20	21	5	[NT]	[NT]
Barium-Dissolved	µg/L	1	Metals-022	[NT]	2	120	120	0	[NT]	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	[NT]	2	<0.5	<0.5	0	[NT]	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	[NT]	2	1	1	0	[NT]	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	[NT]	2	28	28	0	[NT]	[NT]
Selenium-Dissolved	µg/L	1	Metals-022	[NT]	2	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: Metals in Waters - Acid extractable					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			25/01/2023	[NT]	[NT]	[NT]	[NT]	25/01/2023	[NT]
Date analysed	-			25/01/2023	[NT]	[NT]	[NT]	[NT]	25/01/2023	[NT]
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	115	[NT]

QUALITY CONTROL: Ion Balance						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			24/01/2023	1	24/01/2023	24/01/2023		24/01/2023	[NT]
Date analysed	-			24/01/2023	1	24/01/2023	24/01/2023		24/01/2023	[NT]
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	12	12	0	116	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	3	3	0	101	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	29	29	0	95	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	5	5	0	119	[NT]
Hardness	mgCaCO 3 /L	3	Metals-020	[NT]	1	50	50	0	[NT]	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	[NT]		[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	50	[NT]		[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	[NT]		[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	50	[NT]		99	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	1	24	[NT]		108	[NT]
Chloride, Cl	mg/L	1	Inorg-081	<1	1	28	[NT]		103	[NT]
Ionic Balance	%		Inorg-040	[NT]	1	1.0	[NT]		[NT]	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			24/01/2023	1	24/01/2023	24/01/2023		24/01/2023	[NT]
Date analysed	-			24/01/2023	1	24/01/2023	24/01/2023		24/01/2023	[NT]
pH	pH Units		Inorg-001	[NT]	1	6.6	[NT]		99	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	1	290	[NT]		97	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	<5	1	170	[NT]		110	[NT]
Dissolved Oxygen*	mg/L	0.1	Inorg-112	<0.1	1	9.5	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	<0.005	1	0.009	[NT]		104	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	<0.005	0	107	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	<0.005	[NT]		110	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	3.4	[NT]		92	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.01	[NT]		104	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	<0.005	1	3.5	[NT]		92	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	4.2	[NT]		96	[NT]
TKN in water	mg/L	0.1	Inorg-062	<0.1	1	0.8	[NT]		[NT]	[NT]
Organic Nitrogen as N	mg/L	0.2	Inorg-055/062/127	<0.2	1	0.8	[NT]		[NT]	[NT]
Redox Potential*	mV		Inorg-035	[NT]	1	236	[NT]		87	[NT]

QUALITY CONTROL: Acid Herbicides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			30/01/2023	[NT]	[NT]	[NT]	[NT]	30/01/2023	[NT]
Date analysed	-			30/01/2023	[NT]	[NT]	[NT]	[NT]	30/01/2023	[NT]
Clopyralid	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	88	[NT]
3,5-Dichlorobenzoic acid	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
o-chlorophenoxy acetic acid	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-CPA	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dicamba	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
MCPP	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
MCPA	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dichlorprop	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-D	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	98	[NT]
Bromoxynil	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Triclopyr	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,5-TP	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,5-T	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	110	[NT]
MCPB	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dinoseb	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-DB	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ioxynil	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Picloram	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acifluorfen	µg/L	2	Ext-061	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,6-T	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,6-D	µg/L	0.5	Ext-061	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bentazon	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloramben	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluroxypyr	µg/L	1	Ext-061	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2.4- DCPA	%		Ext-061	66	[NT]	[NT]	[NT]	[NT]	60	[NT]

QUALITY CONTROL: Triazine Herbicides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	315085-2
Date extracted	-			27/01/2023	1	27/01/2023	27/01/2023		27/01/2023	31/01/2023
Date analysed	-			27/01/2023	1	27/01/2023	27/01/2023		27/01/2023	31/01/2023
Atrazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	60	86
Ametryn	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Cyanazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Hexazinone	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Irgarol	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Metribuzin	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Prometryn	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	61	71
Propazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	62	78
Simazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Terbutryn	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Terbuthylazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	60	1	60	60	0	70	74

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			24/01/2023	[NT]	[NT]	[NT]	[NT]	24/01/2023	[NT]
Date analysed	-			24/01/2023	[NT]	[NT]	[NT]	[NT]	24/01/2023	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	110	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	108	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	113	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	108	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	115	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	112	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	110	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	118	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	104	[NT]
4:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	107	[NT]
6:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	106	[NT]
8:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	101	[NT]
10:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	124	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	113	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	107	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	112	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	112	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	108	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	102	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	106	[NT]

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	114	[NT]	[NT]	[NT]	[NT]	119	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	115	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	119	[NT]	[NT]	[NT]	[NT]	113	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	109	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	106	[NT]

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	112	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	104	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Acid Herbicides in Water - analysed by Envirolab VIC, report no 35573.

Total metals: no unfiltered, preserved sample was received, therefore analysis was conducted from the unpreserved sample bottle.
Note: there is a possibility some elements may be underestimated.

ENVIROLAB – PLS. DONOT TEST for speciation

Chain of Custody Record

Project No:	SC210108.03	Lab:	
Project/Site:	Sydney Metro WTP	Lab Quote No:	
Project Manager:	Patrick Carroll	Lab Batch No:	
Sampled By:	JX ~~NAT~~ NC	Date Results Required:	
Phone:	426205616	Sample Disposal After:	
Page:	of		
Number of Eskies:	2		

LAB ID	SAMPLE ID	DATE	MATRIX	CONTAINER TYPE & PRESERVATIVE: Soil / Solid 150-250ml Glass Jar	Soil / Solid 200ml Plastic Jar	Soil / Solid - Plastic bag	Water / Liquid 2x 40ml Amber Vial	Water / Liquid 100-500ml Amber Bottle	Water / Liquid 60ml Metals	Water / Liquid 60ml Nutrients	Water / Liquid 250-500ml Plastic (Unpreserved)	Water / Liquid 60-250ml Plastic (PFAS)	Other	ANALYSIS REQUIRED: WQ Parameters: pH, EC ORP, DO, TDS, Alkalinity, Hardness	Major Ions	Extended Metals suite - UltraTrace: 15 metals NEPM Suite	Nutrients (Trace)	TRH + BTEXN	PAH	OCP / OPP	Herbicides	VOC / SVOC	PFAS	Cr speciation	C6>C10		HOLD
			W																								
1	SMW_BH004_S	23.01	W											X										X			
2	PM_BH015	23.01	W											X										X			
3	PM_BH014	23.01	W																								
			W																								
4	QC05	23.01	W											X										X			
5	RS06	23.01	W													X		X									
6	TS	23.01	W															X							X		
7	TB	23.01	W															X							X		
			W																					

epic ENVIRONMENTAL

ALS.

Chain of Custody Record

Project No:	SC210108.03
Project/Site:	Sydney Metro WTP
Project Manager:	
Sampled By:	
Phone:	426205616
Page:	of
Number of Eskies:	

Lab:	
Lab Quote No:	
Lab Batch No:	
Date Results Required:	
Sample Disposal After:	

LAB ID	SAMPLE ID	DATE	MATRIX	CONTAINER TYPE & PRESERVATIVE: Soil / Solid: 150-250ml Glass Jar	Soil / Solid: 200ml Plastic Jar	Soil / Solid: - Plastic bag	Water / Liquid: 2x 40ml Amber Vial	Water / Liquid: 100-500ml Amber Bottle	Water / Liquid: 60ml Metals	Water / Liquid: 60ml Nutrients	Water / Liquid: 250-500ml Plastic (Unpreserved)	Water / Liquid: 60-250ml Plastic (PFAS)	Other	ANALYSIS REQUIRED: WQ Parameters: pH, EC ORP, DO, TDS, Alkalinity, Hardness	Major Ions	Extended Metals suite - UltraTrace: 15 metals NEPM Suite	Nutrients (Trace)	TRH + BTEXN	PAH	OCP / OPP	Herbicides	VOC / SVOC	PFAS	Cr Speciation			HOLD
	QC06	23.01	W											X										X			
	~~R005~~		W																								
	TS	23.01	W													X		X									
	TB	23.01	W													X		X									
			W														

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 315737

Client Details

Client	Epic Environmental (Sydney) Pty Ltd
Attention	Patrick Carroll, j Xie
Address	Suite 5, Level 9, 189 Kent Street, SYDNEY, NSW, 2000

Sample Details

Your Reference	**SC210108.03, Sydney Metro WTP**
Number of Samples	7 Water
Date samples received	03/02/2023
Date completed instructions received	03/02/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

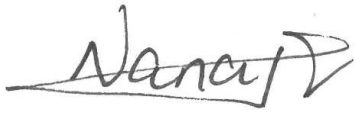
Date results requested by	13/02/2023
Date of Issue	13/02/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Alexander Mitchell Maclean, Senior Chemist
Greta Petzold, Assistant Operation Manager
Kyle Gavrily, Senior Chemist
Loren Bardwell, Development Chemist
Priya Samarawickrama, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

VOCs in water					
Our Reference		315737-1	315737-2	315737-3	315737-4
Your Reference	UNITS	SMW-WTP-BH02	SMW-BH701	SMW-WTP-BH03a	Well-JX
Date Sampled		3/02/2023	3/02/2023	3/02/2023	3/02/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	09/02/2023	09/02/2023	09/02/2023	09/02/2023
Date analysed	-	10/02/2023	10/02/2023	10/02/2023	10/02/2023
Dichlorodifluoromethane	µg/L	<10	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10	<10
Vinyl Chloride	µg/L	<10	<10	<10	<10
Bromomethane	µg/L	<10	<10	<10	<10
Chloroethane	µg/L	<10	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1	<1
Chloroform	µg/L	<1	<1	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1	<1
Benzene	µg/L	<1	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1

VOCs in water					
Our Reference		315737-1	315737-2	315737-3	315737-4
Your Reference	UNITS	SMW-WTP-BH02	SMW-BH701	SMW-WTP-BH03a	Well-JX
Date Sampled		3/02/2023	3/02/2023	3/02/2023	3/02/2023
Type of sample		Water	Water	Water	Water
Bromoform	µg/L	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2
Styrene	µg/L	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1	<1
o-xylene	µg/L	<1	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1	<1	<1
4-isopropyl toluene	µg/L	<1	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1	<1
Hexachlorobutadiene	µg/L	<1	<1	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	109	109	111	114
Surrogate toluene-d8	%	98	99	100	102
Surrogate 4-BFB	%	108	110	109	110

SVOC's in water					
Our Reference		315737-1	315737-2	315737-3	315737-4
Your Reference	UNITS	SMW-WTP-BH02	SMW-BH701	SMW-WTP-BH03a	Well-JX
Date Sampled		3/02/2023	3/02/2023	3/02/2023	3/02/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	09/02/2023	09/02/2023	09/02/2023	09/02/2023
Date analysed	-	09/02/2023	09/02/2023	09/02/2023	09/02/2023
Phenol	µg/L	<2	<2	<2	<2
Bis (2-chloroethyl) ether	µg/L	<5	<5	<5	<5
2-Chlorophenol	µg/L	<2	<2	<2	<2
1,3-Dichlorobenzene	µg/L	<2	<2	<2	<2
1,4-Dichlorobenzene	µg/L	<2	<2	<2	<2
2-Methylphenol	µg/L	<2	<2	<2	<2
1,2-Dichlorobenzene	µg/L	<2	<2	<2	<2
bis-(2-Chloroisopropyl) ether	µg/L	<5	<5	<5	<5
3/4-Methylphenol	µg/L	<4	<4	<4	<4
N-nitrosodi-n-propylamine	µg/L	<5	<5	<5	<5
Hexachloroethane	µg/L	<2	<2	<2	<2
Nitrobenzene	µg/L	<5	<5	<5	<5
Isophorone	µg/L	<5	<5	<5	<5
2,4-Dimethylphenol	µg/L	<2	<2	<2	<2
2-Nitrophenol	µg/L	<2	<2	<2	<2
bis (2-Chloroethoxy) methane	µg/L	<5	<5	<5	<5
2,4-Dichlorophenol	µg/L	<2	<2	<2	<2
1,2,4-Trichlorobenzene	µg/L	<2	<2	<2	<2
Naphthalene	µg/L	<2	<2	<2	<2
4-Chloroaniline	µg/L	<5	<5	<5	<5
4-Chloro-3-methylphenol	µg/L	<10	<10	<10	<10
Hexachlorobutadiene	µg/L	<2	<2	<2	<2
2-Methylnaphthalene	µg/L	<2	<2	<2	<2
Hexachlorocyclopentadiene	µg/L	<5	<5	<5	<5
2,4,6-Trichlorophenol	µg/L	<2	<2	<2	<2
2,4,5-Trichlorophenol	µg/L	<2	<2	<2	<2
2-Chloronaphthalene	µg/L	<2	<2	<2	<2
2-Nitroaniline	µg/L	<5	<5	<5	<5
Dimethyl phthalate	µg/L	<10	<10	<10	<10
2,6-Dinitrotoluene	µg/L	<5	<5	<5	<5
Acenaphthylene	µg/L	<2	<2	<2	<2
3-Nitroaniline	µg/L	<5	<5	<5	<5
Acenaphthene	µg/L	<2	<2	<2	<2
2,4-Dinitrophenol	µg/L	<20	<20	<20	<20

SVOC's in water					
Our Reference		315737-1	315737-2	315737-3	315737-4
Your Reference	UNITS	SMW-WTP-BH02	SMW-BH701	SMW-WTP-BH03a	Well-JX
Date Sampled		3/02/2023	3/02/2023	3/02/2023	3/02/2023
Type of sample		Water	Water	Water	Water
4-Nitrophenol	µg/L	<20	<20	<20	<20
Dibenzofuran	µg/L	<5	<5	<5	<5
Diethylphthalate	µg/L	<10	<10	<10	<10
4-Chlorophenylphenylether	µg/L	<5	<5	<5	<5
4-Nitroaniline	µg/L	<5	<5	<5	<5
Fluorene	µg/L	<2	<2	<2	<2
2-methyl-4,6-dinitrophenol	µg/L	<20	<20	<20	<20
Azobenzene	µg/L	<5	<5	<5	<5
4-Bromophenylphenylether	µg/L	<5	<5	<5	<5
Hexachlorobenzene	µg/L	<2	<2	<2	<2
Pentachlorophenol	µg/L	<10	<10	<10	<10
Phenanthrene	µg/L	<2	<2	<2	<2
Anthracene	µg/L	<2	<2	<2	<2
Carbazole	µg/L	<5	<5	<5	<5
Di-n-butylphthalate	µg/L	<10	<10	<10	<10
Fluoranthene	µg/L	<2	<2	<2	<2
Pyrene	µg/L	<2	<2	<2	<2
Butylbenzylphthalate	µg/L	<10	<10	<10	<10
Bis(2-ethylhexyl) phthalate	µg/L	<50	<50	<50	<50
Benzo(a)anthracene	µg/L	<2	<2	<2	<2
Chrysene	µg/L	<2	<2	<2	<2
Di-n-octylphthalate	µg/L	<10	<10	<10	<10
Benzo(b,j+k)fluoranthene	µg/L	<4	<4	<4	<4
Benzo(a)pyrene	µg/L	<2	<2	<2	<2
Indeno(1,2,3-c,d)pyrene	µg/L	<2	<2	<2	<2
Dibenzo(a,h)anthracene	µg/L	<2	<2	<2	<2
Benzo(g,h,i)perylene	µg/L	<2	<2	<2	<2
Ethylmethanesulfonate	µg/L	<5	<5	<5	<5
Aniline	µg/L	<5	<5	<5	<5
Pentachloroethane	µg/L	<2	<2	<2	<2
Benzyl alcohol	µg/L	<5	<5	<5	<5
Acetophenone	µg/L	<5	<5	<5	<5
N-nitrosomorpholine	µg/L	<5	<5	<5	<5
N-nitrosopiperidine	µg/L	<5	<5	<5	<5
2,6-Dichlorophenol	µg/L	<2	<2	<2	<2
Hexachloropropene-1	µg/L	<2	<2	<2	<2
N-nitroso-n-butylamine	µg/L	<5	<5	<5	<5

SVOC's in water					
Our Reference		315737-1	315737-2	315737-3	315737-4
Your Reference	UNITS	SMW-WTP-BH02	SMW-BH701	SMW-WTP-BH03a	Well-JX
Date Sampled		3/02/2023	3/02/2023	3/02/2023	3/02/2023
Type of sample		Water	Water	Water	Water
Safrole	µg/L	<5	<5	<5	<5
1,2,4,5-Tetrachlorobenzene	µg/L	<2	<2	<2	<2
Trans/Cis-iso-safrole	µg/L	<5	<5	<5	<5
1,3-Dinitrobenzene	µg/L	<5	<5	<5	<5
Pentachlorobenzene	µg/L	<2	<2	<2	<2
1-Naphthylamine	µg/L	<5	<5	<5	<5
2,3,4,6-Tetrachlorophenol	µg/L	<2	<2	<2	<2
2-Naphthylamine	µg/L	<5	<5	<5	<5
5-Nitro-o-toluidine	µg/L	<5	<5	<5	<5
Diphenylamine	µg/L	<5	<5	<5	<5
Phenacetin	µg/L	<5	<5	<5	<5
Pentachloronitrobenzene	µg/L	<5	<5	<5	<5
Dinoseb	µg/L	<10	<10	<10	<10
Methapyrilene	µg/L	<10	<10	<10	<10
p-Dimethylaminoazobenzene	µg/L	<5	<5	<5	<5
2-Acetylaminofluorene	µg/L	<2	<2	<2	<2
7,12-Dimethylbenz(a)anthracene	µg/L	<2	<2	<2	<2
3-Methylcholanthrene	µg/L	<2	<2	<2	<2
a-BHC	µg/L	<2	<2	<2	<2
b-BHC	µg/L	<2	<2	<2	<2
g-BHC	µg/L	<2	<2	<2	<2
d-BHC	µg/L	<2	<2	<2	<2
Heptachlor	µg/L	<2	<2	<2	<2
Aldrin	µg/L	<2	<2	<2	<2
Heptachlor Epoxide	µg/L	<2	<2	<2	<2
g-Chlordane	µg/L	<2	<2	<2	<2
a-Chlordane	µg/L	<2	<2	<2	<2
Endosulfan I	µg/L	<2	<2	<2	<2
p,p'-DDE	µg/L	<2	<2	<2	<2
Dieldrin	µg/L	<2	<2	<2	<2
Endrin	µg/L	<2	<2	<2	<2
p,p'-DDD	µg/L	<2	<2	<2	<2
Endosulfan II	µg/L	<2	<2	<2	<2
Endrin Aldehyde	µg/L	<2	<2	<2	<2
p,p'-DDT	µg/L	<2	<2	<2	<2
Endosulfan Sulphate	µg/L	<2	<2	<2	<2
Endrin Ketone	µg/L	<2	<2	<2	<2

SVOC's in water					
Our Reference		315737-1	315737-2	315737-3	315737-4
Your Reference	UNITS	SMW-WTP-BH02	SMW-BH701	SMW-WTP-BH03a	Well-JX
Date Sampled		3/02/2023	3/02/2023	3/02/2023	3/02/2023
Type of sample		Water	Water	Water	Water
Methoxychlor	µg/L	<2	<2	<2	<2
Dichlorvos	µg/L	<2	<2	<2	<2
Mevinphos	µg/L	<2	<2	<2	<2
Phorate	µg/L	<2	<2	<2	<2
Dimethoate	µg/L	<2	<2	<2	<2
Diazinon (dimpylate)	µg/L	<2	<2	<2	<2
Disulfoton	µg/L	<2	<2	<2	<2
Chloropyriphos-methyl	µg/L	<2	<2	<2	<2
Parathion-methyl	µg/L	<2	<2	<2	<2
Ronnel (fenchlorphos)	µg/L	<2	<2	<2	<2
Fenitrothion	µg/L	<2	<2	<2	<2
Malathion (Maldison)	µg/L	<2	<2	<2	<2
Chloropyriphos	µg/L	<2	<2	<2	<2
Fenthion	µg/L	<2	<2	<2	<2
Parathion (parathion-ethyl)	µg/L	<2	<2	<2	<2
Bromophos Ethyl	µg/L	<2	<2	<2	<2
Methidathion	µg/L	<2	<2	<2	<2
Fenamiphos (Phenamiphos)	µg/L	<2	<2	<2	<2
Ethion	µg/L	<2	<2	<2	<2
Phosalone	µg/L	<2	<2	<2	<2
Azinphos methyl (Guthion)	µg/L	<2	<2	<2	<2
Coumaphos (Co-Ral)	µg/L	<2	<2	<2	<2
Surrogate 2-fluorophenol	%	60	52	55	58
Surrogate Phenol-d_6	%	38	38	36	43
Surrogate Nitrobenzene-d_5	%	94	86	89	83
Surrogate 2-fluorobiphenyl	%	95	88	94	89
Surrogate 2,4,6-Tribromophenol	%	79	69	74	75
Surrogate *p*-Terphenyl-d_{14}	%	84	76	82	79

vTRH(C6-C10)/BTEXN in Water						
Our Reference		315737-1	315737-2	315737-3	315737-4	315737-5
Your Reference	UNITS	SMW-WTP-BH02	SMW-BH701	SMW-WTP-BH03a	Well-JX	RS07
Date Sampled		3/02/2023	3/02/2023	3/02/2023	3/02/2023	3/02/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	09/02/2023	09/02/2023	09/02/2023	09/02/2023	09/02/2023
Date analysed	-	10/02/2023	10/02/2023	10/02/2023	10/02/2023	10/02/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	109	109	111	114	112
Surrogate toluene-d8	%	98	99	100	102	101
Surrogate 4-BFB	%	108	110	109	110	109

vTRH(C6-C10)/BTEXN in Water			
Our Reference		315737-6	315737-7
Your Reference	UNITS	TS0302	TB0302
Date Sampled		3/02/2023	3/02/2023
Type of sample		Water	Water
Date extracted	-	09/02/2023	09/02/2023
Date analysed	-	10/02/2023	10/02/2023
TRH C_6 - C_9	µg/L	[NA]	<10
TRH C_6 - C_{10}	µg/L	[NA]	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	[NA]	<10
Benzene	µg/L	90%	<1
Toluene	µg/L	93%	<1
Ethylbenzene	µg/L	104%	<1
m+p-xylene	µg/L	100%	<2
o-xylene	µg/L	100%	<1
Naphthalene	µg/L	[NA]	<1
Surrogate Dibromofluoromethane	%	101	107
Surrogate toluene-d8	%	98	97
Surrogate 4-BFB	%	103	106

svTRH (C10-C40) in Water						
Our Reference		315737-1	315737-2	315737-3	315737-4	315737-5
Your Reference	UNITS	SMW-WTP-BH02	SMW-BH701	SMW-WTP-BH03a	Well-JX	RS07
Date Sampled		3/02/2023	3/02/2023	3/02/2023	3/02/2023	3/02/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	07/02/2023	07/02/2023	07/02/2023	07/02/2023	07/02/2023
Date analysed	-	08/02/2023	08/02/2023	08/02/2023	08/02/2023	08/02/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	170	110	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	170	110	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	50	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	190	170	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	240	170	<50	<50	<50
Surrogate o-Terphenyl	%	77	61	70	70	79

PAHs in Water					
Our Reference		315737-1	315737-2	315737-3	315737-4
Your Reference	UNITS	SMW-WTP-BH02	SMW-BH701	SMW-WTP-BH03a	Well-JX
Date Sampled		3/02/2023	3/02/2023	3/02/2023	3/02/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	09/02/2023	09/02/2023	09/02/2023	09/02/2023
Date analysed	-	09/02/2023	09/02/2023	09/02/2023	09/02/2023
Naphthalene	µg/L	<1	<1	<1	<1
Acenaphthylene	µg/L	<1	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1	<1
Fluorene	µg/L	<1	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1	<1
Anthracene	µg/L	<1	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1	<1
Pyrene	µg/L	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1	<1
Chrysene	µg/L	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	84	76	82	79

Organochlorine Pesticides in Water					
Our Reference		315737-1	315737-2	315737-3	315737-4
Your Reference	UNITS	SMW-WTP-BH02	SMW-BH701	SMW-WTP-BH03a	Well-JX
Date Sampled		3/02/2023	3/02/2023	3/02/2023	3/02/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	09/02/2023	09/02/2023	09/02/2023	09/02/2023
Date analysed	-	09/02/2023	09/02/2023	09/02/2023	09/02/2023
alpha-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
HCB	µg/L	<0.2	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	89	83	86	83

OP Pesticides in Water					
Our Reference		315737-1	315737-2	315737-3	315737-4
Your Reference	UNITS	SMW-WTP-BH02	SMW-BH701	SMW-WTP-BH03a	Well-JX
Date Sampled		3/02/2023	3/02/2023	3/02/2023	3/02/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	09/02/2023	09/02/2023	09/02/2023	09/02/2023
Date analysed	-	09/02/2023	09/02/2023	09/02/2023	09/02/2023
Dichlorvos	µg/L	<0.2	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	89	83	86	83

HM in water - dissolved					
Our Reference		315737-1	315737-3	315737-4	315737-5
Your Reference	UNITS	SMW-WTP-BH02	SMW-WTP-BH03a	Well-JX	RS07
Date Sampled		3/02/2023	3/02/2023	3/02/2023	3/02/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	07/02/2023	07/02/2023	07/02/2023	07/02/2023
Date analysed	-	07/02/2023	07/02/2023	07/02/2023	07/02/2023
Arsenic-Dissolved	µg/L	2	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	0.2	<0.1
Chromium-Dissolved	µg/L	3	<1	<1	<1
Copper-Dissolved	µg/L	70	3	21	<1
Lead-Dissolved	µg/L	2	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	3	2	110	<1
Zinc-Dissolved	µg/L	11	15	470	<1
Barium-Dissolved	µg/L	11	9	26	<1
Beryllium-Dissolved	µg/L	<0.5	<0.5	5	<0.5
Cobalt-Dissolved	µg/L	<1	<1	160	<1
Manganese-Dissolved	µg/L	6	<5	2,900	<5
Selenium-Dissolved	µg/L	<1	<1	<1	<1

Metals in Waters - Acid extractable				
Our Reference		315737-1	315737-3	315737-4
Your Reference	UNITS	SMW-WTP-BH02	SMW-WTP-BH03a	Well-JX
Date Sampled		3/02/2023	3/02/2023	3/02/2023
Type of sample		Water	Water	Water
Date prepared	-	07/02/2023	07/02/2023	07/02/2023
Date analysed	-	07/02/2023	07/02/2023	07/02/2023
Phosphorus - Total	mg/L	0.1	0.2	0.08

Ion Balance						
Our Reference		315737-1	315737-2	315737-3	315737-4	315737-5
Your Reference	UNITS	SMW-WTP-BH02	SMW-BH701	SMW-WTP-BH03a	Well-JX	RS07
Date Sampled		3/02/2023	3/02/2023	3/02/2023	3/02/2023	3/02/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	03/02/2023	03/02/2023	03/02/2023	03/02/2023	03/02/2023
Date analysed	-	03/02/2023	03/02/2023	03/02/2023	03/02/2023	03/02/2023
Calcium - Dissolved	mg/L	5.2	59	7.5	5	<0.5
Potassium - Dissolved	mg/L	12	38	1	9.9	<0.5
Sodium - Dissolved	mg/L	140	1,900	19	610	<0.5
Magnesium - Dissolved	mg/L	0.9	190	2	34	<0.5
Hardness	mgCaCO 3 /L	17	910	25	150	<3
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5	<5	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	190	810	32	11	<5
Carbonate Alkalinity as $CaCO_3$	mg/L	120	<5	<5	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	310	810	32	11	<5
Sulphate, SO4	mg/L	13	520	17	390	<1
Chloride, Cl	mg/L	25	2,700	20	1,100	<1
Ionic Balance	%	-2.0	-2.0	-6.0	-14	N/A

Miscellaneous Inorganics						
Our Reference		315737-1	315737-2	315737-3	315737-4	315737-5
Your Reference	UNITS	SMW-WTP-BH02	SMW-BH701	SMW-WTP-BH03a	Well-JX	RS07
Date Sampled		3/02/2023	3/02/2023	3/02/2023	3/02/2023	3/02/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	03/02/2023	03/02/2023	03/02/2023	03/02/2023	03/02/2023
Date analysed	-	03/02/2023	03/02/2023	03/02/2023	03/02/2023	03/02/2023
pH	pH Units	9.5	6.8	6.9	4.9	5.8
Electrical Conductivity	µS/cm	700	9,600	180	3,900	<1
Total Dissolved Solids (grav)	mg/L	440	6,000	120	2,500	<5
Dissolved Oxygen*	mg/L	7.9	7.2	8.9	8.1	8.0
Phosphate as P in water	mg/L	0.11	0.02	<0.005	<0.005	<0.005
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	[NA]	<0.005	<0.005	<0.005
Trivalent Chromium	mg/L	<0.005	[NA]	<0.005	<0.005	<0.005
Ammonia as N in water	mg/L	<0.005	[NA]	0.005	0.53	[NA]
Nitrate as N in water	mg/L	0.43	[NA]	0.061	0.007	[NA]
Nitrite as N in water	mg/L	<0.005	[NA]	<0.005	<0.005	[NA]
NOx as N in water	mg/L	0.4	[NA]	0.06	0.009	[NA]
Total Nitrogen in water	mg/L	0.8	[NA]	0.2	0.8	[NA]
TKN in water	mg/L	0.3	[NA]	0.1	0.8	[NA]
Organic Nitrogen as N	mg/L	0.3	[NA]	<0.2	0.3	[NA]
Redox Potential*	mV	253	283	229	16	[NA]

Acid Herbicides in Water					
Our Reference		315737-1	315737-2	315737-3	315737-4
Your Reference	UNITS	SMW-WTP-BH02	SMW-BH701	SMW-WTP-BH03a	Well-JX
Date Sampled		3/02/2023	3/02/2023	3/02/2023	3/02/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	09/02/2023	09/02/2023	09/02/2023	09/02/2023
Date analysed	-	10/02/2023	10/02/2023	10/02/2023	10/02/2023
Clopyralid	µg/L	<0.5	<0.5	<0.5	<0.5
3,5-Dichlorobenzoic acid	µg/L	<0.5	<0.5	<0.5	<0.5
o-chlorophenoxy acetic acid	µg/L	<0.5	<0.5	<0.5	<0.5
4-CPA	µg/L	<0.5	<0.5	<0.5	<0.5
Dicamba	µg/L	<0.5	<0.5	<0.5	<0.5
MCPP	µg/L	<0.5	<0.5	<0.5	<0.5
MCPA	µg/L	<0.5	<0.5	<0.5	<0.5
Dichlorprop	µg/L	<0.5	<0.5	<0.5	<0.5
2,4-D	µg/L	<0.5	<0.5	<0.5	<0.5
Bromoxynil	µg/L	<0.5	<0.5	<0.5	<0.5
Triclopyr	µg/L	<0.5	<0.5	<0.5	<0.5
2,4,5-TP	µg/L	<0.5	<0.5	<0.5	<0.5
2,4,5-T	µg/L	<0.5	<0.5	<0.5	<0.5
MCPB	µg/L	<0.5	<0.5	<0.5	<0.5
Dinoseb	µg/L	<1	<1	<1	<1
2,4-DB	µg/L	<0.5	<0.5	<0.5	<0.5
Ioxynil	µg/L	<1	<1	<1	<1
Picloram	µg/L	<1	<1	<1	<1
Acifluorfen	µg/L	<2	<2	<2	<2
2,4,6-T	µg/L	<0.5	<0.5	<0.5	<0.5
2,6-D	µg/L	<0.5	<0.5	<0.5	<0.5
Bentazon	µg/L	<1	<1	<1	<1
Chloramben	µg/L	<1	<1	<1	<1
Fluroxypyr	µg/L	<1	<1	<1	<1
Surrogate 2.4- DCPA	%	78	89	80	97

Triazine Herbicides in Water					
Our Reference		315737-1	315737-2	315737-3	315737-4
Your Reference	UNITS	SMW-WTP-BH02	SMW-BH701	SMW-WTP-BH03a	Well-JX
Date Sampled		3/02/2023	3/02/2023	3/02/2023	3/02/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	09/02/2023	09/02/2023	09/02/2023	09/02/2023
Date analysed	-	09/02/2023	09/02/2023	09/02/2023	09/02/2023
Atrazine	mg/L	<0.002	<0.002	<0.002	<0.002
Ametryn	mg/L	<0.002	<0.002	<0.002	<0.002
Cyanazine	mg/L	<0.002	<0.002	<0.002	<0.002
Hexazinone	mg/L	<0.002	<0.002	<0.002	<0.002
Irgarol	mg/L	<0.002	<0.002	<0.002	<0.002
Metribuzin	mg/L	<0.002	<0.002	<0.002	<0.002
Prometryn	mg/L	<0.002	<0.002	<0.002	<0.002
Propazine	mg/L	<0.002	<0.002	<0.002	<0.002
Simazine	mg/L	<0.002	<0.002	<0.002	<0.002
Terbutryn	mg/L	<0.002	<0.002	<0.002	<0.002
Terbuthylazine	mg/L	<0.002	<0.002	<0.002	<0.002
Surrogate p-Terphenyl-d14	%	84	76	81	78

PFAS in Waters Extended					
Our Reference		315737-1	315737-2	315737-3	315737-4
Your Reference	UNITS	SMW-WTP-BH02	SMW-BH701	SMW-WTP-BH03a	Well-JX
Date Sampled		3/02/2023	3/02/2023	3/02/2023	3/02/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	07/02/2023	07/02/2023	07/02/2023	07/02/2023
Date analysed	-	07/02/2023	07/02/2023	07/02/2023	07/02/2023
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.04
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.02	<0.01	<0.02
6:2 FTS	µg/L	0.02	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	103	101	100	96
Surrogate $^{13}C_2$ *PFOA*	%	103	97	102	104
Extracted ISTD $^{13}C_3$ *PFBS*	%	104	90	100	98
Extracted ISTD $^{18}O_2$ *PFHxS*	%	111	113	116	118
Extracted ISTD $^{13}C_4$ *PFOS*	%	113	121	115	120
Extracted ISTD $^{13}C_4$ *PFBA*	%	87	52	94	43

PFAS in Waters Extended					
Our Reference		315737-1	315737-2	315737-3	315737-4
Your Reference	UNITS	SMW-WTP-BH02	SMW-BH701	SMW-WTP-BH03a	Well-JX
Date Sampled		3/02/2023	3/02/2023	3/02/2023	3/02/2023
Type of sample		Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	104	54	97	78
Extracted ISTD $^{13}C_2$ *PFHxA*	%	110	57	103	93
Extracted ISTD $^{13}C_4$ *PFHpA*	%	121	81	120	111
Extracted ISTD $^{13}C_4$ *PFOA*	%	118	93	120	110
Extracted ISTD $^{13}C_5$ *PFNA*	%	133	123	138	132
Extracted ISTD $^{13}C_2$ *PFDA*	%	120	91	111	98
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	123	110	112	114
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	137	130	137	135
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	115	121	134	124
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	122	31	90	41
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	139	55	127	87
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	143	102	147	127
Extracted ISTD $^{13}C_8$ *FOSA*	%	120	124	122	125
Extracted ISTD d_3 *N MeFOSA*	%	109	102	113	112
Extracted ISTD d_5 *N EtFOSA*	%	106	128	127	128
Extracted ISTD d_7 *N MeFOSE*	%	110	117	114	117
Extracted ISTD d_9 *N EtFOSE*	%	104	102	108	108
Extracted ISTD d_3 *N MeFOSAA*	%	129	73	117	93
Extracted ISTD d_5 *N EtFOSAA*	%	114	71	106	89
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01	<0.01
Total Positive PFOA & PFOS	µg/L	<0.01	<0.01	<0.01	<0.01
Total Positive PFAS	µg/L	0.02	<0.01	<0.01	<0.01

Method ID	Methodology Summary
Ext-061	Analysed by Envirolab Melbourne
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Inorg-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation below:- TDS = EC * 0.6
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Inorg-035	Analysed using an electrode. Please note that the results for water analyses are indicative only, samples are ideally analysed on collection.
Inorg-040	The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% ie total anions = total cations +/-15%.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Inorg-112	Dissolved Oxygen using membrane electrode. Note this analysis should ideally be carried out immediately after sampling.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			09/02/2023	[NT]	[NT]	[NT]	[NT]	09/02/2023	[NT]
Date analysed	-			10/02/2023	[NT]	[NT]	[NT]	[NT]	10/02/2023	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	82	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	84	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	87	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	110	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate toluene-d8	%		Org-023	103	[NT]	[NT]	[NT]	[NT]	103	[NT]
Surrogate 4-BFB	%		Org-023	110	[NT]	[NT]	[NT]	[NT]	105	[NT]

QUALITY CONTROL: SVOC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	315737-3
Date extracted	-			09/02/2023	1	09/02/2023	09/02/2023		09/02/2023	09/02/2023
Date analysed	-			09/02/2023	1	09/02/2023	09/02/2023		09/02/2023	09/02/2023
Phenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	97	38
Bis (2-chloroethyl) ether	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2-Chlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	105	79
1,3-Dichlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
1,4-Dichlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	96	55
2-Methylphenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	102	74
1,2-Dichlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
bis-(2-Chloroisopropyl) ether	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
3/4-Methylphenol	µg/L	4	Org-022/025	<4	1	<4	<4	0	[NT]	[NT]
N-nitrosodi-n-propylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Hexachloroethane	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Nitrobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Isophorone	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,4-Dimethylphenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2-Nitrophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
bis (2-Chloroethoxy) methane	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,4-Dichlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
1,2,4-Trichlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Naphthalene	µg/L	2	Org-022/025	<2	1	<2	<2	0	113	88
4-Chloroaniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
4-Chloro-3-methylphenol	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2-Methylnaphthalene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Hexachlorocyclopentadiene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,4,6-Trichlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2,4,5-Trichlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2-Chloronaphthalene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2-Nitroaniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Dimethyl phthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	100	86
2,6-Dinitrotoluene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Acenaphthylene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
3-Nitroaniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Acenaphthene	µg/L	2	Org-022/025	<2	1	<2	<2	0	121	103
2,4-Dinitrophenol	µg/L	20	Org-022/025	<20	1	<20	<20	0	[NT]	[NT]
4-Nitrophenol	µg/L	20	Org-022/025	<20	1	<20	<20	0	82	33
Dibenzofuran	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Diethylphthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	109	101
4-Chlorophenylphenylether	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]

QUALITY CONTROL: SVOC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	315737-3
4-Nitroaniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Fluorene	µg/L	2	Org-022/025	<2	1	<2	<2	0	122	107
2-methyl-4,6-dinitrophenol	µg/L	20	Org-022/025	<20	1	<20	<20	0	[NT]	[NT]
Azobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
4-Bromophenylphenylether	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Hexachlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Pentachlorophenol	µg/L	10	Org-022/025	<10	1	<10	<10	0	112	56
Phenanthrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	130	110
Anthracene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Carbazole	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Di-n-butylphthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Fluoranthene	µg/L	2	Org-022/025	<2	1	<2	<2	0	129	110
Pyrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	137	117
Butylbenzylphthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Bis(2-ethylhexyl) phthalate	µg/L	50	Org-022/025	<50	1	<50	<50	0	[NT]	[NT]
Benzo(a)anthracene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Chrysene	µg/L	2	Org-022/025	<2	1	<2	<2	0	83	73
Di-n-octylphthalate	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	µg/L	4	Org-022/025	<4	1	<4	<4	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	126	108
Indeno(1,2,3-c,d)pyrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Ethylmethanesulfonate	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Aniline	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Pentachloroethane	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Benzyl alcohol	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Acetophenone	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
N-nitrosomorpholine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
N-nitrosopiperidine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,6-Dichlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	124	86
Hexachloropropene-1	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
N-nitroso-n-butylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Safrole	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
1,2,4,5-Tetrachlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Trans/Cis-iso-safrole	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
1,3-Dinitrobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Pentachlorobenzene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
1-Naphthylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2,3,4,6-Tetrachlorophenol	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]

QUALITY CONTROL: SVOC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	315737-3
2-Naphthylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
5-Nitro-o-toluidine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Diphenylamine	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Phenacetin	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Pentachloronitrobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
Dinoseb	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Methapyrilene	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
p-Dimethylaminoazobenzene	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2-Acetylaminofluorene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
7,12-Dimethylbenz(a)anthracene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
3-Methylcholanthrene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
a-BHC	µg/L	2	Org-022/025	<2	1	<2	<2	0	106	96
b-BHC	µg/L	2	Org-022/025	<2	1	<2	<2	0	104	94
g-BHC	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
d-BHC	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Heptachlor	µg/L	2	Org-022/025	<2	1	<2	<2	0	99	93
Aldrin	µg/L	2	Org-022/025	<2	1	<2	<2	0	105	91
Heptachlor Epoxide	µg/L	2	Org-022/025	<2	1	<2	<2	0	102	86
g-Chlordane	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
a-Chlordane	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Endosulfan I	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
p,p'-DDE	µg/L	2	Org-022/025	<2	1	<2	<2	0	113	96
Dieldrin	µg/L	2	Org-022/025	<2	1	<2	<2	0	110	94
Endrin	µg/L	2	Org-022/025	<2	1	<2	<2	0	86	88
p,p'-DDD	µg/L	2	Org-022/025	<2	1	<2	<2	0	114	133
Endosulfan II	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Endrin Aldehyde	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
p,p'-DDT	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	2	Org-022/025	<2	1	<2	<2	0	108	96
Endrin Ketone	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Methoxychlor	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Dichlorvos	µg/L	2	Org-022/025	<2	1	<2	<2	0	118	105
Mevinphos	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Phorate	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Dimethoate	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Diazinon (dimpylate)	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Disulfoton	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Chloropyriphos-methyl	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Parathion-methyl	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]

QUALITY CONTROL: SVOC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	315737-3
Ronnel (fenchlorphos)	µg/L	2	Org-022/025	<2	1	<2	<2	0	99	83
Fenitrothion	µg/L	2	Org-022/025	<2	1	<2	<2	0	89	85
Malathion (Maldison)	µg/L	2	Org-022/025	<2	1	<2	<2	0	118	103
Chloropyriphos	µg/L	2	Org-022/025	<2	1	<2	<2	0	114	98
Fenthion	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Parathion (parathion-ethyl)	µg/L	2	Org-022/025	<2	1	<2	<2	0	95	89
Bromophos Ethyl	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Methidathion	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Fenamiphos (Phenamiphos)	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Ethion	µg/L	2	Org-022/025	<2	1	<2	<2	0	107	94
Phosalone	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Azinphos methyl (Guthion)	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Coumaphos (Co-Ral)	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Surrogate 2-fluorophenol	%		Org-022/025	64	1	60	60	0	47	47
Surrogate Phenol-d_6	%		Org-022/025	38	1	38	47	21	50	34
Surrogate Nitrobenzene-d_5	%		Org-022/025	103	1	94	90	4	86	86
Surrogate 2-fluorobiphenyl	%		Org-022/025	107	1	95	88	8	96	86
Surrogate 2,4,6-Tribromophenol	%		Org-022/025	82	1	79	76	4	104	68
Surrogate p-Terphenyl-d_{14}	%		Org-022/025	95	1	84	77	9	97	80

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			09/02/2023	[NT]	[NT]	[NT]	[NT]	09/02/2023	[NT]
Date analysed	-			10/02/2023	[NT]	[NT]	[NT]	[NT]	10/02/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	90	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	90	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	94	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	110	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate toluene-d8	%		Org-023	103	[NT]	[NT]	[NT]	[NT]	103	[NT]
Surrogate 4-BFB	%		Org-023	110	[NT]	[NT]	[NT]	[NT]	105	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			07/02/2023	1	07/02/2023	07/02/2023		07/02/2023	[NT]
Date analysed	-			08/02/2023	1	08/02/2023	08/02/2023		08/02/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	55	10	86	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	170	280	49	94	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	120	18	86	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	50	71	35	86	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	190	350	59	94	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	86	[NT]
Surrogate o-Terphenyl	%		Org-020	80	1	77	77	0	75	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	315737-3
Date extracted	-			09/02/2023	1	09/02/2023	09/02/2023		09/02/2023	09/02/2023
Date analysed	-			09/02/2023	1	09/02/2023	09/02/2023		09/02/2023	09/02/2023
Naphthalene	µg/L	0.2	Org-022/025	<1	1	<1	<1	0	113	88
Acenaphthylene	µg/L	0.1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<1	1	<1	<1	0	121	103
Fluorene	µg/L	0.1	Org-022/025	<1	1	<1	<1	0	122	107
Phenanthrene	µg/L	0.1	Org-022/025	<1	1	<1	<1	0	130	110
Anthracene	µg/L	0.1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<1	1	<1	<1	0	129	110
Pyrene	µg/L	0.1	Org-022/025	<1	1	<1	<1	0	137	117
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<1	1	<1	<1	0	83	73
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<1	1	<1	<1	0	126	108
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	95	1	84	77	9	97	80

QUALITY CONTROL: Organochlorine Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	315737-3
Date extracted	-			09/02/2023	1	09/02/2023	09/02/2023		09/02/2023	09/02/2023
Date analysed	-			09/02/2023	1	09/02/2023	09/02/2023		09/02/2023	09/02/2023
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	106	96
HCB	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	104	94
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	99	93
delta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	105	91
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	102	86
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	113	96
Dieldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	110	94
Endrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	86	88
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	112	133
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	108	96
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	105	1	89	86	3	100	89

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	315737-3
Date extracted	-			09/02/2023	1	09/02/2023	09/02/2023		09/02/2023	09/02/2023
Date analysed	-			09/02/2023	1	09/02/2023	09/02/2023		09/02/2023	09/02/2023
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	118	105
Dimethoate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	99	83
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	89	85
Malathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	118	103
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	114	98
Parathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	95	89
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	107	94
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	105	1	89	86	3	100	89

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	315737-3
Date prepared	-			07/02/2023	1	07/02/2023	07/02/2023		07/02/2023	07/02/2023
Date analysed	-			07/02/2023	1	07/02/2023	07/02/2023		07/02/2023	07/02/2023
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	2	2	0	94	93
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	94	94
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	3	3	0	97	94
Copper-Dissolved	µg/L	1	Metals-022	<1	1	70	77	10	97	93
Lead-Dissolved	µg/L	1	Metals-022	<1	1	2	2	0	94	94
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	105	104
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	3	4	29	95	91
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	11	12	9	95	94
Barium-Dissolved	µg/L	1	Metals-022	<1	1	11	12	9	96	96
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	1	<0.5	<0.5	0	100	105
Cobalt-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	94	91
Manganese-Dissolved	µg/L	5	Metals-022	<5	1	6	7	15	98	95
Selenium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	93	92

QUALITY CONTROL: Metals in Waters - Acid extractable					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			07/02/2023	[NT]	[NT]	[NT]	[NT]	07/02/2023	[NT]
Date analysed	-			07/02/2023	[NT]	[NT]	[NT]	[NT]	07/02/2023	[NT]
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	110	[NT]

QUALITY CONTROL: Ion Balance						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	315737-4
Date prepared	-			03/02/2023	3	03/02/2023	03/02/2023		03/02/2023	03/02/2023
Date analysed	-			03/02/2023	3	03/02/2023	03/02/2023		03/02/2023	03/02/2023
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	3	7.5	7.5	0	94	90
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	3	1	1	0	92	91
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	3	19	19	0	96	#
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	3	2	2	0	96	91
Hardness	mgCaCO 3 /L	3	Metals-020	[NT]	3	25	25	0	[NT]	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	<5	3	<5	[NT]		[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	3	32	[NT]		[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	3	<5	[NT]		[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	3	32	[NT]		91	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	3	17	[NT]		108	[NT]
Chloride, Cl	mg/L	1	Inorg-081	<1	3	20	[NT]		104	[NT]
Ionic Balance	%		Inorg-040	[NT]	3	-6.0	[NT]		[NT]	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			03/02/2023	1	03/02/2023	03/02/2023		03/02/2023	[NT]
Date analysed	-			03/02/2023	1	03/02/2023	03/02/2023		03/02/2023	[NT]
pH	pH Units		Inorg-001	[NT]	1	9.5	[NT]		99	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	1	700	[NT]		102	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	<5	1	440	[NT]		100	[NT]
Dissolved Oxygen*	mg/L	0.1	Inorg-112	<0.1	1	7.9	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	<0.005	1	0.11	[NT]		99	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	<0.005	0	102	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	<0.005	[NT]		102	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.43	[NT]		111	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	[NT]		98	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.4	[NT]		111	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	0.8	[NT]		90	[NT]
TKN in water	mg/L	0.1	Inorg-062	<0.1	1	0.3	[NT]		[NT]	[NT]
Organic Nitrogen as N	mg/L	0.2	Inorg-055/062/127	<0.2	1	0.3	[NT]		[NT]	[NT]
Redox Potential*	mV		Inorg-035	[NT]	1	253	[NT]		87	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	2	03/02/2023	03/02/2023		[NT]	[NT]
Date analysed	-			[NT]	2	03/02/2023	03/02/2023		[NT]	[NT]
pH	pH Units		Inorg-001	[NT]	2	6.8	[NT]		[NT]	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	[NT]	2	9600	[NT]		[NT]	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	[NT]	2	6000	6300	5	[NT]	[NT]
Dissolved Oxygen*	mg/L	0.1	Inorg-112	[NT]	2	7.2	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	[NT]	2	0.02	[NT]		[NT]	[NT]
Redox Potential*	mV		Inorg-035	[NT]	2	283	281	1	[NT]	[NT]

QUALITY CONTROL: Acid Herbicides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	315737-2
Date extracted	-			09/02/2023	1	09/02/2023	09/02/2023		09/02/2023	09/02/2023
Date analysed	-			10/02/2023	1	10/02/2023	10/02/2023		10/02/2023	10/02/2023
Clopyralid	µg/L	0.5	Ext-061	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
3,5-Dichlorobenzoic acid	µg/L	0.5	Ext-061	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
o-chlorophenoxy acetic acid	µg/L	0.5	Ext-061	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
4-CPA	µg/L	0.5	Ext-061	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Dicamba	µg/L	0.5	Ext-061	<0.5	1	<0.5	<0.5	0	83	100
MCPP	µg/L	0.5	Ext-061	<0.5	1	<0.5	<0.5	0	81	100
MCPA	µg/L	0.5	Ext-061	<0.5	1	<0.5	<0.5	0	82	101
Dichlorprop	µg/L	0.5	Ext-061	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
2,4-D	µg/L	0.5	Ext-061	<0.5	1	<0.5	<0.5	0	86	106
Bromoxynil	µg/L	0.5	Ext-061	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Triclopyr	µg/L	0.5	Ext-061	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
2,4,5-TP	µg/L	0.5	Ext-061	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
2,4,5-T	µg/L	0.5	Ext-061	<0.5	1	<0.5	<0.5	0	81	99
MCPB	µg/L	0.5	Ext-061	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Dinoseb	µg/L	1	Ext-061	<1	1	<1	<1	0	[NT]	[NT]
2,4-DB	µg/L	0.5	Ext-061	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Ioxynil	µg/L	1	Ext-061	<1	1	<1	<1	0	[NT]	[NT]
Picloram	µg/L	1	Ext-061	<1	1	<1	<1	0	[NT]	[NT]
Acifluorfen	µg/L	2	Ext-061	<2	1	<2	<2	0	[NT]	[NT]
2,4,6-T	µg/L	0.5	Ext-061	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
2,6-D	µg/L	0.5	Ext-061	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Bentazon	µg/L	1	Ext-061	<1	1	<1	<1	0	[NT]	[NT]
Chloramben	µg/L	1	Ext-061	<1	1	<1	<1	0	[NT]	[NT]
Fluroxypyr	µg/L	1	Ext-061	<1	1	<1	<1	0	[NT]	[NT]
Surrogate 2.4- DCPA	%		Ext-061	78	1	78	84	7	83	93

QUALITY CONTROL: Triazine Herbicides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	315737-3
Date extracted	-			09/02/2023	1	09/02/2023	09/02/2023		09/02/2023	09/02/2023
Date analysed	-			09/02/2023	1	09/02/2023	09/02/2023		09/02/2023	09/02/2023
Atrazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	118	98
Ametryn	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Cyanazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Hexazinone	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Irgarol	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Metribuzin	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Prometryn	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	96	83
Propazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	110	93
Simazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Terbutryn	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Terbuthylazine	mg/L	0.002	Org-022/025	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	95	1	84	77	9	95	79

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			07/02/2023	[NT]	[NT]	[NT]	[NT]	07/02/2023	[NT]
Date analysed	-			07/02/2023	[NT]	[NT]	[NT]	[NT]	07/02/2023	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	103	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	101	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	86	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	110	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	103	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	111	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	108	[NT]
4:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	102	[NT]
6:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	104	[NT]
8:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	97	[NT]
10:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	106	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	108	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	108	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	103	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	105	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	108	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	111	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	122	[NT]	[NT]	[NT]	[NT]	112	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	139	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	109	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	116	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	117	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	120	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	111	[NT]	[NT]	[NT]	[NT]	105	[NT]

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	117	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	102	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

Total metals: no unfiltered, preserved sample was received, therefore analysis was conducted from the unpreserved sample bottle.
Note: there is a possibility some elements may be underestimated.

Ion Balance - # Percent recovery is not applicable due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Dissolved Metals: no filtered, preserved sample was received for#2, therefore the unpreserved sample was filtered through 0.45µm filter at the lab.
Note: there is a possibility some elements may be underestimated.

Phenoxy Acid Herbicides analysed by MPL Laboratories. Report No. PEB0390

① PLS. DONOT TEST Cr SPECIATION, SAMPLE ON HOLD
THX.

epic ENVIRONMENTAL

Chain of Custody Record

Project No:	SC210108.03
Project/Site:	Sydney Metro WTP
Project Manager:	PC
Sampled By:	JX
Phone:	426205616
Page:	1 of 1
Number of Eskies:	01

Lab:	
Lab Quote No:	
Lab Batch No:	
Date Results Required:	standard.
Sample Disposal After:	

LAB ID	SAMPLE ID	DATE	MATRIX
1	SMW-WTP-BH02	03.Feb	W
2	SMW-BH701	03-Feb	W
3	SMW-WTP_BH03A	—	W
4	Well-JX	—	W
5	R507	—	W
	~~FS07~~		W
	~~FB~~		W
6	TS0302	—	W
7	TB0302	—	W
			W
			W
			W
			W
			W
			W
			W
			W
			W
			W
			W
			W
		TOTALS	

CONTAINER TYPE & PRESERVATIVE

Soil / Solid			Water / Liquid					Other
150-250ml Glass Jar	200ml Plastic Jar	- Plastic bag	2x 40ml Amber Vial	100-500ml Amber Bottle	60ml Metals	60ml Nutrients	250-500ml Plastic (Unpreserved)	60-250ml Plastic (PFAS)	

ANALYSIS REQUIRED

WQ Parameters: pH, EC ORP, DO, TDS, Alkalinity, Hardness	Major Ions	Extended Metals suite - UltraTrace: 15 metals NEPM Suite	Nutrients (Trace)	TRH + BTEXN	PAH	OCP / OPP	Herbicides	VOC / SVOC	PFAS	Cr speciation	Cr & C10		HOLD
X										X			V
X	X			X	X	X	X	X	X				V
X										X			V
X										X			V
X	X	X		X							X		V
				X							X		
				X							X		

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 315437
Date Received: 3/2/23
Time Received: 17:45
Received By: HYL
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Envirolab Services
12 Ashley S.
Chatswood NSW 2067
Ph: (02) 9910 6200
Date Received:
Time Received:
Received By:
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished By:	JX			Received By:	BLS STD		
NAME	Jay XIE	SIGNATURE	DATE 03.Feb23 ########	NAME	HYL	SIGNATURE	DATE 3/2/23 @1700

Custody Seals Intact	Y	N
Samples Received Chilled	Y	N
Method of Shipment		

NOTES:

Email ###
cc ###
cc epicenvironmental@esdat.com.au
cc labs@epicenvironmental.com.au

② SMW-BH701 only got limited samples.
please sample TRH/BTEXN/VOC as first Priority. THX

TJ 315085

ALS.

Chain of Custody Record

Project No:	SC210108.03
Project/Site:	Sydney Metro WTP
Project Manager:	
Sampled By:	
Phone:	426205616
Page:	of
Number of Eskies:	

Lab:	
Lab Quote No:	
Lab Batch No:	
Date Results Required:	
Sample Disposal After:	

LAB ID	SAMPLE ID	DATE	MATRIX	CONTAINER TYPE & PRESERVATIVE									
				Soil / Solid			Water / Liquid						Other
				150-250ml Glass Jar	200ml Plastic Jar	- Plastic bag	2x 40ml Amber Vial	100-500ml Amber Bottle	60ml Metals	60ml Nutrients	250-500ml Plastic (Unpreserved)	60-250ml Plastic (PFAS)	
1	QC06	23.01	W										
	~~BG05~~		W										
2	TS	23.01	W										
3	TB	23.01	W										
			W										
			W										

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2302610**	Page	: 1 of 17
Client	: **EPIC ENVIRONMENTAL**	Laboratory	: Environmental Division Sydney
Contact	: INVOICES & RESULTS	Contact	: Customer Services ES
Address	: SUITE 5, LEVEL 9/189 KENT STREET SYDNEY 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: SC210108.03 Sydney Metro WTP	Date Samples Received	: 25-Jan-2023 15:50
Order number	: ----	Date Analysis Commenced	: 25-Jan-2023
C-O-C number	: ----	Issue Date	: 03-Feb-2023 17:34
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 3		
No. of samples analysed	: 3		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP075: Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EP202: Poor matrix spike recoveries for particular compounds due to matrix interferences.
- EP075: Where reported, 'Sum of PAH' is the sum of the USEPA 16 priority PAHs
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC06	TS	TB	----	----
			Sampling date / time	23-Jan-2023 00:00	23-Jan-2023 00:00	23-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2302610-001	ES2302610-002	ES2302610-003	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**6.45**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**660**	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**452**	----	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**137**	----	----	----	----
pH Redox	----	0.01	pH Unit	**6.34**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**89**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**89**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**124**	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**62**	----	----	----	----
ED093F: SAR and Hardness Calculations								
Total Hardness as CaCO3	----	1	mg/L	**41**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.10**	----	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.070**	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.002**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC06	TS	TB	----	----
			Sampling date / time	23-Jan-2023 00:00	23-Jan-2023 00:00	23-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2302610-001	ES2302610-002	ES2302610-003	--------	--------
				Result	Result	Result	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EG049F: Dissolved Trivalent Chromium								
Trivalent Chromium	16065-83-1	0.01	mg/L	<0.01	----	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**3.80**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.4**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**4.2**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.02**	----	----	----	----
EP025: Oxygen - Dissolved (DO)								
Dissolved Oxygen	----	0.1	mg/L	**8.6**	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	----	----	----	----
beta-BHC	319-85-7	0.5	µg/L	<0.5	----	----	----	----
gamma-BHC	58-89-9	0.5	µg/L	<0.5	----	----	----	----
delta-BHC	319-86-8	0.5	µg/L	<0.5	----	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	----	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<0.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L	<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L	<0.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC06	TS	TB	----	----
			Sampling date / time	23-Jan-2023 00:00	23-Jan-2023 00:00	23-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2302610-001	ES2302610-002	ES2302610-003	--------	--------
				Result	Result	Result	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	2.0	µg/L	<2.0	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	----	----	----	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L	<0.5	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/L	<0.5	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	----	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	----	----	----	----
Parathion	56-38-2	2.0	µg/L	<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	1	µg/L	<1	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----
Styrene	100-42-5	5	µg/L	<5	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----
Isopropylbenzene	98-82-8	5	µg/L	<5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC06	TS	TB	----	----
			Sampling date / time	23-Jan-2023 00:00	23-Jan-2023 00:00	23-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2302610-001	ES2302610-002	ES2302610-003	--------	--------
				Result	Result	Result	----	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
n-Propylbenzene	103-65-1	5	µg/L	<5	----	----	----	----
1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	----	----	----	----
sec-Butylbenzene	135-98-8	5	µg/L	<5	----	----	----	----
1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	----	----	----	----
tert-Butylbenzene	98-06-6	5	µg/L	<5	----	----	----	----
p-Isopropyltoluene	99-87-6	5	µg/L	<5	----	----	----	----
n-Butylbenzene	104-51-8	5	µg/L	<5	----	----	----	----
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	50	µg/L	<50	----	----	----	----
2-Butanone (MEK)	78-93-3	50	µg/L	<50	----	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	----	----	----	----
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	----	----	----	----
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	5	µg/L	<5	----	----	----	----
EP074D: Fumigants								
2.2-Dichloropropane	594-20-7	5	µg/L	<5	----	----	----	----
1.2-Dichloropropane	78-87-5	5	µg/L	<5	----	----	----	----
cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	----	----	----	----
trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	----	----	----	----
1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	----	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	----	----	----	----
Chloromethane	74-87-3	50	µg/L	<50	----	----	----	----
Vinyl chloride	75-01-4	50	µg/L	<50	----	----	----	----
Bromomethane	74-83-9	50	µg/L	<50	----	----	----	----
Chloroethane	75-00-3	50	µg/L	<50	----	----	----	----
Trichlorofluoromethane	75-69-4	50	µg/L	<50	----	----	----	----
1.1-Dichloroethene	75-35-4	5	µg/L	<5	----	----	----	----
Iodomethane	74-88-4	5	µg/L	<5	----	----	----	----
trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	----	----	----	----
1.1-Dichloroethane	75-34-3	5	µg/L	<5	----	----	----	----
cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	----	----	----	----
1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	----	----	----	----
1.1-Dichloropropylene	563-58-6	5	µg/L	<5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC06	TS	TB	----	----
				Sampling date / time	23-Jan-2023 00:00	23-Jan-2023 00:00	23-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2302610-001	ES2302610-002	ES2302610-003	--------	--------
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
Carbon Tetrachloride	56-23-5	5	µg/L		<5	----	----	----	----
1.2-Dichloroethane	107-06-2	5	µg/L		<5	----	----	----	----
Trichloroethene	79-01-6	5	µg/L		<5	----	----	----	----
Dibromomethane	74-95-3	5	µg/L		<5	----	----	----	----
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	----	----	----	----
1.3-Dichloropropane	142-28-9	5	µg/L		<5	----	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	----	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	----	----	----	----
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L		<5	----	----	----	----
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L		<5	----	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	----	----	----	----
1.2.3-Trichloropropane	96-18-4	5	µg/L		<5	----	----	----	----
Pentachloroethane	76-01-7	5	µg/L		<5	----	----	----	----
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L		<5	----	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	----	----	----	----
Bromobenzene	108-86-1	5	µg/L		<5	----	----	----	----
2-Chlorotoluene	95-49-8	5	µg/L		<5	----	----	----	----
4-Chlorotoluene	106-43-4	5	µg/L		<5	----	----	----	----
1.2.3-Trichlorobenzene	87-61-6	5	µg/L		<5	----	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	----	----	----	----
Bromodichloromethane	75-27-4	5	µg/L		<5	----	----	----	----
Dibromochloromethane	124-48-1	5	µg/L		<5	----	----	----	----
Bromoform	75-25-2	5	µg/L		<5	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC06	TS	TB	----	----
			Sampling date / time	23-Jan-2023 00:00	23-Jan-2023 00:00	23-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2302610-001	ES2302610-002	ES2302610-003	--------	--------
				Result	Result	Result	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	----	----	----	----
EP075A: Phenolic Compounds								
Phenol	108-95-2	2	µg/L	<2	----	----	----	----
2-Chlorophenol	95-57-8	2	µg/L	<2	----	----	----	----
2-Methylphenol	95-48-7	2	µg/L	<2	----	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	----	----	----	----
2-Nitrophenol	88-75-5	2	µg/L	<2	----	----	----	----
2.4-Dimethylphenol	105-67-9	2	µg/L	<2	----	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L	<2	----	----	----	----
2.6-Dichlorophenol	87-65-0	2	µg/L	<2	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	2	µg/L	<2	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	2	µg/L	<2	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	2	µg/L	<2	----	----	----	----
Pentachlorophenol	87-86-5	4	µg/L	<4	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	2	µg/L	<2	----	----	----	----
2-Methylnaphthalene	91-57-6	2	µg/L	<2	----	----	----	----
2-Chloronaphthalene	91-58-7	2	µg/L	<2	----	----	----	----
Acenaphthylene	208-96-8	2	µg/L	<2	----	----	----	----
Acenaphthene	83-32-9	2	µg/L	<2	----	----	----	----
Fluorene	86-73-7	2	µg/L	<2	----	----	----	----
Phenanthrene	85-01-8	2	µg/L	<2	----	----	----	----
Anthracene	120-12-7	2	µg/L	<2	----	----	----	----
Fluoranthene	206-44-0	2	µg/L	<2	----	----	----	----
Pyrene	129-00-0	2	µg/L	<2	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC06	TS	TB	----	----
			Sampling date / time	23-Jan-2023 00:00	23-Jan-2023 00:00	23-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2302610-001	ES2302610-002	ES2302610-003	--------	--------
				Result	Result	Result	----	----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
N-2-Fluorenyl Acetamide	53-96-3	2	µg/L	<2	----	----	----	----
Benz(a)anthracene	56-55-3	2	µg/L	<2	----	----	----	----
Chrysene	218-01-9	2	µg/L	<2	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	4	µg/L	<4	----	----	----	----
7.12-Dimethylbenz(a)anthracene	57-97-6	2	µg/L	<2	----	----	----	----
Benzo(a)pyrene	50-32-8	2	µg/L	<2	----	----	----	----
3-Methylcholanthrene	56-49-5	2	µg/L	<2	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	2	µg/L	<2	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	2	µg/L	<2	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	2	µg/L	<2	----	----	----	----
^ Sum of PAHs	----	2	µg/L	<2	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	2	µg/L	<2	----	----	----	----
EP075C: Phthalate Esters								
Dimethyl phthalate	131-11-3	2	µg/L	<2	----	----	----	----
Diethyl phthalate	84-66-2	2	µg/L	<2	----	----	----	----
Di-n-butyl phthalate	84-74-2	2	µg/L	<2	----	----	----	----
Butyl benzyl phthalate	85-68-7	2	µg/L	<2	----	----	----	----
bis(2-ethylhexyl) phthalate	117-81-7	10	µg/L	<10	----	----	----	----
Di-n-octylphthalate	117-84-0	2	µg/L	<2	----	----	----	----
EP075D: Nitrosamines								
N-Nitrosomethylethylamine	10595-95-6	2	µg/L	<2	----	----	----	----
N-Nitrosodiethylamine	55-18-5	2	µg/L	<2	----	----	----	----
N-Nitrosopyrrolidine	930-55-2	4	µg/L	<4	----	----	----	----
N-Nitrosomorpholine	59-89-2	2	µg/L	<2	----	----	----	----
N-Nitrosodi-n-propylamine	621-64-7	2	µg/L	<2	----	----	----	----
N-Nitrosopiperidine	100-75-4	2	µg/L	<2	----	----	----	----
N-Nitrosodibutylamine	924-16-3	2	µg/L	<2	----	----	----	----
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	4	µg/L	<4	----	----	----	----
Methapyrilene	91-80-5	2	µg/L	<2	----	----	----	----
EP075E: Nitroaromatics and Ketones								
2-Picoline	109-06-8	2	µg/L	<2	----	----	----	----
Acetophenone	98-86-2	2	µg/L	<2	----	----	----	----
Nitrobenzene	98-95-3	2	µg/L	<2	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC06	TS	TB	----	----
			Sampling date / time	23-Jan-2023 00:00	23-Jan-2023 00:00	23-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2302610-001	ES2302610-002	ES2302610-003	--------	--------
				Result	Result	Result	----	----
EP075E: Nitroaromatics and Ketones - Continued								
Isophorone	78-59-1	2	µg/L	<2	----	----	----	----
2.6-Dinitrotoluene	606-20-2	4	µg/L	<4	----	----	----	----
2.4-Dinitrotoluene	121-14-2	4	µg/L	<4	----	----	----	----
1-Naphthylamine	134-32-7	2	µg/L	<2	----	----	----	----
4-Nitroquinoline-N-oxide	56-57-5	2	µg/L	<2	----	----	----	----
5-Nitro-o-toluidine	99-55-8	2	µg/L	<2	----	----	----	----
Azobenzene	103-33-3	2	µg/L	<2	----	----	----	----
1.3.5-Trinitrobenzene	99-35-4	2	µg/L	<2	----	----	----	----
Phenacetin	62-44-2	2	µg/L	<2	----	----	----	----
4-Aminobiphenyl	92-67-1	2	µg/L	<2	----	----	----	----
Pentachloronitrobenzene	82-68-8	2	µg/L	<2	----	----	----	----
Pronamide	23950-58-5	2	µg/L	<2	----	----	----	----
Dimethylaminoazobenzene	60-11-7	2	µg/L	<2	----	----	----	----
Chlorobenzilate	510-15-6	2	µg/L	<2	----	----	----	----
EP075F: Haloethers								
Bis(2-chloroethyl) ether	111-44-4	2	µg/L	<2	----	----	----	----
Bis(2-chloroethoxy) methane	111-91-1	2	µg/L	<2	----	----	----	----
4-Chlorophenyl phenyl ether	7005-72-3	2	µg/L	<2	----	----	----	----
4-Bromophenyl phenyl ether	101-55-3	2	µg/L	<2	----	----	----	----
EP075G: Chlorinated Hydrocarbons								
1.3-Dichlorobenzene	541-73-1	2	µg/L	<2	----	----	----	----
1.4-Dichlorobenzene	106-46-7	2	µg/L	<2	----	----	----	----
1.2-Dichlorobenzene	95-50-1	2	µg/L	<2	----	----	----	----
Hexachloroethane	67-72-1	2	µg/L	<2	----	----	----	----
1.2.4-Trichlorobenzene	120-82-1	2	µg/L	<2	----	----	----	----
Hexachloropropylene	1888-71-7	2	µg/L	<2	----	----	----	----
Hexachlorobutadiene	87-68-3	2	µg/L	<2	----	----	----	----
Hexachlorocyclopentadiene	77-47-4	10	µg/L	<10	----	----	----	----
Pentachlorobenzene	608-93-5	2	µg/L	<2	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	4	µg/L	<4	----	----	----	----
EP075H: Anilines and Benzidines								
Aniline	62-53-3	2	µg/L	<2	----	----	----	----
4-Chloroaniline	106-47-8	2	µg/L	<2	----	----	----	----
2-Nitroaniline	88-74-4	4	µg/L	<4	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC06	TS	TB	----	----
				Sampling date / time	23-Jan-2023 00:00	23-Jan-2023 00:00	23-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2302610-001	ES2302610-002	ES2302610-003	--------	--------
					Result	Result	Result	----	----
EP075H: Anilines and Benzidines - Continued									
3-Nitroaniline	99-09-2	4	µg/L		<4	----	----	----	----
Dibenzofuran	132-64-9	2	µg/L		<2	----	----	----	----
4-Nitroaniline	100-01-6	2	µg/L		<2	----	----	----	----
Carbazole	86-74-8	2	µg/L		<2	----	----	----	----
3.3`-Dichlorobenzidine	91-94-1	2	µg/L		<2	----	----	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	2	µg/L		<2	----	----	----	----
beta-BHC	319-85-7	2	µg/L		<2	----	----	----	----
gamma-BHC	58-89-9	2	µg/L		<2	----	----	----	----
delta-BHC	319-86-8	2	µg/L		<2	----	----	----	----
Heptachlor	76-44-8	2	µg/L		<2	----	----	----	----
Aldrin	309-00-2	2	µg/L		<2	----	----	----	----
Heptachlor epoxide	1024-57-3	2	µg/L		<2	----	----	----	----
alpha-Endosulfan	959-98-8	2	µg/L		<2	----	----	----	----
4.4`-DDE	72-55-9	2	µg/L		<2	----	----	----	----
Dieldrin	60-57-1	2	µg/L		<2	----	----	----	----
Endrin	72-20-8	2	µg/L		<2	----	----	----	----
beta-Endosulfan	33213-65-9	2	µg/L		<2	----	----	----	----
4.4`-DDD	72-54-8	2	µg/L		<2	----	----	----	----
Endosulfan sulfate	1031-07-8	2	µg/L		<2	----	----	----	----
4.4`-DDT	50-29-3	4	µg/L		<4	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	4	µg/L		<4	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	4	µg/L		<4	----	----	----	----
EP075J: Organophosphorus Pesticides									
Dichlorvos	62-73-7	2	µg/L		<2	----	----	----	----
Dimethoate	60-51-5	2	µg/L		<2	----	----	----	----
Diazinon	333-41-5	2	µg/L		<2	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	2	µg/L		<2	----	----	----	----
Malathion	121-75-5	2	µg/L		<2	----	----	----	----
Fenthion	55-38-9	2	µg/L		<2	----	----	----	----
Chlorpyrifos	2921-88-2	2	µg/L		<2	----	----	----	----
Pirimphos-ethyl	23505-41-1	2	µg/L		<2	----	----	----	----
Chlorfenvinphos	470-90-6	2	µg/L		<2	----	----	----	----
Prothiofos	34643-46-4	2	µg/L		<2	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC06	TS	TB	----	----
				Sampling date / time	23-Jan-2023 00:00	23-Jan-2023 00:00	23-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2302610-001	ES2302610-002	ES2302610-003	--------	--------
					Result	Result	Result	----	----
EP075J: Organophosphorus Pesticides - Continued									
Ethion	563-12-2	2	µg/L		<2	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	<20	----	----
C10 - C14 Fraction	----	50	µg/L		<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	<20	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	----	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	**8**	<1	----	----
Toluene	108-88-3	2	µg/L		<2	**8**	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	**8**	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	**16**	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	**8**	<2	----	----
^ **Total Xylenes**	----	2	µg/L		<2	**24**	<2	----	----
^ **Sum of BTEX**	----	1	µg/L		<1	**48**	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	**12**	<5	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS									
4-Chlorophenoxy acetic acid	122-88-3	10	µg/L		<10	----	----	----	----
2.4-DB	94-82-6	10	µg/L		<10	----	----	----	----
Dicamba	1918-00-9	10	µg/L		<10	----	----	----	----
Mecoprop	93-65-2	10	µg/L		<10	----	----	----	----
MCPA	94-74-6	10	µg/L		<10	----	----	----	----
2.4-DP	120-36-5	10	µg/L		<10	----	----	----	----
2.4-D	94-75-7	10	µg/L		<10	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC06	TS	TB	----	----
			Sampling date / time	23-Jan-2023 00:00	23-Jan-2023 00:00	23-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2302610-001	ES2302610-002	ES2302610-003	--------	--------
				Result	Result	Result	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS - Continued								
Triclopyr	55335-06-3	10	µg/L	<10	----	----	----	----
Silvex (2.4.5-TP/Fenoprop)	93-72-1	10	µg/L	<10	----	----	----	----
2.4.5-T	93-76-5	10	µg/L	<10	----	----	----	----
MCPB	94-81-5	10	µg/L	<10	----	----	----	----
Picloram	1918-02-1	10	µg/L	<10	----	----	----	----
Clopyralid	1702-17-6	10	µg/L	<10	----	----	----	----
Fluroxypyr	69377-81-7	10	µg/L	<10	----	----	----	----
2.6-D	575-90-6	10	µg/L	<10	----	----	----	----
2.4.6-T	575-89-3	10	µg/L	<10	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.09**	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**0.03**	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.18**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.15**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**0.29**	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.26**	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	**0.07**	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**0.10**	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC06	TS	TB	----	----
				Sampling date / time	23-Jan-2023 00:00	23-Jan-2023 00:00	23-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2302610-001	ES2302610-002	ES2302610-003	--------	--------
					Result	Result	Result	----	----
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**1.17**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.33**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**1.14**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC06	TS	TB	----	----
				Sampling date / time	23-Jan-2023 00:00	23-Jan-2023 00:00	23-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2302610-001	ES2302610-002	ES2302610-003	--------	--------
					Result	Result	Result	----	----
EP068S: Organochlorine Pesticide Surrogate - Continued									
Dibromo-DDE	21655-73-2	0.5	%		68.0	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		71.5	----	----	----	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	5	%		114	----	----	----	----
Toluene-D8	2037-26-5	5	%		115	----	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		116	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		23.5	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		47.7	----	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%		29.3	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		60.0	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%		74.3	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		63.4	----	----	----	----
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	2	%		38.0	----	----	----	----
Phenol-d6	13127-88-3	2	%		24.8	----	----	----	----
2-Chlorophenol-D4	93951-73-6	2	%		53.3	----	----	----	----
2.4.6-Tribromophenol	118-79-6	2	%		47.0	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	2	%		54.1	----	----	----	----
1.2-Dichlorobenzene-D4	2199-69-1	2	%		47.0	----	----	----	----
2-Fluorobiphenyl	321-60-8	2	%		54.4	----	----	----	----
Anthracene-d10	1719-06-8	2	%		67.3	----	----	----	----
4-Terphenyl-d14	1718-51-0	2	%		65.1	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		118	106	106	----	----
Toluene-D8	2037-26-5	2	%		114	101	108	----	----
4-Bromofluorobenzene	460-00-4	2	%		116	99.4	110	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2.4-Dichlorophenyl Acetic Acid	19719-28-9	10	%		116	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		102	----	----	----	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Sample ID	QC06	TS	TB	----	----
				Sampling date / time	23-Jan-2023 00:00	23-Jan-2023 00:00	23-Jan-2023 00:00	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES2302610-001**	**ES2302610-002**	**ES2302610-003**	--------	--------
					Result	Result	Result	----	----
EP231S: PFAS Surrogate - Continued									
13C8-PFOA	----	0.02	%		**87.4**	**----**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	67	111
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	67	111
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	78	133
Toluene-D8	2037-26-5	79	129
4-Bromofluorobenzene	460-00-4	81	124
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP075S: Acid Extractable Surrogates			
2-Fluorophenol	367-12-4	10	117
Phenol-d6	13127-88-3	10	69
2-Chlorophenol-D4	93951-73-6	21	130
2.4.6-Tribromophenol	118-79-6	10	151
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	142
1.2-Dichlorobenzene-D4	2199-69-1	24	121
2-Fluorobiphenyl	321-60-8	27	135
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	21	123
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128
EP202S: Phenoxyacetic Acid Herbicide Surrogate			
2.4-Dichlorophenyl Acetic Acid	19719-28-9	64	140
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2302610**	Page	: 1 of 22
Client	: **EPIC ENVIRONMENTAL**	Laboratory	: Environmental Division Sydney
Contact	: INVOICES & RESULTS	Contact	: Customer Services ES
Address	: SUITE 5, LEVEL 9/189 KENT STREET SYDNEY 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: SC210108.03 Sydney Metro WTP	Date Samples Received	: 25-Jan-2023
Order number	: ----	Date Analysis Commenced	: 25-Jan-2023
C-O-C number	: ----	Issue Date	: 03-Feb-2023
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 3		
No. of samples analysed	: 3		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titrator (QC Lot: 4841007)									
ES2302367-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.84	6.10	4.4	0% - 20%
ES2302490-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.83	8.85	0.2	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 4841004)									
ES2302367-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	52	52	0.0	0% - 20%
ES2302788-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	7070	6980	1.2	0% - 20%
EW2300386-006	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	63	64	0.0	0% - 20%
ES2302361-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1750	1740	0.7	0% - 20%
EW2300386-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	142	141	0.9	0% - 20%
ES2302490-004	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	989	990	0.0	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 4835520)									
EN2300836-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	2140	2110	1.5	0% - 20%
ES2302065-005	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1220	1190	2.2	0% - 20%
EA075: Redox Potential (QC Lot: 4838123)									
ES2300895-017	Anonymous	EA075: Redox Potential	----	0.1	mV	109	111	2.1	0% - 20%
		EA075: pH Redox	----	0.01	pH Unit	7.75	7.75	0.0	0% - 20%
ES2302509-001	Anonymous	EA075: Redox Potential	----	0.1	mV	173	174	0.9	0% - 20%
		EA075: pH Redox	----	0.01	pH Unit	5.65	5.64	0.2	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 4841005)									
ES2302361-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	252	255	1.1	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	252	255	1.1	0% - 20%
ES2302490-004	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
ED037P: Alkalinity by PC Titrator (QC Lot: 4841005) - continued									
ES2302490-004	Anonymous	ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	178	200	11.7	0% - 20%
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	301	283	5.9	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	478	483	1.0	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 4839492)									
ES2302238-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	4	2	89.2	No Limit
ES2302584-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	217	197	9.4	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 4839491)									
ES2302065-004	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	17	17	0.0	0% - 50%
ES2302605-002	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	4200	4240	1.1	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 4841281)									
ES2302465-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.005	0.005	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Cobalt	7440-48-4	0.001	mg/L	0.016	0.015	0.0	0% - 50%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	2.19	2.19	0.1	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.123	0.121	1.5	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.098	0.097	1.7	0% - 50%
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Boron	7440-42-8	0.05	mg/L	<0.05	0.07	30.5	No Limit
ES2302641-002	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.038	0.038	0.0	0% - 20%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Cobalt	7440-48-4	0.001	mg/L	0.009	0.009	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.412	0.410	0.4	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.007	0.007	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.411	0.405	1.4	0% - 20%
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 4841280)									

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 4841280) - continued									
ES2302341-003	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP2300699-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 4838967)									
ES2302591-001	Anonymous	EG050G-F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2302608-001	Anonymous	EG050G-F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 4844560)									
ES2302591-007	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	<0.01	0.0	No Limit
ES2302649-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.02	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 4844556)									
ES2302591-005	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	0.4	0.0	No Limit
ES2302635-003	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.5	1.4	0.0	0% - 50%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 4844557)									
ES2302591-005	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.04	0.03	0.0	No Limit
ES2302635-003	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.33	0.30	8.8	0% - 20%
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 4845189)									
ES2302559-001	Anonymous	EP074: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP074: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP074: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP074: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
EP074B: Oxygenated Compounds (QC Lot: 4845189)									
ES2302559-001	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
EP074C: Sulfonated Compounds (QC Lot: 4845189)									
ES2302559-001	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
EP074D: Fumigants (QC Lot: 4845189)									
ES2302559-001	Anonymous	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP074D: Fumigants (QC Lot: 4845189) - continued									
ES2302559-001	Anonymous	EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 4845189)									
ES2302559-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 4845189)									
ES2302559-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 4845189)									
ES2302559-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074G: Trihalomethanes (QC Lot: 4845189) - continued									
ES2302559-001	Anonymous	EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4845188)									
ES2302559-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4845191)									
ES2302608-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES2302657-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4845188)									
ES2302559-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4845191)									
ES2302608-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES2302657-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 4845188)									
ES2302559-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EP080: BTEXN (QC Lot: 4845191)									
ES2302608-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES2302657-005	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QC Lot: 4836491)									
EM2300935-001	Anonymous	EP202-SL: 4-Chlorophenoxy acetic acid	122-88-3	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: 2.4-DB	94-82-6	10	µg/L	<10	<10	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QC Lot: 4836491) - continued									
EM2300935-001	Anonymous	EP202-SL: Dicamba	1918-00-9	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: Mecoprop	93-65-2	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: MCPA	94-74-6	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: 2.4-DP	120-36-5	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: 2.4-D	94-75-7	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: Triclopyr	55335-06-3	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: Silvex (2.4.5-TP/Fenoprop)	93-72-1	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: 2.4.5-T	93-76-5	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: MCPB	94-81-5	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: Picloram	1918-02-1	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: Clopyralid	1702-17-6	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: Fluroxypyr	69377-81-7	10	µg/L	<10	<10	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4848504)									
ES2302610-001	QC06	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.18	0.19	0.0	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.15	0.16	0.0	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.09	0.10	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4848504)									
ES2302610-001	QC06	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.10	0.10	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.29	0.30	0.0	0% - 50%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.26	0.26	0.0	0% - 50%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.07	0.08	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4848504)									
ES2302610-001	QC06	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4848504) - continued									
ES2302610-001	QC06	EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4848504)									
ES2302610-001	QC06	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 4848504)									
ES2302610-001	QC06	EP231X: Sum of PFAS	----	0.01	µg/L	1.17	1.22	4.2	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA005P: pH by PC Titrator (QCLot: 4841007)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.8	101
				----	7 pH Unit	99.6	99.2	101
EA010P: Conductivity by PC Titrator (QCLot: 4841004)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	103	89.9	110
				<1	2100 µS/cm	95.4	90.2	111
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 4835520)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	101	87.0	109
				<10	293 mg/L	125	75.2	126
				<10	2340 mg/L	102	83.0	124
EA075: Redox Potential (QCLot: 4838123)								
EA075: Redox Potential	----	----	mV	----	234 mV	98.1	96.0	106
				----	300 mV	100	97.0	105
				----	86 mV	110	97.0	115
ED037P: Alkalinity by PC Titrator (QCLot: 4841005)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	99.9	81.0	111
				----	50 mg/L	105	80.0	120
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 4839492)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	101	82.0	122
				<1	500 mg/L	112	82.0	122
ED045G: Chloride by Discrete Analyser (QCLot: 4839491)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	50 mg/L	108	80.9	127
				<1	1000 mg/L	102	80.9	127
EG020F: Dissolved Metals by ICP-MS (QCLot: 4841281)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	95.8	85.0	114
EG020A-F: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	96.7	85.0	115
EG020A-F: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	96.6	82.0	110
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	94.9	84.0	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	96.1	85.0	111
EG020A-F: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	94.6	82.0	112
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	98.6	81.0	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.5	83.0	111
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	95.8	82.0	110
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	95.0	82.0	112
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	94.2	85.0	115

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 4841281) - continued								
EG020A-F: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	97.0	83.0	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	94.6	81.0	117
EG020A-F: Boron	7440-42-8	0.05	mg/L	<0.05	0.5 mg/L	112	85.0	115
EG035F: Dissolved Mercury by FIMS (QCLot: 4841280)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	90.9	83.0	105
EG050F: Dissolved Hexavalent Chromium (QCLot: 4838967)								
EG050G-F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.05 mg/L	103	86.0	112
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 4844560)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	104	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 4844556)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	93.4	69.0	101
				<0.1	1 mg/L	98.6	70.0	118
				<0.1	5 mg/L	97.2	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 4844557)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	93.3	71.3	126
				<0.01	0.442 mg/L	93.0	71.3	126
				<0.01	1 mg/L	104	71.3	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 4836749)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	78.5	64.9	107
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	96.3	58.3	111
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	85.5	69.0	117
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	77.7	70.0	112
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	95.0	68.9	110
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	78.7	65.2	108
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	81.5	65.8	109
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	88.9	67.1	107
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	89.8	64.1	110
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	88.4	66.7	112
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	90.3	63.2	111
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	90.8	65.2	113
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	89.6	66.0	112
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	88.2	65.2	113
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	98.0	67.3	114
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	97.8	72.0	122
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	90.6	66.9	109
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	95.0	65.2	112
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	99.5	65.2	112
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	99.6	63.8	110

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 4836749) - continued								
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	80.1	61.1	114
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4836749)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	83.4	65.6	114
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	79.6	63.7	113
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	25.3	19.7	48.0
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	77.3	69.5	110
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	94.1	71.1	110
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	80.4	77.0	119
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	77.3	70.0	124
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	90.4	68.4	116
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	92.0	68.6	112
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	93.9	75.0	119
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	87.4	67.0	121
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	102	69.0	121
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	77.0	71.8	110
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	88.2	67.5	112
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	106	64.1	116
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	96.2	67.8	114
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	96.7	74.0	120
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	97.3	66.2	114
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	56.4	51.6	128
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 4845189)								
EP074: Benzene	71-43-2	1	µg/L	<1	10 µg/L	100	77.0	119
EP074: Toluene	108-88-3	2	µg/L	<2	10 µg/L	100	69.0	129
EP074: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	99.7	76.0	118
EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	20 µg/L	100	77.0	119
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	99.5	73.0	119
EP074: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	99.7	79.0	117
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	100	76.0	118
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	100	69.0	119
EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	101	74.0	116
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	101	73.0	119
EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	101	74.0	116
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	102	72.0	116
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	101	71.0	119
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	102	65.0	123
EP074B: Oxygenated Compounds (QCLot: 4845189)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP074B: Oxygenated Compounds (QCLot: 4845189) - continued								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	101	61.4	134
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	94.3	73.6	130
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	98.2	66.0	132
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	94.9	65.0	137
EP074C: Sulfonated Compounds (QCLot: 4845189)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	101	72.8	127
EP074D: Fumigants (QCLot: 4845189)								
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	100	68.0	122
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	99.2	76.0	118
EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	97.9	62.0	120
EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	98.1	60.0	114
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	100	69.0	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 4845189)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	90.7	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	113	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	110	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	104	56.0	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	103	61.0	139
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	104	69.0	131
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	101	70.0	124
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	92.2	70.2	128
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	100	74.0	118
EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	99.6	74.0	120
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	102	77.0	119
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	99.7	67.0	119
EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	101	73.0	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	98.5	62.0	120
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	102	73.0	123
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	101	76.0	118
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	97.2	73.0	119
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	101	72.0	126
EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	100.0	71.0	129
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	96.3	72.0	124
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	97.7	66.0	114
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	101	60.0	120
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	96.2	70.6	128
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	99.8	70.0	124
EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	99.3	74.0	126

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP074E: Halogenated Aliphatic Compounds (QCLot: 4845189) - continued								
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	103	71.8	126
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	96.7	66.4	136
EP074F: Halogenated Aromatic Compounds (QCLot: 4845189)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	100	79.0	117
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	99.5	76.0	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	102	73.0	119
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	101	73.0	119
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	101	67.0	123
EP074G: Trihalomethanes (QCLot: 4845189)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	100	72.0	120
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	96.5	64.0	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	96.4	65.0	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	95.8	73.5	126
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4836752)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	78.0	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	71.2	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	74.4	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	65.9	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	82.0	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	89.5	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	112	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	114	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	90.0	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	99.4	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	96.0	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	91.5	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	93.2	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	89.9	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	87.9	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	92.4	59.1	118
EP075A: Phenolic Compounds (QCLot: 4836750)								
EP075: Phenol	108-95-2	2	µg/L	<2	10 µg/L	38.8	25.5	64.1
EP075: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	75.7	52.0	88.0
EP075: 2-Methylphenol	95-48-7	2	µg/L	<2	10 µg/L	73.6	50.0	94.0
EP075: 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2	10 µg/L	62.5	45.0	96.2
EP075: 2-Nitrophenol	88-75-5	2	µg/L	<2	10 µg/L	81.0	48.0	98.0
EP075: 2.4-Dimethylphenol	105-67-9	2	µg/L	<2	10 µg/L	83.3	50.0	94.0

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP075A: Phenolic Compounds (QCLot: 4836750) - continued								
EP075: 2.4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	84.4	61.9	109
EP075: 2.6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	86.3	61.5	108
EP075: 4-Chloro-3-methylphenol	59-50-7	2	µg/L	<2	10 µg/L	94.5	61.4	107
EP075: 2.4.6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	99.0	57.6	112
EP075: 2.4.5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	99.3	58.0	110
EP075: Pentachlorophenol	87-86-5	4	µg/L	<4	20 µg/L	# 113	12.8	95.0
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 4836750)								
EP075: Naphthalene	91-20-3	2	µg/L	<2	10 µg/L	85.1	51.0	95.0
EP075: 2-Methylnaphthalene	91-57-6	2	µg/L	<2	10 µg/L	89.7	59.0	108
EP075: 2-Chloronaphthalene	91-58-7	2	µg/L	<2	10 µg/L	95.4	60.6	106
EP075: Acenaphthylene	208-96-8	2	µg/L	<2	10 µg/L	96.8	64.0	108
EP075: Acenaphthene	83-32-9	2	µg/L	<2	10 µg/L	93.5	65.0	108
EP075: Fluorene	86-73-7	2	µg/L	<2	10 µg/L	97.6	65.2	107
EP075: Phenanthrene	85-01-8	2	µg/L	<2	10 µg/L	94.3	66.7	108
EP075: Anthracene	120-12-7	2	µg/L	<2	10 µg/L	96.5	65.8	108
EP075: Fluoranthene	206-44-0	2	µg/L	<2	10 µg/L	95.2	64.9	109
EP075: Pyrene	129-00-0	2	µg/L	<2	10 µg/L	95.2	60.1	111
EP075: N-2-Fluorenyl Acetamide	53-96-3	2	µg/L	<2	10 µg/L	105	59.7	110
EP075: Benz(a)anthracene	56-55-3	2	µg/L	<2	10 µg/L	92.3	62.2	112
EP075: Chrysene	218-01-9	2	µg/L	<2	10 µg/L	90.8	59.3	114
EP075: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	4	µg/L	<4	20 µg/L	88.1	60.1	111
EP075: 7.12-Dimethylbenz(a)anthracene	57-97-6	2	µg/L	<2	10 µg/L	73.0	50.0	108
EP075: Benzo(a)pyrene	50-32-8	2	µg/L	<2	10 µg/L	84.7	59.2	112
EP075: 3-Methylcholanthrene	56-49-5	2	µg/L	<2	10 µg/L	98.1	60.1	110
EP075: Indeno(1.2.3.cd)pyrene	193-39-5	2	µg/L	<2	10 µg/L	80.3	59.6	110
EP075: Dibenz(a.h)anthracene	53-70-3	2	µg/L	<2	10 µg/L	83.9	57.2	109
EP075: Benzo(g.h.i)perylene	191-24-2	2	µg/L	<2	10 µg/L	75.8	60.6	110
EP075: Benzo(a)pyrene TEQ (zero)	----	2	µg/L	<2	----	----	----	----
EP075C: Phthalate Esters (QCLot: 4836750)								
EP075: Dimethyl phthalate	131-11-3	2	µg/L	<2	10 µg/L	107	64.3	112
EP075: Diethyl phthalate	84-66-2	2	µg/L	<2	10 µg/L	108	67.3	111
EP075: Di-n-butyl phthalate	84-74-2	2	µg/L	<2	10 µg/L	102	68.4	122
EP075: Butyl benzyl phthalate	85-68-7	2	µg/L	<2	10 µg/L	97.3	61.2	114
EP075: bis(2-ethylhexyl) phthalate	117-81-7	----	µg/L	----	10 µg/L	103	60.0	132
EP075: Di-n-octylphthalate	117-84-0	2	µg/L	<2	10 µg/L	102	62.1	115
EP075D: Nitrosamines (QCLot: 4836750)								
EP075: N-Nitrosomethylethylamine	10595-95-6	2	µg/L	<2	10 µg/L	55.4	46.0	110

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP075D: Nitrosamines (QCLot: 4836750) - continued								
EP075: N-Nitrosodiethylamine	55-18-5	2	µg/L	<2	10 µg/L	80.6	60.6	113
EP075: N-Nitrosopyrrolidine	930-55-2	4	µg/L	<4	10 µg/L	73.6	45.0	91.0
EP075: N-Nitrosomorpholine	59-89-2	2	µg/L	<2	10 µg/L	66.8	42.0	100
EP075: N-Nitrosodi-n-propylamine	621-64-7	2	µg/L	<2	10 µg/L	87.8	63.5	108
EP075: N-Nitrosopiperidine	100-75-4	2	µg/L	<2	10 µg/L	87.5	61.7	107
EP075: N-Nitrosodibutylamine	924-16-3	2	µg/L	<2	10 µg/L	91.0	62.5	108
EP075: N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	4	µg/L	<4	20 µg/L	102	64.6	112
EP075: Methapyrilene	91-80-5	2	µg/L	<2	10 µg/L	# 17.5	23.3	125
EP075E: Nitroaromatics and Ketones (QCLot: 4836750)								
EP075: 2-Picoline	109-06-8	2	µg/L	<2	10 µg/L	58.4	41.0	109
EP075: Acetophenone	98-86-2	2	µg/L	<2	10 µg/L	83.6	68.3	112
EP075: Nitrobenzene	98-95-3	2	µg/L	<2	10 µg/L	79.7	68.3	112
EP075: Isophorone	78-59-1	2	µg/L	<2	10 µg/L	92.8	67.6	111
EP075: 2.6-Dinitrotoluene	606-20-2	4	µg/L	<4	10 µg/L	104	64.4	113
EP075: 2.4-Dinitrotoluene	121-14-2	4	µg/L	<4	10 µg/L	105	59.5	109
EP075: 1-Naphthylamine	134-32-7	2	µg/L	<2	10 µg/L	# 118	46.8	102
EP075: 4-Nitroquinoline-N-oxide	56-57-5	2	µg/L	<2	10 µg/L	85.4	40.0	96.0
EP075: 5-Nitro-o-toluidine	99-55-8	2	µg/L	<2	10 µg/L	# 110	58.3	106
EP075: Azobenzene	103-33-3	2	µg/L	<2	10 µg/L	101	66.0	112
EP075: 1.3.5-Trinitrobenzene	99-35-4	2	µg/L	<2	10 µg/L	101	46.0	108
EP075: Phenacetin	62-44-2	2	µg/L	<2	10 µg/L	# 114	57.8	101
EP075: 4-Aminobiphenyl	92-67-1	2	µg/L	<2	10 µg/L	108	60.1	112
EP075: Pentachloronitrobenzene	82-68-8	2	µg/L	<2	10 µg/L	105	59.0	109
EP075: Pronamide	23950-58-5	2	µg/L	<2	10 µg/L	101	62.7	109
EP075: Dimethylaminoazobenzene	60-11-7	2	µg/L	<2	10 µg/L	94.8	59.4	108
EP075: Chlorobenzilate	510-15-6	2	µg/L	<2	10 µg/L	93.7	57.7	110
EP075F: Haloethers (QCLot: 4836750)								
EP075: Bis(2-chloroethyl) ether	111-44-4	2	µg/L	<2	10 µg/L	74.8	69.1	112
EP075: Bis(2-chloroethoxy) methane	111-91-1	2	µg/L	<2	10 µg/L	89.3	66.2	111
EP075: 4-Chlorophenyl phenyl ether	7005-72-3	2	µg/L	<2	10 µg/L	96.7	64.7	109
EP075: 4-Bromophenyl phenyl ether	101-55-3	2	µg/L	<2	10 µg/L	97.2	61.6	108
EP075G: Chlorinated Hydrocarbons (QCLot: 4836750)								
EP075: 1.4-Dichlorobenzene	106-46-7	2	µg/L	<2	10 µg/L	75.1	41.0	97.0
EP075: 1.3-Dichlorobenzene	541-73-1	2	µg/L	<2	10 µg/L	76.6	40.0	96.0
EP075: 1.2-Dichlorobenzene	95-50-1	2	µg/L	<2	10 µg/L	79.3	41.0	95.0
EP075: Hexachloroethane	67-72-1	2	µg/L	<2	10 µg/L	75.1	46.0	88.0
EP075: 1.2.4-Trichlorobenzene	120-82-1	2	µg/L	<2	10 µg/L	76.4	46.0	96.0

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP075G: Chlorinated Hydrocarbons (QCLot: 4836750) - continued								
EP075: Hexachloropropylene	1888-71-7	2	µg/L	<2	10 µg/L	74.3	34.0	96.0
EP075: Hexachlorobutadiene	87-68-3	2	µg/L	<2	10 µg/L	81.7	37.4	100
EP075: Hexachlorocyclopentadiene	77-47-4	10	µg/L	<10	10 µg/L	52.3	23.5	107
EP075: Pentachlorobenzene	608-93-5	2	µg/L	<2	10 µg/L	90.7	64.5	107
EP075: Hexachlorobenzene (HCB)	118-74-1	4	µg/L	<4	10 µg/L	96.2	65.7	110
EP075H: Anilines and Benzidines (QCLot: 4836750)								
EP075: Aniline	62-53-3	2	µg/L	<2	10 µg/L	66.3	50.0	104
EP075: 4-Chloroaniline	106-47-8	2	µg/L	<2	10 µg/L	89.7	42.0	106
EP075: 2-Nitroaniline	88-74-4	4	µg/L	<4	10 µg/L	100	60.9	110
EP075: 3-Nitroaniline	99-09-2	4	µg/L	<4	10 µg/L	# 111	51.5	96.9
EP075: Dibenzofuran	132-64-9	2	µg/L	<2	10 µg/L	96.9	65.3	108
EP075: 4-Nitroaniline	100-01-6	2	µg/L	<2	10 µg/L	89.6	48.9	99.5
EP075: Carbazole	86-74-8	2	µg/L	<2	10 µg/L	97.3	64.3	107
EP075: 3.3`-Dichlorobenzidine	91-94-1	2	µg/L	<2	10 µg/L	102	60.3	119
EP075I: Organochlorine Pesticides (QCLot: 4836750)								
EP075: alpha-BHC	319-84-6	2	µg/L	<2	10 µg/L	100	64.3	110
EP075: beta-BHC	319-85-7	2	µg/L	<2	10 µg/L	# 109	53.0	107
EP075: gamma-BHC	58-89-9	2	µg/L	<2	10 µg/L	98.1	51.0	111
EP075: delta-BHC	319-86-8	2	µg/L	<2	10 µg/L	99.0	57.0	111
EP075: Heptachlor	76-44-8	2	µg/L	<2	10 µg/L	92.2	57.9	108
EP075: Aldrin	309-00-2	2	µg/L	<2	10 µg/L	90.9	56.0	112
EP075: Heptachlor epoxide	1024-57-3	2	µg/L	<2	10 µg/L	93.1	50.0	118
EP075: alpha-Endosulfan	959-98-8	2	µg/L	<2	10 µg/L	94.9	59.0	111
EP075: 4.4`-DDE	72-55-9	2	µg/L	<2	10 µg/L	93.6	53.0	115
EP075: Dieldrin	60-57-1	2	µg/L	<2	10 µg/L	95.4	59.0	115
EP075: Endrin	72-20-8	2	µg/L	<2	10 µg/L	97.5	58.0	114
EP075: beta-Endosulfan	33213-65-9	2	µg/L	<2	10 µg/L	94.6	54.0	116
EP075: 4.4`-DDD	72-54-8	2	µg/L	<2	10 µg/L	96.2	55.0	115
EP075: Endosulfan sulfate	1031-07-8	2	µg/L	<2	10 µg/L	89.8	52.8	114
EP075: 4.4`-DDT	50-29-3	4	µg/L	<4	10 µg/L	88.5	56.0	114
EP075: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	4	µg/L	<4	----	----	----	----
EP075: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	4	µg/L	<4	----	----	----	----
EP075J: Organophosphorus Pesticides (QCLot: 4836750)								
EP075: Dichlorvos	62-73-7	2	µg/L	<2	10 µg/L	108	51.0	113
EP075: Dimethoate	60-51-5	2	µg/L	<2	10 µg/L	106	43.0	109
EP075: Diazinon	333-41-5	2	µg/L	<2	10 µg/L	96.5	49.0	113

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP075J: Organophosphorus Pesticides (QCLot: 4836750) - continued								
EP075: Chlorpyrifos-methyl	5598-13-0	2	µg/L	<2	10 µg/L	97.7	54.1	116
EP075: Malathion	121-75-5	2	µg/L	<2	10 µg/L	109	54.0	124
EP075: Fenthion	55-38-9	2	µg/L	<2	10 µg/L	99.2	57.0	115
EP075: Chlorpyrifos	2921-88-2	2	µg/L	<2	10 µg/L	99.3	53.0	109
EP075: Pirimphos-ethyl	23505-41-1	2	µg/L	<2	10 µg/L	98.8	55.0	111
EP075: Chlorfenvinphos	470-90-6	2	µg/L	<2	10 µg/L	97.7	50.0	116
EP075: Prothiofos	34643-46-4	2	µg/L	<2	10 µg/L	101	54.0	118
EP075: Ethion	563-12-2	2	µg/L	<2	10 µg/L	99.9	51.0	117
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4836751)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	65.7	53.7	97.0
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	90.9	63.3	107
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	80.7	58.3	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4845188)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	94.2	75.0	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4845191)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	88.8	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4836751)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	67.6	53.9	95.5
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	88.2	57.8	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	82.5	50.5	115
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4845188)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	96.8	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4845191)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	92.4	75.0	127
EP080: BTEXN (QCLot: 4845188)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	101	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	104	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	103	70.0	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	102	69.0	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	102	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	106	70.0	120
EP080: BTEXN (QCLot: 4845191)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	87.6	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	94.0	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	91.8	70.0	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	93.2	69.0	121

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP080: BTEXN (QCLot: 4845191) - continued								
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	93.6	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	93.7	70.0	120
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 4836491)								
EP202-SL: 4-Chlorophenoxy acetic acid	122-88-3	10	µg/L	<10	100 µg/L	88.2	82.0	136
EP202-SL: 2.4-DB	94-82-6	10	µg/L	<10	100 µg/L	75.9	65.0	147
EP202-SL: Dicamba	1918-00-9	10	µg/L	<10	100 µg/L	95.5	83.0	137
EP202-SL: Mecoprop	93-65-2	10	µg/L	<10	100 µg/L	89.0	75.0	143
EP202-SL: MCPA	94-74-6	10	µg/L	<10	100 µg/L	89.2	76.0	140
EP202-SL: 2.4-DP	120-36-5	10	µg/L	<10	100 µg/L	86.8	76.0	144
EP202-SL: 2.4-D	94-75-7	10	µg/L	<10	100 µg/L	86.8	77.0	139
EP202-SL: Triclopyr	55335-06-3	10	µg/L	<10	100 µg/L	87.6	77.0	141
EP202-SL: Silvex (2.4.5-TP/Fenoprop)	93-72-1	10	µg/L	<10	100 µg/L	83.2	75.0	143
EP202-SL: 2.4.5-T	93-76-5	10	µg/L	<10	100 µg/L	86.8	78.0	140
EP202-SL: MCPB	94-81-5	10	µg/L	<10	100 µg/L	79.2	69.2	139
EP202-SL: Picloram	1918-02-1	10	µg/L	<10	100 µg/L	90.0	70.0	144
EP202-SL: Clopyralid	1702-17-6	10	µg/L	<10	100 µg/L	88.1	70.0	145
EP202-SL: Fluroxypyr	69377-81-7	10	µg/L	<10	100 µg/L	92.8	77.0	145
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4848504)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	78.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	90.0	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	78.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	87.0	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	79.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	83.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4848504)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	90.4	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	94.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	84.6	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	81.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	91.2	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	87.4	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.4	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	78.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	83.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	102	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4848504)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	91.0	67.0	137

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4848504) - continued								
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	88.3	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	98.4	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	83.8	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	84.6	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	97.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	96.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4848504)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	78.0	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	108	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	104	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	79.0	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 4839492)							
ES2302238-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	104	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 4839491)							
ES2302065-004	Anonymous	ED045G: Chloride	16887-00-6	50 mg/L	106	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 4841281)							
ES2302263-006	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	99.1	70.0	130
		EG020A-F: Beryllium	7440-41-7	1 mg/L	109	70.0	130
		EG020A-F: Barium	7440-39-3	1 mg/L	102	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	104	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	97.7	70.0	130
		EG020A-F: Cobalt	7440-48-4	1 mg/L	99.6	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	103	70.0	130
		EG020A-F: Lead	7439-92-1	1 mg/L	95.2	70.0	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	105	70.0	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	102	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 4841281) - continued							
ES2302263-006	Anonymous	EG020A-F: Vanadium	7440-62-2	1 mg/L	96.1	70.0	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	101	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 4841280)							
EN2300837-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	84.5	70.0	130
EG050F: Dissolved Hexavalent Chromium (QCLot: 4838967)							
ES2302591-001	Anonymous	EG050G-F: Hexavalent Chromium	18540-29-9	0.05 mg/L	91.1	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 4844560)							
ES2302591-007	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	95.3	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 4844556)							
ES2302591-006	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	98.5	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 4844557)							
ES2302591-006	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	103	70.0	130
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 4845189)							
ES2302559-001	Anonymous	EP074: Benzene	71-43-2	25 µg/L	109	70.0	130
		EP074: Toluene	108-88-3	25 µg/L	115	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 4845189)							
ES2302559-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	86.7	70.0	130
		EP074: Trichloroethene	79-01-6	25 µg/L	109	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 4845189)							
ES2302559-001	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	118	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4845188)							
ES2302559-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	92.6	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4845191)							
ES2302608-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	114	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4845188)							
ES2302559-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	94.7	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4845191)							
ES2302608-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	118	70.0	130
EP080: BTEXN (QCLot: 4845188)							
ES2302559-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	81.7	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	81.7	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	81.0	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	79.7	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080: BTEXN (QCLot: 4845188) - continued							
ES2302559-001	Anonymous	EP080: ortho-Xylene	95-47-6	25 µg/L	81.1	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	77.4	70.0	130
EP080: BTEXN (QCLot: 4845191)							
ES2302608-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	94.8	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	104	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	106	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	107	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	107	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	107	70.0	130
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 4836491)							
EM2300935-001	Anonymous	EP202-SL: Mecoprop	93-65-2	100 µg/L	76.2	75.0	143
		EP202-SL: MCPA	94-74-6	100 µg/L	# 74.7	76.0	140
		EP202-SL: 2.4-D	94-75-7	100 µg/L	# 72.8	77.0	139
		EP202-SL: Triclopyr	55335-06-3	100 µg/L	# 74.5	77.0	141
		EP202-SL: 2.4.5-T	93-76-5	100 µg/L	# 73.4	78.0	140
		EP202-SL: Picloram	1918-02-1	100 µg/L	# 34.9	70.0	144
		EP202-SL: Clopyralid	1702-17-6	100 µg/L	# 26.4	70.0	145
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4848504)							
ES2302266-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	86.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	90.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	81.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	93.0	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	86.0	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	81.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4848504)							
ES2302266-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	96.4	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	115	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	103	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	95.8	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	91.4	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	98.2	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	97.2	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	93.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	79.6	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	81.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	112	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4848504)							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4848504) - continued							
ES2302266-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	100	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	94.1	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	100	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	89.9	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	89.1	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	107	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	93.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4848504)							
ES2302266-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	84.6	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	109	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	94.8	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	78.2	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2302610**	Page	: 1 of 13
Client	: **EPIC ENVIRONMENTAL**	Laboratory	: Environmental Division Sydney
Contact	: INVOICES & RESULTS	Telephone	: +61-2-8784 8555
Project	: SC210108.03 Sydney Metro WTP	Date Samples Received	: 25-Jan-2023
Site	: ----	Issue Date	: 03-Feb-2023
Sampler	: ----	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075A: Phenolic Compounds	QC-4836750-002	----	**Pentachlorophenol**	87-86-5	113 %	12.8-95.0%	**Recovery greater than upper control limit**
EP075D: Nitrosamines	QC-4836750-002	----	**Methapyrilene**	91-80-5	17.5 %	23.3-125%	**Recovery less than lower control limit**
EP075E: Nitroaromatics and Ketones	QC-4836750-002	----	**1-Naphthylamine**	134-32-7	118 %	46.8-102%	**Recovery greater than upper control limit**
EP075E: Nitroaromatics and Ketones	QC-4836750-002	----	**5-Nitro-o-toluidine**	99-55-8	110 %	58.3-106%	**Recovery greater than upper control limit**
EP075E: Nitroaromatics and Ketones	QC-4836750-002	----	**Phenacetin**	62-44-2	114 %	57.8-101%	**Recovery greater than upper control limit**
EP075H: Anilines and Benzidines	QC-4836750-002	----	**3-Nitroaniline**	99-09-2	111 %	51.5-96.9%	**Recovery greater than upper control limit**
EP075I: Organochlorine Pesticides	QC-4836750-002	----	**beta-BHC**	319-85-7	109 %	53.0-107%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EP202A: Phenoxyacetic Acid Herbicides by LCMS	EM2300935--001	Anonymous	**MCPA**	94-74-6	74.7 %	76.0-140%	**Recovery less than lower data quality objective**
EP202A: Phenoxyacetic Acid Herbicides by LCMS	EM2300935--001	Anonymous	**2.4-D**	94-75-7	72.8 %	77.0-139%	**Recovery less than lower data quality objective**
EP202A: Phenoxyacetic Acid Herbicides by LCMS	EM2300935--001	Anonymous	**Triclopyr**	55335-06-3	74.5 %	77.0-141%	**Recovery less than lower data quality objective**
EP202A: Phenoxyacetic Acid Herbicides by LCMS	EM2300935--001	Anonymous	**2.4.5-T**	93-76-5	73.4 %	78.0-140%	**Recovery less than lower data quality objective**
EP202A: Phenoxyacetic Acid Herbicides by LCMS	EM2300935--001	Anonymous	**Picloram**	1918-02-1	34.9 %	70.0-144%	**Recovery less than lower data quality objective**
EP202A: Phenoxyacetic Acid Herbicides by LCMS	EM2300935--001	Anonymous	**Clopyralid**	1702-17-6	26.4 %	70.0-145%	**Recovery less than lower data quality objective**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
QC06	----	----	----	30-Jan-2023	23-Jan-2023	**7**
EA075: Redox Potential						
Clear Plastic Bottle - Natural						
QC06	----	----	----	27-Jan-2023	23-Jan-2023	**4**
EP025: Oxygen - Dissolved (DO)						

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EP025: Oxygen - Dissolved (DO) - Analysis Holding Time Compliance						
Clear Plastic Bottle - Natural						
QC06	----	----	----	25-Jan-2023	23-Jan-2023	**2**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count: QC	Count: Regular	Rate (%): Actual	Rate (%): Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)					
Conductivity by Auto Titrator	4	49	8.16	8.33	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P)							
QC06	**23-Jan-2023**	**----**	----	----	**30-Jan-2023**	23-Jan-2023	✗
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P)							
QC06	**23-Jan-2023**	**----**	----	----	**30-Jan-2023**	20-Feb-2023	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
QC06	**23-Jan-2023**	**----**	----	----	**25-Jan-2023**	30-Jan-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA075: Redox Potential							
Clear Plastic Bottle - Natural (EA075)							
QC06	**23-Jan-2023**	**----**	----	----	**27-Jan-2023**	23-Jan-2023	×
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P)							
QC06	**23-Jan-2023**	**----**	----	----	**30-Jan-2023**	06-Feb-2023	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G)							
QC06	**23-Jan-2023**	**----**	----	----	**30-Jan-2023**	20-Feb-2023	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G)							
QC06	**23-Jan-2023**	**----**	----	----	**30-Jan-2023**	20-Feb-2023	✓
ED093F: SAR and Hardness Calculations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F)							
QC06	**23-Jan-2023**	**----**	----	----	**30-Jan-2023**	20-Feb-2023	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
QC06	**23-Jan-2023**	**----**	----	----	**30-Jan-2023**	22-Jul-2023	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
QC06	**23-Jan-2023**	**----**	----	----	**01-Feb-2023**	20-Feb-2023	✓
EG050F: Dissolved Hexavalent Chromium							
Clear Plastic Bottle - NaOH (EG050G-F)							
QC06	**23-Jan-2023**	**----**	----	----	**28-Jan-2023**	20-Feb-2023	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
QC06	**23-Jan-2023**	**----**	----	----	**01-Feb-2023**	20-Feb-2023	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
QC06	**23-Jan-2023**	**01-Feb-2023**	20-Feb-2023	✓	**02-Feb-2023**	20-Feb-2023	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
QC06	**23-Jan-2023**	**01-Feb-2023**	20-Feb-2023	✓	**02-Feb-2023**	20-Feb-2023	✓
EP025: Oxygen - Dissolved (DO)							
Clear Plastic Bottle - Natural (EP025)							
QC06	**23-Jan-2023**	**----**	----	----	**25-Jan-2023**	23-Jan-2023	×
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068)							
QC06	**23-Jan-2023**	**30-Jan-2023**	30-Jan-2023	✓	**03-Feb-2023**	11-Mar-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068)							
QC06	**23-Jan-2023**	**30-Jan-2023**	30-Jan-2023	✓	**03-Feb-2023**	11-Mar-2023	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC06	**23-Jan-2023**	**02-Feb-2023**	06-Feb-2023	✓	**02-Feb-2023**	06-Feb-2023	✓
EP074B: Oxygenated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC06	**23-Jan-2023**	**02-Feb-2023**	06-Feb-2023	✓	**02-Feb-2023**	06-Feb-2023	✓
EP074C: Sulfonated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC06	**23-Jan-2023**	**02-Feb-2023**	06-Feb-2023	✓	**02-Feb-2023**	06-Feb-2023	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC06	**23-Jan-2023**	**02-Feb-2023**	06-Feb-2023	✓	**02-Feb-2023**	06-Feb-2023	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC06	**23-Jan-2023**	**02-Feb-2023**	06-Feb-2023	✓	**02-Feb-2023**	06-Feb-2023	✓
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC06	**23-Jan-2023**	**02-Feb-2023**	06-Feb-2023	✓	**02-Feb-2023**	06-Feb-2023	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC06	**23-Jan-2023**	**02-Feb-2023**	06-Feb-2023	✓	**02-Feb-2023**	06-Feb-2023	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
QC06	**23-Jan-2023**	**30-Jan-2023**	30-Jan-2023	✓	**02-Feb-2023**	11-Mar-2023	✓
EP075A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075)							
QC06	**23-Jan-2023**	**30-Jan-2023**	30-Jan-2023	✓	**02-Feb-2023**	11-Mar-2023	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075)							
QC06	**23-Jan-2023**	**30-Jan-2023**	30-Jan-2023	✓	**02-Feb-2023**	11-Mar-2023	✓
EP075C: Phthalate Esters							
Amber Glass Bottle - Unpreserved (EP075)							
QC06	**23-Jan-2023**	**30-Jan-2023**	30-Jan-2023	✓	**02-Feb-2023**	11-Mar-2023	✓
EP075D: Nitrosamines							
Amber Glass Bottle - Unpreserved (EP075)							
QC06	**23-Jan-2023**	**30-Jan-2023**	30-Jan-2023	✓	**02-Feb-2023**	11-Mar-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075E: Nitroaromatics and Ketones							
Amber Glass Bottle - Unpreserved (EP075)							
QC06	**23-Jan-2023**	**30-Jan-2023**	30-Jan-2023	✓	**02-Feb-2023**	11-Mar-2023	✓
EP075F: Haloethers							
Amber Glass Bottle - Unpreserved (EP075)							
QC06	**23-Jan-2023**	**30-Jan-2023**	30-Jan-2023	✓	**02-Feb-2023**	11-Mar-2023	✓
EP075G: Chlorinated Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075)							
QC06	**23-Jan-2023**	**30-Jan-2023**	30-Jan-2023	✓	**02-Feb-2023**	11-Mar-2023	✓
EP075H: Anilines and Benzidines							
Amber Glass Bottle - Unpreserved (EP075)							
QC06	**23-Jan-2023**	**30-Jan-2023**	30-Jan-2023	✓	**02-Feb-2023**	11-Mar-2023	✓
EP075I: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved (EP075)							
QC06	**23-Jan-2023**	**30-Jan-2023**	30-Jan-2023	✓	**02-Feb-2023**	11-Mar-2023	✓
EP075J: Organophosphorus Pesticides							
Amber Glass Bottle - Unpreserved (EP075)							
QC06	**23-Jan-2023**	**30-Jan-2023**	30-Jan-2023	✓	**02-Feb-2023**	11-Mar-2023	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
QC06	**23-Jan-2023**	**30-Jan-2023**	30-Jan-2023	✓	**03-Feb-2023**	11-Mar-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
QC06, TB	**23-Jan-2023**	**02-Feb-2023**	06-Feb-2023	✓	**02-Feb-2023**	06-Feb-2023	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
QC06	**23-Jan-2023**	**30-Jan-2023**	30-Jan-2023	✓	**03-Feb-2023**	11-Mar-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
QC06, TB	**23-Jan-2023**	**02-Feb-2023**	06-Feb-2023	✓	**02-Feb-2023**	06-Feb-2023	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
QC06, TS, TB	**23-Jan-2023**	**02-Feb-2023**	06-Feb-2023	✓	**02-Feb-2023**	06-Feb-2023	✓
EP202A: Phenoxyacetic Acid Herbicides by LCMS							
Amber Glass Bottle - Unpreserved (EP202-SL)							
QC06	**23-Jan-2023**	**----**	----	----	**27-Jan-2023**	30-Jan-2023	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
QC06	**23-Jan-2023**	**03-Feb-2023**	22-Jul-2023	✓	**03-Feb-2023**	22-Jul-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
QC06	**23-Jan-2023**	**03-Feb-2023**	22-Jul-2023	✓	**03-Feb-2023**	22-Jul-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
QC06	**23-Jan-2023**	**03-Feb-2023**	22-Jul-2023	✓	**03-Feb-2023**	22-Jul-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
QC06	**23-Jan-2023**	**03-Feb-2023**	22-Jul-2023	✓	**03-Feb-2023**	22-Jul-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
QC06	**23-Jan-2023**	**03-Feb-2023**	22-Jul-2023	✓	**03-Feb-2023**	22-Jul-2023	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Alkalinity by Auto Titrator	ED037-P	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	6	49	**12.24**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	1	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	3	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Redox Potential	EA075	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	0	3	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	3	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	26	**11.54**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by Auto Titrator	ED037-P	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	4	49	**8.16**	**8.33**	×	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Redox Potential	EA075	3	13	**23.08**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Control Samples (LCS) - Continued							
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	20	**15.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	19	**15.79**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	19	**15.79**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	26	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	1	49	**2.04**	**1.67**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	26	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	1	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	3	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	0	3	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
TRH - Semivolatile Fraction	EP071	0	3	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	26	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Redox Potential	EA075	WATER	In house: Ion selective electrode
Alkalinity by Auto Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm.
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Trivalent Chromium - Dissolved	EG049G-F	WATER	In house: Referenced to APHA 3500 Cr-B & 3120/3125. Trivalent Chromium is the difference between total dissolved and dissolved hexavalent chromium.

Analytical Methods	Method	Matrix	Method Descriptions
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	WATER	In house: Referenced to APHA 3500 Cr-A & B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined directly on water sample by Descrete Analyser as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3).
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Oxygen - Dissolved	EP025	WATER	In house: Referenced to APHA 4500-O G. Dissolved Oxygen Probe. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
Semivolatile Organic Compounds	EP075	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	WATER	In house: LCMS (Electrospray in negative mode). After adding surrogate and acetic acid, water samples are injected on a C18 column for LC/MS determination.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

Relinquished by - ELSID
HTL
23/11/2023 11:30

Please hold for arsenic testing

314911

epic ENVIRONMENTAL

Chain of Custody Record

Project No:	SC210108.03
Project/Site:	Sydney Metro WTP
Project Manager:	Patrick Carroll
Sampled By:	JXie@epicenvironmental.com.au
Phone:	426205616
Page:	1 of 1
Number of Eskies:	1

Lab:	ALS
Lab Quote No:	
Lab Batch No:	
Date Results Required:	
Sample Disposal After:	

CONTAINER TYPE & PRESERVATIVE

LAB ID	SAMPLE ID	DATE	MATRIX	Soil / Solid: 150-250ml Glass Jar	Soil / Solid: 200ml Plastic Jar	Soil / Solid: - Plastic bag	Water / Liquid: 2x 40ml Amber Vial	Water / Liquid: 100-500ml Amber Bottle	Water / Liquid: 60ml Metals	Water / Liquid: 60ml Nutrients	Water / Liquid: 250-500ml Plastic (Unpreserved)	Water / Liquid: 60-250ml Plastic (PFAS)	Other	ANALYSIS REQUIRED: WQ Parameters: pH, EC ORP, DO, TDS, Alkalinity, Hardness	Major Ions	Extended Metals suite - UltraTrace: 15 metals NEPM Suite	Nutrients (Trace)	TRH + BTEXN	PAH	OCP / OPP	Herbicides	VOC / SVOC	PFAS	Cr speciation	Cr, Cu		HOLD
1	~~QC05~~ QC04	19/1	W											X										X			
2	TB06		W															X							X		
3	TS06		W															X							X		
			W																					

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2302217**	Page	: 1 of 17
Client	: **EPIC ENVIRONMENTAL**	Laboratory	: Environmental Division Sydney
Contact	: P Carroll	Contact	: Customer Services ES
Address	: SUITE 5, LEVEL 9/189 KENT STREET SYDNEY 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: SC210108.03 Sydney Metro WTP	Date Samples Received	: 23-Jan-2023 15:00
Order number	: ----	Date Analysis Commenced	: 24-Jan-2023
C-O-C number	: ----	Issue Date	: 02-Feb-2023 16:39
Sampler	: Joy Xie		
Site	: Sydney Metro WTP		
Quote number	: EN/222		
No. of samples received	: 3		
No. of samples analysed	: 3		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP075: Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- EP080: The results for sample ES2302217-003 was confirmed by re-analysis.
- EP202: Poor matrix spike recoveries for Picloram and Clopyralid due to matrix effects.
- EP080/EP074: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory.
- EP075: Where reported, 'Sum of PAH' is the sum of the USEPA 16 priority PAHs
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC04	TB06	TS06	----	----
			Sampling date / time	19-Jan-2023 00:00	16-Jan-2023 00:00	16-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2302217-001	ES2302217-002	ES2302217-003	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.13**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**1900**	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**1180**	----	----	----	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	**595**	----	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**134**	----	----	----	----
pH Redox	----	0.01	pH Unit	**7.02**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**695**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**695**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**47**	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**206**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**131**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	**65**	----	----	----	----
Sodium	7440-23-5	1	mg/L	**194**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**19**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.005	µg/L	<0.005	----	----	----	----
EG049G LL-F: Dissolved Trivalent Chromium - Low Level								
Trivalent Chromium	16065-83-1	0.001	mg/L	<0.001	----	----	----	----
EG050G LL-F: Dissolved Hexavalent Chromium by Discrete Analyser - Low Level								
Hexavalent Chromium	18540-29-9	0.001	mg/L	<0.001	----	----	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC04	TB06	TS06	----	----
				Sampling date / time	19-Jan-2023 00:00	16-Jan-2023 00:00	16-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2302217-001	ES2302217-002	ES2302217-003	--------	--------
					Result	Result	Result	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Arsenic	7440-38-2	0.2	µg/L		**0.5**	----	----	----	----
Barium	7440-39-3	0.5	µg/L		**504**	----	----	----	----
Beryllium	7440-41-7	0.1	µg/L		<0.1	----	----	----	----
Boron	7440-42-8	5	µg/L		**417**	----	----	----	----
Cadmium	7440-43-9	0.05	µg/L		<0.05	----	----	----	----
Chromium	7440-47-3	0.2	µg/L		**0.2**	----	----	----	----
Cobalt	7440-48-4	0.1	µg/L		**0.4**	----	----	----	----
Copper	7440-50-8	0.5	µg/L		<0.5	----	----	----	----
Lead	7439-92-1	0.1	µg/L		<0.1	----	----	----	----
Manganese	7439-96-5	0.5	µg/L		**829**	----	----	----	----
Nickel	7440-02-0	0.5	µg/L		<0.5	----	----	----	----
Selenium	7782-49-2	0.2	µg/L		**0.4**	----	----	----	----
Vanadium	7440-62-2	0.2	µg/L		<0.2	----	----	----	----
Zinc	7440-66-6	1	µg/L		<1	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		**9.50**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**11.0**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**11.0**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.40**	----	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	----	----	----	----
EN055: Ionic Balance									
ø Total Anions	----	0.01	meq/L		**20.7**	----	----	----	----
ø Total Cations	----	0.01	meq/L		**20.8**	----	----	----	----
ø Ionic Balance	----	0.01	%		**0.33**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC04	TB06	TS06	----	----
			Sampling date / time	19-Jan-2023 00:00	16-Jan-2023 00:00	16-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2302217-001	ES2302217-002	ES2302217-003	--------	--------
				Result	Result	Result	----	----
EP025: Oxygen - Dissolved (DO)								
Dissolved Oxygen	----	0.1	mg/L	**5.2**	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	----	----	----	----
beta-BHC	319-85-7	0.5	µg/L	<0.5	----	----	----	----
gamma-BHC	58-89-9	0.5	µg/L	<0.5	----	----	----	----
delta-BHC	319-86-8	0.5	µg/L	<0.5	----	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	----	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<0.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L	<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L	<0.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	----	----	----	----
4.4`-DDT	50-29-3	2.0	µg/L	<2.0	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	----	----	----	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L	<0.5	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/L	<0.5	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC04	TB06	TS06	----	----
				Sampling date / time	19-Jan-2023 00:00	16-Jan-2023 00:00	16-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2302217-001	ES2302217-002	ES2302217-003	--------	--------
					Result	Result	Result	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued									
Malathion	121-75-5	0.5	µg/L		<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L		<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L		<0.5	----	----	----	----
Parathion	56-38-2	2.0	µg/L		<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L		<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L		<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L		<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L		<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L		<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L		<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L		<0.5	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		<5	----	----	----	----
Isopropylbenzene	98-82-8	5	µg/L		<5	----	----	----	----
n-Propylbenzene	103-65-1	5	µg/L		<5	----	----	----	----
1.3.5-Trimethylbenzene	108-67-8	5	µg/L		<5	----	----	----	----
sec-Butylbenzene	135-98-8	5	µg/L		<5	----	----	----	----
1.2.4-Trimethylbenzene	95-63-6	5	µg/L		<5	----	----	----	----
tert-Butylbenzene	98-06-6	5	µg/L		<5	----	----	----	----
p-Isopropyltoluene	99-87-6	5	µg/L		<5	----	----	----	----
n-Butylbenzene	104-51-8	5	µg/L		<5	----	----	----	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	50	µg/L		<50	----	----	----	----
2-Butanone (MEK)	78-93-3	50	µg/L		<50	----	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L		<50	----	----	----	----
2-Hexanone (MBK)	591-78-6	50	µg/L		<50	----	----	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	5	µg/L		<5	----	----	----	----
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	5	µg/L		<5	----	----	----	----
1.2-Dichloropropane	78-87-5	5	µg/L		<5	----	----	----	----
cis-1.3-Dichloropropylene	10061-01-5	5	µg/L		<5	----	----	----	----
trans-1.3-Dichloropropylene	10061-02-6	5	µg/L		<5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC04	TB06	TS06	----	----
			Sampling date / time	19-Jan-2023 00:00	16-Jan-2023 00:00	16-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2302217-001	ES2302217-002	ES2302217-003	--------	--------
				Result	Result	Result	----	----
EP074D: Fumigants - Continued								
1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	----	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	----	----	----	----
Chloromethane	74-87-3	50	µg/L	<50	----	----	----	----
Vinyl chloride	75-01-4	50	µg/L	<50	----	----	----	----
Bromomethane	74-83-9	50	µg/L	<50	----	----	----	----
Chloroethane	75-00-3	50	µg/L	<50	----	----	----	----
Trichlorofluoromethane	75-69-4	50	µg/L	<50	----	----	----	----
1.1-Dichloroethene	75-35-4	5	µg/L	<5	----	----	----	----
Iodomethane	74-88-4	5	µg/L	<5	----	----	----	----
trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	----	----	----	----
1.1-Dichloroethane	75-34-3	5	µg/L	<5	----	----	----	----
cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	----	----	----	----
1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	----	----	----	----
1.1-Dichloropropylene	563-58-6	5	µg/L	<5	----	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	----	----	----	----
1.2-Dichloroethane	107-06-2	5	µg/L	<5	----	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	----	----	----	----
Dibromomethane	74-95-3	5	µg/L	<5	----	----	----	----
1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	----	----	----	----
1.3-Dichloropropane	142-28-9	5	µg/L	<5	----	----	----	----
Tetrachloroethene	127-18-4	5	µg/L	<5	----	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	----	----	----	----
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	----	----	----	----
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	----	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	----	----	----	----
1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	----	----	----	----
Pentachloroethane	76-01-7	5	µg/L	<5	----	----	----	----
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	----	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	----	----	----	----
Bromobenzene	108-86-1	5	µg/L	<5	----	----	----	----
2-Chlorotoluene	95-49-8	5	µg/L	<5	----	----	----	----
4-Chlorotoluene	106-43-4	5	µg/L	<5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC04	TB06	TS06	----	----
			Sampling date / time	19-Jan-2023 00:00	16-Jan-2023 00:00	16-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2302217-001	ES2302217-002	ES2302217-003	--------	--------
				Result	Result	Result	----	----
EP074F: Halogenated Aromatic Compounds - Continued								
1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	----	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	----	----	----	----
Bromodichloromethane	75-27-4	5	µg/L	<5	----	----	----	----
Dibromochloromethane	124-48-1	5	µg/L	<5	----	----	----	----
Bromoform	75-25-2	5	µg/L	<5	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	----	----	----	----
EP075A: Phenolic Compounds								
Phenol	108-95-2	2	µg/L	<2	----	----	----	----
2-Chlorophenol	95-57-8	2	µg/L	<2	----	----	----	----
2-Methylphenol	95-48-7	2	µg/L	<2	----	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	----	----	----	----
2-Nitrophenol	88-75-5	2	µg/L	<2	----	----	----	----
2.4-Dimethylphenol	105-67-9	2	µg/L	<2	----	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L	<2	----	----	----	----
2.6-Dichlorophenol	87-65-0	2	µg/L	<2	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC04	TB06	TS06	----	----
				Sampling date / time	19-Jan-2023 00:00	16-Jan-2023 00:00	16-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2302217-001	ES2302217-002	ES2302217-003	--------	--------
					Result	Result	Result	----	----
EP075A: Phenolic Compounds - Continued									
4-Chloro-3-methylphenol	59-50-7	2	µg/L		<2	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	2	µg/L		<2	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	2	µg/L		<2	----	----	----	----
Pentachlorophenol	87-86-5	4	µg/L		<4	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	2	µg/L		<2	----	----	----	----
2-Methylnaphthalene	91-57-6	2	µg/L		<2	----	----	----	----
2-Chloronaphthalene	91-58-7	2	µg/L		<2	----	----	----	----
Acenaphthylene	208-96-8	2	µg/L		<2	----	----	----	----
Acenaphthene	83-32-9	2	µg/L		<2	----	----	----	----
Fluorene	86-73-7	2	µg/L		<2	----	----	----	----
Phenanthrene	85-01-8	2	µg/L		<2	----	----	----	----
Anthracene	120-12-7	2	µg/L		<2	----	----	----	----
Fluoranthene	206-44-0	2	µg/L		<2	----	----	----	----
Pyrene	129-00-0	2	µg/L		<2	----	----	----	----
N-2-Fluorenyl Acetamide	53-96-3	2	µg/L		<2	----	----	----	----
Benz(a)anthracene	56-55-3	2	µg/L		<2	----	----	----	----
Chrysene	218-01-9	2	µg/L		<2	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	4	µg/L		<4	----	----	----	----
7.12-Dimethylbenz(a)anthracene	57-97-6	2	µg/L		<2	----	----	----	----
Benzo(a)pyrene	50-32-8	2	µg/L		<2	----	----	----	----
3-Methylcholanthrene	56-49-5	2	µg/L		<2	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	2	µg/L		<2	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	2	µg/L		<2	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	2	µg/L		<2	----	----	----	----
^ Sum of PAHs	----	2	µg/L		<2	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	2	µg/L		<2	----	----	----	----
EP075C: Phthalate Esters									
Dimethyl phthalate	131-11-3	2	µg/L		<2	----	----	----	----
Diethyl phthalate	84-66-2	2	µg/L		<2	----	----	----	----
Di-n-butyl phthalate	84-74-2	2	µg/L		<2	----	----	----	----
Butyl benzyl phthalate	85-68-7	2	µg/L		<2	----	----	----	----
bis(2-ethylhexyl) phthalate	117-81-7	10	µg/L		<10	----	----	----	----
Di-n-octylphthalate	117-84-0	2	µg/L		<2	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC04	TB06	TS06	----	----
				Sampling date / time	19-Jan-2023 00:00	16-Jan-2023 00:00	16-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2302217-001	ES2302217-002	ES2302217-003	--------	--------
					Result	Result	Result	----	----
EP075C: Phthalate Esters - Continued									
EP075D: Nitrosamines									
N-Nitrosomethylethylamine	10595-95-6	2	µg/L		<2	----	----	----	----
N-Nitrosodiethylamine	55-18-5	2	µg/L		<2	----	----	----	----
N-Nitrosopyrrolidine	930-55-2	4	µg/L		<4	----	----	----	----
N-Nitrosomorpholine	59-89-2	2	µg/L		<2	----	----	----	----
N-Nitrosodi-n-propylamine	621-64-7	2	µg/L		<2	----	----	----	----
N-Nitrosopiperidine	100-75-4	2	µg/L		<2	----	----	----	----
N-Nitrosodibutylamine	924-16-3	2	µg/L		<2	----	----	----	----
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	4	µg/L		<4	----	----	----	----
Methapyrilene	91-80-5	2	µg/L		<2	----	----	----	----
EP075E: Nitroaromatics and Ketones									
2-Picoline	109-06-8	2	µg/L		<2	----	----	----	----
Acetophenone	98-86-2	2	µg/L		<2	----	----	----	----
Nitrobenzene	98-95-3	2	µg/L		<2	----	----	----	----
Isophorone	78-59-1	2	µg/L		<2	----	----	----	----
2.6-Dinitrotoluene	606-20-2	4	µg/L		<4	----	----	----	----
2.4-Dinitrotoluene	121-14-2	4	µg/L		<4	----	----	----	----
1-Naphthylamine	134-32-7	2	µg/L		<2	----	----	----	----
4-Nitroquinoline-N-oxide	56-57-5	2	µg/L		<2	----	----	----	----
5-Nitro-o-toluidine	99-55-8	2	µg/L		<2	----	----	----	----
Azobenzene	103-33-3	2	µg/L		<2	----	----	----	----
1.3.5-Trinitrobenzene	99-35-4	2	µg/L		<2	----	----	----	----
Phenacetin	62-44-2	2	µg/L		<2	----	----	----	----
4-Aminobiphenyl	92-67-1	2	µg/L		<2	----	----	----	----
Pentachloronitrobenzene	82-68-8	2	µg/L		<2	----	----	----	----
Pronamide	23950-58-5	2	µg/L		<2	----	----	----	----
Dimethylaminoazobenzene	60-11-7	2	µg/L		<2	----	----	----	----
Chlorobenzilate	510-15-6	2	µg/L		<2	----	----	----	----
EP075F: Haloethers									
Bis(2-chloroethyl) ether	111-44-4	2	µg/L		<2	----	----	----	----
Bis(2-chloroethoxy) methane	111-91-1	2	µg/L		<2	----	----	----	----
4-Chlorophenyl phenyl ether	7005-72-3	2	µg/L		<2	----	----	----	----
4-Bromophenyl phenyl ether	101-55-3	2	µg/L		<2	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC04	TB06	TS06	----	----
			Sampling date / time	19-Jan-2023 00:00	16-Jan-2023 00:00	16-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2302217-001	ES2302217-002	ES2302217-003	--------	--------
				Result	Result	Result	----	----
EP075G: Chlorinated Hydrocarbons								
1.3-Dichlorobenzene	541-73-1	2	µg/L	<2	----	----	----	----
1.4-Dichlorobenzene	106-46-7	2	µg/L	<2	----	----	----	----
1.2-Dichlorobenzene	95-50-1	2	µg/L	<2	----	----	----	----
Hexachloroethane	67-72-1	2	µg/L	<2	----	----	----	----
1.2.4-Trichlorobenzene	120-82-1	2	µg/L	<2	----	----	----	----
Hexachloropropylene	1888-71-7	2	µg/L	<2	----	----	----	----
Hexachlorobutadiene	87-68-3	2	µg/L	<2	----	----	----	----
Hexachlorocyclopentadiene	77-47-4	10	µg/L	<10	----	----	----	----
Pentachlorobenzene	608-93-5	2	µg/L	<2	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	4	µg/L	<4	----	----	----	----
EP075H: Anilines and Benzidines								
Aniline	62-53-3	2	µg/L	<2	----	----	----	----
4-Chloroaniline	106-47-8	2	µg/L	<2	----	----	----	----
2-Nitroaniline	88-74-4	4	µg/L	<4	----	----	----	----
3-Nitroaniline	99-09-2	4	µg/L	<4	----	----	----	----
Dibenzofuran	132-64-9	2	µg/L	<2	----	----	----	----
4-Nitroaniline	100-01-6	2	µg/L	<2	----	----	----	----
Carbazole	86-74-8	2	µg/L	<2	----	----	----	----
3.3`-Dichlorobenzidine	91-94-1	2	µg/L	<2	----	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	2	µg/L	<2	----	----	----	----
beta-BHC	319-85-7	2	µg/L	<2	----	----	----	----
gamma-BHC	58-89-9	2	µg/L	<2	----	----	----	----
delta-BHC	319-86-8	2	µg/L	<2	----	----	----	----
Heptachlor	76-44-8	2	µg/L	<2	----	----	----	----
Aldrin	309-00-2	2	µg/L	<2	----	----	----	----
Heptachlor epoxide	1024-57-3	2	µg/L	<2	----	----	----	----
alpha-Endosulfan	959-98-8	2	µg/L	<2	----	----	----	----
4.4`-DDE	72-55-9	2	µg/L	<2	----	----	----	----
Dieldrin	60-57-1	2	µg/L	<2	----	----	----	----
Endrin	72-20-8	2	µg/L	<2	----	----	----	----
beta-Endosulfan	33213-65-9	2	µg/L	<2	----	----	----	----
4.4`-DDD	72-54-8	2	µg/L	<2	----	----	----	----
Endosulfan sulfate	1031-07-8	2	µg/L	<2	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC04	TB06	TS06	----	----
			Sampling date / time	19-Jan-2023 00:00	16-Jan-2023 00:00	16-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2302217-001	ES2302217-002	ES2302217-003	--------	--------
				Result	Result	Result	----	----
EP075I: Organochlorine Pesticides - Continued								
4.4`-DDT	50-29-3	4	µg/L	<4	----	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	4	µg/L	<4	----	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	4	µg/L	<4	----	----	----	----
EP075J: Organophosphorus Pesticides								
Dichlorvos	62-73-7	2	µg/L	<2	----	----	----	----
Dimethoate	60-51-5	2	µg/L	<2	----	----	----	----
Diazinon	333-41-5	2	µg/L	<2	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	2	µg/L	<2	----	----	----	----
Malathion	121-75-5	2	µg/L	<2	----	----	----	----
Fenthion	55-38-9	2	µg/L	<2	----	----	----	----
Chlorpyrifos	2921-88-2	2	µg/L	<2	----	----	----	----
Pirimphos-ethyl	23505-41-1	2	µg/L	<2	----	----	----	----
Chlorfenvinphos	470-90-6	2	µg/L	<2	----	----	----	----
Prothiofos	34643-46-4	2	µg/L	<2	----	----	----	----
Ethion	563-12-2	2	µg/L	<2	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	**9**	----	----
Toluene	108-88-3	2	µg/L	<2	<2	**8**	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC04	TB06	TS06	----	----
				Sampling date / time	19-Jan-2023 00:00	16-Jan-2023 00:00	16-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2302217-001	ES2302217-002	ES2302217-003	--------	--------
					Result	Result	Result	----	----
EP080: BTEXN - Continued									
Ethylbenzene	100-41-4	2	µg/L		<2	<2	**8**	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	**14**	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	**8**	----	----
^ **Total Xylenes**	----	2	µg/L		<2	<2	**22**	----	----
^ **Sum of BTEX**	----	1	µg/L		<1	<1	**47**	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	**9**	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS									
4-Chlorophenoxy acetic acid	122-88-3	10	µg/L		<10	----	----	----	----
2.4-DB	94-82-6	10	µg/L		<10	----	----	----	----
Dicamba	1918-00-9	10	µg/L		<10	----	----	----	----
Mecoprop	93-65-2	10	µg/L		<10	----	----	----	----
MCPA	94-74-6	10	µg/L		<10	----	----	----	----
2.4-DP	120-36-5	10	µg/L		<10	----	----	----	----
2.4-D	94-75-7	10	µg/L		<10	----	----	----	----
Triclopyr	55335-06-3	10	µg/L		<10	----	----	----	----
Silvex (2.4.5-TP/Fenoprop)	93-72-1	10	µg/L		<10	----	----	----	----
2.4.5-T	93-76-5	10	µg/L		<10	----	----	----	----
MCPB	94-81-5	10	µg/L		<10	----	----	----	----
Picloram	1918-02-1	10	µg/L		<10	----	----	----	----
Clopyralid	1702-17-6	10	µg/L		<10	----	----	----	----
Fluroxypyr	69377-81-7	10	µg/L		<10	----	----	----	----
2.6-D	575-90-6	10	µg/L		<10	----	----	----	----
2.4.6-T	575-89-3	10	µg/L		<10	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.01**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC04	TB06	TS06	----	----
			Sampling date / time	19-Jan-2023 00:00	16-Jan-2023 00:00	16-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2302217-001	ES2302217-002	ES2302217-003	--------	--------
				Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC04	TB06	TS06	----	----
			Sampling date / time	19-Jan-2023 00:00	16-Jan-2023 00:00	16-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2302217-001	ES2302217-002	ES2302217-003	--------	--------
				Result	Result	Result	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.01**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.01**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.01**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	**62.0**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	**66.6**	----	----	----	----
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	5	%	**98.0**	----	----	----	----
Toluene-D8	2037-26-5	5	%	**90.4**	----	----	----	----
4-Bromofluorobenzene	460-00-4	5	%	**91.6**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	**21.7**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	**48.0**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%	**38.7**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	**62.2**	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%	**78.4**	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	**58.9**	----	----	----	----
EP075S: Acid Extractable Surrogates								
2-Fluorophenol	367-12-4	2	%	**39.8**	----	----	----	----
Phenol-d6	13127-88-3	2	%	**26.0**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	2	%	**56.0**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	2	%	**51.0**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC04	TB06	TS06	----	----
			Sampling date / time	19-Jan-2023 00:00	16-Jan-2023 00:00	16-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2302217-001	ES2302217-002	ES2302217-003	--------	--------
				Result	Result	Result	----	----
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	2	%	**55.5**	----	----	----	----
1.2-Dichlorobenzene-D4	2199-69-1	2	%	**57.2**	----	----	----	----
2-Fluorobiphenyl	321-60-8	2	%	**60.4**	----	----	----	----
Anthracene-d10	1719-06-8	2	%	**64.6**	----	----	----	----
4-Terphenyl-d14	1718-51-0	2	%	**65.3**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**102**	**108**	**90.3**	----	----
Toluene-D8	2037-26-5	2	%	**89.5**	**97.1**	**92.2**	----	----
4-Bromofluorobenzene	460-00-4	2	%	**86.7**	**96.3**	**88.6**	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate								
2.4-Dichlorophenyl Acetic Acid	19719-28-9	10	%	**100**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**90.0**	----	----	----	----
13C8-PFOA	----	0.02	%	**89.4**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	67	111
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	67	111
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	78	133
Toluene-D8	2037-26-5	79	129
4-Bromofluorobenzene	460-00-4	81	124
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP075S: Acid Extractable Surrogates			
2-Fluorophenol	367-12-4	10	117
Phenol-d6	13127-88-3	10	69
2-Chlorophenol-D4	93951-73-6	21	130
2.4.6-Tribromophenol	118-79-6	10	151
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	142
1.2-Dichlorobenzene-D4	2199-69-1	24	121
2-Fluorobiphenyl	321-60-8	27	135
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	21	123
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128
EP202S: Phenoxyacetic Acid Herbicide Surrogate			
2.4-Dichlorophenyl Acetic Acid	19719-28-9	64	140
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2302217**	Page	: 1 of 23
Client	: **EPIC ENVIRONMENTAL**	Laboratory	: Environmental Division Sydney
Contact	: P Carroll	Contact	: Customer Services ES
Address	: SUITE 5, LEVEL 9/189 KENT STREET SYDNEY 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: SC210108.03 Sydney Metro WTP	Date Samples Received	: 23-Jan-2023
Order number	: ----	Date Analysis Commenced	: 24-Jan-2023
C-O-C number	: ----	Issue Date	: 02-Feb-2023
Sampler	: Joy Xie		
Site	: Sydney Metro WTP		
Quote number	: EN/222		
No. of samples received	: 3		
No. of samples analysed	: 3		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titrator (QC Lot: 4839126)									
ES2302310-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.25	7.32	1.0	0% - 20%
ES2302065-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.23	6.31	1.3	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 4839127)									
ES2302657-005	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1160	1160	0.5	0% - 20%
ES2302310-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1920	1940	1.1	0% - 20%
ES2302065-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	92	93	0.0	0% - 20%
ES2302710-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	20100	20300	1.2	0% - 20%
ES2302414-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	308	308	0.0	0% - 20%
ES2302710-004	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	10400	10100	2.8	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 4835520)									
EN2300836-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	2140	2110	1.5	0% - 20%
ES2302065-005	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1220	1190	2.2	0% - 20%
EA075: Redox Potential (QC Lot: 4838123)									
ES2300895-017	Anonymous	EA075: Redox Potential	----	0.1	mV	109	111	2.1	0% - 20%
		EA075: pH Redox	----	0.01	pH Unit	7.75	7.75	0.0	0% - 20%
ES2302509-001	Anonymous	EA075: Redox Potential	----	0.1	mV	173	174	0.9	0% - 20%
		EA075: pH Redox	----	0.01	pH Unit	5.65	5.64	0.2	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 4839128)									
ES2302138-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	34	36	6.1	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	34	36	6.1	0% - 20%
ES2302234-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
ED037P: Alkalinity by PC Titrator (QC Lot: 4839128) - continued									
ES2302234-001	Anonymous	ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	43	46	4.9	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	43	46	4.9	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 4833504)									
ES2302375-003	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	793	793	0.0	0% - 20%
ES2302000-006	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	6	6	0.0	No Limit
ED045G: Chloride by Discrete Analyser (QC Lot: 4833503)									
ES2302405-006	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	34	34	0.0	0% - 20%
ES2302000-006	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	23	23	0.0	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 4833118)									
ES2301984-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	40	40	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	14	14	0.0	0% - 50%
		ED093F: Sodium	7440-23-5	1	mg/L	226	231	2.0	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	18	18	0.0	0% - 50%
ES2302165-003	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	114	115	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	<1	<1	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	91	90	0.0	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	36	36	0.0	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 4833117)									
ES2301984-001	Anonymous	EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
ES2302165-003	Anonymous	EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.002	0.003	0.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 4842516)									
ES2302227-001	Anonymous	EG035F-UT: Mercury	7439-97-6	0.005	µg/L	0.010	0.011	9.5	No Limit
ES2302591-008	Anonymous	EG035F-UT: Mercury	7439-97-6	0.005	µg/L	<0.005	<0.005	0.0	No Limit
EG050G LL-F: Dissolved Hexavalent Chromium by Discrete Analyser - Low Level (QC Lot: 4839025)									
ES2302093-001	Anonymous	EG050G: Hexavalent Chromium	18540-29-9	0.001	mg/L	0.001	0.001	0.0	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 4833108)									
ES2301930-008	Anonymous	EG094B-F: Selenium	7782-49-2	0.2	µg/L	0.0042 mg/L	4.3	0.0	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 4833109)									
ES2301930-008	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.00005 mg/L	<0.05	0.0	No Limit
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	0.7	0.8	0.0	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.0001 mg/L	<0.1	0.0	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.0002 mg/L	0.2	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	0.4	0.5	0.0	No Limit
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	1.2	1.2	0.0	No Limit
		EG094A-F: Barium	7440-39-3	0.5	µg/L	27.0	27.8	3.0	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.0005 mg/L	<0.5	0.0	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	0.0222 mg/L	22.4	0.8	0% - 20%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 4833109) - continued									
ES2301930-008	Anonymous	EG094A-F: Nickel	7440-02-0	0.5	µg/L	0.0043 mg/L	4.6	5.6	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	0.003 mg/L	3	0.0	No Limit
		EG094A-F: Boron	7440-42-8	5	µg/L	162	165	2.1	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 4838817)									
ES2302134-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.01	0.01	0.0	No Limit
ES2302188-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.08	0.11	21.9	0% - 50%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 4833505)									
ES2302375-006	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.01	0.01	0.0	No Limit
ES2302217-001	QC04	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 4838818)									
ES2302139-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.01	0.0	No Limit
ES2302188-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 4838814)									
ES2302139-003	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.3	0.2	0.0	No Limit
ES2302188-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	<0.5	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 4838815)									
ES2302139-003	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.08	0.08	0.0	No Limit
ES2302188-002	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.13	0.14	0.0	0% - 50%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 4833506)									
ES2302217-001	QC04	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 4838424)									
ES2302217-001	QC04	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
ES2302224-004	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP074B: Oxygenated Compounds (QC Lot: 4838424)									
ES2302217-001	QC04	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
ES2302224-004	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
EP074C: Sulfonated Compounds (QC Lot: 4838424)									
ES2302217-001	QC04	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
ES2302224-004	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
EP074D: Fumigants (QC Lot: 4838424)									
ES2302217-001	QC04	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
ES2302224-004	Anonymous	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 4838424)									
ES2302217-001	QC04	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP074E: Halogenated Aliphatic Compounds (QC Lot: 4838424) - continued									
ES2302217-001	QC04	EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
ES2302224-004	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 4838424)									
ES2302217-001	QC04	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP074F: Halogenated Aromatic Compounds (QC Lot: 4838424) - continued									
ES2302217-001	QC04	EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
ES2302224-004	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 4838424)									
ES2302217-001	QC04	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
ES2302224-004	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4838425)									
ES2302217-001	QC04	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES2302224-004	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4838425)									
ES2302217-001	QC04	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES2302224-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 4838425)									
ES2302217-001	QC04	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES2302224-004	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QC Lot: 4832967)									

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QC Lot: 4832967) - continued									
EB2301516-001	Anonymous	EP202-SL: 4-Chlorophenoxy acetic acid	122-88-3	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: 2.4-DB	94-82-6	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: Dicamba	1918-00-9	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: Mecoprop	93-65-2	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: MCPA	94-74-6	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: 2.4-DP	120-36-5	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: 2.4-D	94-75-7	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: Triclopyr	55335-06-3	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: Silvex (2.4.5-TP/Fenoprop)	93-72-1	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: 2.4.5-T	93-76-5	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: MCPB	94-81-5	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: Picloram	1918-02-1	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: Clopyralid	1702-17-6	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: Fluroxypyr	69377-81-7	10	µg/L	<10	<10	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4841333)									
ES2302224-004	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2302331-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.07	0.07	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.03	0.02	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.06	0.05	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4841333)									
ES2302224-004	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2302331-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.05	0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4841333) - continued									
ES2302331-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4841333)									
ES2302224-004	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2302331-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4841333)									
ES2302224-004	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4841333) - continued									
ES2302224-004	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.08	0.08	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2302331-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 4841333)									
ES2302224-004	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.11	0.11	0.0	0% - 50%
ES2302331-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.36	0.33	8.7	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA005P: pH by PC Titrator (QCLot: 4839126)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.8	101
				----	7 pH Unit	100	99.2	101
EA010P: Conductivity by PC Titrator (QCLot: 4839127)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	91.2	89.9	110
				<1	2100 µS/cm	98.7	90.2	111
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 4835520)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	101	87.0	109
				<10	293 mg/L	125	75.2	126
				<10	2340 mg/L	102	83.0	124
EA075: Redox Potential (QCLot: 4838123)								
EA075: Redox Potential	----	----	mV	----	234 mV	98.1	96.0	106
				----	300 mV	100	97.0	105
				----	86 mV	110	97.0	115
ED037P: Alkalinity by PC Titrator (QCLot: 4839128)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	98.7	81.0	111
				----	50 mg/L	101	80.0	120
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 4833504)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	110	82.0	122
				<1	500 mg/L	106	82.0	122
ED045G: Chloride by Discrete Analyser (QCLot: 4833503)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	50 mg/L	96.4	80.9	127
				<1	1000 mg/L	102	80.9	127
ED093F: Dissolved Major Cations (QCLot: 4833118)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	103	80.0	114
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	101	90.0	116
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	103	82.0	120
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	101	85.0	113
EG020F: Dissolved Metals by ICP-MS (QCLot: 4833117)								
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	98.3	85.0	111
EG035F: Dissolved Mercury by FIMS (QCLot: 4842516)								
EG035F-UT: Mercury	7439-97-6	0.005	µg/L	<0.005	0.1 µg/L	92.0	85.0	115
EG050G LL-F: Dissolved Hexavalent Chromium by Discrete Analyser - Low Level (QCLot: 4839025)								
EG050G: Hexavalent Chromium	18540-29-9	0.001	mg/L	<0.001	0.05 mg/L	96.7	81.0	115

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 4833108)								
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	102	70.0	122
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 4833109)								
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	104	79.0	121
EG094A-F: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	95.2	85.0	115
EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	114	75.0	123
EG094A-F: Boron	7440-42-8	5	µg/L	<5	50 µg/L	112	79.0	129
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	99.4	87.0	111
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	102	80.0	122
EG094A-F: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	100	82.0	124
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	98.5	83.0	117
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	93.7	74.0	118
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	97.4	83.0	123
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	98.1	86.0	118
EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	98.8	78.0	128
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	102	83.0	121
EK055G: Ammonia as N by Discrete Analyser (QCLot: 4838817)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	105	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 4833505)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	104	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 4838818)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	107	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 4838814)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	89.4	69.0	101
				<0.1	1 mg/L	96.9	70.0	118
				<0.1	5 mg/L	104	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 4838815)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	94.2	71.3	126
				<0.01	0.442 mg/L	99.9	71.3	126
				<0.01	1 mg/L	111	71.3	126
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 4833506)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	99.8	85.0	117
EP068A: Organochlorine Pesticides (OC) (QCLot: 4833515)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	86.2	64.9	107
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	77.3	58.3	111
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	102	69.0	117
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	91.7	70.0	112
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	108	68.9	110
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	86.2	65.2	108

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 4833515) - continued								
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	87.5	65.8	109
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	96.8	67.1	107
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	102	64.1	110
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	92.3	66.7	112
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	103	63.2	111
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	96.4	65.2	113
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	106	66.0	112
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	97.8	65.2	113
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	98.1	67.3	114
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	97.7	72.0	122
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	90.0	66.9	109
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	97.4	65.2	112
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	93.0	65.2	112
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	91.9	63.8	110
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	92.9	61.1	114
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4833515)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	88.1	65.6	114
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	90.7	63.7	113
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	25.3	19.7	48.0
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	95.3	69.5	110
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	100	71.1	110
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	100	77.0	119
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	95.5	70.0	124
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	93.9	68.4	116
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	85.0	68.6	112
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	84.0	75.0	119
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	89.9	67.0	121
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	94.4	69.0	121
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	94.3	71.8	110
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	97.5	67.5	112
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	88.4	64.1	116
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	107	67.8	114
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	92.6	74.0	120
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	91.6	66.2	114
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	91.0	51.6	128
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 4838424)								
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	100	73.0	119
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	103	76.0	118
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	97.7	69.0	119

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 4838424) - continued								
EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	98.3	74.0	116
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	99.0	73.0	119
EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	100.0	74.0	116
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	99.8	72.0	116
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	99.4	71.0	119
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	97.0	65.0	123
EP074B: Oxygenated Compounds (QCLot: 4838424)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	116	61.4	134
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	89.0	73.6	130
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	107	66.0	132
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	95.2	65.0	137
EP074C: Sulfonated Compounds (QCLot: 4838424)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	103	72.8	127
EP074D: Fumigants (QCLot: 4838424)								
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	98.8	68.0	122
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	99.9	76.0	118
EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	101	62.0	120
EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	101	60.0	114
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	110	69.0	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 4838424)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	98.1	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	94.4	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	102	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	82.6	56.0	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	83.3	61.0	139
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	97.8	69.0	131
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	97.4	70.0	124
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	107	70.2	128
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	103	74.0	118
EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	102	74.0	120
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	102	77.0	119
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	99.2	67.0	119
EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	98.6	73.0	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	103	62.0	120
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	102	73.0	123
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	104	76.0	118
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	106	73.0	119
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	111	72.0	126

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP074E: Halogenated Aliphatic Compounds (QCLot: 4838424) - continued								
EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	109	71.0	129
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	94.5	72.0	124
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	106	66.0	114
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	98.4	60.0	120
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	112	70.6	128
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	115	70.0	124
EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	112	74.0	126
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	116	71.8	126
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	99.1	66.4	136
EP074F: Halogenated Aromatic Compounds (QCLot: 4838424)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	104	79.0	117
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	102	76.0	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	100	73.0	119
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	97.4	73.0	119
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	94.4	67.0	123
EP074G: Trihalomethanes (QCLot: 4838424)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	100	72.0	120
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	101	64.0	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	109	65.0	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	102	73.5	126
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4833513)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	57.9	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	94.7	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	93.8	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	98.8	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	94.6	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	94.4	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	97.3	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	96.7	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	70.5	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	74.0	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	82.5	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	65.2	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	73.3	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	67.6	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	65.2	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	71.3	59.1	118

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP075A: Phenolic Compounds (QCLot: 4833516)								
EP075: Phenol	108-95-2	2	µg/L	<2	10 µg/L	39.1	25.5	64.1
EP075: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	70.0	52.0	88.0
EP075: 2-Methylphenol	95-48-7	2	µg/L	<2	10 µg/L	66.5	50.0	94.0
EP075: 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2	10 µg/L	62.1	45.0	96.2
EP075: 2-Nitrophenol	88-75-5	2	µg/L	<2	10 µg/L	82.6	48.0	98.0
EP075: 2.4-Dimethylphenol	105-67-9	2	µg/L	<2	10 µg/L	81.7	50.0	94.0
EP075: 2.4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	81.1	61.9	109
EP075: 2.6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	81.5	61.5	108
EP075: 4-Chloro-3-methylphenol	59-50-7	2	µg/L	<2	10 µg/L	80.6	61.4	107
EP075: 2.4.6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	86.6	57.6	112
EP075: 2.4.5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	93.1	58.0	110
EP075: Pentachlorophenol	87-86-5	4	µg/L	<4	20 µg/L	74.7	12.8	95.0
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 4833516)								
EP075: Naphthalene	91-20-3	2	µg/L	<2	10 µg/L	76.3	51.0	95.0
EP075: 2-Methylnaphthalene	91-57-6	2	µg/L	<2	10 µg/L	77.8	59.0	108
EP075: 2-Chloronaphthalene	91-58-7	2	µg/L	<2	10 µg/L	80.4	60.6	106
EP075: Acenaphthylene	208-96-8	2	µg/L	<2	10 µg/L	82.8	64.0	108
EP075: Acenaphthene	83-32-9	2	µg/L	<2	10 µg/L	83.8	65.0	108
EP075: Fluorene	86-73-7	2	µg/L	<2	10 µg/L	84.3	65.2	107
EP075: Phenanthrene	85-01-8	2	µg/L	<2	10 µg/L	87.8	66.7	108
EP075: Anthracene	120-12-7	2	µg/L	<2	10 µg/L	89.0	65.8	108
EP075: Fluoranthene	206-44-0	2	µg/L	<2	10 µg/L	88.3	64.9	109
EP075: Pyrene	129-00-0	2	µg/L	<2	10 µg/L	85.8	60.1	111
EP075: N-2-Fluorenyl Acetamide	53-96-3	2	µg/L	<2	10 µg/L	85.8	59.7	110
EP075: Benz(a)anthracene	56-55-3	2	µg/L	<2	10 µg/L	84.4	62.2	112
EP075: Chrysene	218-01-9	2	µg/L	<2	10 µg/L	86.9	59.3	114
EP075: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	4	µg/L	<4	20 µg/L	78.4	60.1	111
EP075: 7.12-Dimethylbenz(a)anthracene	57-97-6	2	µg/L	<2	10 µg/L	# 121	50.0	108
EP075: Benzo(a)pyrene	50-32-8	2	µg/L	<2	10 µg/L	79.7	59.2	112
EP075: 3-Methylcholanthrene	56-49-5	2	µg/L	<2	10 µg/L	89.2	60.1	110
EP075: Indeno(1.2.3.cd)pyrene	193-39-5	2	µg/L	<2	10 µg/L	84.7	59.6	110
EP075: Dibenz(a.h)anthracene	53-70-3	2	µg/L	<2	10 µg/L	87.1	57.2	109
EP075: Benzo(g.h.i)perylene	191-24-2	2	µg/L	<2	10 µg/L	83.8	60.6	110
EP075: Benzo(a)pyrene TEQ (zero)	----	2	µg/L	<2	----	----	----	----
EP075C: Phthalate Esters (QCLot: 4833516)								
EP075: Dimethyl phthalate	131-11-3	2	µg/L	<2	10 µg/L	85.8	64.3	112
EP075: Diethyl phthalate	84-66-2	2	µg/L	<2	10 µg/L	86.0	67.3	111
EP075: Di-n-butyl phthalate	84-74-2	2	µg/L	<2	10 µg/L	90.0	68.4	122

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP075C: Phthalate Esters (QCLot: 4833516) - continued								
EP075: Butyl benzyl phthalate	85-68-7	2	µg/L	<2	10 µg/L	88.1	61.2	114
EP075: bis(2-ethylhexyl) phthalate	117-81-7	----	µg/L	----	10 µg/L	82.4	60.0	132
EP075: Di-n-octylphthalate	117-84-0	2	µg/L	<2	10 µg/L	75.4	62.1	115
EP075D: Nitrosamines (QCLot: 4833516)								
EP075: N-Nitrosomethylethylamine	10595-95-6	2	µg/L	<2	10 µg/L	63.2	46.0	110
EP075: N-Nitrosodiethylamine	55-18-5	2	µg/L	<2	10 µg/L	71.5	60.6	113
EP075: N-Nitrosopyrrolidine	930-55-2	4	µg/L	<4	10 µg/L	71.6	45.0	91.0
EP075: N-Nitrosomorpholine	59-89-2	2	µg/L	<2	10 µg/L	66.3	42.0	100
EP075: N-Nitrosodi-n-propylamine	621-64-7	2	µg/L	<2	10 µg/L	83.4	63.5	108
EP075: N-Nitrosopiperidine	100-75-4	2	µg/L	<2	10 µg/L	81.2	61.7	107
EP075: N-Nitrosodibutylamine	924-16-3	2	µg/L	<2	10 µg/L	77.2	62.5	108
EP075: N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	4	µg/L	<4	20 µg/L	83.1	64.6	112
EP075: Methapyrilene	91-80-5	2	µg/L	<2	10 µg/L	# 21.7	23.3	125
EP075E: Nitroaromatics and Ketones (QCLot: 4833516)								
EP075: 2-Picoline	109-06-8	2	µg/L	<2	10 µg/L	54.2	41.0	109
EP075: Acetophenone	98-86-2	2	µg/L	<2	10 µg/L	83.2	68.3	112
EP075: Nitrobenzene	98-95-3	2	µg/L	<2	10 µg/L	79.9	68.3	112
EP075: Isophorone	78-59-1	2	µg/L	<2	10 µg/L	85.4	67.6	111
EP075: 2.6-Dinitrotoluene	606-20-2	4	µg/L	<4	10 µg/L	86.1	64.4	113
EP075: 2.4-Dinitrotoluene	121-14-2	4	µg/L	<4	10 µg/L	83.3	59.5	109
EP075: 1-Naphthylamine	134-32-7	2	µg/L	<2	10 µg/L	99.7	46.8	102
EP075: 4-Nitroquinoline-N-oxide	56-57-5	2	µg/L	<2	10 µg/L	76.7	40.0	96.0
EP075: 5-Nitro-o-toluidine	99-55-8	2	µg/L	<2	10 µg/L	78.4	58.3	106
EP075: Azobenzene	103-33-3	2	µg/L	<2	10 µg/L	82.4	66.0	112
EP075: 1.3.5-Trinitrobenzene	99-35-4	2	µg/L	<2	10 µg/L	77.8	46.0	108
EP075: Phenacetin	62-44-2	2	µg/L	<2	10 µg/L	71.1	57.8	101
EP075: 4-Aminobiphenyl	92-67-1	2	µg/L	<2	10 µg/L	81.1	60.1	112
EP075: Pentachloronitrobenzene	82-68-8	2	µg/L	<2	10 µg/L	83.6	59.0	109
EP075: Pronamide	23950-58-5	2	µg/L	<2	10 µg/L	88.2	62.7	109
EP075: Dimethylaminoazobenzene	60-11-7	2	µg/L	<2	10 µg/L	87.8	59.4	108
EP075: Chlorobenzilate	510-15-6	2	µg/L	<2	10 µg/L	88.5	57.7	110
EP075F: Haloethers (QCLot: 4833516)								
EP075: Bis(2-chloroethyl) ether	111-44-4	2	µg/L	<2	10 µg/L	79.7	69.1	112
EP075: Bis(2-chloroethoxy) methane	111-91-1	2	µg/L	<2	10 µg/L	84.1	66.2	111
EP075: 4-Chlorophenyl phenyl ether	7005-72-3	2	µg/L	<2	10 µg/L	81.8	64.7	109
EP075: 4-Bromophenyl phenyl ether	101-55-3	2	µg/L	<2	10 µg/L	81.8	61.6	108
EP075G: Chlorinated Hydrocarbons (QCLot: 4833516)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP075G: Chlorinated Hydrocarbons (QCLot: 4833516) - continued								
EP075: 1.4-Dichlorobenzene	106-46-7	2	µg/L	<2	10 µg/L	64.8	41.0	97.0
EP075: 1.3-Dichlorobenzene	541-73-1	2	µg/L	<2	10 µg/L	62.8	40.0	96.0
EP075: 1.2-Dichlorobenzene	95-50-1	2	µg/L	<2	10 µg/L	67.4	41.0	95.0
EP075: Hexachloroethane	67-72-1	2	µg/L	<2	10 µg/L	58.0	46.0	88.0
EP075: 1.2.4-Trichlorobenzene	120-82-1	2	µg/L	<2	10 µg/L	70.0	46.0	96.0
EP075: Hexachloropropylene	1888-71-7	2	µg/L	<2	10 µg/L	55.1	34.0	96.0
EP075: Hexachlorobutadiene	87-68-3	2	µg/L	<2	10 µg/L	53.6	37.4	100
EP075: Hexachlorocyclopentadiene	77-47-4	10	µg/L	<10	10 µg/L	40.4	23.5	107
EP075: Pentachlorobenzene	608-93-5	2	µg/L	<2	10 µg/L	77.6	64.5	107
EP075: Hexachlorobenzene (HCB)	118-74-1	4	µg/L	<4	10 µg/L	79.9	65.7	110
EP075H: Anilines and Benzidines (QCLot: 4833516)								
EP075: Aniline	62-53-3	2	µg/L	<2	10 µg/L	64.6	50.0	104
EP075: 4-Chloroaniline	106-47-8	2	µg/L	<2	10 µg/L	73.0	42.0	106
EP075: 2-Nitroaniline	88-74-4	4	µg/L	<4	10 µg/L	82.3	60.9	110
EP075: 3-Nitroaniline	99-09-2	4	µg/L	<4	10 µg/L	72.7	51.5	96.9
EP075: Dibenzofuran	132-64-9	2	µg/L	<2	10 µg/L	81.4	65.3	108
EP075: 4-Nitroaniline	100-01-6	2	µg/L	<2	10 µg/L	73.9	48.9	99.5
EP075: Carbazole	86-74-8	2	µg/L	<2	10 µg/L	87.7	64.3	107
EP075: 3.3`-Dichlorobenzidine	91-94-1	2	µg/L	<2	10 µg/L	91.3	60.3	119
EP075I: Organochlorine Pesticides (QCLot: 4833516)								
EP075: alpha-BHC	319-84-6	2	µg/L	<2	10 µg/L	83.0	64.3	110
EP075: beta-BHC	319-85-7	2	µg/L	<2	10 µg/L	82.8	53.0	107
EP075: gamma-BHC	58-89-9	2	µg/L	<2	10 µg/L	86.8	51.0	111
EP075: delta-BHC	319-86-8	2	µg/L	<2	10 µg/L	89.4	57.0	111
EP075: Heptachlor	76-44-8	2	µg/L	<2	10 µg/L	83.9	57.9	108
EP075: Aldrin	309-00-2	2	µg/L	<2	10 µg/L	88.5	56.0	112
EP075: Heptachlor epoxide	1024-57-3	2	µg/L	<2	10 µg/L	86.5	50.0	118
EP075: alpha-Endosulfan	959-98-8	2	µg/L	<2	10 µg/L	89.7	59.0	111
EP075: 4.4`-DDE	72-55-9	2	µg/L	<2	10 µg/L	85.5	53.0	115
EP075: Dieldrin	60-57-1	2	µg/L	<2	10 µg/L	89.1	59.0	115
EP075: Endrin	72-20-8	2	µg/L	<2	10 µg/L	87.4	58.0	114
EP075: beta-Endosulfan	33213-65-9	2	µg/L	<2	10 µg/L	85.3	54.0	116
EP075: 4.4`-DDD	72-54-8	2	µg/L	<2	10 µg/L	89.1	55.0	115
EP075: Endosulfan sulfate	1031-07-8	2	µg/L	<2	10 µg/L	94.9	52.8	114
EP075: 4.4`-DDT	50-29-3	4	µg/L	<4	10 µg/L	88.3	56.0	114
EP075: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	4	µg/L	<4	----	----	----	----
EP075: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	4	µg/L	<4	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP075J: Organophosphorus Pesticides (QCLot: 4833516)								
EP075: Dichlorvos	62-73-7	2	µg/L	<2	10 µg/L	89.7	51.0	113
EP075: Dimethoate	60-51-5	2	µg/L	<2	10 µg/L	76.0	43.0	109
EP075: Diazinon	333-41-5	2	µg/L	<2	10 µg/L	90.3	49.0	113
EP075: Chlorpyrifos-methyl	5598-13-0	2	µg/L	<2	10 µg/L	90.2	54.1	116
EP075: Malathion	121-75-5	2	µg/L	<2	10 µg/L	89.2	54.0	124
EP075: Fenthion	55-38-9	2	µg/L	<2	10 µg/L	88.7	57.0	115
EP075: Chlorpyrifos	2921-88-2	2	µg/L	<2	10 µg/L	88.2	53.0	109
EP075: Pirimphos-ethyl	23505-41-1	2	µg/L	<2	10 µg/L	88.8	55.0	111
EP075: Chlorfenvinphos	470-90-6	2	µg/L	<2	10 µg/L	88.3	50.0	116
EP075: Prothiofos	34643-46-4	2	µg/L	<2	10 µg/L	88.5	54.0	118
EP075: Ethion	563-12-2	2	µg/L	<2	10 µg/L	92.0	51.0	117
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4833514)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	73.8	53.7	97.0
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	83.8	63.3	107
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	81.0	58.3	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4838425)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	87.6	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4833514)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	62.4	53.9	95.5
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	78.2	57.8	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	84.7	50.5	115
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4838425)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	95.1	75.0	127
EP080: BTEXN (QCLot: 4838425)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	86.2	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	84.2	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	81.5	70.0	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	94.2	69.0	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	82.2	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	85.2	70.0	120
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 4832967)								
EP202-SL: 4-Chlorophenoxy acetic acid	122-88-3	10	µg/L	<10	100 µg/L	107	82.0	136
EP202-SL: 2.4-DB	94-82-6	10	µg/L	<10	100 µg/L	99.3	65.0	147
EP202-SL: Dicamba	1918-00-9	10	µg/L	<10	100 µg/L	108	83.0	137
EP202-SL: Mecoprop	93-65-2	10	µg/L	<10	100 µg/L	103	75.0	143
EP202-SL: MCPA	94-74-6	10	µg/L	<10	100 µg/L	105	76.0	140
EP202-SL: 2.4-DP	120-36-5	10	µg/L	<10	100 µg/L	103	76.0	144

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 4832967) - continued								
EP202-SL: 2.4-D	94-75-7	10	µg/L	<10	100 µg/L	104	77.0	139
EP202-SL: Triclopyr	55335-06-3	10	µg/L	<10	100 µg/L	103	77.0	141
EP202-SL: Silvex (2.4.5-TP/Fenoprop)	93-72-1	10	µg/L	<10	100 µg/L	104	75.0	143
EP202-SL: 2.4.5-T	93-76-5	10	µg/L	<10	100 µg/L	104	78.0	140
EP202-SL: MCPB	94-81-5	10	µg/L	<10	100 µg/L	102	69.2	139
EP202-SL: Picloram	1918-02-1	10	µg/L	<10	100 µg/L	109	70.0	144
EP202-SL: Clopyralid	1702-17-6	10	µg/L	<10	100 µg/L	104	70.0	145
EP202-SL: Fluroxypyr	69377-81-7	10	µg/L	<10	100 µg/L	112	77.0	145
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4841333)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	80.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	96.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	88.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	97.0	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	85.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	84.6	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4841333)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	84.5	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	100	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.6	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	102	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	87.4	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	93.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	106	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4841333)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	99.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	102	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	97.5	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	93.8	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	107	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	102	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	99.2	61.0	135

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4841333)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	94.2	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	101	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	94.6	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	92.0	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
				Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 4833504)							
ES2302000-006	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	118	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 4833503)							
ES2302000-006	Anonymous	ED045G: Chloride	16887-00-6	50 mg/L	106	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 4833117)							
ES2302122-003	Anonymous	EG020A-F: Chromium	7440-47-3	1 mg/L	99.0	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 4842516)							
ES2302591-001	Anonymous	EG035F-UT: Mercury	7439-97-6	0.1 µg/L	91.0	70.0	130
EG050G LL-F: Dissolved Hexavalent Chromium by Discrete Analyser - Low Level (QCLot: 4839025)							
ES2302093-001	Anonymous	EG050G: Hexavalent Chromium	18540-29-9	0.05 mg/L	80.6	70.0	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 4833109)							
ES2301930-009	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	111	70.0	130
		EG094A-F: Barium	7440-39-3	50 µg/L	99.3	70.0	130
		EG094A-F: Beryllium	7440-41-7	50 µg/L	90.3	70.0	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	94.8	70.0	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	96.0	70.0	130
		EG094A-F: Cobalt	7440-48-4	50 µg/L	100	70.0	130
		EG094A-F: Copper	7440-50-8	50 µg/L	94.3	70.0	130
		EG094A-F: Lead	7439-92-1	50 µg/L	91.7	70.0	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	90.2	70.0	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	96.6	70.0	130
		EG094A-F: Vanadium	7440-62-2	50 µg/L	96.4	70.0	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	93.3	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 4838817)							
ES2302134-002	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	117	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK057G: Nitrite as N by Discrete Analyser (QCLot: 4833505)							
ES2302217-001	QC04	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	106	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 4838818)							
ES2302139-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	103	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 4838814)							
ES2302165-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	10 mg/L	100	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 4838815)							
ES2302165-001	Anonymous	EK067G: Total Phosphorus as P	----	2 mg/L	109	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 4833506)							
ES2302217-001	QC04	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	95.2	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 4838424)							
ES2302217-001	QC04	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	74.8	70.0	130
		EP074: Trichloroethene	79-01-6	25 µg/L	105	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 4838424)							
ES2302217-001	QC04	EP074: Chlorobenzene	108-90-7	25 µg/L	113	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4838425)							
ES2302217-001	QC04	EP080: C6 - C9 Fraction	----	325 µg/L	119	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4838425)							
ES2302217-001	QC04	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	120	70.0	130
EP080: BTEXN (QCLot: 4838425)							
ES2302217-001	QC04	EP080: Benzene	71-43-2	25 µg/L	109	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	104	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	104	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	104	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	104	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	95.8	70.0	130
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 4832967)							
EB2301516-001	Anonymous	EP202-SL: Mecoprop	93-65-2	100 µg/L	83.5	75.0	143
		EP202-SL: MCPA	94-74-6	100 µg/L	83.1	76.0	140
		EP202-SL: 2.4-D	94-75-7	100 µg/L	82.7	77.0	139
		EP202-SL: Triclopyr	55335-06-3	100 µg/L	83.6	77.0	141
		EP202-SL: 2.4.5-T	93-76-5	100 µg/L	84.4	78.0	140
		EP202-SL: Picloram	1918-02-1	100 µg/L	# 30.1	70.0	144
		EP202-SL: Clopyralid	1702-17-6	100 µg/L	# 21.4	70.0	145
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4841333)							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4841333) - continued							
ES2302224-004	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	97.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	113	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	101	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	110	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	97.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	88.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4841333)							
ES2302224-004	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	112	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	120	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	118	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	108	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	116	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	103	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	97.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	111	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	127	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	103	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	122	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4841333)							
ES2302224-004	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	116	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	120	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	109	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	99.7	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	127	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	123	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	113	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4841333)							
ES2302224-004	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	107	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	106	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	98.0	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	89.2	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2302217**	Page	: 1 of 14
Client	: **EPIC ENVIRONMENTAL**	Laboratory	: Environmental Division Sydney
Contact	: P Carroll	Telephone	: +61-2-8784 8555
Project	: SC210108.03 Sydney Metro WTP	Date Samples Received	: 23-Jan-2023
Site	: Sydney Metro WTP	Issue Date	: 02-Feb-2023
Sampler	: Joy Xie	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075B: Polynuclear Aromatic Hydrocarbons	QC-4833516-002	----	**7.12-Dimethylbenz(a)anthracene**	57-97-6	121 %	50.0-108%	**Recovery greater than upper control limit**
EP075D: Nitrosamines	QC-4833516-002	----	**Methapyrilene**	91-80-5	21.7 %	23.3-125%	**Recovery less than lower control limit**
Matrix Spike (MS) Recoveries							
EP202A: Phenoxyacetic Acid Herbicides by LCMS	EB2301516--001	Anonymous	**Picloram**	1918-02-1	30.1 %	70.0-144%	**Recovery less than lower data quality objective**
EP202A: Phenoxyacetic Acid Herbicides by LCMS	EB2301516--001	Anonymous	**Clopyralid**	1702-17-6	21.4 %	70.0-145%	**Recovery less than lower data quality objective**

Regular Sample Surrogates

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP068S: Organochlorine Pesticide Surrogate	ES2302217-001	QC04	**Dibromo-DDE**	21655-73-2	62.0 %	66.5-111 %	**Recovery less than lower data quality objective**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / **Container** / Client Sample ID(s)	*Extraction / Preparation*			*Analysis*		
	Date extracted	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
QC04	----	----	----	28-Jan-2023	19-Jan-2023	**9**
EA075: Redox Potential						
Clear Plastic Bottle - Natural						
QC04	----	----	----	27-Jan-2023	19-Jan-2023	**8**
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural						
QC04	----	----	----	25-Jan-2023	21-Jan-2023	**4**
EK071G: Reactive Phosphorus as P by discrete analyser						
Clear Plastic Bottle - Natural						
QC04	----	----	----	25-Jan-2023	21-Jan-2023	**4**
EP025: Oxygen - Dissolved (DO)						
Clear Plastic Bottle - Natural						
QC04	----	----	----	24-Jan-2023	19-Jan-2023	**5**
EP080/071: Total Petroleum Hydrocarbons						
VOC Vial - unpreserved						
TB06	31-Jan-2023	23-Jan-2023	**8**	31-Jan-2023	23-Jan-2023	**8**

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
VOC Vial - unpreserved						
TB06	31-Jan-2023	23-Jan-2023	**8**	31-Jan-2023	23-Jan-2023	**8**
EP080: BTEXN						
Clear glass VOC vial - HCl						
TS06	31-Jan-2023	30-Jan-2023	**1**	01-Feb-2023	30-Jan-2023	**2**
VOC Vial - unpreserved						
TB06	31-Jan-2023	23-Jan-2023	**8**	31-Jan-2023	23-Jan-2023	**8**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count: QC	Count: Regular	Rate (%): Actual	Rate (%): Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)					
Conductivity by Auto Titrator	4	58	6.90	8.33	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P)							
QC04	**19-Jan-2023**	**----**	----	----	**28-Jan-2023**	19-Jan-2023	×

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P)							
QC04	**19-Jan-2023**	**----**	----	----	**28-Jan-2023**	16-Feb-2023	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
QC04	**19-Jan-2023**	**----**	----	----	**25-Jan-2023**	26-Jan-2023	✓
EA065: Total Hardness as CaCO3							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F)							
QC04	**19-Jan-2023**	**----**	----	----	**25-Jan-2023**	16-Feb-2023	✓
EA075: Redox Potential							
Clear Plastic Bottle - Natural (EA075)							
QC04	**19-Jan-2023**	**----**	----	----	**27-Jan-2023**	19-Jan-2023	×
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P)							
QC04	**19-Jan-2023**	**----**	----	----	**28-Jan-2023**	02-Feb-2023	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G)							
QC04	**19-Jan-2023**	**----**	----	----	**25-Jan-2023**	16-Feb-2023	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G)							
QC04	**19-Jan-2023**	**----**	----	----	**25-Jan-2023**	16-Feb-2023	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F)							
QC04	**19-Jan-2023**	**----**	----	----	**25-Jan-2023**	16-Feb-2023	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
QC04	**19-Jan-2023**	**----**	----	----	**25-Jan-2023**	18-Jul-2023	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F-UT)							
QC04	**19-Jan-2023**	**----**	----	----	**31-Jan-2023**	16-Feb-2023	✓
EG050G LL-F: Dissolved Hexavalent Chromium by Discrete Analyser - Low Level							
Clear Plastic Bottle - NaOH Filtered (EG050G LL-F)							
QC04	**19-Jan-2023**	**----**	----	----	**28-Jan-2023**	16-Feb-2023	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG094B-F)							
QC04	**19-Jan-2023**	**----**	----	----	**25-Jan-2023**	18-Jul-2023	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G)							
QC04	**19-Jan-2023**	**----**	----	----	**28-Jan-2023**	16-Feb-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G)							
QC04	**19-Jan-2023**	**----**	----	----	**25-Jan-2023**	21-Jan-2023	×
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
QC04	**19-Jan-2023**	**----**	----	----	**28-Jan-2023**	16-Feb-2023	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
QC04	**19-Jan-2023**	**28-Jan-2023**	16-Feb-2023	✓	**30-Jan-2023**	16-Feb-2023	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
QC04	**19-Jan-2023**	**28-Jan-2023**	16-Feb-2023	✓	**30-Jan-2023**	16-Feb-2023	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Clear Plastic Bottle - Natural (EK071G)							
QC04	**19-Jan-2023**	**----**	----	----	**25-Jan-2023**	21-Jan-2023	×
EP025: Oxygen - Dissolved (DO)							
Clear Plastic Bottle - Natural (EP025)							
QC04	**19-Jan-2023**	**----**	----	----	**24-Jan-2023**	19-Jan-2023	×
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068)							
QC04	**19-Jan-2023**	**25-Jan-2023**	26-Jan-2023	✓	**31-Jan-2023**	06-Mar-2023	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068)							
QC04	**19-Jan-2023**	**25-Jan-2023**	26-Jan-2023	✓	**31-Jan-2023**	06-Mar-2023	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Clear glass VOC vial - HCl (EP074)							
QC04	**19-Jan-2023**	**31-Jan-2023**	02-Feb-2023	✓	**31-Jan-2023**	02-Feb-2023	✓
EP074B: Oxygenated Compounds							
Clear glass VOC vial - HCl (EP074)							
QC04	**19-Jan-2023**	**31-Jan-2023**	02-Feb-2023	✓	**31-Jan-2023**	02-Feb-2023	✓
EP074C: Sulfonated Compounds							
Clear glass VOC vial - HCl (EP074)							
QC04	**19-Jan-2023**	**31-Jan-2023**	02-Feb-2023	✓	**31-Jan-2023**	02-Feb-2023	✓
EP074D: Fumigants							
Clear glass VOC vial - HCl (EP074)							
QC04	**19-Jan-2023**	**31-Jan-2023**	02-Feb-2023	✓	**31-Jan-2023**	02-Feb-2023	✓
EP074E: Halogenated Aliphatic Compounds							
Clear glass VOC vial - HCl (EP074)							
QC04	**19-Jan-2023**	**31-Jan-2023**	02-Feb-2023	✓	**31-Jan-2023**	02-Feb-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074F: Halogenated Aromatic Compounds							
Clear glass VOC vial - HCl (EP074)							
QC04	**19-Jan-2023**	**31-Jan-2023**	02-Feb-2023	✓	**31-Jan-2023**	02-Feb-2023	✓
EP074G: Trihalomethanes							
Clear glass VOC vial - HCl (EP074)							
QC04	**19-Jan-2023**	**31-Jan-2023**	02-Feb-2023	✓	**31-Jan-2023**	02-Feb-2023	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
QC04	**19-Jan-2023**	**25-Jan-2023**	26-Jan-2023	✓	**30-Jan-2023**	06-Mar-2023	✓
EP075A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075)							
QC04	**19-Jan-2023**	**25-Jan-2023**	26-Jan-2023	✓	**30-Jan-2023**	06-Mar-2023	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075)							
QC04	**19-Jan-2023**	**25-Jan-2023**	26-Jan-2023	✓	**30-Jan-2023**	06-Mar-2023	✓
EP075C: Phthalate Esters							
Amber Glass Bottle - Unpreserved (EP075)							
QC04	**19-Jan-2023**	**25-Jan-2023**	26-Jan-2023	✓	**30-Jan-2023**	06-Mar-2023	✓
EP075D: Nitrosamines							
Amber Glass Bottle - Unpreserved (EP075)							
QC04	**19-Jan-2023**	**25-Jan-2023**	26-Jan-2023	✓	**30-Jan-2023**	06-Mar-2023	✓
EP075E: Nitroaromatics and Ketones							
Amber Glass Bottle - Unpreserved (EP075)							
QC04	**19-Jan-2023**	**25-Jan-2023**	26-Jan-2023	✓	**30-Jan-2023**	06-Mar-2023	✓
EP075F: Haloethers							
Amber Glass Bottle - Unpreserved (EP075)							
QC04	**19-Jan-2023**	**25-Jan-2023**	26-Jan-2023	✓	**30-Jan-2023**	06-Mar-2023	✓
EP075G: Chlorinated Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075)							
QC04	**19-Jan-2023**	**25-Jan-2023**	26-Jan-2023	✓	**30-Jan-2023**	06-Mar-2023	✓
EP075H: Anilines and Benzidines							
Amber Glass Bottle - Unpreserved (EP075)							
QC04	**19-Jan-2023**	**25-Jan-2023**	26-Jan-2023	✓	**30-Jan-2023**	06-Mar-2023	✓
EP075I: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved (EP075)							
QC04	**19-Jan-2023**	**25-Jan-2023**	26-Jan-2023	✓	**30-Jan-2023**	06-Mar-2023	✓
EP075J: Organophosphorus Pesticides							
Amber Glass Bottle - Unpreserved (EP075)							
QC04	**19-Jan-2023**	**25-Jan-2023**	26-Jan-2023	✓	**30-Jan-2023**	06-Mar-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
QC04	**19-Jan-2023**	**25-Jan-2023**	26-Jan-2023	✓	**31-Jan-2023**	06-Mar-2023	✓
Clear glass VOC vial - HCl (EP080)							
QC04	**19-Jan-2023**	**31-Jan-2023**	02-Feb-2023	✓	**31-Jan-2023**	02-Feb-2023	✓
VOC Vial - unpreserved (EP080)							
TB06	**16-Jan-2023**	**31-Jan-2023**	23-Jan-2023	×	**31-Jan-2023**	23-Jan-2023	×
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
QC04	**19-Jan-2023**	**25-Jan-2023**	26-Jan-2023	✓	**31-Jan-2023**	06-Mar-2023	✓
Clear glass VOC vial - HCl (EP080)							
QC04	**19-Jan-2023**	**31-Jan-2023**	02-Feb-2023	✓	**31-Jan-2023**	02-Feb-2023	✓
VOC Vial - unpreserved (EP080)							
TB06	**16-Jan-2023**	**31-Jan-2023**	23-Jan-2023	×	**31-Jan-2023**	23-Jan-2023	×
EP080: BTEXN							
Clear glass VOC vial - HCl (EP080)							
TS06	**16-Jan-2023**	**31-Jan-2023**	30-Jan-2023	×	**01-Feb-2023**	30-Jan-2023	×
Clear glass VOC vial - HCl (EP080)							
QC04	**19-Jan-2023**	**31-Jan-2023**	02-Feb-2023	✓	**31-Jan-2023**	02-Feb-2023	✓
VOC Vial - unpreserved (EP080)							
TB06	**16-Jan-2023**	**31-Jan-2023**	23-Jan-2023	×	**31-Jan-2023**	23-Jan-2023	×
EP202A: Phenoxyacetic Acid Herbicides by LCMS							
Amber Glass Bottle - Unpreserved (EP202-SL)							
QC04	**19-Jan-2023**	**----**	----	----	**25-Jan-2023**	26-Jan-2023	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
QC04	**19-Jan-2023**	**31-Jan-2023**	18-Jul-2023	✓	**01-Feb-2023**	18-Jul-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
QC04	**19-Jan-2023**	**31-Jan-2023**	18-Jul-2023	✓	**01-Feb-2023**	18-Jul-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
QC04	**19-Jan-2023**	**31-Jan-2023**	18-Jul-2023	✓	**01-Feb-2023**	18-Jul-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
QC04	**19-Jan-2023**	**31-Jan-2023**	18-Jul-2023	✓	**01-Feb-2023**	18-Jul-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
QC04	**19-Jan-2023**	**31-Jan-2023**	18-Jul-2023	✓	**01-Feb-2023**	18-Jul-2023	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Alkalinity by Auto Titrator	ED037-P	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	6	58	**10.34**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Hexavalent Chromium by DA - Low Level	EG050G LL-F	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Ultra-trace	EG035F-UT	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	7	**28.57**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	2	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Redox Potential	EA075	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	0	1	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	6	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by Auto Titrator	ED037-P	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	4	58	**6.90**	**8.33**	×	NEPM 2013 B3 & ALS QC Standard
Dissolved Hexavalent Chromium by DA - Low Level	EG050G LL-F	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Ultra-trace	EG035F-UT	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Control Samples (LCS) - Continued							
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Redox Potential	EA075	3	13	**23.08**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	20	**15.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	20	**15.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	20	**15.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	1	58	**1.72**	**1.67**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Hexavalent Chromium by DA - Low Level	EG050G LL-F	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Ultra-trace	EG035F-UT	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Hexavalent Chromium by DA - Low Level	EG050G LL-F	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Ultra-trace	EG035F-UT	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	2	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	0	1	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	6	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Redox Potential	EA075	WATER	In house: Ion selective electrode
Alkalinity by Auto Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm.
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS - Ultra-trace	EG035F-UT	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve.
Dissolved Trivalent Chromium by DA - Low Level	EG049G LL-F	WATER	In house: Referenced to APHA 3500 Cr-B & 3120/3125. Trivalent Chromium is the difference between total dissolved and dissolved hexavalent chromium.

Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Hexavalent Chromium by DA - Low Level	EG050G LL-F	WATER	In house: Referenced to APHA 3500 Cr-A & B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined directly on water sample by Descrete Analyser as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3).
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM Schedule B(3).
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM Schedule B(3).
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM Schedule B(3)
Oxygen - Dissolved	EP025	WATER	In house: Referenced to APHA 4500-O G. Dissolved Oxygen Probe. This method is compliant with NEPM Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
Semivolatile Organic Compounds	EP075	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	WATER	In house: LCMS (Electrospray in negative mode). After adding surrogate and acetic acid, water samples are injected on a C18 column for LC/MS determination.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

314602 ah 17101

epic ENVIRONMENTAL

To ALS.

Chain of Custody Record

Project No:	SC210108.03
Project/Site:	Sydney Metro WTP
Project Manager:	PAT
Sampled By:	JX NC
Phone:	426205616
Page:	1 of 1
Number of Eskies:	

Lab:	
Lab Quote No:	
Lab Batch No:	
Date Results Required:	
Sample Disposal After:	

LAB ID	SAMPLE ID	DATE	MATRIX	CONTAINER TYPE & PRESERVATIVE										ANALYSIS REQUIRED												HOLD
				Soil / Solid			Water / Liquid						Other	WQ Parameters: pH, EC ORP, DO, TDS, Alkalinity, Hardness	Major Ions	Extended Metals suite - UltraTrace: 15 metals NEPM Suite	Nutrients (Trace)	TRH + BTEXN	PAH	OCP / OPP	Herbicides	VOC / SVOC	PFAS	Cr Speciation	C6, C10		
				150-250ml Glass Jar	200ml Plastic Jar	- Plastic bag	2x 40ml Amber Vial	100-500ml Amber Bottle	60ml Metals	60ml Nutrients	250-500ml Plastic (Unpreserved)	60-250ml Plastic (PFAS)														
1	QC02	16.01.23	W											X	X	X	X	X	X	X	X	X	X	X		
2	TS02		W															X							X	
3	TB02		W															X							X	
			W																					

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2301657**	Page	: 1 of 17
Client	: **EPIC ENVIRONMENTAL**	Laboratory	: Environmental Division Sydney
Contact	: INVOICES & RESULTS	Contact	: Customer Services ES
Address	: SUITE 5, LEVEL 9/189 KENT STREET SYDNEY 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: SC210108.03 Sydney Metro WTP	Date Samples Received	: 18-Jan-2023 14:00
Order number	: ----	Date Analysis Commenced	: 19-Jan-2023
C-O-C number	: ----	Issue Date	: 25-Jan-2023 17:42
Sampler	: JX NC		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 3		
No. of samples analysed	: 3		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dian Dao	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP202: Poor matrix spike recoveries for Picloram and Clopyralid due to matrix effects.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP075: Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- EP080: Batch ES2301657-3 Result has been confirmed by re-analysis.
- EN055: Ionic Balance out of acceptable limits for sample ES2301657-#001 due to analytes not quantified in this report.
- EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEXN compounds spiked at 20 ug/L.
- EP075: Where reported, 'Sum of PAH' is the sum of the USEPA 16 priority PAHs
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- EG093: Samples containing high levels of sulfate may precipitate barium under the acidic conditions of this method and may therefore bias results low.

- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC02	TS02	TB02	----	----
			Sampling date / time	16-Jan-2023 00:00	11-Jan-2023 00:00	11-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2301657-001	ES2301657-002	ES2301657-003	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**5.69**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**8350**	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**5590**	----	----	----	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	**786**	----	----	----	----
EA075: Redox Potential								
Redox Potential	----	0.1	mV	**60.6**	----	----	----	----
pH Redox	----	0.01	pH Unit	**5.40**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**82**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**82**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**455**	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**3100**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**56**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	**157**	----	----	----	----
Sodium	7440-23-5	1	mg/L	**1390**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**5**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.005	µg/L	<0.005	----	----	----	----
EG049G LL-F: Dissolved Trivalent Chromium - Low Level								
Trivalent Chromium	16065-83-1	0.001	mg/L	<0.001	----	----	----	----
EG050G LL-F: Dissolved Hexavalent Chromium by Discrete Analyser - Low Level								
Hexavalent Chromium	18540-29-9	0.001	mg/L	<0.001	----	----	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC02	TS02	TB02	----	----
				Sampling date / time	16-Jan-2023 00:00	11-Jan-2023 00:00	11-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2301657-001	ES2301657-002	ES2301657-003	--------	--------
					Result	Result	Result	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Arsenic	7440-38-2	0.2	µg/L		**1.4**	----	----	----	----
Barium	7440-39-3	0.5	µg/L		**39.0**	----	----	----	----
Beryllium	7440-41-7	0.1	µg/L		<0.1	----	----	----	----
Boron	7440-42-8	5	µg/L		**39**	----	----	----	----
Cadmium	7440-43-9	0.05	µg/L		<0.05	----	----	----	----
Chromium	7440-47-3	0.2	µg/L		<0.2	----	----	----	----
Cobalt	7440-48-4	0.1	µg/L		**21.2**	----	----	----	----
Copper	7440-50-8	0.5	µg/L		<0.5	----	----	----	----
Lead	7439-92-1	0.1	µg/L		**0.1**	----	----	----	----
Manganese	7439-96-5	0.5	µg/L		**94.0**	----	----	----	----
Nickel	7440-02-0	0.5	µg/L		**8.9**	----	----	----	----
Selenium	7782-49-2	0.2	µg/L		**0.5**	----	----	----	----
Vanadium	7440-62-2	0.2	µg/L		**1.2**	----	----	----	----
Zinc	7440-66-6	1	µg/L		**20**	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		**0.30**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**0.6**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**0.6**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.05**	----	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**0.02**	----	----	----	----
EN055: Ionic Balance									
ø Total Anions	----	0.01	meq/L		**98.6**	----	----	----	----
ø Total Cations	----	0.01	meq/L		**79.5**	----	----	----	----
ø Ionic Balance	----	0.01	%		**10.7**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC02	TS02	TB02	----	----
			Sampling date / time	16-Jan-2023 00:00	11-Jan-2023 00:00	11-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2301657-001	ES2301657-002	ES2301657-003	--------	--------
				Result	Result	Result	----	----
EP025: Oxygen - Dissolved (DO)								
Dissolved Oxygen	----	0.1	mg/L	8.4	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	----	----	----	----
beta-BHC	319-85-7	0.5	µg/L	<0.5	----	----	----	----
gamma-BHC	58-89-9	0.5	µg/L	<0.5	----	----	----	----
delta-BHC	319-86-8	0.5	µg/L	<0.5	----	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	----	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<0.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L	<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L	<0.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	----	----	----	----
4.4`-DDT	50-29-3	2.0	µg/L	<2.0	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	----	----	----	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L	<0.5	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/L	<0.5	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC02	TS02	TB02	----	----
				Sampling date / time	16-Jan-2023 00:00	11-Jan-2023 00:00	11-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2301657-001	ES2301657-002	ES2301657-003	--------	--------
					Result	Result	Result	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued									
Malathion	121-75-5	0.5	µg/L		<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L		<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L		<0.5	----	----	----	----
Parathion	56-38-2	2.0	µg/L		<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L		<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L		<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L		<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L		<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L		<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L		<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L		<0.5	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		<5	----	----	----	----
Isopropylbenzene	98-82-8	5	µg/L		<5	----	----	----	----
n-Propylbenzene	103-65-1	5	µg/L		<5	----	----	----	----
1.3.5-Trimethylbenzene	108-67-8	5	µg/L		<5	----	----	----	----
sec-Butylbenzene	135-98-8	5	µg/L		<5	----	----	----	----
1.2.4-Trimethylbenzene	95-63-6	5	µg/L		<5	----	----	----	----
tert-Butylbenzene	98-06-6	5	µg/L		<5	----	----	----	----
p-Isopropyltoluene	99-87-6	5	µg/L		<5	----	----	----	----
n-Butylbenzene	104-51-8	5	µg/L		<5	----	----	----	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	50	µg/L		<50	----	----	----	----
2-Butanone (MEK)	78-93-3	50	µg/L		<50	----	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L		<50	----	----	----	----
2-Hexanone (MBK)	591-78-6	50	µg/L		<50	----	----	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	5	µg/L		<5	----	----	----	----
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	5	µg/L		<5	----	----	----	----
1.2-Dichloropropane	78-87-5	5	µg/L		<5	----	----	----	----
cis-1.3-Dichloropropylene	10061-01-5	5	µg/L		<5	----	----	----	----
trans-1.3-Dichloropropylene	10061-02-6	5	µg/L		<5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC02	TS02	TB02	----	----
			Sampling date / time	16-Jan-2023 00:00	11-Jan-2023 00:00	11-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2301657-001	ES2301657-002	ES2301657-003	--------	--------
				Result	Result	Result	----	----
EP074D: Fumigants - Continued								
1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	----	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	----	----	----	----
Chloromethane	74-87-3	50	µg/L	<50	----	----	----	----
Vinyl chloride	75-01-4	50	µg/L	<50	----	----	----	----
Bromomethane	74-83-9	50	µg/L	<50	----	----	----	----
Chloroethane	75-00-3	50	µg/L	<50	----	----	----	----
Trichlorofluoromethane	75-69-4	50	µg/L	<50	----	----	----	----
1.1-Dichloroethene	75-35-4	5	µg/L	<5	----	----	----	----
Iodomethane	74-88-4	5	µg/L	<5	----	----	----	----
trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	----	----	----	----
1.1-Dichloroethane	75-34-3	5	µg/L	<5	----	----	----	----
cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	----	----	----	----
1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	----	----	----	----
1.1-Dichloropropylene	563-58-6	5	µg/L	<5	----	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	----	----	----	----
1.2-Dichloroethane	107-06-2	5	µg/L	<5	----	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	----	----	----	----
Dibromomethane	74-95-3	5	µg/L	<5	----	----	----	----
1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	----	----	----	----
1.3-Dichloropropane	142-28-9	5	µg/L	<5	----	----	----	----
Tetrachloroethene	127-18-4	5	µg/L	<5	----	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	----	----	----	----
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	----	----	----	----
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	----	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	----	----	----	----
1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	----	----	----	----
Pentachloroethane	76-01-7	5	µg/L	<5	----	----	----	----
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	----	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	----	----	----	----
Bromobenzene	108-86-1	5	µg/L	<5	----	----	----	----
2-Chlorotoluene	95-49-8	5	µg/L	<5	----	----	----	----
4-Chlorotoluene	106-43-4	5	µg/L	<5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC02	TS02	TB02	----	----
			Sampling date / time	16-Jan-2023 00:00	11-Jan-2023 00:00	11-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2301657-001	ES2301657-002	ES2301657-003	--------	--------
				Result	Result	Result	----	----
EP074F: Halogenated Aromatic Compounds - Continued								
1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	----	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	----	----	----	----
Bromodichloromethane	75-27-4	5	µg/L	<5	----	----	----	----
Dibromochloromethane	124-48-1	5	µg/L	<5	----	----	----	----
Bromoform	75-25-2	5	µg/L	<5	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	----	----	----	----
EP075A: Phenolic Compounds								
Phenol	108-95-2	2	µg/L	<2	----	----	----	----
2-Chlorophenol	95-57-8	2	µg/L	<2	----	----	----	----
2-Methylphenol	95-48-7	2	µg/L	<2	----	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	----	----	----	----
2-Nitrophenol	88-75-5	2	µg/L	<2	----	----	----	----
2.4-Dimethylphenol	105-67-9	2	µg/L	<2	----	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L	<2	----	----	----	----
2.6-Dichlorophenol	87-65-0	2	µg/L	<2	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC02	TS02	TB02	----	----
			Sampling date / time	16-Jan-2023 00:00	11-Jan-2023 00:00	11-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2301657-001	ES2301657-002	ES2301657-003	--------	--------
				Result	Result	Result	----	----
EP075A: Phenolic Compounds - Continued								
4-Chloro-3-methylphenol	59-50-7	2	µg/L	<2	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	2	µg/L	<2	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	2	µg/L	<2	----	----	----	----
Pentachlorophenol	87-86-5	4	µg/L	<4	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
2-Methylnaphthalene	91-57-6	2	µg/L	<2	----	----	----	----
2-Chloronaphthalene	91-58-7	2	µg/L	<2	----	----	----	----
N-2-Fluorenyl Acetamide	53-96-3	2	µg/L	<2	----	----	----	----
7.12-Dimethylbenz(a)anthracene	57-97-6	2	µg/L	<2	----	----	----	----
3-Methylcholanthrene	56-49-5	2	µg/L	<2	----	----	----	----
EP075C: Phthalate Esters								
Dimethyl phthalate	131-11-3	2	µg/L	<2	----	----	----	----
Diethyl phthalate	84-66-2	2	µg/L	<2	----	----	----	----
Di-n-butyl phthalate	84-74-2	2	µg/L	<2	----	----	----	----
Butyl benzyl phthalate	85-68-7	2	µg/L	<2	----	----	----	----
bis(2-ethylhexyl) phthalate	117-81-7	10	µg/L	<10	----	----	----	----
Di-n-octylphthalate	117-84-0	2	µg/L	<2	----	----	----	----
EP075D: Nitrosamines								
N-Nitrosomethylethylamine	10595-95-6	2	µg/L	<2	----	----	----	----
N-Nitrosodiethylamine	55-18-5	2	µg/L	<2	----	----	----	----
N-Nitrosopyrrolidine	930-55-2	4	µg/L	<4	----	----	----	----
N-Nitrosomorpholine	59-89-2	2	µg/L	<2	----	----	----	----
N-Nitrosodi-n-propylamine	621-64-7	2	µg/L	<2	----	----	----	----
N-Nitrosopiperidine	100-75-4	2	µg/L	<2	----	----	----	----
N-Nitrosodibutylamine	924-16-3	2	µg/L	<2	----	----	----	----
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	4	µg/L	<4	----	----	----	----
Methapyrilene	91-80-5	2	µg/L	<2	----	----	----	----
EP075E: Nitroaromatics and Ketones								
2-Picoline	109-06-8	2	µg/L	<2	----	----	----	----
Acetophenone	98-86-2	2	µg/L	<2	----	----	----	----
Nitrobenzene	98-95-3	2	µg/L	<2	----	----	----	----
Isophorone	78-59-1	2	µg/L	<2	----	----	----	----
2.6-Dinitrotoluene	606-20-2	4	µg/L	<4	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC02	TS02	TB02	----	----
			Sampling date / time	16-Jan-2023 00:00	11-Jan-2023 00:00	11-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2301657-001	ES2301657-002	ES2301657-003	--------	--------
				Result	Result	Result	----	----
EP075E: Nitroaromatics and Ketones - Continued								
2.4-Dinitrotoluene	121-14-2	4	µg/L	<4	----	----	----	----
1-Naphthylamine	134-32-7	2	µg/L	<2	----	----	----	----
4-Nitroquinoline-N-oxide	56-57-5	2	µg/L	<2	----	----	----	----
5-Nitro-o-toluidine	99-55-8	2	µg/L	<2	----	----	----	----
Azobenzene	103-33-3	2	µg/L	<2	----	----	----	----
1.3.5-Trinitrobenzene	99-35-4	2	µg/L	<2	----	----	----	----
Phenacetin	62-44-2	2	µg/L	<2	----	----	----	----
4-Aminobiphenyl	92-67-1	2	µg/L	<2	----	----	----	----
Pentachloronitrobenzene	82-68-8	2	µg/L	<2	----	----	----	----
Pronamide	23950-58-5	2	µg/L	<2	----	----	----	----
Dimethylaminoazobenzene	60-11-7	2	µg/L	<2	----	----	----	----
Chlorobenzilate	510-15-6	2	µg/L	<2	----	----	----	----
EP075F: Haloethers								
Bis(2-chloroethyl) ether	111-44-4	2	µg/L	<2	----	----	----	----
Bis(2-chloroethoxy) methane	111-91-1	2	µg/L	<2	----	----	----	----
4-Chlorophenyl phenyl ether	7005-72-3	2	µg/L	<2	----	----	----	----
4-Bromophenyl phenyl ether	101-55-3	2	µg/L	<2	----	----	----	----
EP075G: Chlorinated Hydrocarbons								
1.3-Dichlorobenzene	541-73-1	2	µg/L	<2	----	----	----	----
1.4-Dichlorobenzene	106-46-7	2	µg/L	<2	----	----	----	----
1.2-Dichlorobenzene	95-50-1	2	µg/L	<2	----	----	----	----
Hexachloroethane	67-72-1	2	µg/L	<2	----	----	----	----
1.2.4-Trichlorobenzene	120-82-1	2	µg/L	<2	----	----	----	----
Hexachloropropylene	1888-71-7	2	µg/L	<2	----	----	----	----
Hexachlorobutadiene	87-68-3	2	µg/L	<2	----	----	----	----
Hexachlorocyclopentadiene	77-47-4	10	µg/L	<10	----	----	----	----
Pentachlorobenzene	608-93-5	2	µg/L	<2	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	4	µg/L	<4	----	----	----	----
EP075H: Anilines and Benzidines								
Aniline	62-53-3	2	µg/L	<2	----	----	----	----
4-Chloroaniline	106-47-8	2	µg/L	<2	----	----	----	----
2-Nitroaniline	88-74-4	4	µg/L	<4	----	----	----	----
3-Nitroaniline	99-09-2	4	µg/L	<4	----	----	----	----
Dibenzofuran	132-64-9	2	µg/L	<2	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC02	TS02	TB02	----	----
				Sampling date / time	16-Jan-2023 00:00	11-Jan-2023 00:00	11-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2301657-001	ES2301657-002	ES2301657-003	--------	--------
					Result	Result	Result	----	----
EP075H: Anilines and Benzidines - Continued									
4-Nitroaniline	100-01-6	2	µg/L		<2	----	----	----	----
Carbazole	86-74-8	2	µg/L		<2	----	----	----	----
3.3`-Dichlorobenzidine	91-94-1	2	µg/L		<2	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	<20	----	----
C10 - C14 Fraction	----	50	µg/L		<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	----	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	**21**	<1	----	----
Toluene	108-88-3	2	µg/L		<2	**18**	**3**	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	**16**	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	**15**	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	**16**	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	**31**	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	**86**	**3**	----	----
Naphthalene	91-20-3	5	µg/L		<5	**18**	<5	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS									
4-Chlorophenoxy acetic acid	122-88-3	10	µg/L		<10	----	----	----	----
2.4-DB	94-82-6	10	µg/L		<10	----	----	----	----
Dicamba	1918-00-9	10	µg/L		<10	----	----	----	----
Mecoprop	93-65-2	10	µg/L		<10	----	----	----	----
MCPA	94-74-6	10	µg/L		<10	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC02	TS02	TB02	----	----
				Sampling date / time	16-Jan-2023 00:00	11-Jan-2023 00:00	11-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2301657-001	ES2301657-002	ES2301657-003	--------	--------
					Result	Result	Result	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS - Continued									
2.4-DP	120-36-5	10	µg/L		<10	----	----	----	----
2.4-D	94-75-7	10	µg/L		<10	----	----	----	----
Triclopyr	55335-06-3	10	µg/L		<10	----	----	----	----
Silvex (2.4.5-TP/Fenoprop)	93-72-1	10	µg/L		<10	----	----	----	----
2.4.5-T	93-76-5	10	µg/L		<10	----	----	----	----
MCPB	94-81-5	10	µg/L		<10	----	----	----	----
Picloram	1918-02-1	10	µg/L		<10	----	----	----	----
Clopyralid	1702-17-6	10	µg/L		<10	----	----	----	----
Fluroxypyr	69377-81-7	10	µg/L		<10	----	----	----	----
2.6-D	575-90-6	10	µg/L		<10	----	----	----	----
2.4.6-T	575-89-3	10	µg/L		<10	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.11**	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		**0.08**	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.25**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.15**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		**0.04**	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.41**	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		**0.08**	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.06**	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC02	TS02	TB02	----	----
			Sampling date / time	16-Jan-2023 00:00	11-Jan-2023 00:00	11-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2301657-001	ES2301657-002	ES2301657-003	--------	--------
				Result	Result	Result	----	----
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**1.18**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.40**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC02	TS02	TB02	----	----
				Sampling date / time	16-Jan-2023 00:00	11-Jan-2023 00:00	11-Jan-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2301657-001	ES2301657-002	ES2301657-003	--------	--------
					Result	Result	Result	----	----
EP231P: PFAS Sums - Continued									
Sum of PFAS (WA DER List)	----	0.01	µg/L		1.10	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		66.0	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		64.4	----	----	----	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	5	%		124	----	----	----	----
Toluene-D8	2037-26-5	5	%		122	----	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		112	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		28.2	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		54.9	----	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%		65.0	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		71.2	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%		77.9	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		78.8	----	----	----	----
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	2	%		41.6	----	----	----	----
Phenol-d6	13127-88-3	2	%		26.8	----	----	----	----
2-Chlorophenol-D4	93951-73-6	2	%		57.6	----	----	----	----
2.4.6-Tribromophenol	118-79-6	2	%		55.4	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	2	%		58.5	----	----	----	----
1.2-Dichlorobenzene-D4	2199-69-1	2	%		57.8	----	----	----	----
2-Fluorobiphenyl	321-60-8	2	%		64.6	----	----	----	----
Anthracene-d10	1719-06-8	2	%		78.7	----	----	----	----
4-Terphenyl-d14	1718-51-0	2	%		73.4	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		126	124	125	----	----
Toluene-D8	2037-26-5	2	%		118	99.6	96.9	----	----
4-Bromofluorobenzene	460-00-4	2	%		114	90.9	89.6	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2.4-Dichlorophenyl Acetic Acid	19719-28-9	10	%		111	----	----	----	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Sample ID	QC02	TS02	TB02	----	----
				Sampling date / time	16-Jan-2023 00:00	11-Jan-2023 00:00	11-Jan-2023 00:00	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES2301657-001**	**ES2301657-002**	**ES2301657-003**	--------	--------
					Result	Result	Result	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**110**	**----**	**----**	**----**	**----**
13C8-PFOA	----	0.02	%		**90.5**	**----**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	67	111
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	67	111
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	78	133
Toluene-D8	2037-26-5	79	129
4-Bromofluorobenzene	460-00-4	81	124
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP075S: Acid Extractable Surrogates			
2-Fluorophenol	367-12-4	10	117
Phenol-d6	13127-88-3	10	69
2-Chlorophenol-D4	93951-73-6	21	130
2.4.6-Tribromophenol	118-79-6	10	151
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	142
1.2-Dichlorobenzene-D4	2199-69-1	24	121
2-Fluorobiphenyl	321-60-8	27	135
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	21	123
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128
EP202S: Phenoxyacetic Acid Herbicide Surrogate			
2.4-Dichlorophenyl Acetic Acid	19719-28-9	64	140
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2301657**	Page	: 1 of 22
Client	: **EPIC ENVIRONMENTAL**	Laboratory	: Environmental Division Sydney
Contact	: INVOICES & RESULTS	Contact	: Customer Services ES
Address	: SUITE 5, LEVEL 9/189 KENT STREET SYDNEY 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: SC210108.03 Sydney Metro WTP	Date Samples Received	: 18-Jan-2023
Order number	: ----	Date Analysis Commenced	: 19-Jan-2023
C-O-C number	: ----	Issue Date	: 25-Jan-2023
Sampler	: JX NC		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 3		
No. of samples analysed	: 3		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dian Dao	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titrator (QC Lot: 4830227)									
ES2301530-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.85	7.97	1.5	0% - 20%
ES2301667-005	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.83	5.72	1.9	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 4830225)									
ES2301584-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	2	0.0	No Limit
ES2301717-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	3280	3210	2.2	0% - 20%
ES2301946-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	3080	3060	0.7	0% - 20%
ES2301717-011	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	10500	10400	1.0	0% - 20%
ES2301774-010	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	439	436	0.8	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 4826221)									
ES2301537-004	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	953	945	0.8	0% - 20%
EW2300216-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	143	136	5.6	0% - 50%
EA075: Redox Potential (QC Lot: 4827279)									
EN2300414-001	Anonymous	EA075: Redox Potential	----	0.1	mV	133	144	8.3	0% - 20%
		EA075: pH Redox	----	0.01	pH Unit	7.32	7.35	0.4	0% - 20%
ME2300107-001	Anonymous	EA075: Redox Potential	----	0.1	mV	81.9	80.2	2.1	0% - 20%
		EA075: pH Redox	----	0.01	pH Unit	8.01	8.05	0.5	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 4830226)									
ES2301638-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	56	49	13.2	0% - 20%
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	298	301	0.9	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	355	351	1.2	0% - 20%
ES2301667-005	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
ED037P: Alkalinity by PC Titrator (QC Lot: 4830226) - continued									
ES2301667-005	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	3	2	0.0	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	3	2	0.0	No Limit
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 4827258)									
ES2301554-010	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1190	1180	0.0	0% - 20%
ME2300156-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	483	486	0.8	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 4827259)									
ES2301554-010	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	1060	1060	0.4	0% - 20%
ME2300156-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	176	174	1.2	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 4828628)									
ES2301604-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	<1	<1	0.0	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	<1	<1	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	4	4	0.0	No Limit
		ED093F: Potassium	7440-09-7	1	mg/L	<1	<1	0.0	No Limit
ES2301673-006	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	3	3	0.0	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	4	4	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	11	11	0.0	0% - 50%
		ED093F: Potassium	7440-09-7	1	mg/L	1	1	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 4828626)									
ES2301639-001	Anonymous	EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
ES2301604-001	Anonymous	EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 4832034)									
EW2300276-001	Anonymous	EG035F-UT: Mercury	7439-97-6	0.005	µg/L	0.074	0.074	0.0	0% - 50%
EG050G LL-F: Dissolved Hexavalent Chromium by Discrete Analyser - Low Level (QC Lot: 4824821)									
ES2301634-001	Anonymous	EG050G: Hexavalent Chromium	18540-29-9	0.001	mg/L	0.013	0.014	7.8	0% - 50%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 4829276)									
ES2301607-003	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Barium	7440-39-3	0.5	µg/L	9.2	8.6	6.8	0% - 50%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	1.9	1.8	6.7	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	4.6	4.3	5.7	No Limit
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	3	3	0.0	No Limit
		EG094A-F: Boron	7440-42-8	5	µg/L	10	10	0.0	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 4829277)									

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 4829277) - continued									
ES2301607-003	Anonymous	EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 4830016)									
ES2301546-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	144	146	2.0	0% - 20%
EW2300253-003	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.04	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 4827257)									
ME2300156-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES2301519-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.10	<0.10	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 4830015)									
ES2301520-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	42.6	42.6	0.2	0% - 20%
ES2301690-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	66.2	59.7	10.4	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 4830012)									
ES2301574-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	1470	1490	1.5	0% - 20%
EW2300253-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.03	0.02	0.0	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 4827256)									
ME2300156-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.01	<0.01	0.0	No Limit
ES2301519-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	98.3	99.1	0.8	0% - 20%
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 4828499)									
ES2301712-002	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
ES2301712-007	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
EP074B: Oxygenated Compounds (QC Lot: 4828499)									
ES2301712-002	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP074B: Oxygenated Compounds (QC Lot: 4828499) - continued									
ES2301712-002	Anonymous	EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
ES2301712-007	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
EP074C: Sulfonated Compounds (QC Lot: 4828499)									
ES2301712-002	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
ES2301712-007	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
EP074D: Fumigants (QC Lot: 4828499)									
ES2301712-002	Anonymous	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
ES2301712-007	Anonymous	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 4828499)									
ES2301712-002	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP074E: Halogenated Aliphatic Compounds (QC Lot: 4828499) - continued									
ES2301712-002	Anonymous	EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
ES2301712-007	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 4828499)									
ES2301712-002	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP074F: Halogenated Aromatic Compounds (QC Lot: 4828499) - continued									
ES2301712-007	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 4828499)									
ES2301712-002	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
ES2301712-007	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4828498)									
ES2301712-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES2301712-007	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4828498)									
ES2301712-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES2301712-007	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 4828498)									
ES2301712-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES2301712-007	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QC Lot: 4825433)									
EB2301011-001	Anonymous	EP202-SL: 4-Chlorophenoxy acetic acid	122-88-3	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: 2.4-DB	94-82-6	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: Dicamba	1918-00-9	10	µg/L	<10	<10	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QC Lot: 4825433) - continued									
EB2301011-001	Anonymous	EP202-SL: Mecoprop	93-65-2	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: MCPA	94-74-6	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: 2.4-DP	120-36-5	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: 2.4-D	94-75-7	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: Triclopyr	55335-06-3	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: Silvex (2.4.5-TP/Fenoprop)	93-72-1	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: 2.4.5-T	93-76-5	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: MCPB	94-81-5	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: Picloram	1918-02-1	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: Clopyralid	1702-17-6	10	µg/L	<10	<10	0.0	No Limit
		EP202-SL: Fluroxypyr	69377-81-7	10	µg/L	<10	<10	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4826983)									
ES2301457-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.50	0.50	0.0	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.46	0.47	3.2	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	15.8	17.9	12.5	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.05	<0.05	0.0	No Limit
ES2301831-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.16	0.25	43.9	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	17.3	17.1	1.0	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.05	<0.05	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4826983)									
ES2301457-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	1.68	1.70	1.2	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	3.12	3.25	4.1	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	9.03	9.38	3.7	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.87	0.93	6.7	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.05	<0.05	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	1.1	1.1	0.0	No Limit
ES2301831-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.38	0.41	8.9	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	3.14	3.33	5.9	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	9.26	9.70	4.6	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.62	0.71	13.5	0% - 50%

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4826983) - continued									
ES2301831-002	Anonymous	EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	1.1	1.3	14.7	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4826983)									
ES2301457-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.12	<0.12	0.0	No Limit
ES2301831-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.12	<0.12	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4826983)									
ES2301457-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.66	0.64	4.6	0% - 50%
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4826983) - continued									
ES2301457-001	Anonymous	EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2301831-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.17	0.18	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 4826983)									
ES2301457-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	33.3	35.9	7.5	0% - 20%
ES2301831-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	32.1	33.0	2.6	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA005P: pH by PC Titrator (QCLot: 4830227)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.8	101
				----	7 pH Unit	100	99.2	101
EA010P: Conductivity by PC Titrator (QCLot: 4830225)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	90.5	89.9	110
				<1	2100 µS/cm	96.6	90.2	111
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 4826221)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	94.5	87.0	109
				<10	293 mg/L	107	75.2	126
				<10	2340 mg/L	107	83.0	124
EA075: Redox Potential (QCLot: 4827279)								
EA075: Redox Potential	----	----	mV	----	234 mV	97.9	96.0	106
				----	300 mV	101	97.0	105
				----	86 mV	112	97.0	115
ED037P: Alkalinity by PC Titrator (QCLot: 4830226)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	96.7	81.0	111
				----	50 mg/L	106	80.0	120
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 4827258)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	106	82.0	122
				<1	500 mg/L	97.9	82.0	122
ED045G: Chloride by Discrete Analyser (QCLot: 4827259)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	50 mg/L	106	80.9	127
				<1	1000 mg/L	106	80.9	127
ED093F: Dissolved Major Cations (QCLot: 4828628)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	103	80.0	114
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	100	90.0	116
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	103	82.0	120
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	101	85.0	113
EG020F: Dissolved Metals by ICP-MS (QCLot: 4828626)								
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	95.9	85.0	111
EG035F: Dissolved Mercury by FIMS (QCLot: 4832034)								
EG035F-UT: Mercury	7439-97-6	0.005	µg/L	<0.005	0.1 µg/L	97.0	85.0	115
EG050G LL-F: Dissolved Hexavalent Chromium by Discrete Analyser - Low Level (QCLot: 4824821)								
EG050G: Hexavalent Chromium	18540-29-9	0.001	mg/L	<0.001	0.05 mg/L	106	81.0	115

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 4829276)								
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	95.6	79.0	121
EG094A-F: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	99.8	85.0	115
EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	98.5	75.0	123
EG094A-F: Boron	7440-42-8	5	µg/L	<5	50 µg/L	107	79.0	129
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	96.8	87.0	111
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	89.2	80.0	122
EG094A-F: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	90.8	82.0	124
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	88.3	83.0	117
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	92.5	74.0	118
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	92.6	83.0	123
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	98.5	86.0	118
EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	96.0	78.0	128
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	97.6	83.0	121
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 4829277)								
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	87.1	70.0	122
EK055G: Ammonia as N by Discrete Analyser (QCLot: 4830016)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	101	90.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 4827257)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	97.9	82.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 4830015)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	102	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 4830011)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	89.6	69.0	101
				<0.1	1 mg/L	92.5	70.0	118
				<0.1	5 mg/L	102	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 4830012)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	96.2	71.3	126
				<0.01	0.442 mg/L	98.6	71.3	126
				<0.01	1 mg/L	104	71.3	126
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 4827256)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	94.3	85.0	117
EP068A: Organochlorine Pesticides (OC) (QCLot: 4826759)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	82.0	64.9	107
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	90.5	58.3	111
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	83.8	69.0	117
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	78.9	70.0	112
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	84.2	68.9	110
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	75.3	65.2	108

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 4826759) - continued								
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	83.4	65.8	109
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	86.2	67.1	107
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	97.7	64.1	110
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	106	66.7	112
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	105	63.2	111
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	104	65.2	113
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	102	66.0	112
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	94.8	65.2	113
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	99.0	67.3	114
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	103	72.0	122
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	89.6	66.9	109
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	101	65.2	112
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	83.2	65.2	112
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	100	63.8	110
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	88.0	61.1	114
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4826759)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	95.3	65.6	114
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	77.2	63.7	113
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	24.8	19.7	48.0
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	81.2	69.5	110
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	81.4	71.1	110
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	80.0	77.0	119
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	74.9	70.0	124
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	80.4	68.4	116
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	85.0	68.6	112
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	80.7	75.0	119
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	75.2	67.0	121
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	82.0	69.0	121
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	82.4	71.8	110
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	95.9	67.5	112
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	106	64.1	116
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	107	67.8	114
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	101	74.0	120
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	77.3	66.2	114
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	95.1	51.6	128
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 4828499)								
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	93.1	73.0	119
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	93.3	76.0	118
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	94.1	69.0	119

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 4828499) - continued								
EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	93.7	74.0	116
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	91.9	73.0	119
EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	93.7	74.0	116
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	94.1	72.0	116
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	89.4	71.0	119
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	90.2	65.0	123
EP074B: Oxygenated Compounds (QCLot: 4828499)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	92.5	61.4	134
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	78.5	73.6	130
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	76.9	66.0	132
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	83.4	65.0	137
EP074C: Sulfonated Compounds (QCLot: 4828499)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	80.4	72.8	127
EP074D: Fumigants (QCLot: 4828499)								
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	87.6	68.0	122
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	94.4	76.0	118
EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	74.2	62.0	120
EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	73.5	60.0	114
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	93.7	69.0	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 4828499)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	83.3	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	92.0	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	82.0	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	82.7	56.0	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	82.3	61.0	139
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	78.6	69.0	131
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	85.2	70.0	124
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	78.9	70.2	128
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	97.3	74.0	118
EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	96.0	74.0	120
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	96.0	77.0	119
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	89.4	67.0	119
EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	90.4	73.0	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	85.5	62.0	120
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	94.8	73.0	123
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	90.6	76.0	118
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	93.1	73.0	119
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	99.3	72.0	126

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP074E: Halogenated Aliphatic Compounds (QCLot: 4828499) - continued								
EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	98.7	71.0	129
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	87.1	72.0	124
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	91.0	66.0	114
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	85.1	60.0	120
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	93.7	70.6	128
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	97.3	70.0	124
EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	97.4	74.0	126
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	80.1	71.8	126
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	99.7	66.4	136
EP074F: Halogenated Aromatic Compounds (QCLot: 4828499)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	94.7	79.0	117
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	96.2	76.0	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	95.5	73.0	119
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	96.0	73.0	119
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	95.8	67.0	123
EP074G: Trihalomethanes (QCLot: 4828499)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	95.8	72.0	120
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	81.8	64.0	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	84.1	65.0	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	78.4	73.5	126
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4826758)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	69.6	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	67.3	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	73.2	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	71.6	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	80.0	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	74.6	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	88.2	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	89.8	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	90.5	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	87.4	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	88.6	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	110	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	85.2	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	83.7	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	85.9	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	81.8	59.1	118

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP075A: Phenolic Compounds (QCLot: 4826760)								
EP075: Phenol	108-95-2	2	µg/L	<2	10 µg/L	32.4	25.5	64.1
EP075: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	63.9	52.0	88.0
EP075: 2-Methylphenol	95-48-7	2	µg/L	<2	10 µg/L	59.7	50.0	94.0
EP075: 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2	10 µg/L	54.5	45.0	96.2
EP075: 2-Nitrophenol	88-75-5	2	µg/L	<2	10 µg/L	71.0	48.0	98.0
EP075: 2.4-Dimethylphenol	105-67-9	2	µg/L	<2	10 µg/L	68.4	50.0	94.0
EP075: 2.4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	71.6	61.9	109
EP075: 2.6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	74.3	61.5	108
EP075: 4-Chloro-3-methylphenol	59-50-7	2	µg/L	<2	10 µg/L	73.0	61.4	107
EP075: 2.4.6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	78.2	57.6	112
EP075: 2.4.5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	76.9	58.0	110
EP075: Pentachlorophenol	87-86-5	4	µg/L	<4	20 µg/L	67.9	12.8	95.0
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 4826760)								
EP075: 2-Methylnaphthalene	91-57-6	2	µg/L	<2	10 µg/L	66.2	59.0	108
EP075: 2-Chloronaphthalene	91-58-7	2	µg/L	<2	10 µg/L	66.2	60.6	106
EP075: N-2-Fluorenyl Acetamide	53-96-3	2	µg/L	<2	10 µg/L	69.3	59.7	110
EP075: 7.12-Dimethylbenz(a)anthracene	57-97-6	2	µg/L	<2	10 µg/L	# 125	50.0	108
EP075: 3-Methylcholanthrene	56-49-5	2	µg/L	<2	10 µg/L	84.2	60.1	110
EP075C: Phthalate Esters (QCLot: 4826760)								
EP075: Dimethyl phthalate	131-11-3	2	µg/L	<2	10 µg/L	81.0	64.3	112
EP075: Diethyl phthalate	84-66-2	2	µg/L	<2	10 µg/L	79.4	67.3	111
EP075: Di-n-butyl phthalate	84-74-2	2	µg/L	<2	10 µg/L	86.9	68.4	122
EP075: Butyl benzyl phthalate	85-68-7	2	µg/L	<2	10 µg/L	82.2	61.2	114
EP075: bis(2-ethylhexyl) phthalate	117-81-7	----	µg/L	----	10 µg/L	95.0	60.0	132
EP075: Di-n-octylphthalate	117-84-0	2	µg/L	<2	10 µg/L	84.3	62.1	115
EP075D: Nitrosamines (QCLot: 4826760)								
EP075: N-Nitrosomethylethylamine	10595-95-6	2	µg/L	<2	10 µg/L	56.6	46.0	110
EP075: N-Nitrosodiethylamine	55-18-5	2	µg/L	<2	10 µg/L	65.5	60.6	113
EP075: N-Nitrosopyrrolidine	930-55-2	4	µg/L	<4	10 µg/L	62.0	45.0	91.0
EP075: N-Nitrosomorpholine	59-89-2	2	µg/L	<2	10 µg/L	55.3	42.0	100
EP075: N-Nitrosodi-n-propylamine	621-64-7	2	µg/L	<2	10 µg/L	76.6	63.5	108
EP075: N-Nitrosopiperidine	100-75-4	2	µg/L	<2	10 µg/L	72.1	61.7	107
EP075: N-Nitrosodibutylamine	924-16-3	2	µg/L	<2	10 µg/L	67.7	62.5	108
EP075: N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	4	µg/L	<4	20 µg/L	78.5	64.6	112
EP075: Methapyrilene	91-80-5	2	µg/L	<2	10 µg/L	53.3	23.3	125
EP075E: Nitroaromatics and Ketones (QCLot: 4826760)								
EP075: 2-Picoline	109-06-8	2	µg/L	<2	10 µg/L	55.4	41.0	109

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP075E: Nitroaromatics and Ketones (QCLot: 4826760) - continued								
EP075: Acetophenone	98-86-2	2	µg/L	<2	10 µg/L	72.8	68.3	112
EP075: Nitrobenzene	98-95-3	2	µg/L	<2	10 µg/L	# 66.9	68.3	112
EP075: Isophorone	78-59-1	2	µg/L	<2	10 µg/L	74.4	67.6	111
EP075: 2.6-Dinitrotoluene	606-20-2	4	µg/L	<4	10 µg/L	79.4	64.4	113
EP075: 2.4-Dinitrotoluene	121-14-2	4	µg/L	<4	10 µg/L	76.0	59.5	109
EP075: 1-Naphthylamine	134-32-7	2	µg/L	<2	10 µg/L	93.0	46.8	102
EP075: 4-Nitroquinoline-N-oxide	56-57-5	2	µg/L	<2	10 µg/L	57.4	40.0	96.0
EP075: 5-Nitro-o-toluidine	99-55-8	2	µg/L	<2	10 µg/L	76.1	58.3	106
EP075: Azobenzene	103-33-3	2	µg/L	<2	10 µg/L	73.9	66.0	112
EP075: 1.3.5-Trinitrobenzene	99-35-4	2	µg/L	<2	10 µg/L	67.2	46.0	108
EP075: Phenacetin	62-44-2	2	µg/L	<2	10 µg/L	69.9	57.8	101
EP075: 4-Aminobiphenyl	92-67-1	2	µg/L	<2	10 µg/L	77.6	60.1	112
EP075: Pentachloronitrobenzene	82-68-8	2	µg/L	<2	10 µg/L	72.3	59.0	109
EP075: Pronamide	23950-58-5	2	µg/L	<2	10 µg/L	82.5	62.7	109
EP075: Dimethylaminoazobenzene	60-11-7	2	µg/L	<2	10 µg/L	75.9	59.4	108
EP075: Chlorobenzilate	510-15-6	2	µg/L	<2	10 µg/L	78.7	57.7	110
EP075F: Haloethers (QCLot: 4826760)								
EP075: Bis(2-chloroethyl) ether	111-44-4	2	µg/L	<2	10 µg/L	72.2	69.1	112
EP075: Bis(2-chloroethoxy) methane	111-91-1	2	µg/L	<2	10 µg/L	73.8	66.2	111
EP075: 4-Chlorophenyl phenyl ether	7005-72-3	2	µg/L	<2	10 µg/L	70.2	64.7	109
EP075: 4-Bromophenyl phenyl ether	101-55-3	2	µg/L	<2	10 µg/L	72.2	61.6	108
EP075G: Chlorinated Hydrocarbons (QCLot: 4826760)								
EP075: 1.4-Dichlorobenzene	106-46-7	2	µg/L	<2	10 µg/L	55.8	41.0	97.0
EP075: 1.3-Dichlorobenzene	541-73-1	2	µg/L	<2	10 µg/L	56.6	40.0	96.0
EP075: 1.2-Dichlorobenzene	95-50-1	2	µg/L	<2	10 µg/L	60.1	41.0	95.0
EP075: Hexachloroethane	67-72-1	2	µg/L	<2	10 µg/L	54.8	46.0	88.0
EP075: 1.2.4-Trichlorobenzene	120-82-1	2	µg/L	<2	10 µg/L	54.4	46.0	96.0
EP075: Hexachloropropylene	1888-71-7	2	µg/L	<2	10 µg/L	52.5	34.0	96.0
EP075: Hexachlorobutadiene	87-68-3	2	µg/L	<2	10 µg/L	55.6	37.4	100
EP075: Hexachlorocyclopentadiene	77-47-4	10	µg/L	<10	10 µg/L	37.1	23.5	107
EP075: Pentachlorobenzene	608-93-5	2	µg/L	<2	10 µg/L	65.2	64.5	107
EP075: Hexachlorobenzene (HCB)	118-74-1	4	µg/L	<4	10 µg/L	72.3	65.7	110
EP075H: Anilines and Benzidines (QCLot: 4826760)								
EP075: Aniline	62-53-3	2	µg/L	<2	10 µg/L	62.8	50.0	104
EP075: 4-Chloroaniline	106-47-8	2	µg/L	<2	10 µg/L	75.7	42.0	106
EP075: 2-Nitroaniline	88-74-4	4	µg/L	<4	10 µg/L	77.3	60.9	110
EP075: 3-Nitroaniline	99-09-2	4	µg/L	<4	10 µg/L	78.6	51.5	96.9
EP075: Dibenzofuran	132-64-9	2	µg/L	<2	10 µg/L	69.1	65.3	108

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP075H: Anilines and Benzidines (QCLot: 4826760) - continued								
EP075: 4-Nitroaniline	100-01-6	2	µg/L	<2	10 µg/L	79.7	48.9	99.5
EP075: Carbazole	86-74-8	2	µg/L	<2	10 µg/L	82.6	64.3	107
EP075: 3.3`-Dichlorobenzidine	91-94-1	2	µg/L	<2	10 µg/L	78.9	60.3	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4826761)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	64.7	53.7	97.0
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	64.4	63.3	107
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	69.6	58.3	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4828498)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	84.8	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4826761)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	68.8	53.9	95.5
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	66.5	57.8	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	66.2	50.5	115
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4828498)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	86.0	75.0	127
EP080: BTEXN (QCLot: 4828498)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	103	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	95.2	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	101	70.0	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	102	69.0	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	104	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	110	70.0	120
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 4825433)								
EP202-SL: 4-Chlorophenoxy acetic acid	122-88-3	10	µg/L	<10	100 µg/L	112	82.0	136
EP202-SL: 2.4-DB	94-82-6	10	µg/L	<10	100 µg/L	118	65.0	147
EP202-SL: Dicamba	1918-00-9	10	µg/L	<10	100 µg/L	111	83.0	137
EP202-SL: Mecoprop	93-65-2	10	µg/L	<10	100 µg/L	114	75.0	143
EP202-SL: MCPA	94-74-6	10	µg/L	<10	100 µg/L	114	76.0	140
EP202-SL: 2.4-DP	120-36-5	10	µg/L	<10	100 µg/L	114	76.0	144
EP202-SL: 2.4-D	94-75-7	10	µg/L	<10	100 µg/L	112	77.0	139
EP202-SL: Triclopyr	55335-06-3	10	µg/L	<10	100 µg/L	112	77.0	141
EP202-SL: Silvex (2.4.5-TP/Fenoprop)	93-72-1	10	µg/L	<10	100 µg/L	116	75.0	143
EP202-SL: 2.4.5-T	93-76-5	10	µg/L	<10	100 µg/L	112	78.0	140
EP202-SL: MCPB	94-81-5	10	µg/L	<10	100 µg/L	127	69.2	139
EP202-SL: Picloram	1918-02-1	10	µg/L	<10	100 µg/L	106	70.0	144
EP202-SL: Clopyralid	1702-17-6	10	µg/L	<10	100 µg/L	107	70.0	145
EP202-SL: Fluroxypyr	69377-81-7	10	µg/L	<10	100 µg/L	112	77.0	145

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4826983)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	98.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	82.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	81.6	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	78.8	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	85.2	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4826983)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	84.6	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	81.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	87.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	84.6	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	80.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	85.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	85.6	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	83.6	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	86.8	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	82.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4826983)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	82.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	80.1	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	90.6	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	86.4	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	87.5	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	90.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	92.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4826983)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	80.2	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	86.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	83.6	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	82.6	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 4827258)							
ES2301554-010	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not Determined	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 4827259)							
ES2301554-010	Anonymous	ED045G: Chloride	16887-00-6	50 mg/L	# Not Determined	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 4828626)							
ES2301518-011	Anonymous	EG020A-F: Chromium	7440-47-3	1 mg/L	119	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 4832034)							
EW2300276-002	Anonymous	EG035F-UT: Mercury	7439-97-6	0.1 µg/L	91.0	70.0	130
EG050G LL-F: Dissolved Hexavalent Chromium by Discrete Analyser - Low Level (QCLot: 4824821)							
ES2301634-001	Anonymous	EG050G: Hexavalent Chromium	18540-29-9	0.05 mg/L	96.3	70.0	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 4829276)							
ES2301657-001	QC02	EG094A-F: Arsenic	7440-38-2	50 µg/L	112	70.0	130
		EG094A-F: Barium	7440-39-3	50 µg/L	98.1	70.0	130
		EG094A-F: Beryllium	7440-41-7	50 µg/L	86.2	70.0	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	93.7	70.0	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	84.6	70.0	130
		EG094A-F: Cobalt	7440-48-4	50 µg/L	96.8	70.0	130
		EG094A-F: Copper	7440-50-8	50 µg/L	91.7	70.0	130
		EG094A-F: Lead	7439-92-1	50 µg/L	87.6	70.0	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	82.7	70.0	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	104	70.0	130
		EG094A-F: Vanadium	7440-62-2	50 µg/L	99.7	70.0	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	89.1	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 4830016)							
ES2301546-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	# Not Determined	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 4827257)							
ES2301519-001	Anonymous	EK057G: Nitrite as N	14797-65-0	5 mg/L	103	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 4830015)							
ES2301520-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 4827256)							
ES2301519-001	Anonymous						

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 4827256) - continued							
ES2301519-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	# Not Determined	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 4828499)							
ES2301712-002	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	78.7	70.0	130
		EP074: Trichloroethene	79-01-6	25 µg/L	94.8	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 4828499)							
ES2301712-002	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	95.6	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4828498)							
ES2301712-002	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	91.2	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4828498)							
ES2301712-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	99.2	70.0	130
EP080: BTEXN (QCLot: 4828498)							
ES2301712-002	Anonymous	EP080: Benzene	71-43-2	25 µg/L	120	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	94.7	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	97.0	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	96.8	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	99.7	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	99.1	70.0	130
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 4825433)							
EB2301011-001	Anonymous	EP202-SL: Mecoprop	93-65-2	100 µg/L	126	75.0	143
		EP202-SL: MCPA	94-74-6	100 µg/L	125	76.0	140
		EP202-SL: 2.4-D	94-75-7	100 µg/L	124	77.0	139
		EP202-SL: Triclopyr	55335-06-3	100 µg/L	120	77.0	141
		EP202-SL: 2.4.5-T	93-76-5	100 µg/L	124	78.0	140
		EP202-SL: Picloram	1918-02-1	100 µg/L	# 62.0	70.0	144
		EP202-SL: Clopyralid	1702-17-6	100 µg/L	# 65.2	70.0	145
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4826983)							
ES2301457-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	# Not Determined	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	116	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	77.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	78.4	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	80.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	84.2	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4826983)							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4826983) - continued							
ES2301457-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	78.4	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	100	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	96.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	101	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	78.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	76.2	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	82.4	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	82.2	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	80.6	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	75.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	103	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4826983)							
ES2301457-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	86.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	83.3	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	85.7	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	80.2	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	82.4	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	86.6	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	92.2	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4826983)							
ES2301457-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	87.8	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	81.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	83.6	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	80.6	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2301657**	Page	: 1 of 14
Client	: **EPIC ENVIRONMENTAL**	Laboratory	: Environmental Division Sydney
Contact	: INVOICES & RESULTS	Telephone	: +61-2-8784 8555
Project	: SC210108.03 Sydney Metro WTP	Date Samples Received	: 18-Jan-2023
Site	: ----	Issue Date	: 25-Jan-2023
Sampler	: JX NC	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075B: Polynuclear Aromatic Hydrocarbons	QC-4826760-002	----	**7.12-Dimethylbenz(a)anthracene**	57-97-6	125 %	50.0-108%	**Recovery greater than upper control limit**
EP075E: Nitroaromatics and Ketones	QC-4826760-002	----	**Nitrobenzene**	98-95-3	66.9 %	68.3-112%	**Recovery less than lower control limit**
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	ES2301554--010	Anonymous	**Sulfate as SO4 - Turbidimetric**	14808-79-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
ED045G: Chloride by Discrete Analyser	ES2301554--010	Anonymous	**Chloride**	16887-00-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EK055G: Ammonia as N by Discrete Analyser	ES2301546--001	Anonymous	**Ammonia as N**	7664-41-7	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	ES2301520--004	Anonymous	**Nitrite + Nitrate as N**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EK071G: Reactive Phosphorus as P by discrete analyse	ES2301519--001	Anonymous	**Reactive Phosphorus as P**	14265-44-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP202A: Phenoxyacetic Acid Herbicides by LCMS	EB2301011--001	Anonymous	**Picloram**	1918-02-1	62.0 %	70.0-144%	**Recovery less than lower data quality objective**
EP202A: Phenoxyacetic Acid Herbicides by LCMS	EB2301011--001	Anonymous	**Clopyralid**	1702-17-6	65.2 %	70.0-145%	**Recovery less than lower data quality objective**
EP231A: Perfluoroalkyl Sulfonic Acids	ES2301457--002	Anonymous	**Perfluorobutane sulfonic acid (PFBS)**	375-73-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Regular Sample Surrogates

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP068S: Organochlorine Pesticide Surrogate	ES2301657-001	QC02	**Dibromo-DDE**	21655-73-2	66.0 %	66.5-111 %	**Recovery less than lower data quality objective**
EP068T: Organophosphorus Pesticide Surrogate	ES2301657-001	QC02	**DEF**	78-48-8	64.4 %	66.5-111 %	**Recovery less than lower data quality objective**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	*Extraction / Preparation*	*Analysis*

Matrix: **WATER**

Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
QC02	----	----	----	23-Jan-2023	16-Jan-2023	**7**
EA075: Redox Potential						
Clear Plastic Bottle - Natural						
QC02	----	----	----	20-Jan-2023	16-Jan-2023	**4**
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural						
QC02	----	----	----	20-Jan-2023	18-Jan-2023	**2**
EK071G: Reactive Phosphorus as P by discrete analyser						
Clear Plastic Bottle - Natural						
QC02	----	----	----	20-Jan-2023	18-Jan-2023	**2**
EP025: Oxygen - Dissolved (DO)						
Clear Plastic Bottle - Natural						
QC02	----	----	----	21-Jan-2023	16-Jan-2023	**5**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	0	20	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	5	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	5	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P)							
QC02	16-Jan-2023	----	----	----	23-Jan-2023	16-Jan-2023	×
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P)							
QC02	16-Jan-2023	----	----	----	23-Jan-2023	13-Feb-2023	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
QC02	16-Jan-2023	----	----	----	20-Jan-2023	23-Jan-2023	✓
EA065: Total Hardness as CaCO3							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F)							
QC02	16-Jan-2023	----	----	----	23-Jan-2023	13-Feb-2023	✓
EA075: Redox Potential							
Clear Plastic Bottle - Natural (EA075)							
QC02	16-Jan-2023	----	----	----	20-Jan-2023	16-Jan-2023	×
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P)							
QC02	16-Jan-2023	----	----	----	23-Jan-2023	30-Jan-2023	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G)							
QC02	16-Jan-2023	----	----	----	20-Jan-2023	13-Feb-2023	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G)							
QC02	16-Jan-2023	----	----	----	20-Jan-2023	13-Feb-2023	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F)							
QC02	16-Jan-2023	----	----	----	23-Jan-2023	13-Feb-2023	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
QC02	16-Jan-2023	----	----	----	23-Jan-2023	15-Jul-2023	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F-UT)							
QC02	16-Jan-2023	----	----	----	25-Jan-2023	13-Feb-2023	✓
EG050G LL-F: Dissolved Hexavalent Chromium by Discrete Analyser - Low Level							
Clear Plastic Bottle - NaOH Filtered (EG050G LL-F)							
QC02	16-Jan-2023	----	----	----	19-Jan-2023	13-Feb-2023	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG094B-F)							
QC02	16-Jan-2023	----	----	----	23-Jan-2023	15-Jul-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G)							
QC02	**16-Jan-2023**	**----**	----	----	**24-Jan-2023**	13-Feb-2023	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G)							
QC02	**16-Jan-2023**	**----**	----	----	**20-Jan-2023**	18-Jan-2023	×
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
QC02	**16-Jan-2023**	**----**	----	----	**24-Jan-2023**	13-Feb-2023	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
QC02	**16-Jan-2023**	**23-Jan-2023**	13-Feb-2023	✓	**23-Jan-2023**	13-Feb-2023	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
QC02	**16-Jan-2023**	**23-Jan-2023**	13-Feb-2023	✓	**23-Jan-2023**	13-Feb-2023	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Clear Plastic Bottle - Natural (EK071G)							
QC02	**16-Jan-2023**	**----**	----	----	**20-Jan-2023**	18-Jan-2023	×
EP025: Oxygen - Dissolved (DO)							
Clear Plastic Bottle - Natural (EP025)							
QC02	**16-Jan-2023**	**----**	----	----	**21-Jan-2023**	16-Jan-2023	×
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068)							
QC02	**16-Jan-2023**	**20-Jan-2023**	23-Jan-2023	✓	**25-Jan-2023**	01-Mar-2023	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068)							
QC02	**16-Jan-2023**	**20-Jan-2023**	23-Jan-2023	✓	**25-Jan-2023**	01-Mar-2023	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC02	**16-Jan-2023**	**23-Jan-2023**	30-Jan-2023	✓	**24-Jan-2023**	30-Jan-2023	✓
EP074B: Oxygenated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC02	**16-Jan-2023**	**23-Jan-2023**	30-Jan-2023	✓	**24-Jan-2023**	30-Jan-2023	✓
EP074C: Sulfonated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC02	**16-Jan-2023**	**23-Jan-2023**	30-Jan-2023	✓	**24-Jan-2023**	30-Jan-2023	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC02	**16-Jan-2023**	**23-Jan-2023**	30-Jan-2023	✓	**24-Jan-2023**	30-Jan-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC02	**16-Jan-2023**	**23-Jan-2023**	30-Jan-2023	✓	**24-Jan-2023**	30-Jan-2023	✓
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC02	**16-Jan-2023**	**23-Jan-2023**	30-Jan-2023	✓	**24-Jan-2023**	30-Jan-2023	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC02	**16-Jan-2023**	**23-Jan-2023**	30-Jan-2023	✓	**24-Jan-2023**	30-Jan-2023	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
QC02	**16-Jan-2023**	**20-Jan-2023**	23-Jan-2023	✓	**25-Jan-2023**	01-Mar-2023	✓
EP075A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075)							
QC02	**16-Jan-2023**	**20-Jan-2023**	23-Jan-2023	✓	**24-Jan-2023**	01-Mar-2023	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075)							
QC02	**16-Jan-2023**	**20-Jan-2023**	23-Jan-2023	✓	**24-Jan-2023**	01-Mar-2023	✓
EP075C: Phthalate Esters							
Amber Glass Bottle - Unpreserved (EP075)							
QC02	**16-Jan-2023**	**20-Jan-2023**	23-Jan-2023	✓	**24-Jan-2023**	01-Mar-2023	✓
EP075D: Nitrosamines							
Amber Glass Bottle - Unpreserved (EP075)							
QC02	**16-Jan-2023**	**20-Jan-2023**	23-Jan-2023	✓	**24-Jan-2023**	01-Mar-2023	✓
EP075E: Nitroaromatics and Ketones							
Amber Glass Bottle - Unpreserved (EP075)							
QC02	**16-Jan-2023**	**20-Jan-2023**	23-Jan-2023	✓	**24-Jan-2023**	01-Mar-2023	✓
EP075F: Haloethers							
Amber Glass Bottle - Unpreserved (EP075)							
QC02	**16-Jan-2023**	**20-Jan-2023**	23-Jan-2023	✓	**24-Jan-2023**	01-Mar-2023	✓
EP075G: Chlorinated Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075)							
QC02	**16-Jan-2023**	**20-Jan-2023**	23-Jan-2023	✓	**24-Jan-2023**	01-Mar-2023	✓
EP075H: Anilines and Benzidines							
Amber Glass Bottle - Unpreserved (EP075)							
QC02	**16-Jan-2023**	**20-Jan-2023**	23-Jan-2023	✓	**24-Jan-2023**	01-Mar-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
QC02	**16-Jan-2023**	**20-Jan-2023**	23-Jan-2023	✓	**25-Jan-2023**	01-Mar-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
TB02	**11-Jan-2023**	**23-Jan-2023**	25-Jan-2023	✓	**24-Jan-2023**	25-Jan-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
QC02	**16-Jan-2023**	**23-Jan-2023**	30-Jan-2023	✓	**24-Jan-2023**	30-Jan-2023	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
QC02	**16-Jan-2023**	**20-Jan-2023**	23-Jan-2023	✓	**25-Jan-2023**	01-Mar-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
TB02	**11-Jan-2023**	**23-Jan-2023**	25-Jan-2023	✓	**24-Jan-2023**	25-Jan-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
QC02	**16-Jan-2023**	**23-Jan-2023**	30-Jan-2023	✓	**24-Jan-2023**	30-Jan-2023	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
TS02, TB02	**11-Jan-2023**	**23-Jan-2023**	25-Jan-2023	✓	**24-Jan-2023**	25-Jan-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
QC02	**16-Jan-2023**	**23-Jan-2023**	30-Jan-2023	✓	**24-Jan-2023**	30-Jan-2023	✓
EP202A: Phenoxyacetic Acid Herbicides by LCMS							
Amber Glass Bottle - Unpreserved (EP202-SL)							
QC02	**16-Jan-2023**	**----**	----	----	**23-Jan-2023**	23-Jan-2023	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
QC02	**16-Jan-2023**	**23-Jan-2023**	15-Jul-2023	✓	**24-Jan-2023**	15-Jul-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
QC02	**16-Jan-2023**	**23-Jan-2023**	15-Jul-2023	✓	**24-Jan-2023**	15-Jul-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
QC02	**16-Jan-2023**	**23-Jan-2023**	15-Jul-2023	✓	**24-Jan-2023**	15-Jul-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
QC02	**16-Jan-2023**	**23-Jan-2023**	15-Jul-2023	✓	**24-Jan-2023**	15-Jul-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
QC02	**16-Jan-2023**	**23-Jan-2023**	15-Jul-2023	✓	**24-Jan-2023**	15-Jul-2023	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Alkalinity by Auto Titrator	ED037-P	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	5	42	**11.90**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Hexavalent Chromium by DA - Low Level	EG050G LL-F	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Ultra-trace	EG035F-UT	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	10	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	1	**100.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	3	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	2	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Redox Potential	EA075	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	0	2	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	0	20	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	5	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by Auto Titrator	ED037-P	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	4	42	**9.52**	**8.33**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Hexavalent Chromium by DA - Low Level	EG050G LL-F	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Ultra-trace	EG035F-UT	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Control Samples (LCS) - Continued							
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Redox Potential	EA075	3	11	**27.27**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	19	**15.79**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	20	**15.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	16	**18.75**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	1	42	**2.38**	**1.67**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Hexavalent Chromium by DA - Low Level	EG050G LL-F	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Ultra-trace	EG035F-UT	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Total Phosphorus as P By Discrete Analyser	EK067G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Hexavalent Chromium by DA - Low Level	EG050G LL-F	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Ultra-trace	EG035F-UT	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	3	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	2	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	0	2	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	0	20	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	0	16	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	5	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Redox Potential	EA075	WATER	In house: Ion selective electrode
Alkalinity by Auto Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm.
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS - Ultra-trace	EG035F-UT	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve.
Dissolved Trivalent Chromium by DA - Low Level	EG049G LL-F	WATER	In house: Referenced to APHA 3500 Cr-B & 3120/3125. Trivalent Chromium is the difference between total dissolved and dissolved hexavalent chromium.

Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Hexavalent Chromium by DA - Low Level	EG050G LL-F	WATER	In house: Referenced to APHA 3500 Cr-A & B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined directly on water sample by Descrete Analyser as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3).
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM Schedule B(3).
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM Schedule B(3).
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM Schedule B(3)
Oxygen - Dissolved	EP025	WATER	In house: Referenced to APHA 4500-O G. Dissolved Oxygen Probe. This method is compliant with NEPM Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
Semivolatile Organic Compounds	EP075	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202-SL	WATER	In house: LCMS (Electrospray in negative mode). After adding surrogate and acetic acid, water samples are injected on a C18 column for LC/MS determination.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

April 2023 monitoring event

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

ENVIROLAB GROUP
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 321086.

Date Received: 18/04/23.
Time Received: 0900
Received By: VC
Temp: Cool/Ambient 2°C.
Cooling: Ice/Icepack
Security: Intact/Broken/None

epic ENVIRONMENTAL

Chain of Custody Record

Project No:	SC210108.03 - GWMP	Lab:	Envirolab Sydney
Project/Site:	SC210108.03 - GWMP	Lab Quote No:	
Sampled By:		Lab Batch No:	
Phone / Email:		Date Results Required:	Standard TAT
Results to:	pcarroll@epicenvironmental.com.au /		
Page 1 of 1		Sample Disposal After:	
Number of Eskies:	2		

| LAB ID | Sample ID | Date/Time | Matrix | CONTAINER TYPE & PRESERVATIVE (water/liquid) | | |

#321086.
18104123
VC.

epic ENVIRONMENTAL

Chain of Custody Record

Project No:	SC210108.03 - GWMP	Lab:	ALS Sydney
Project/Site:	SC210108.03 - GWMP	Lab Quote No:	
Sampled By:		Lab Batch No:	
Phone / Email:		Date Results Required:	Standard TAT
Results to:	pcarroll@epicenvironmental.com.au /.		
Page 1 of		Sample Disposal After:	
Number of Eskies:			

LAB ID	Sample ID	Date/Time	Matrix	CONTAINER TYPE & PRESERVATIVE water/liquid: PFAS jar	Plastic Bag	40ml Amber Vial	100-500ml Amber Bottle	60ml Metals	60ml Nutrients	250-500ml Plastic (Unpreserved)	60-250ml Plastic (PFAS)	ASS	TRH (C6-C40) / BTEXN / PAH / Phenols / OC / OP (W-33)	Extended water suite (NT-13)	11 metals (W-30)	PFAS (Short Suite) - EP231					
	QC02	17/04	W										✓	✓	✓	✓					
			TOTALS										0	0	0	0	0	0	0	0	0

Relinquished By:			Received By:		
NAME	SIGNATURE	DATE	NAME	SIGNATURE	DATE

Custody Seals Intact	Y	N
Samples Received Chilled	Y	N
Method of Shipment		

NOTES: Bottles supplied for As speciation to be placed on HOLD and not analysed.

please filter from ~~AT~~ unpreservative bottle for As speciation - on hold

Epic Environmental Pty Ltd ABN 54 169 579 275
Level 6, 193 North Quay, Brisbane QLD 4000

web www.epicenvironmental.com.au
email labs@epicenvironmental.com.au

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 321086

Client Details

Client	Epic Environmental (Sydney) Pty Ltd
Attention	Patrick Carroll
Address	Suite 5, Level 9, 189 Kent Street, SYDNEY, NSW, 2000

Sample Details

Your Reference	**SC210108.03-GWMP**
Number of Samples	9 Water
Date samples received	18/04/2023
Date completed instructions received	18/04/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

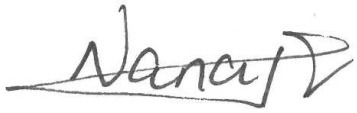
Date results requested by	27/04/2023
Date of Issue	27/04/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Alexander Mitchell Maclean, Senior Chemist
Diego Bigolin, Inorganics Supervisor
Kyle Gavrily, Senior Chemist
Liam Timmins, Organics Supervisor
Loren Bardwell, Development Chemist

Authorised By



Nancy Zhang, Laboratory Manager

VOCs in water						
Our Reference		321086-1	321086-2	321086-3	321086-4	321086-5
Your Reference	UNITS	CZ1_BH13	SMW_ENV224	SMW_ENV234	SMW-WTP-BH25_S	CZ5_MW16
Date Sampled		17/04/2023	17/04/2023	17/04/2023	17/04/2023	17/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	18/04/2023	18/04/2023	18/04/2023	18/04/2023	19/04/2023
Date analysed	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Methylene chloride	µg/L	<4	<4	<4	<4	<4
Dichlorodifluoromethane	µg/L	<10	<10	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10	<10	<10
Vinyl Chloride	µg/L	<0.3	<0.3	<0.3	<0.3	<0.3
Bromomethane	µg/L	<2	<2	<2	<2	<2
Chloroethane	µg/L	<10	<10	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1	<1	<1
Chloroform	µg/L	<1	<1	<1	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1	<1	<1
Benzene	µg/L	<1	<1	<1	2	<1
Dibromomethane	µg/L	<1	<1	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1	710	<1

VOCs in water						
Our Reference		321086-1	321086-2	321086-3	321086-4	321086-5
Your Reference	UNITS	CZ1_BH13	SMW_ENV224	SMW_ENV234	SMW-WTP-BH25_S	CZ5_MW16
Date Sampled		17/04/2023	17/04/2023	17/04/2023	17/04/2023	17/04/2023
Type of sample		Water	Water	Water	Water	Water
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
Bromoform	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
Styrene	µg/L	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1	<1	<1
o-xylene	µg/L	<1	<1	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1	34	<1
Sec-butyl benzene	µg/L	<1	<1	<1	<1	<1
1,4-dichlorobenzene	µg/L	<0.3	<0.3	<0.3	70	<0.3
4-isopropyl toluene	µg/L	<1	<1	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1	2	<1
n-butyl benzene	µg/L	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1	5	<1
Hexachlorobutadiene	µg/L	<0.7	<0.7	<0.7	<0.7	<0.7
1,2,3-trichlorobenzene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	105	103	104	97	106
Surrogate toluene-d8	%	101	100	101	98	100
Surrogate 4-BFB	%	105	104	102	90	103

VOCs in water		
Our Reference		321086-9
Your Reference	UNITS	QC01
Date Sampled		17/04/2023
Type of sample		Water
Date extracted	-	18/04/2023
Date analysed	-	19/04/2023
Methylene chloride	µg/L	<4
Dichlorodifluoromethane	µg/L	<10
Chloromethane	µg/L	<10
Vinyl Chloride	µg/L	<0.3
Bromomethane	µg/L	<2
Chloroethane	µg/L	<10
Trichlorofluoromethane	µg/L	<10
1,1-Dichloroethene	µg/L	<1
Trans-1,2-dichloroethene	µg/L	<1
1,1-dichloroethane	µg/L	<1
Cis-1,2-dichloroethene	µg/L	<1
Bromochloromethane	µg/L	<1
Chloroform	µg/L	<1
2,2-dichloropropane	µg/L	<1
1,2-dichloroethane	µg/L	<1
1,1,1-trichloroethane	µg/L	<1
1,1-dichloropropene	µg/L	<1
Cyclohexane	µg/L	<1
Carbon tetrachloride	µg/L	<1
Benzene	µg/L	<1
Dibromomethane	µg/L	<1
1,2-dichloropropane	µg/L	<1
Trichloroethene	µg/L	<1
Bromodichloromethane	µg/L	<1
trans-1,3-dichloropropene	µg/L	<1
cis-1,3-dichloropropene	µg/L	<1
1,1,2-trichloroethane	µg/L	<1
Toluene	µg/L	<1
1,3-dichloropropane	µg/L	<1
Dibromochloromethane	µg/L	<1
1,2-dibromoethane	µg/L	<1
Tetrachloroethene	µg/L	<1
1,1,1,2-tetrachloroethane	µg/L	<1
Chlorobenzene	µg/L	<1

VOCs in water		
Our Reference	UNITS	321086-9
Your Reference		QC01
Date Sampled		17/04/2023
Type of sample		Water
Ethylbenzene	µg/L	<1
Bromoform	µg/L	<1
m+p-xylene	µg/L	<2
Styrene	µg/L	<1
1,1,2,2-tetrachloroethane	µg/L	<1
o-xylene	µg/L	<1
1,2,3-trichloropropane	µg/L	<1
Isopropylbenzene	µg/L	<1
Bromobenzene	µg/L	<1
n-propyl benzene	µg/L	<1
2-chlorotoluene	µg/L	<1
4-chlorotoluene	µg/L	<1
1,3,5-trimethyl benzene	µg/L	<1
Tert-butyl benzene	µg/L	<1
1,2,4-trimethyl benzene	µg/L	<1
1,3-dichlorobenzene	µg/L	<1
Sec-butyl benzene	µg/L	<1
1,4-dichlorobenzene	µg/L	<0.3
4-isopropyl toluene	µg/L	<1
1,2-dichlorobenzene	µg/L	<1
n-butyl benzene	µg/L	<1
1,2-dibromo-3-chloropropane	µg/L	<1
1,2,4-trichlorobenzene	µg/L	<1
Hexachlorobutadiene	µg/L	<0.7
1,2,3-trichlorobenzene	µg/L	<1
Surrogate Dibromofluoromethane	%	105
Surrogate toluene-d8	%	100
Surrogate 4-BFB	%	103

vTRH(C6-C10)/BTEXN in Water						
Our Reference		321086-1	321086-2	321086-3	321086-4	321086-5
Your Reference	UNITS	CZ1_BH13	SMW_ENV224	SMW_ENV234	SMW-WTP-BH25_S	CZ5_MW16
Date Sampled		17/04/2023	17/04/2023	17/04/2023	17/04/2023	17/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	18/04/2023	18/04/2023	18/04/2023	18/04/2023	19/04/2023
Date analysed	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	1,000	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	1,100	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	1,100	<10
Benzene	µg/L	<1	<1	<1	2	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	105	103	104	97	106
Surrogate toluene-d8	%	101	100	101	98	100
Surrogate 4-BFB	%	105	104	102	90	103

vTRH(C6-C10)/BTEXN in Water					
Our Reference		321086-6	321086-7	321086-8	321086-9
Your Reference	UNITS	TS	TB	R01	QC01
Date Sampled		17/04/2023	17/04/2023	17/04/2023	17/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Date analysed	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023
TRH C_6 - C_9	µg/L	[NA]	<10	<10	<10
TRH C_6 - C_{10}	µg/L	[NA]	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	[NA]	<10	<10	<10
Benzene	µg/L	114%	<1	<1	<1
Toluene	µg/L	108%	<1	<1	<1
Ethylbenzene	µg/L	118%	<1	<1	<1
m+p-xylene	µg/L	107%	<2	<2	<2
o-xylene	µg/L	108%	<1	<1	<1
Naphthalene	µg/L	[NA]	<1	<1	<1
Surrogate Dibromofluoromethane	%	99	104	104	105
Surrogate toluene-d8	%	100	101	101	100
Surrogate 4-BFB	%	96	103	102	103

svTRH (C10-C40) in Water						
Our Reference		321086-1	321086-2	321086-3	321086-4	321086-5
Your Reference	UNITS	CZ1_BH13	SMW_ENV224	SMW_ENV234	SMW-WTP-BH25_S	CZ5_MW16
Date Sampled		17/04/2023	17/04/2023	17/04/2023	17/04/2023	17/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Date analysed	-	19/04/2023	20/04/2023	20/04/2023	20/04/2023	19/04/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	96	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	300	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	390	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	130	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	130	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	260	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	400	<50
Surrogate o-Terphenyl	%	80	82	70	76	69

svTRH (C10-C40) in Water			
Our Reference		321086-8	321086-9
Your Reference	UNITS	R01	QC01
Date Sampled		17/04/2023	17/04/2023
Type of sample		Water	Water
Date extracted	-	19/04/2023	19/04/2023
Date analysed	-	19/04/2023	20/04/2023
TRH C_{10} - C_{14}	µg/L	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50
Surrogate o-Terphenyl	%	70	68

PAHs in Water						
Our Reference		321086-1	321086-2	321086-3	321086-4	321086-5
Your Reference	UNITS	CZ1_BH13	SMW_ENV224	SMW_ENV234	SMW-WTP-BH25_S	CZ5_MW16
Date Sampled		17/04/2023	17/04/2023	17/04/2023	17/04/2023	17/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Date analysed	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Naphthalene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1	0.13	<0.1
Surrogate p-Terphenyl-d14	%	106	106	110	102	91

PAHs in Water		
Our Reference		321086-9
Your Reference	UNITS	QC01
Date Sampled		17/04/2023
Type of sample		Water
Date extracted	-	19/04/2023
Date analysed	-	19/04/2023
Naphthalene	µg/L	<0.2
Acenaphthylene	µg/L	<0.1
Acenaphthene	µg/L	<0.1
Fluorene	µg/L	<0.1
Phenanthrene	µg/L	<0.1
Anthracene	µg/L	<0.1
Fluoranthene	µg/L	<0.1
Pyrene	µg/L	<0.1
Benzo(a)anthracene	µg/L	<0.1
Chrysene	µg/L	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2
Benzo(a)pyrene	µg/L	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5
Total +ve PAH's	µg/L	<0.1
Surrogate p-Terphenyl-d14	%	100

Organochlorine Pesticides in Water						
Our Reference		321086-1	321086-2	321086-3	321086-4	321086-5
Your Reference	UNITS	CZ1_BH13	SMW_ENV224	SMW_ENV234	SMW-WTP-BH25_S	CZ5_MW16
Date Sampled		17/04/2023	17/04/2023	17/04/2023	17/04/2023	17/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Date analysed	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
alpha-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
HCB	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	98	95	97	93	82

Organochlorine Pesticides in Water		
Our Reference		321086-9
Your Reference	UNITS	QC01
Date Sampled		17/04/2023
Type of sample		Water
Date extracted	-	19/04/2023
Date analysed	-	19/04/2023
alpha-BHC	µg/L	<0.2
HCB	µg/L	<0.2
beta-BHC	µg/L	<0.2
gamma-BHC	µg/L	<0.2
Heptachlor	µg/L	<0.2
delta-BHC	µg/L	<0.2
Aldrin	µg/L	<0.2
Heptachlor Epoxide	µg/L	<0.2
gamma-Chlordane	µg/L	<0.2
alpha-Chlordane	µg/L	<0.2
Endosulfan I	µg/L	<0.2
pp-DDE	µg/L	<0.2
Dieldrin	µg/L	<0.2
Endrin	µg/L	<0.2
Endosulfan II	µg/L	<0.2
pp-DDD	µg/L	<0.2
Endrin Aldehyde	µg/L	<0.2
pp-DDT	µg/L	<0.2
Endosulfan Sulphate	µg/L	<0.2
Methoxychlor	µg/L	<0.2
Surrogate TCMX	%	90

OP Pesticides in Water						
Our Reference		321086-1	321086-2	321086-3	321086-4	321086-5
Your Reference	UNITS	CZ1_BH13	SMW_ENV224	SMW_ENV234	SMW-WTP-BH25_S	CZ5_MW16
Date Sampled		17/04/2023	17/04/2023	17/04/2023	17/04/2023	17/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Date analysed	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Dichlorvos	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	98	95	97	93	82

OP Pesticides in Water		
Our Reference		321086-9
Your Reference	UNITS	QC01
Date Sampled		17/04/2023
Type of sample		Water
Date extracted	-	19/04/2023
Date analysed	-	19/04/2023
Dichlorvos	µg/L	<0.2
Dimethoate	µg/L	<0.2
Diazinon	µg/L	<0.2
Chlorpyriphos-methyl	µg/L	<0.2
Ronnel	µg/L	<0.2
Fenitrothion	µg/L	<0.2
Malathion	µg/L	<0.2
Chlorpyriphos	µg/L	<0.2
Parathion	µg/L	<0.2
Bromophos ethyl	µg/L	<0.2
Ethion	µg/L	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2
Surrogate TCMX	%	90

PCBs in Water						
Our Reference		321086-1	321086-2	321086-3	321086-4	321086-5
Your Reference	UNITS	CZ1_BH13	SMW_ENV224	SMW_ENV234	SMW-WTP-BH25_S	CZ5_MW16
Date Sampled		17/04/2023	17/04/2023	17/04/2023	17/04/2023	17/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Date analysed	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Aroclor 1016	µg/L	<2	<2	<2	<10	<2
Aroclor 1221	µg/L	<2	<2	<2	<10	<2
Aroclor 1232	µg/L	<2	<2	<2	<10	<2
Aroclor 1242	µg/L	<2	<2	<2	<10	<2
Aroclor 1248	µg/L	<2	<2	<2	<10	<2
Aroclor 1254	µg/L	<2	<2	<2	<10	<2
Aroclor 1260	µg/L	<2	<2	<2	<10	<2
Surrogate TCMX	%	98	95	97	93	82

PCBs in Water		
Our Reference		321086-9
Your Reference	UNITS	QC01
Date Sampled		17/04/2023
Type of sample		Water
Date extracted	-	19/04/2023
Date analysed	-	19/04/2023
Aroclor 1016	µg/L	<2
Aroclor 1221	µg/L	<2
Aroclor 1232	µg/L	<2
Aroclor 1242	µg/L	<2
Aroclor 1248	µg/L	<2
Aroclor 1254	µg/L	<2
Aroclor 1260	µg/L	<2
Surrogate TCMX	%	90

Total Phenolics in Water						
Our Reference		321086-1	321086-2	321086-3	321086-4	321086-5
Your Reference	UNITS	CZ1_BH13	SMW_ENV224	SMW_ENV234	SMW-WTP-BH25_S	CZ5_MW16
Date Sampled		17/04/2023	17/04/2023	17/04/2023	17/04/2023	17/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Date analysed	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Total Phenolics (as Phenol)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Total Phenolics in Water		
Our Reference		321086-9
Your Reference	UNITS	QC01
Date Sampled		17/04/2023
Type of sample		Water
Date extracted	-	19/04/2023
Date analysed	-	19/04/2023
Total Phenolics (as Phenol)	mg/L	<0.05

HM in water - dissolved						
Our Reference		321086-1	321086-2	321086-3	321086-4	321086-5
Your Reference	UNITS	CZ1_BH13	SMW_ENV224	SMW_ENV234	SMW-WTP-BH25_S	CZ5_MW16
Date Sampled		17/04/2023	17/04/2023	17/04/2023	17/04/2023	17/04/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Date analysed	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Arsenic-Dissolved	µg/L	6	1	5	4	11
Beryllium-Dissolved	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Boron-Dissolved	µg/L	210	100	400	220	480
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	<1	<1	<1	<1
Cobalt-Dissolved	µg/L	7	6	4	<1	10
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Manganese-Dissolved	µg/L	460	1,200	1,800	250	93
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	0.06
Nickel-Dissolved	µg/L	4	9	4	<1	6
Selenium-Dissolved	µg/L	<1	<1	<1	<1	<1
Zinc-Dissolved	µg/L	9	3	<1	<1	12

HM in water - dissolved			
Our Reference		321086-8	321086-9
Your Reference	UNITS	R01	QC01
Date Sampled		17/04/2023	17/04/2023
Type of sample		Water	Water
Date prepared	-	19/04/2023	19/04/2023
Date analysed	-	19/04/2023	19/04/2023
Arsenic-Dissolved	µg/L	<1	<1
Beryllium-Dissolved	µg/L	[NA]	<0.5
Boron-Dissolved	µg/L	[NA]	100
Cadmium-Dissolved	µg/L	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1
Copper-Dissolved	µg/L	<1	<1
Cobalt-Dissolved	µg/L	[NA]	6
Lead-Dissolved	µg/L	<1	<1
Manganese-Dissolved	µg/L	[NA]	1,100
Mercury-Dissolved	µg/L	<0.05	<0.05
Nickel-Dissolved	µg/L	<1	9
Selenium-Dissolved	µg/L	[NA]	<1
Zinc-Dissolved	µg/L	<1	4

Miscellaneous Inorganics						
Our Reference		321086-1	321086-2	321086-3	321086-4	321086-5
Your Reference	UNITS	CZ1_BH13	SMW_ENV224	SMW_ENV234	SMW-WTP-BH25_S	CZ5_MW16
Date Sampled		17/04/2023	17/04/2023	17/04/2023	17/04/2023	17/04/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Date analysed	-	18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
pH	pH Units	6.3	6.6	6.5	7.2	6.1
Electrical Conductivity	µS/cm	33,000	4,100	30,000	3,000	6,400
Total Dissolved Solids (grav)	mg/L	25,000	3,600	22,000	2,100	3,700
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Ammonia as N in water	mg/L	1.4	0.91	2.2	15	2.2
Nitrate as N in water	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite as N in water	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
NOx as N in water	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
TKN in water	mg/L	1.4	1.4	3.1	19	2.6
Phosphate as P in water	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Total Nitrogen in water	mg/L	1.4	1.4	3.1	19	2.6

Miscellaneous Inorganics		
Our Reference		321086-9
Your Reference	UNITS	QC01
Date Sampled		17/04/2023
Type of sample		Water
Date prepared	-	18/04/2023
Date analysed	-	18/04/2023
pH	pH Units	6.6
Electrical Conductivity	µS/cm	3,700
Total Dissolved Solids (grav)	mg/L	3,400
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005
Ammonia as N in water	mg/L	0.79
Nitrate as N in water	mg/L	<0.005
Nitrite as N in water	mg/L	<0.005
NOx as N in water	mg/L	<0.005
TKN in water	mg/L	1.4
Phosphate as P in water	mg/L	<0.005
Total Nitrogen in water	mg/L	1.4

Metals in Waters - Total						
Our Reference		321086-1	321086-2	321086-3	321086-4	321086-5
Your Reference	UNITS	CZ1_BH13	SMW_ENV224	SMW_ENV234	SMW-WTP-BH25_S	CZ5_MW16
Date Sampled		17/04/2023	17/04/2023	17/04/2023	17/04/2023	17/04/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Date analysed	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Phosphorus - Total	mg/L	0.1	0.05	<0.05	0.1	<0.05

Metals in Waters - Total		
Our Reference		321086-9
Your Reference	UNITS	QC01
Date Sampled		17/04/2023
Type of sample		Water
Date prepared	-	19/04/2023
Date analysed	-	19/04/2023
Phosphorus - Total	mg/L	<0.05

Ion Balance						
Our Reference		321086-1	321086-2	321086-3	321086-4	321086-5
Your Reference	UNITS	CZ1_BH13	SMW_ENV224	SMW_ENV234	SMW-WTP-BH25_S	CZ5_MW16
Date Sampled		17/04/2023	17/04/2023	17/04/2023	17/04/2023	17/04/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Date analysed	-	18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Calcium - Dissolved	mg/L	450	630	420	230	30
Potassium - Dissolved	mg/L	70	10	65	21	25
Sodium - Dissolved	mg/L	6,400	200	5,400	330	910
Magnesium - Dissolved	mg/L	550	65	580	83	69
Hardness	mgCaCO 3 /L	3,400	1,800	3,400	920	360
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5	<5	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	640	520	450	1,100	190
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5	<5	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	640	520	450	1,100	190
Sulphate, SO4	mg/L	1,300	1,500	960	390	540
Chloride, Cl	mg/L	14,000	520	12,000	300	1,800
Ionic Balance	%	-11	-10	-8.0	-8.0	-17

Ion Balance		
Our Reference		321086-9
Your Reference	UNITS	QC01
Date Sampled		17/04/2023
Type of sample		Water
Date prepared	-	18/04/2023
Date analysed	-	18/04/2023
Calcium - Dissolved	mg/L	620
Potassium - Dissolved	mg/L	9.6
Sodium - Dissolved	mg/L	190
Magnesium - Dissolved	mg/L	61
Hardness	mgCaCO 3 /L	1,800
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	480
Carbonate Alkalinity as $CaCO_3$	mg/L	<5
Total Alkalinity as $CaCO_3$	mg/L	480
Sulphate, SO4	mg/L	1,700
Chloride, Cl	mg/L	390
Ionic Balance	%	-11

PFAS in Waters Short						
Our Reference		321086-1	321086-2	321086-3	321086-4	321086-5
Your Reference	UNITS	CZ1_BH13	SMW_ENV224	SMW_ENV234	SMW-WTP-BH25_S	CZ5_MW16
Date Sampled		17/04/2023	17/04/2023	17/04/2023	17/04/2023	17/04/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Date analysed	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.02	0.02	0.01	0.08	0.02
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	0.02	0.02	0.05	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	0.02	0.04	0.03	0.03
6:2 FTS	µg/L	<0.01	0.02	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	106	103	101	103	100
Surrogate $^{13}C_2$ *PFOA*	%	102	103	105	105	104
Extracted ISTD $^{18}O_2$ *PFHxS*	%	96	99	103	101	105
Extracted ISTD $^{13}C_4$ *PFOS*	%	103	107	109	113	108
Extracted ISTD $^{13}C_4$ *PFOA*	%	103	109	110	114	106
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	97	136	145	179	113
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	112	131	130	185	128
Total Positive PFHxS & PFOS	µg/L	0.02	0.04	0.03	0.13	0.02
Total Positive PFOA & PFOS	µg/L	<0.01	0.04	0.06	0.09	0.03
Total Positive PFAS	µg/L	0.02	0.08	0.07	0.16	0.05

PFAS in Waters Short		
Our Reference		321086-9
Your Reference	UNITS	QC01
Date Sampled		17/04/2023
Type of sample		Water
Date prepared	-	19/04/2023
Date analysed	-	19/04/2023
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.02
Perfluorooctanesulfonic acid PFOS	µg/L	0.02
Perfluorooctanoic acid PFOA	µg/L	0.03
6:2 FTS	µg/L	0.02
8:2 FTS	µg/L	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	99
Surrogate $^{13}C_2$ *PFOA*	%	106
Extracted ISTD $^{18}O_2$ *PFHxS*	%	100
Extracted ISTD $^{13}C_4$ *PFOS*	%	111
Extracted ISTD $^{13}C_4$ *PFOA*	%	110
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	146
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	147
Total Positive PFHxS & PFOS	µg/L	0.04
Total Positive PFOA & PFOS	µg/L	0.04
Total Positive PFAS	µg/L	0.09

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Inorg-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation below:- TDS = EC * 0.6
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Inorg-040	The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% ie total anions = total cations +/-15%.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			18/04/2023	1	18/04/2023	18/04/2023		18/04/2023	[NT]
Date analysed	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
Methylene chloride	µg/L	4	Org-023	<4	1	<4	<4	0	[NT]	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Vinyl Chloride	µg/L	0.3	Org-023	<0.3	1	<0.3	<0.3	0	[NT]	[NT]
Bromomethane	µg/L	2	Org-023	<2	1	<2	<2	0	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	102	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	1	<1	<1	0	109	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	112	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	98	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	96	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	105	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	106	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	104	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	µg/L	0.3	Org-023	<0.3	1	<0.3	<0.3	0	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	0.7	Org-023	<0.7	1	<0.7	<0.7	0	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	109	1	105	106	1	102	[NT]
Surrogate toluene-d8	%		Org-023	103	1	101	97	4	101	[NT]
Surrogate 4-BFB	%		Org-023	100	1	105	104	1	101	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			18/04/2023	1	18/04/2023	18/04/2023		18/04/2023	[NT]
Date analysed	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	<10	<10	0	106	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	<10	<10	0	106	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	104	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	107	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	107	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	107	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	105	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	109	1	105	106	1	102	[NT]
Surrogate toluene-d8	%		Org-023	103	1	101	97	4	101	[NT]
Surrogate 4-BFB	%		Org-023	100	1	105	104	1	101	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
Date analysed	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	101	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	<100	0	109	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	86	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	<50	<50	0	101	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	109	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	86	[NT]
Surrogate o-Terphenyl	%		Org-020	86	1	80	81	1	71	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
Date analysed	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
Naphthalene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	90	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	96	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	99	[NT]
Anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	100	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	104	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	75	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	131	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	111	1	106	105	1	96	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
Date analysed	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	90	[NT]
HCB	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	93	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	112	[NT]
delta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	104	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	100	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	118	[NT]
Dieldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	111	[NT]
Endrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	115	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	120	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	112	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	105	1	98	95	3	94	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
Date analysed	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	122	[NT]
Dimethoate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	98	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	102	[NT]
Malathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	121	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	118	[NT]
Parathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	102	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	123	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	105	1	98	95	3	94	[NT]

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
Date analysed	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
Aroclor 1016	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	1	<2	<2	0	109	[NT]
Aroclor 1260	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	105	1	98	95	3	106	[NT]

QUALITY CONTROL: Total Phenolics in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
Date analysed	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-031	<0.05	1	<0.05	<0.05	0	101	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
Date prepared	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
Date analysed	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	6	6	0	98	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	1	<0.5	<0.5	0	99	[NT]
Boron-Dissolved	µg/L	20	Metals-022	<20	1	210	220	5	93	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	98	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	93	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	93	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	<1	1	7	7	0	95	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	102	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	1	460	470	2	98	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	84	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	4	5	22	100	[NT]
Selenium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	97	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	9	11	20	100	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	321086-2
Date prepared	-			18/04/2023	1	18/04/2023	18/04/2023		18/04/2023	18/04/2023
Date analysed	-			18/04/2023	1	18/04/2023	18/04/2023		18/04/2023	18/04/2023
pH	pH Units		Inorg-001	[NT]	1	6.3	6.3	0	98	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	1	33000	33000	0	102	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	<5	1	25000	26000	4	101	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	<0.005	0	105	92
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	1.4	1.4	0	98	88
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	<0.005	0	110	74
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	<0.005	0	96	94
NOx as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	<0.005	0	110	74
TKN in water	mg/L	0.1	Inorg-062	<0.1	1	1.4	1.4	0	[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	<0.005	1	<0.005	<0.005	0	100	#
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	1.4	1.4	0	99	93

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	321086-4
Date prepared	-			[NT]	3	18/04/2023	18/04/2023		[NT]	18/04/2023
Date analysed	-			[NT]	3	18/04/2023	18/04/2023		[NT]	18/04/2023
pH	pH Units		Inorg-001	[NT]	3	6.5	[NT]		[NT]	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	[NT]	3	30000	[NT]		[NT]	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	[NT]	3	22000	[NT]		[NT]	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	[NT]	3	<0.005	[NT]		[NT]	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	[NT]	3	2.2	[NT]		[NT]	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	[NT]	3	<0.005	[NT]		[NT]	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	[NT]	3	<0.005	[NT]		[NT]	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	[NT]	3	<0.005	[NT]		[NT]	[NT]
TKN in water	mg/L	0.1	Inorg-062	[NT]	3	3.1	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	[NT]	3	<0.005	[NT]		[NT]	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	[NT]	3	3.1	[NT]		[NT]	[NT]

QUALITY CONTROL: Metals in Waters - Total						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321086-2
Date prepared	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	19/04/2023
Date analysed	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	19/04/2023
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	1	0.1	0.1	0	100	115

QUALITY CONTROL: Ion Balance						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	321086-2
Date prepared	-			18/04/2023	1	18/04/2023	18/04/2023		18/04/2023	18/04/2023
Date analysed	-			18/04/2023	1	18/04/2023	18/04/2023		18/04/2023	18/04/2023
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	450	460	2	90	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	70	70	0	92	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	6400	6300	2	93	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	550	550	0	93	[NT]
Hardness	mgCaCO 3 /L	3	Metals-020	[NT]	1	3400	3400	0	[NT]	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	<5	0	[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	640	620	3	[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	<5	0	[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	640	620	3	95	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	1	1300	1400	7	117	#
Chloride, Cl	mg/L	1	Inorg-081	<1	1	14000	15000	7	109	#
Ionic Balance	%		Inorg-040	[NT]	1	-11	-16	-37	[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Short						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date prepared	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
Date analysed	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	0.02	0.02	0	103	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	101	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	103	[NT]
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	96	[NT]
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	98	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	108	1	106	102	4	100	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	103	1	102	106	4	103	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	103	1	96	98	2	98	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	107	1	103	108	5	107	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	112	1	103	101	2	106	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	118	1	97	87	11	112	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	142	1	112	97	14	133	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

PCBs in Water - The PQL has been raised due to interferences from analytes (other than those being tested) in sample 321086-4.

Phosphate as P - # Percent recovery not reported due to matrix interferences. Samples were diluted and reanalysed and the poor recovery was confirmed. However, an acceptable recovery was obtained for the LCS.

ION_BALANCE:
- # Percent recovery is not applicable due to the high concentration of the analyte/s in the sample/s. However an acceptable recovery was obtained for the LCS.
- The mass inbalance may be caused by other ions that have not been measured.

COC received: 19/04/23 @ 1645.

ENVIROLAB
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 321264
Date Received: 19/4/23
Time Received: 1645
Received By: DL
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

ENVIROLAB
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 321264
Date Received: 19/4/23
Time Received: 1645
Received By: DL
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

epic ENVIRONMENTAL

Chain of Custody Record

Project No:	SC210108.03 - GWMP	Lab:	Envirolab Sydney
Project/Site:	SC210108.03 - GWMP	Lab Quote No:	
Sampled By:		Lab Batch No:	
Phone / Email:		Date Results Required:	Standard TAT
Results to:	pcarroll@epicenvironmental.com.au /		
Page 1 of		Sample Disposal After:	
Number of Eskies:			

| LAB ID | Sample ID | Date/Time | Matrix | CONTAINER TYPE & PRESERVATIVE | | |

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 321264

Client Details

Client	Epic Environmental (Sydney) Pty Ltd
Attention	Patrick Carroll
Address	Suite 5, Level 9, 189 Kent Street, SYDNEY, NSW, 2000

Sample Details

Your Reference	**SC210108.03-GWMP**
Number of Samples	7 Water
Date samples received	19/04/2023
Date completed instructions received	19/04/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	01/05/2023
Date of Issue	29/04/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Alexander Mitchell Maclean, Senior Chemist
Diego Bigolin, Inorganics Supervisor
Dragana Tomas, Senior Chemist
Hannah Nguyen, Metals Supervisor
Kyle Gavrily, Senior Chemist
Liam Timmins, Organics Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

VOCs in water					
Our Reference		321264-1	321264-2	321264-3	321264-4
Your Reference	UNITS	SMW_ENV042	CZ4e-MW01	CZ4e-MW03	SMW_ENV039
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	20/04/2023	20/04/2023	20/04/2023	20/04/2023
Date analysed	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Methylene chloride	µg/L	<4	<4	<4	<4
Dichlorodifluoromethane	µg/L	<10	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10	<10
Vinyl Chloride	µg/L	<0.3	<0.3	<0.3	<0.3
Bromomethane	µg/L	<2	<2	<2	<2
Chloroethane	µg/L	<10	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1	<1
Chloroform	µg/L	<1	<1	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1	<1
Benzene	µg/L	<1	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1	<1

VOCs in water					
Our Reference	UNITS	321264-1	321264-2	321264-3	321264-4
Your Reference		SMW_ENV042	CZ4e-MW01	CZ4e-MW03	SMW_ENV039
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Water	Water	Water	Water
Ethylbenzene	µg/L	<1	<1	<1	<1
Bromoform	µg/L	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2
Styrene	µg/L	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1	<1
o-xylene	µg/L	<1	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1	<1
1,4-dichlorobenzene	µg/L	<0.3	<0.3	<0.3	<0.3
4-isopropyl toluene	µg/L	<1	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1	<1
Hexachlorobutadiene	µg/L	<0.7	<0.7	<0.7	<0.7
1,2,3-trichlorobenzene	µg/L	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	105	104	105	104
Surrogate toluene-d8	%	97	97	97	97
Surrogate 4-BFB	%	105	105	103	108

vTRH(C6-C10)/BTEXN in Water						
Our Reference		321264-1	321264-2	321264-3	321264-4	321264-5
Your Reference	UNITS	SMW_ENV042	CZ4e-MW01	CZ4e-MW03	SMW_ENV039	R02
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	20/04/2023	20/04/2023	20/04/2023	20/04/2023	20/04/2023
Date analysed	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	105	104	105	104	104
Surrogate toluene-d8	%	97	97	97	97	98
Surrogate 4-BFB	%	105	105	103	108	103

vTRH(C6-C10)/BTEXN in Water			
Our Reference		321264-6	321264-7
Your Reference	UNITS	TS	TB
Date Sampled		18/04/2023	18/04/2023
Type of sample		Water	Water
Date extracted	-	20/04/2023	20/04/2023
Date analysed	-	21/04/2023	21/04/2023
TRH C_6 - C_9	µg/L	[NA]	<10
TRH C_6 - C_{10}	µg/L	[NA]	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	[NA]	<10
Benzene	µg/L	108%	<1
Toluene	µg/L	105%	<1
Ethylbenzene	µg/L	117%	<1
m+p-xylene	µg/L	106%	<2
o-xylene	µg/L	106%	<1
Naphthalene	µg/L	[NA]	<1
Surrogate Dibromofluoromethane	%	101	102
Surrogate toluene-d8	%	99	97
Surrogate 4-BFB	%	98	102

svTRH (C10-C40) in Water						
Our Reference		321264-1	321264-2	321264-3	321264-4	321264-5
Your Reference	UNITS	SMW_ENV042	CZ4e-MW01	CZ4e-MW03	SMW_ENV039	R02
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	22/04/2023	22/04/2023	22/04/2023	22/04/2023	22/04/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	62	71	65	69	67

PAHs in Water					
Our Reference		321264-1	321264-2	321264-3	321264-4
Your Reference	UNITS	SMW_ENV042	CZ4e-MW01	CZ4e-MW03	SMW_ENV039
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Naphthalene	µg/L	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	91	91	94	102

Organochlorine Pesticides in Water					
Our Reference	UNITS	321264-1	321264-2	321264-3	321264-4
Your Reference		SMW_ENV042	CZ4e-MW01	CZ4e-MW03	SMW_ENV039
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023
alpha-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
HCB	µg/L	<0.2	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	82	81	71	72

OP Pesticides in Water					
Our Reference		321264-1	321264-2	321264-3	321264-4
Your Reference	UNITS	SMW_ENV042	CZ4e-MW01	CZ4e-MW03	SMW_ENV039
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Dichlorvos	µg/L	<0.2	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	82	81	71	72

PCBs in Water					
Our Reference		321264-1	321264-2	321264-3	321264-4
Your Reference	UNITS	SMW_ENV042	CZ4e-MW01	CZ4e-MW03	SMW_ENV039
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Aroclor 1016	µg/L	<2	<2	<2	<2
Aroclor 1221	µg/L	<2	<2	<2	<2
Aroclor 1232	µg/L	<2	<2	<2	<2
Aroclor 1242	µg/L	<2	<2	<2	<2
Aroclor 1248	µg/L	<2	<2	<2	<2
Aroclor 1254	µg/L	<2	<2	<2	<2
Aroclor 1260	µg/L	<2	<2	<2	<2
Surrogate TCMX	%	82	81	71	72

Total Phenolics in Water					
Our Reference		321264-1	321264-2	321264-3	321264-4
Your Reference	UNITS	SMW_ENV042	CZ4e-MW01	CZ4e-MW03	SMW_ENV039
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	20/04/2023	20/04/2023	20/04/2023	20/04/2023
Date analysed	-	20/04/2023	20/04/2023	20/04/2023	20/04/2023
Total Phenolics (as Phenol)	mg/L	<0.05	<0.05	<0.05	<0.05

HM in water - dissolved						
Our Reference	UNITS	321264-1	321264-2	321264-3	321264-4	321264-5
Your Reference		SMW_ENV042	CZ4e-MW01	CZ4e-MW03	SMW_ENV039	R02
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Arsenic-Dissolved	µg/L	5	7	<1	3	<1
Beryllium-Dissolved	µg/L	<0.5	2	<0.5	<0.5	<0.5
Boron-Dissolved	µg/L	100	60	40	40	<20
Cadmium-Dissolved	µg/L	<0.1	<0.1	0.3	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	570	<1	<1	350	<1
Cobalt-Dissolved	µg/L	14	36	44	26	<1
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Manganese-Dissolved	µg/L	290	1,500	2,900	1,200	<5
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	12	21	17	24	<1
Selenium-Dissolved	µg/L	<1	<1	<1	<1	<1
Zinc-Dissolved	µg/L	21	48	34	9	<1

Miscellaneous Inorganics					
Our Reference	UNITS	321264-1	321264-2	321264-3	321264-4
Your Reference		SMW_ENV042	CZ4e-MW01	CZ4e-MW03	SMW_ENV039
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Date analysed	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023
pH	pH Units	5.9	6.3	6.1	6.4
Electrical Conductivity	µS/cm	24,000	15,000	6,300	30,000
Total Dissolved Solids (grav)	mg/L	16,000	11,000	3,800	22,000
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005	<0.005
Ammonia as N in water	mg/L	1.2	0.088	0.037	0.77
Nitrate as N in water	mg/L	<0.005	<0.005	<0.005	<0.005
Nitrite as N in water	mg/L	<0.005	<0.005	<0.005	<0.005
NOx as N in water	mg/L	<0.005	<0.005	0.005	<0.005
TKN in water	mg/L	1.4	0.3	0.2	0.8
Phosphate as P in water	mg/L	<0.005	<0.005	<0.005	<0.005
Total Nitrogen in water	mg/L	1.4	0.3	0.2	0.8

Metals in Waters - Total					
Our Reference		321264-1	321264-2	321264-3	321264-4
Your Reference	UNITS	SMW_ENV042	CZ4e-MW01	CZ4e-MW03	SMW_ENV039
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Phosphorus - Total	mg/L	<0.05	<0.05	0.06	<0.05

Ion Balance					
Our Reference	UNITS	321264-1	321264-2	321264-3	321264-4
Your Reference		SMW_ENV042	CZ4e-MW01	CZ4e-MW03	SMW_ENV039
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	20/04/2023	20/04/2023	20/04/2023	20/04/2023
Date analysed	-	20/04/2023	20/04/2023	20/04/2023	20/04/2023
Calcium - Dissolved	mg/L	200	150	71	340
Potassium - Dissolved	mg/L	15	7.4	3	23
Sodium - Dissolved	mg/L	4,700	3,000	1,000	5,700
Magnesium - Dissolved	mg/L	730	370	110	820
Hardness	mgCaCO 3 /L	3,500	1,900	610	4,200
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	60	340	130	440
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	60	340	130	440
Sulphate, SO4	mg/L	1,200	1,600	800	2,000
Chloride, Cl	mg/L	9,400	5,400	1,700	12,000
Ionic Balance	%	-3.0	-6.0	-10	-6.0

PFAS in Waters Short					
Our Reference		321264-1	321264-2	321264-3	321264-4
Your Reference	UNITS	SMW_ENV042	CZ4e-MW01	CZ4e-MW03	SMW_ENV039
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	0.05	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	103	97	97	97
Surrogate $^{13}C_2$ *PFOA*	%	105	102	102	101
Extracted ISTD $^{18}O_2$ *PFHxS*	%	102	100	101	100
Extracted ISTD $^{13}C_4$ *PFOS*	%	100	103	103	105
Extracted ISTD $^{13}C_4$ *PFOA*	%	104	106	108	102
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	103	93	106	94
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	107	109	120	97
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	0.07	<0.01
Total Positive PFOA & PFOS	µg/L	<0.01	<0.01	0.03	<0.01
Total Positive PFAS	µg/L	<0.01	<0.01	0.08	<0.01

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Inorg-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation below:- TDS = EC * 0.6
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Inorg-040	The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% ie total anions = total cations +/-15%.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			20/04/2023	[NT]	[NT]	[NT]	[NT]	20/04/2023	[NT]
Date analysed	-			21/04/2023	[NT]	[NT]	[NT]	[NT]	21/04/2023	[NT]
Methylene chloride	µg/L	4	Org-023	<4	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Vinyl Chloride	µg/L	0.3	Org-023	<0.3	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromomethane	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-dichlorobenzene	µg/L	0.3	Org-023	<0.3	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorobutadiene	µg/L	0.7	Org-023	<0.7	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	105	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate toluene-d8	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate 4-BFB	%		Org-023	107	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			20/04/2023	[NT]	[NT]	[NT]	[NT]	20/04/2023	[NT]
Date analysed	-			21/04/2023	[NT]	[NT]	[NT]	[NT]	21/04/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	111	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	111	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	115	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	114	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	105	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate toluene-d8	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate 4-BFB	%		Org-023	107	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			21/04/2023	[NT]	[NT]	[NT]	[NT]	21/04/2023	[NT]
Date analysed	-			22/04/2023	[NT]	[NT]	[NT]	[NT]	22/04/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	103	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	113	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	103	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	113	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate o-Terphenyl	%		Org-020	71	[NT]	[NT]	[NT]	[NT]	75	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			21/04/2023	[NT]	[NT]	[NT]	[NT]	21/04/2023	[NT]
Date analysed	-			21/04/2023	[NT]	[NT]	[NT]	[NT]	21/04/2023	[NT]
Naphthalene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	81	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	72	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	112	[NT]	[NT]	[NT]	[NT]	104	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			21/04/2023	[NT]	[NT]	[NT]	[NT]	21/04/2023	[NT]
Date analysed	-			21/04/2023	[NT]	[NT]	[NT]	[NT]	21/04/2023	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	81	[NT]
HCB	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	85	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
delta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	86	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	81	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	102	[NT]
Dieldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	98	[NT]
Endrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	87	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	89	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	78	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	94	[NT]	[NT]	[NT]	[NT]	92	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			21/04/2023	[NT]	[NT]	[NT]	[NT]	21/04/2023	[NT]
Date analysed	-			21/04/2023	[NT]	[NT]	[NT]	[NT]	21/04/2023	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	91	[NT]
Dimethoate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	81	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	89	[NT]
Malathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	85	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	93	[NT]
Parathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	69	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	78	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	94	[NT]	[NT]	[NT]	[NT]	92	[NT]

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			21/04/2023	[NT]	[NT]	[NT]	[NT]	21/04/2023	[NT]
Date analysed	-			21/04/2023	[NT]	[NT]	[NT]	[NT]	21/04/2023	[NT]
Aroclor 1016	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	121	[NT]
Aroclor 1260	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	94	[NT]	[NT]	[NT]	[NT]	92	[NT]

QUALITY CONTROL: Total Phenolics in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321264-2
Date extracted	-			20/04/2023	1	20/04/2023	20/04/2023		20/04/2023	20/04/2023
Date analysed	-			20/04/2023	1	20/04/2023	20/04/2023		20/04/2023	20/04/2023
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-031	<0.05	1	<0.05	<0.05	0	102	97

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	321264-2
Date prepared	-			28/04/2023	1	28/04/2023	28/04/2023		28/04/2023	28/04/2023
Date analysed	-			28/04/2023	1	28/04/2023	28/04/2023		28/04/2023	28/04/2023
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	5	5	0	94	94
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	1	<0.5	<0.5	0	91	98
Boron-Dissolved	µg/L	20	Metals-022	<20	1	100	100	0	103	100
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	94	98
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	95	108
Copper-Dissolved	µg/L	1	Metals-022	<1	1	570	600	5	96	99
Cobalt-Dissolved	µg/L	1	Metals-022	<1	1	14	14	0	95	104
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	100	87
Manganese-Dissolved	µg/L	5	Metals-022	<5	1	290	310	7	94	#
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	85	78
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	12	12	0	96	100
Selenium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	91	92
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	21	22	5	96	119

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321264-2
Date prepared	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	19/04/2023
Date analysed	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	19/04/2023
pH	pH Units		Inorg-001	[NT]	1	5.9	[NT]		99	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	1	24000	[NT]		101	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	<5	1	16000	18000	12	110	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	<0.005	0	98	106
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	1.2	[NT]		106	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	[NT]		111	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	[NT]		98	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	[NT]		111	[NT]
TKN in water	mg/L	0.1	Inorg-062	<0.1	1	1.4	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	<0.005	1	<0.005	[NT]		89	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	1.4	[NT]		94	[NT]

QUALITY CONTROL: Metals in Waters - Total					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			28/04/2023	[NT]	[NT]	[NT]	[NT]	28/04/2023	[NT]
Date analysed	-			28/04/2023	[NT]	[NT]	[NT]	[NT]	28/04/2023	[NT]
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	93	[NT]

QUALITY CONTROL: Ion Balance						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			20/04/2023	[NT]	[NT]	[NT]	[NT]	20/04/2023	[NT]
Date analysed	-			20/04/2023	[NT]	[NT]	[NT]	[NT]	20/04/2023	[NT]
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	93	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	90	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	96	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	94	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	95	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Chloride, Cl	mg/L	1	Inorg-081	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]

QUALITY CONTROL: PFAS in Waters Short						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321264-2
Date prepared	-			21/04/2023	1	21/04/2023	21/04/2023		21/04/2023	21/04/2023
Date analysed	-			21/04/2023	1	21/04/2023	21/04/2023		21/04/2023	21/04/2023
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	98	98
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	100	97
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	99	98
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	105	96
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	103	102
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	98	1	103	100	3	101	99
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	100	1	105	102	3	101	103
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	102	1	102	102	0	100	101
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	100	1	100	102	2	98	102
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	106	1	104	105	1	107	101
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	123	1	103	94	9	109	97
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	119	1	107	103	4	118	100

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Total metals: no unfiltered, preserved sample was received, therefore analysis was conducted from the unpreserved sample bottle. Note: there is a possibility some elements may be underestimated.

8 HM in water - dissolved - # Percent recovery is not applicable due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 321257

Date Received: 19/04/23.
Time Received: 1645
Received By: DC
Temp: Cool/Ambient
Cooling: Ice/Icepack: 5°C
Security: Intact/Broken/None

Chain of Custody Record

Project No:	SC210108.03 - GWMP	Lab:	Envirolab Sydney
Project/Site:	SC210108.03 - GWMP	Lab Quote No:	
Sampled By:		Lab Batch No:	
Phone / Email:		Date Results Required:	Standard TAT
Results to:	pcarroll@epicenvironmental.com.au /		
Page 1 of		Sample Disposal After:	
Number of Eskies:			

LAB ID	Sample ID	Date/Time	Matrix	CONTAINER TYPE & PRESERVATIVE (water/liquid)								Combo 8L (13 Metals - Low level)	VOC Suite - ADWG Level	PFAS (Short Suite)	Nutrient Suite	Ionic Balance	Hexavalent Chromium	TDS, pH, EC	Trip	Rinsate	
				PFAS Jar	Plastic Bag	40ml Amber Vial	100-500ml Amber Bottle	60ml Metals	50ml Nutrients	250-500ml Plastic (Unpreserved)	50-250ml Plastic (PFAS)	ASS								TRH C6-C10/BTEXN	TRH C6-C40	8 metals
1	SMW_JWTP_BH13	19.04	W			2	2	1	1	1	1		X	X	X	X	X	X	X			
2	BALC-MW18	"	"										X					X				
3	CZ6-MW05	"	"										X					X				
4	R03	"	"										~~X~~							X	X	
5	QC03	"	"										X					X				
6,7	TS/TB	"	"																X			
			TOTALS									0	0	0	0	0	0	0	0		0	

Relinquished By:	Jjeli X2E	Received By:		Custody Seals Intact	Y	N	
NAME	Joy SIGNATURE	DATE 1904	NAME SIGNATURE DATE	Samples Received Chilled	Y	N	
				Method of Shipment			

NOTES: (1) Bottles supplied for As speciation to be placed on HOLD and not analysed.

(2) Please send out QC02 to ALS (COC included in bag)

Epic Environmental Pty Ltd ABN 54 169 579 275
Level 6, 193 North Quay, Brisbane QLD 4000

web www.epicenvironmental.com.au
email labs@epicenvironmental.com.au

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 321257

Client Details

Client	Epic Environmental (Sydney) Pty Ltd
Attention	Patrick Carroll
Address	Suite 5, Level 9, 189 Kent Street, SYDNEY, NSW, 2000

Sample Details

Your Reference	**SC210108.03-GWMP**
Number of Samples	7 Water
Date samples received	19/04/2023
Date completed instructions received	19/04/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	01/05/2023
Date of Issue	29/04/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Alexander Mitchell Maclean, Senior Chemist
Diego Bigolin, Inorganics Supervisor
Dragana Tomas, Senior Chemist
Hannah Nguyen, Metals Supervisor
Kyle Gavrily, Senior Chemist
Loren Bardwell, Development Chemist
Nick Sarlamis, Assistant Operation Manager
Priya Samarawickrama, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

VOCs in water					
Our Reference		321257-1	321257-2	321257-3	321257-5
Your Reference	UNITS	SMW_WTP_BH13	QALC-MW18	CZ6-MW05	QC03
Date Sampled		19/04/2023	19/04/2023	19/04/2023	19/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	20/04/2023	20/04/2023	20/04/2023	20/04/2023
Date analysed	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Methylene chloride	µg/L	<4	<4	<4	<4
Dichlorodifluoromethane	µg/L	<10	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10	<10
Vinyl Chloride	µg/L	<0.3	<0.3	<0.3	<0.3
Bromomethane	µg/L	<2	<2	<2	<2
Chloroethane	µg/L	<10	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1	<1
Chloroform	µg/L	<1	<1	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1	<1
Benzene	µg/L	<1	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1	<1

VOCs in water					
Our Reference		321257-1	321257-2	321257-3	321257-5
Your Reference	UNITS	SMW_WTP_BH13	QALC-MW18	CZ6-MW05	QC03
Date Sampled		19/04/2023	19/04/2023	19/04/2023	19/04/2023
Type of sample		Water	Water	Water	Water
Ethylbenzene	µg/L	<1	<1	<1	<1
Bromoform	µg/L	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2
Styrene	µg/L	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1	<1
o-xylene	µg/L	<1	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1	<1
1,4-dichlorobenzene	µg/L	<0.3	<0.3	<0.3	<0.3
4-isopropyl toluene	µg/L	<1	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1	<1
Hexachlorobutadiene	µg/L	<0.7	<0.7	<0.7	<0.7
1,2,3-trichlorobenzene	µg/L	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	107	108	108	104
Surrogate toluene-d8	%	99	99	99	96
Surrogate 4-BFB	%	108	103	104	103

vTRH(C6-C10)/BTEXN in Water						
Our Reference		321257-1	321257-2	321257-3	321257-4	321257-5
Your Reference	UNITS	SMW_WTP_BH13	QALC-MW18	CZ6-MW05	R03	QC03
Date Sampled		19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	20/04/2023	20/04/2023	20/04/2023	20/04/2023	20/04/2023
Date analysed	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	107	108	108	105	104
Surrogate toluene-d8	%	99	99	99	98	96
Surrogate 4-BFB	%	108	103	104	105	103

vTRH(C6-C10)/BTEXN in Water			
Our Reference		321257-6	321257-7
Your Reference	UNITS	TS	TB
Date Sampled		19/04/2023	19/04/2023
Type of sample		Water	Water
Date extracted	-	20/04/2023	20/04/2023
Date analysed	-	21/04/2023	21/04/2023
TRH C_6 - C_9	µg/L	[NA]	<10
TRH C_6 - C_{10}	µg/L	[NA]	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	[NA]	<10
Benzene	µg/L	108%	<1
Toluene	µg/L	105%	<1
Ethylbenzene	µg/L	117%	<1
m+p-xylene	µg/L	106%	<2
o-xylene	µg/L	106%	<1
Naphthalene	µg/L	[NA]	<1
Surrogate Dibromofluoromethane	%	101	102
Surrogate toluene-d8	%	99	97
Surrogate 4-BFB	%	98	102

svTRH (C10-C40) in Water						
Our Reference		321257-1	321257-2	321257-3	321257-4	321257-5
Your Reference	UNITS	SMW_WTP_BH13	QALC-MW18	CZ6-MW05	R03	QC03
Date Sampled		19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	22/04/2023	22/04/2023	22/04/2023	22/04/2023	22/04/2023
TRH C_{10} - C_{14}	µg/L	<50	77	110	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	200	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	80	310	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	94	120	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	94	120	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	190	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	90	310	<50	<50
Surrogate o-Terphenyl	%	80	71	72	65	70

PAHs in Water					
Our Reference		321257-1	321257-2	321257-3	321257-5
Your Reference	UNITS	SMW_WTP_BH13	QALC-MW18	CZ6-MW05	QC03
Date Sampled		19/04/2023	19/04/2023	19/04/2023	19/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Naphthalene	µg/L	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	104	91	72	112

Organochlorine Pesticides in Water					
Our Reference		321257-1	321257-2	321257-3	321257-5
Your Reference	UNITS	SMW_WTP_BH13	QALC-MW18	CZ6-MW05	QC03
Date Sampled		19/04/2023	19/04/2023	19/04/2023	19/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023	24/04/2023	21/04/2023
alpha-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
HCB	µg/L	<0.2	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	92	79	87	98

OP Pesticides in Water					
Our Reference		321257-1	321257-2	321257-3	321257-5
Your Reference	UNITS	SMW_WTP_BH13	QALC-MW18	CZ6-MW05	QC03
Date Sampled		19/04/2023	19/04/2023	19/04/2023	19/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023	24/04/2023	21/04/2023
Dichlorvos	µg/L	<0.2	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	92	79	87	98

PCBs in Water					
Our Reference		321257-1	321257-2	321257-3	321257-5
Your Reference	UNITS	SMW_WTP_BH13	QALC-MW18	CZ6-MW05	QC03
Date Sampled		19/04/2023	19/04/2023	19/04/2023	19/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023	24/04/2023	21/04/2023
Aroclor 1016	µg/L	<2	<2	<2	<2
Aroclor 1221	µg/L	<2	<2	<2	<2
Aroclor 1232	µg/L	<2	<2	<2	<2
Aroclor 1242	µg/L	<2	<2	<2	<2
Aroclor 1248	µg/L	<2	<2	<2	<2
Aroclor 1254	µg/L	<2	<2	<2	<2
Aroclor 1260	µg/L	<2	<2	<2	<2
Surrogate TCMX	%	92	79	87	98

Total Phenolics in Water					
Our Reference		321257-1	321257-2	321257-3	321257-5
Your Reference	UNITS	SMW_WTP_BH13	QALC-MW18	CZ6-MW05	QC03
Date Sampled		19/04/2023	19/04/2023	19/04/2023	19/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	20/04/2023	20/04/2023	20/04/2023	20/04/2023
Date analysed	-	20/04/2023	20/04/2023	20/04/2023	20/04/2023
Total Phenolics (as Phenol)	mg/L	<0.05	<0.05	<0.05	<0.05

HM in water - dissolved						
Our Reference		321257-1	321257-2	321257-3	321257-4	321257-5
Your Reference	UNITS	SMW_WTP_BH13	QALC-MW18	CZ6-MW05	R03	QC03
Date Sampled		19/04/2023	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Arsenic-Dissolved	µg/L	1	1	6	<1	1
Beryllium-Dissolved	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Boron-Dissolved	µg/L	80	30	60	<20	50
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	<1	<1	<1	<1
Cobalt-Dissolved	µg/L	15	4	<1	<1	14
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Manganese-Dissolved	µg/L	200	590	34	<5	190
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	6	2	<1	<1	5
Selenium-Dissolved	µg/L	<1	<1	<1	<1	<1
Zinc-Dissolved	µg/L	1	<1	<1	<1	1

Miscellaneous Inorganics					
Our Reference		321257-1	321257-2	321257-3	321257-5
Your Reference	UNITS	SMW_WTP_BH13	QALC-MW18	CZ6-MW05	QC03
Date Sampled		19/04/2023	19/04/2023	19/04/2023	19/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023
Date analysed	-	19/04/2023	19/04/2023	19/04/2023	19/04/2023
pH	pH Units	6.4	6.8	6.9	6.4
Electrical Conductivity	µS/cm	10,000	8,400	1,200	11,000
Total Dissolved Solids (grav)	mg/L	6,600	4,900	720	6,400
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005	<0.005
Ammonia as N in water	mg/L	0.057	0.020	0.28	0.057
Nitrate as N in water	mg/L	<0.005	<0.005	0.14	<0.005
Nitrite as N in water	mg/L	<0.005	<0.005	0.061	<0.005
NOx as N in water	mg/L	<0.005	<0.005	0.2	<0.005
TKN in water	mg/L	0.2	0.3	0.6	0.2
Phosphate as P in water	mg/L	<0.005	<0.005	<0.005	<0.005
Total Nitrogen in water	mg/L	0.2	0.3	0.8	0.2

Metals in Waters - Total					
Our Reference		321257-1	321257-2	321257-3	321257-5
Your Reference	UNITS	SMW_WTP_BH13	QALC-MW18	CZ6-MW05	QC03
Date Sampled		19/04/2023	19/04/2023	19/04/2023	19/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Date analysed	-	26/04/2023	26/04/2023	26/04/2023	26/04/2023
Phosphorus - Total	mg/L	<0.05	<0.05	0.08	<0.05

Ion Balance					
Our Reference		321257-1	321257-2	321257-3	321257-5
Your Reference	UNITS	SMW_WTP_BH13	QALC-MW18	CZ6-MW05	QC03
Date Sampled		19/04/2023	19/04/2023	19/04/2023	19/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	20/04/2023	20/04/2023	20/04/2023	20/04/2023
Date analysed	-	20/04/2023	20/04/2023	20/04/2023	20/04/2023
Calcium - Dissolved	mg/L	60	48	9.1	64
Potassium - Dissolved	mg/L	11	7.6	4	12
Sodium - Dissolved	mg/L	1,800	1,400	250	1,800
Magnesium - Dissolved	mg/L	210	100	17	230
Hardness	mgCaCO 3 /L	1,000	550	91	1,100
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	230	280	270	230
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	230	280	270	230
Sulphate, SO4	mg/L	360	540	21	380
Chloride, Cl	mg/L	3,700	2,700	220	3,800
Ionic Balance	%	-8.0	-12	2.0	-8.0

PFAS in Waters Short					
Our Reference		321257-1	321257-2	321257-3	321257-5
Your Reference	UNITS	SMW_WTP_BH13	QALC-MW18	CZ6-MW05	QC03
Date Sampled		19/04/2023	19/04/2023	19/04/2023	19/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	<0.01	0.04	0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	0.02	0.06	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	98	96	101	98
Surrogate $^{13}C_2$ *PFOA*	%	102	103	109	103
Extracted ISTD $^{18}O_2$ *PFHxS*	%	101	102	103	102
Extracted ISTD $^{13}C_4$ *PFOS*	%	103	105	102	103
Extracted ISTD $^{13}C_4$ *PFOA*	%	106	108	109	109
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	101	115	146	98
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	115	113	139	105
Total Positive PFHxS & PFOS	µg/L	0.01	0.02	0.10	0.01
Total Positive PFOA & PFOS	µg/L	<0.01	0.02	0.07	<0.01
Total Positive PFAS	µg/L	0.01	0.02	0.12	0.01

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Inorg-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation below:- TDS = EC * 0.6
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Inorg-040	The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% ie total anions = total cations +/-15%.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			20/04/2023	1	20/04/2023	20/04/2023		20/04/2023	[NT]
Date analysed	-			21/04/2023	1	21/04/2023	24/04/2023		21/04/2023	[NT]
Methylene chloride	µg/L	4	Org-023	<4	1	<4	<4	0	[NT]	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Vinyl Chloride	µg/L	0.3	Org-023	<0.3	1	<0.3	<0.3	0	[NT]	[NT]
Bromomethane	µg/L	2	Org-023	<2	1	<2	<2	0	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	103	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	1	<1	<1	0	106	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	103	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	94	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	96	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	99	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	100	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	99	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	µg/L	0.3	Org-023	<0.3	1	<0.3	<0.3	0	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	0.7	Org-023	<0.7	1	<0.7	<0.7	0	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	105	1	107	108	1	99	[NT]
Surrogate toluene-d8	%		Org-023	99	1	99	98	1	101	[NT]
Surrogate 4-BFB	%		Org-023	107	1	108	106	2	103	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			20/04/2023	1	20/04/2023	20/04/2023		20/04/2023	[NT]
Date analysed	-			21/04/2023	1	21/04/2023	24/04/2023		21/04/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	<10	<10	0	111	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	<10	<10	0	111	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	105	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	107	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	115	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	114	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	110	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	105	1	107	108	1	99	[NT]
Surrogate toluene-d8	%		Org-023	99	1	99	98	1	101	[NT]
Surrogate 4-BFB	%		Org-023	107	1	108	106	2	103	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			21/04/2023	1	21/04/2023	21/04/2023		21/04/2023	[NT]
Date analysed	-			22/04/2023	1	22/04/2023	22/04/2023		22/04/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	103	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	<100	0	113	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	100	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	<50	<50	0	103	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	113	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	100	[NT]
Surrogate o-Terphenyl	%		Org-020	71	1	80	65	21	75	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321257-2
Date extracted	-			21/04/2023	1	21/04/2023	21/04/2023		21/04/2023	21/04/2023
Date analysed	-			21/04/2023	1	21/04/2023	21/04/2023		21/04/2023	21/04/2023
Naphthalene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	94	69
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	91	73
Fluorene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	91	77
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	107	78
Anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	88
Pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	91
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	75	84
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	97	88
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	90	1	104	107	3	106	81

QUALITY CONTROL: Organochlorine Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321257-2
Date extracted	-			21/04/2023	1	21/04/2023	21/04/2023		21/04/2023	21/04/2023
Date analysed	-			21/04/2023	1	21/04/2023	21/04/2023		21/04/2023	21/04/2023
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	90	77
HCB	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	89	79
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	85	100
delta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	78	74
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	82	95
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	87	92
Dieldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	87	93
Endrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	93	85
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	85	89
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	82	80
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	88	1	92	92	0	85	73

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321257-2
Date extracted	-			21/04/2023	1	21/04/2023	21/04/2023		21/04/2023	21/04/2023
Date analysed	-			21/04/2023	1	21/04/2023	21/04/2023		21/04/2023	21/04/2023
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	96	87
Dimethoate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	73	84
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	84	88
Malathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	98	110
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	87	105
Parathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	80	121
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	87	93
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	88	1	92	92	0	85	73

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321257-2
Date extracted	-			21/04/2023	1	21/04/2023	21/04/2023		21/04/2023	21/04/2023
Date analysed	-			21/04/2023	1	21/04/2023	21/04/2023		21/04/2023	21/04/2023
Aroclor 1016	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	1	<2	<2	0	102	113
Aroclor 1260	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	88	1	92	92	0	85	73

QUALITY CONTROL: Total Phenolics in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			20/04/2023	1	20/04/2023	20/04/2023		20/04/2023	[NT]
Date analysed	-			20/04/2023	1	20/04/2023	20/04/2023		20/04/2023	[NT]
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-031	<0.05	1	<0.05	<0.05	0	102	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date prepared	-			24/04/2023	1	24/04/2023	24/04/2023		24/04/2023	[NT]
Date analysed	-			24/04/2023	1	24/04/2023	24/04/2023		24/04/2023	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	1	1	0	82	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	1	<0.5	<0.5	0	89	[NT]
Boron-Dissolved	µg/L	20	Metals-022	<20	1	80	60	29	91	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	86	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	83	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	84	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	<1	1	15	15	0	87	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	92	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	1	200	200	0	89	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	[NT]		83	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	6	6	0	92	[NT]
Selenium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	87	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	1	<1	0	84	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
Date analysed	-			19/04/2023	1	19/04/2023	19/04/2023		19/04/2023	[NT]
pH	pH Units		Inorg-001	[NT]	1	6.4	[NT]		99	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	1	10000	[NT]		100	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	<5	1	6600	7000	6	110	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	[NT]		98	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	0.057	[NT]		106	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	[NT]		111	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	[NT]		98	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	[NT]		111	[NT]
TKN in water	mg/L	0.1	Inorg-062	<0.1	1	0.2	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	<0.005	1	<0.005	[NT]		89	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	0.2	0.2	0	95	[NT]

QUALITY CONTROL: Metals in Waters - Total						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			24/04/2023	3	24/04/2023	24/04/2023		24/04/2023	[NT]
Date analysed	-			26/04/2023	3	26/04/2023	26/04/2023		26/04/2023	[NT]
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	3	0.08	0.09	12	104	[NT]

QUALITY CONTROL: Ion Balance						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321257-2
Date prepared	-			20/04/2023	1	20/04/2023	20/04/2023		20/04/2023	20/04/2023
Date analysed	-			20/04/2023	1	20/04/2023	20/04/2023		20/04/2023	20/04/2023
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	60	62	3	102	87
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	11	11	0	98	106
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	1800	1800	0	101	#
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	210	220	5	104	#
Hardness	mgCaCO 3 /L	3	Metals-020	[NT]	1	1000	1000	0	[NT]	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	[NT]		[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	230	[NT]		[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	[NT]		[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	230	[NT]		95	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	1	360	[NT]		96	[NT]
Chloride, Cl	mg/L	1	Inorg-081	<1	1	3700	[NT]		93	[NT]
Ionic Balance	%		Inorg-040	[NT]	1	-8.0	[NT]		[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Short						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			21/04/2023	[NT]	[NT]	[NT]	[NT]	21/04/2023	[NT]
Date analysed	-			21/04/2023	[NT]	[NT]	[NT]	[NT]	21/04/2023	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	99	[NT]
6:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	105	[NT]
8:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	103	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	100	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	100	[NT]	[NT]	[NT]	[NT]	98	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	123	[NT]	[NT]	[NT]	[NT]	109	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	119	[NT]	[NT]	[NT]	[NT]	118	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Total metals: no unfiltered, preserved sample was received, therefore analysis was conducted from the unpreserved sample bottle. Note: there is a possibility some elements may be underestimated.

Ion Balance - # Percent recovery is not applicable due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Chain of Custody Record

Project No:	SC210108.03 - GWMP
Project/Site:	SC210108.03 - GWMP
Sampled By:	Natalie Chandra
Phone / Email:	
Results to:	pcarroll@epicenvironmental.com.au /
Page 1 of	
Number of Eskies:	1

Lab:	Envirolab Sydney
Lab Quote No:	
Lab Batch No:	
Date Results Required:	Standard TAT
Sample Disposal After:	

LAB ID	Sample ID	Date/Time	Matrix	CONTAINER TYPE & PRESERVATIVE water/liquid: PFAS jar	Plastic Bag	40ml Amber Vial	100-500ml Amber Bottle	60ml Metals	60ml Nutrients	250-500ml Plastic (Unpreserved)	60-250ml Plastic (PFAS)	ASS	Combo 8L (13 Metals - Low level)	VOC Suite - ADWG Level	PFAS (Short Suite)	Nutrient Suite	Ionic Balance	Hexavalent Chromium	TDS, pH, EC	Trip: TRH C6-C10/BTEXN	Rinsate: TRH C6-C40	Rinsate: 8 metals
1	TS030	20/4	W																	X		
2	TS031																			X		
3	PM-BH14	20/4											X						X			
4	PM-BH21												X						X			
5	RB04																				X	X
			TOTALS										0	0	0	0	0	0	0	0		0

Relinquished By:		Received By:	CLS
NAME	NATALIE CHANDRA	NAME	CW
SIGNATURE		SIGNATURE	CW
DATE	20/4	DATE	21/4

Custody Seals Intact	Y N
Samples Received Chilled	Y N
Method of Shipment	

NOTES: Bottles supplied for As speciation to be placed on HOLD and not analysed

Epic Environmental Pty Ltd ABN 54 169 579 275
Level 6, 193 North Quay, Brisbane QLD 4000

Envirolab Services
12 Ashley St
Chatswood NSW 2067
ph: (02) 9910 6200
web: www.envirolabservices.com.au
email: labs@epicenvironmental.com.au

ENVIROLAB GROUP

Job No: 321496
Date Received: 21/4/23
Time Received: 1100
Received By: CW
Temp: Cool/Ambient 1°
Cooling: Ice/Icepack
Security: Intact/Broken/None

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 321476

Client Details

Client	Epic Environmental (Sydney) Pty Ltd
Attention	Patrick Carroll
Address	Suite 5, Level 9, 189 Kent Street, SYDNEY, NSW, 2000

Sample Details

Your Reference	**SC210108.03-GWMP**
Number of Samples	5 Water
Date samples received	21/04/2023
Date completed instructions received	21/04/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	01/05/2023
Date of Issue	01/05/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Alexander Mitchell Maclean, Senior Chemist
Diego Bigolin, Inorganics Supervisor
Hannah Nguyen, Metals Supervisor
Kyle Gavrily, Senior Chemist
Liam Timmins, Organics Supervisor
Priya Samarawickrama, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

VOCs in water			
Our Reference		321476-3	321476-4
Your Reference	UNITS	PM-BH14	PM-BH21
Date Sampled		20/04/2023	20/04/2023
Type of sample		Water	Water
Date extracted	-	24/04/2023	24/04/2023
Date analysed	-	25/04/2023	25/04/2023
Methylene chloride	µg/L	<4	<4
Dichlorodifluoromethane	µg/L	<10	<10
Chloromethane	µg/L	<10	<10
Vinyl Chloride	µg/L	<0.3	<0.3
Bromomethane	µg/L	<2	<2
Chloroethane	µg/L	<10	<10
Trichlorofluoromethane	µg/L	<10	<10
1,1-Dichloroethene	µg/L	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1
1,1-dichloroethane	µg/L	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1
Bromochloromethane	µg/L	<1	<1
Chloroform	µg/L	<1	<1
2,2-dichloropropane	µg/L	<1	<1
1,2-dichloroethane	µg/L	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1
1,1-dichloropropene	µg/L	<1	<1
Cyclohexane	µg/L	<1	<1
Carbon tetrachloride	µg/L	<1	<1
Benzene	µg/L	<1	<1
Dibromomethane	µg/L	<1	<1
1,2-dichloropropane	µg/L	<1	<1
Trichloroethene	µg/L	<1	<1
Bromodichloromethane	µg/L	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1
Toluene	µg/L	<1	<1
1,3-dichloropropane	µg/L	<1	<1
Dibromochloromethane	µg/L	<1	<1
1,2-dibromoethane	µg/L	<1	<1
Tetrachloroethene	µg/L	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1
Chlorobenzene	µg/L	<1	<1

VOCs in water			
Our Reference		321476-3	321476-4
Your Reference	UNITS	PM-BH14	PM-BH21
Date Sampled		20/04/2023	20/04/2023
Type of sample		Water	Water
Ethylbenzene	µg/L	<1	<1
Bromoform	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
Styrene	µg/L	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1
o-xylene	µg/L	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1
Isopropylbenzene	µg/L	<1	<1
Bromobenzene	µg/L	<1	<1
n-propyl benzene	µg/L	<1	<1
2-chlorotoluene	µg/L	<1	<1
4-chlorotoluene	µg/L	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1
Tert-butyl benzene	µg/L	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1
Sec-butyl benzene	µg/L	<1	<1
1,4-dichlorobenzene	µg/L	<0.3	<0.3
4-isopropyl toluene	µg/L	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1
n-butyl benzene	µg/L	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1
Hexachlorobutadiene	µg/L	<0.7	<0.7
1,2,3-trichlorobenzene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	103	104
Surrogate toluene-d8	%	98	99
Surrogate 4-BFB	%	100	102

vTRH(C6-C10)/BTEXN in Water						
Our Reference		321476-1	321476-2	321476-3	321476-4	321476-5
Your Reference	UNITS	TS030	TB031	PM-BH14	PM-BH21	RB04
Date Sampled		20/04/2023	20/04/2023	20/04/2023	20/04/2023	20/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Date analysed	-	25/04/2023	25/04/2023	25/04/2023	25/04/2023	25/04/2023
TRH C_6 - C_9	µg/L	[NA]	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	[NA]	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	[NA]	<10	<10	<10	<10
Benzene	µg/L	104%	<1	<1	<1	<1
Toluene	µg/L	101%	<1	<1	<1	<1
Ethylbenzene	µg/L	99%	<1	<1	<1	<1
m+p-xylene	µg/L	96%	<2	<2	<2	<2
o-xylene	µg/L	102%	<1	<1	<1	<1
Naphthalene	µg/L	[NA]	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	102	103	103	104	103
Surrogate toluene-d8	%	102	98	98	99	98
Surrogate 4-BFB	%	102	100	100	102	100

svTRH (C10-C40) in Water				
Our Reference		321476-3	321476-4	321476-5
Your Reference	UNITS	PM-BH14	PM-BH21	RB04
Date Sampled		20/04/2023	20/04/2023	20/04/2023
Type of sample		Water	Water	Water
Date extracted	-	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	01/05/2023	01/05/2023	28/04/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50
Surrogate o-Terphenyl	%	72	75	61

PAHs in Water			
Our Reference		321476-3	321476-4
Your Reference	UNITS	PM-BH14	PM-BH21
Date Sampled		20/04/2023	20/04/2023
Type of sample		Water	Water
Date extracted	-	28/04/2023	28/04/2023
Date analysed	-	01/05/2023	01/05/2023
Naphthalene	µg/L	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	93	107

Organochlorine Pesticides in Water			
Our Reference	UNITS	321476-3	321476-4
Your Reference		PM-BH14	PM-BH21
Date Sampled		20/04/2023	20/04/2023
Type of sample		Water	Water
Date extracted	-	28/04/2023	28/04/2023
Date analysed	-	01/05/2023	01/05/2023
alpha-BHC	µg/L	<0.2	<0.2
HCB	µg/L	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2
Surrogate TCMX	%	83	87

OP Pesticides in Water			
Our Reference	UNITS	321476-3	321476-4
Your Reference		PM-BH14	PM-BH21
Date Sampled		20/04/2023	20/04/2023
Type of sample		Water	Water
Date extracted	-	28/04/2023	28/04/2023
Date analysed	-	01/05/2023	01/05/2023
Dichlorvos	µg/L	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2
Surrogate TCMX	%	83	87

PCBs in Water			
Our Reference		321476-3	321476-4
Your Reference	UNITS	PM-BH14	PM-BH21
Date Sampled		20/04/2023	20/04/2023
Type of sample		Water	Water
Date extracted	-	28/04/2023	28/04/2023
Date analysed	-	01/05/2023	01/05/2023
Aroclor 1016	µg/L	<2	<2
Aroclor 1221	µg/L	<2	<2
Aroclor 1232	µg/L	<2	<2
Aroclor 1242	µg/L	<2	<2
Aroclor 1248	µg/L	<2	<2
Aroclor 1254	µg/L	<2	<2
Aroclor 1260	µg/L	<2	<2
Surrogate TCMX	%	83	87

Total Phenolics in Water			
Our Reference		321476-3	321476-4
Your Reference	UNITS	PM-BH14	PM-BH21
Date Sampled		20/04/2023	20/04/2023
Type of sample		Water	Water
Date extracted	-	26/04/2023	26/04/2023
Date analysed	-	26/04/2023	26/04/2023
Total Phenolics (as Phenol)	mg/L	<0.05	<0.05

HM in water - dissolved				
Our Reference	UNITS	321476-3	321476-4	321476-5
Your Reference		PM-BH14	PM-BH21	RB04
Date Sampled		20/04/2023	20/04/2023	20/04/2023
Type of sample		Water	Water	Water
Date prepared	-	27/04/2023	27/04/2023	27/04/2023
Date analysed	-	27/04/2023	27/04/2023	27/04/2023
Arsenic-Dissolved	µg/L	<1	<1	<1
Beryllium-Dissolved	µg/L	<0.5	<0.5	<0.5
Boron-Dissolved	µg/L	100	100	<20
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1
Copper-Dissolved	µg/L	2	<1	<1
Cobalt-Dissolved	µg/L	<1	<1	<1
Lead-Dissolved	µg/L	<1	<1	<1
Manganese-Dissolved	µg/L	<5	11	<5
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	<1	<1	<1
Selenium-Dissolved	µg/L	4	1	<1
Zinc-Dissolved	µg/L	5	10	<1

Miscellaneous Inorganics			
Our Reference	UNITS	321476-3	321476-4
Your Reference		PM-BH14	PM-BH21
Date Sampled		20/04/2023	20/04/2023
Type of sample		Water	Water
Date prepared	-	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023
pH	pH Units	6.7	6.3
Electrical Conductivity	µS/cm	570	610
Total Dissolved Solids (grav)	mg/L	330	360
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005
Ammonia as N in water	mg/L	0.017	0.026
Nitrate as N in water	mg/L	3.1	0.10
Nitrite as N in water	mg/L	<0.005	<0.005
NOx as N in water	mg/L	3.1	0.1
TKN in water	mg/L	<0.1	<0.1
Phosphate as P in water	mg/L	0.005	<0.005
Total Nitrogen in water	mg/L	3.1	0.2

Metals in Waters - Total			
Our Reference		321476-3	321476-4
Your Reference	UNITS	PM-BH14	PM-BH21
Date Sampled		20/04/2023	20/04/2023
Type of sample		Water	Water
Date prepared	-	28/04/2023	28/04/2023
Date analysed	-	28/04/2023	28/04/2023
Phosphorus - Total	mg/L	<0.05	<0.05

Ion Balance			
Our Reference	UNITS	321476-3	321476-4
Your Reference		PM-BH14	PM-BH21
Date Sampled		20/04/2023	20/04/2023
Type of sample		Water	Water
Date prepared	-	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023
Calcium - Dissolved	mg/L	7.4	4
Potassium - Dissolved	mg/L	2	3
Sodium - Dissolved	mg/L	100	110
Magnesium - Dissolved	mg/L	8.0	3
Hardness	mgCaCO 3 /L	51	24
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	110	73
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	110	73
Sulphate, SO4	mg/L	91	130
Chloride, Cl	mg/L	42	61
Ionic Balance	%	0	-4.0

PFAS in Waters Short			
Our Reference		321476-3	321476-4
Your Reference	UNITS	PM-BH14	PM-BH21
Date Sampled		20/04/2023	20/04/2023
Type of sample		Water	Water
Date prepared	-	24/04/2023	24/04/2023
Date analysed	-	24/04/2023	24/04/2023
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.18	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.23	0.04
Perfluorooctanoic acid PFOA	µg/L	0.15	0.02
6:2 FTS	µg/L	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	99	101
Surrogate $^{13}C_2$ *PFOA*	%	107	106
Extracted ISTD $^{18}O_2$ *PFHxS*	%	108	110
Extracted ISTD $^{13}C_4$ *PFOS*	%	110	108
Extracted ISTD $^{13}C_4$ *PFOA*	%	113	114
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	120	116
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	170	152
Total Positive PFHxS & PFOS	µg/L	0.41	0.04
Total Positive PFOA & PFOS	µg/L	0.39	0.06
Total Positive PFAS	µg/L	0.56	0.06

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Inorg-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation below:- TDS = EC * 0.6
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Inorg-040	The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% ie total anions = total cations +/-15%.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
Date extracted	-			24/04/2023	3	24/04/2023	26/04/2023		24/04/2023	[NT]
Date analysed	-			25/04/2023	3	25/04/2023	27/04/2023		25/04/2023	[NT]
Methylene chloride	µg/L	4	Org-023	<4	3	<4	<4	0	[NT]	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	3	<10	<10	0	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	3	<10	<10	0	[NT]	[NT]
Vinyl Chloride	µg/L	0.3	Org-023	<0.3	3	<0.3	<0.3	0	[NT]	[NT]
Bromomethane	µg/L	2	Org-023	<2	3	<2	<2	0	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	3	<10	<10	0	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	3	<10	<10	0	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	3	<1	<1	0	82	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	3	<1	<1	0	84	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	3	<1	<1	0	83	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	3	<1	<1	0	83	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	3	<1	<1	0	81	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	3	<1	<1	0	82	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	3	<1	<1	0	80	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	3	<1	<1	0	83	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	3	<2	<2	0	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
o-xylene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	µg/L	0.3	Org-023	<0.3	3	<0.3	<0.3	0	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	0.7	Org-023	<0.7	3	<0.7	<0.7	0	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	104	3	103	101	2	101	[NT]
Surrogate toluene-d8	%		Org-023	101	3	98	91	7	101	[NT]
Surrogate 4-BFB	%		Org-023	101	3	100	98	2	99	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
Date extracted	-			24/04/2023	3	24/04/2023	26/04/2023		24/04/2023	[NT]
Date analysed	-			25/04/2023	3	25/04/2023	27/04/2023		25/04/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	3	<10	<10	0	83	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	3	<10	<10	0	83	[NT]
Benzene	µg/L	1	Org-023	<1	3	<1	<1	0	83	[NT]
Toluene	µg/L	1	Org-023	<1	3	<1	<1	0	83	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	3	<1	<1	0	83	[NT]
m+p-xylene	µg/L	2	Org-023	<2	3	<2	<2	0	83	[NT]
o-xylene	µg/L	1	Org-023	<1	3	<1	<1	0	85	[NT]
Naphthalene	µg/L	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	104	3	103	101	2	101	[NT]
Surrogate toluene-d8	%		Org-023	101	3	98	91	7	101	[NT]
Surrogate 4-BFB	%		Org-023	101	3	100	98	2	99	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			28/04/2023	[NT]	[NT]	[NT]	[NT]	28/04/2023	[NT]
Date analysed	-			28/04/2023	[NT]	[NT]	[NT]	[NT]	28/04/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	108	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	108	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
Surrogate o-Terphenyl	%		Org-020	84	[NT]	[NT]	[NT]	[NT]	72	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			01/05/2023	[NT]	[NT]	[NT]	[NT]	01/05/2023	[NT]
Date analysed	-			01/05/2023	[NT]	[NT]	[NT]	[NT]	01/05/2023	[NT]
Naphthalene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	81	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	69	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	105	[NT]	[NT]	[NT]	[NT]	107	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			01/05/2023	[NT]	[NT]	[NT]	[NT]	01/05/2023	[NT]
Date analysed	-			01/05/2023	[NT]	[NT]	[NT]	[NT]	01/05/2023	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	81	[NT]
HCB	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	77	[NT]
delta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	85	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	85	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	94	[NT]
Dieldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	93	[NT]
Endrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	87	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	70	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	86	[NT]	[NT]	[NT]	[NT]	92	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			01/05/2023	[NT]	[NT]	[NT]	[NT]	01/05/2023	[NT]
Date analysed	-			01/05/2023	[NT]	[NT]	[NT]	[NT]	01/05/2023	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	93	[NT]
Dimethoate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	75	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	67	[NT]
Malathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	83	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	95	[NT]
Parathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	68	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	80	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	86	[NT]	[NT]	[NT]	[NT]	92	[NT]

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			01/05/2023	[NT]	[NT]	[NT]	[NT]	01/05/2023	[NT]
Date analysed	-			01/05/2023	[NT]	[NT]	[NT]	[NT]	01/05/2023	[NT]
Aroclor 1016	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	115	[NT]
Aroclor 1260	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	86	[NT]	[NT]	[NT]	[NT]	92	[NT]

QUALITY CONTROL: Total Phenolics in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			26/04/2023	[NT]	[NT]	[NT]	[NT]	26/04/2023	[NT]
Date analysed	-			26/04/2023	[NT]	[NT]	[NT]	[NT]	26/04/2023	[NT]
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-031	<0.05	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			27/04/2023	[NT]	[NT]	[NT]	[NT]	27/04/2023	[NT]
Date analysed	-			27/04/2023	[NT]	[NT]	[NT]	[NT]	27/04/2023	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	[NT]	[NT]	[NT]	[NT]	95	[NT]
Boron-Dissolved	µg/L	20	Metals-022	<20	[NT]	[NT]	[NT]	[NT]	93	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	[NT]	[NT]	[NT]	[NT]	112	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	83	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Selenium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			21/04/2023	[NT]	[NT]	[NT]	[NT]	21/04/2023	[NT]
Date analysed	-			21/04/2023	[NT]	[NT]	[NT]	[NT]	21/04/2023	[NT]
pH	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	98	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	<5	[NT]	[NT]	[NT]	[NT]	89	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	[NT]	[NT]	[NT]	[NT]	118	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	[NT]	[NT]	[NT]	[NT]	105	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	[NT]	[NT]	[NT]	[NT]	110	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	[NT]	[NT]	[NT]	[NT]	104	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	<0.005	[NT]	[NT]	[NT]	[NT]	110	[NT]
TKN in water	mg/L	0.1	Inorg-062	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	<0.005	[NT]	[NT]	[NT]	[NT]	99	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: Metals in Waters - Total						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			28/04/2023	3	28/04/2023	28/04/2023		28/04/2023	[NT]
Date analysed	-			28/04/2023	3	28/04/2023	28/04/2023		28/04/2023	[NT]
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	3	<0.05	<0.05	0	102	[NT]

QUALITY CONTROL: Ion Balance					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			21/04/2023	[NT]	[NT]	[NT]	[NT]	21/04/2023	[NT]
Date analysed	-			21/04/2023	[NT]	[NT]	[NT]	[NT]	21/04/2023	[NT]
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	98	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	96	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	100	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	102	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	94	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Chloride, Cl	mg/L	1	Inorg-081	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]

QUALITY CONTROL: PFAS in Waters Short					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			24/04/2023	[NT]	[NT]	[NT]	[NT]	24/04/2023	[NT]
Date analysed	-			24/04/2023	[NT]	[NT]	[NT]	[NT]	24/04/2023	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	107	[NT]
6:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	107	[NT]
8:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	107	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	96	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	111	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	109	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	121	[NT]	[NT]	[NT]	[NT]	112	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	146	[NT]	[NT]	[NT]	[NT]	130	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).
Total metals: no unfiltered, preserved sample was received, therefore analysis was conducted from the unpreserved sample bottle.
Note: there is a possibility some elements may be underestimated.

Chain of Custody Record

GWMP

Results to: pcarroll@epicenvironmental.com.au /

Page of

Number of Eskies:

Lab: Envirolab Sydney

Lab Quote No:

Lab Batch No:

Date Results Required: Standard TAT

Sample Disposal After:

| LAB ID | Sample ID | Date/Time | Matrix | CONTAINER TYPE & PRESERVATIVE | | |

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 321532

Client Details

Client	Epic Environmental (Sydney) Pty Ltd
Attention	Patrick Carroll
Address	Suite 5, Level 9, 189 Kent Street, SYDNEY, NSW, 2000

Sample Details

Your Reference	**SC210108.03-GWMP**
Number of Samples	7 Water
Date samples received	21/04/2023
Date completed instructions received	21/04/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

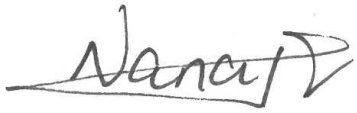
Date results requested by	02/05/2023
Date of Issue	02/05/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Diego Bigolin, Inorganics Supervisor
Hannah Nguyen, Metals Supervisor
Liam Timmins, Organics Supervisor
Loren Bardwell, Development Chemist
Phalak Inthakesone, Organics Development Manager, Sydney

Authorised By



Nancy Zhang, Laboratory Manager

VOCs in water					
Our Reference		321532-1	321532-2	321532-3	321532-4
Your Reference	UNITS	SMW_BH004_S	SMW_BH004_W	SMW_WTP-BH02	SMW_WTP-BH03A
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Date analysed	-	26/04/2023	26/04/2023	26/04/2023	26/04/2023
Methylene chloride	µg/L	<4	<4	<4	<4
Dichlorodifluoromethane	µg/L	<10	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10	<10
Vinyl Chloride	µg/L	<0.3	<0.3	<0.3	<0.3
Bromomethane	µg/L	<2	<2	<2	<2
Chloroethane	µg/L	<10	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1	<1
Chloroform	µg/L	<1	<1	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1	<1
Benzene	µg/L	<1	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1	<1
Tetrachloroethene	µg/L	2	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1	<1

VOCs in water					
Our Reference		321532-1	321532-2	321532-3	321532-4
Your Reference	UNITS	SMW_BH004_S	SMW_BH004_W	SMW_WTP-BH02	SMW_WTP-BH03A
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Water	Water	Water	Water
Ethylbenzene	µg/L	<1	<1	<1	<1
Bromoform	µg/L	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2
Styrene	µg/L	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1	<1
o-xylene	µg/L	<1	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1	<1
1,4-dichlorobenzene	µg/L	<0.3	<0.3	<0.3	<0.3
4-isopropyl toluene	µg/L	<1	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1	<1
Hexachlorobutadiene	µg/L	<0.7	<0.7	<0.7	<0.7
1,2,3-trichlorobenzene	µg/L	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	107	108	124	106
Surrogate toluene-d8	%	96	98	96	97
Surrogate 4-BFB	%	101	100	107	99

vTRH(C6-C10)/BTEXN in Water						
Our Reference		321532-1	321532-2	321532-3	321532-4	321532-5
Your Reference	UNITS	SMW_BH004_S	SMW_BH004_W	SMW_WTP-BH02	SMW_WTP-BH03A	TS
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Date analysed	-	26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	[NA]
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	[NA]
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	[NA]
Benzene	µg/L	<1	<1	<1	<1	101%
Toluene	µg/L	<1	<1	<1	<1	95%
Ethylbenzene	µg/L	<1	<1	<1	<1	105%
m+p-xylene	µg/L	<2	<2	<2	<2	97%
o-xylene	µg/L	<1	<1	<1	<1	98%
Naphthalene	µg/L	<1	<1	<1	<1	[NA]
Surrogate Dibromofluoromethane	%	107	108	124	106	102
Surrogate toluene-d8	%	96	98	96	97	96
Surrogate 4-BFB	%	101	100	107	99	97

vTRH(C6-C10)/BTEXN in Water			
Our Reference		321532-6	321532-7
Your Reference	UNITS	TB	R05
Date Sampled		21/04/2023	21/04/2023
Type of sample		Water	Water
Date extracted	-	24/04/2023	24/04/2023
Date analysed	-	26/04/2023	26/04/2023
TRH C_6 - C_9	µg/L	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10
Benzene	µg/L	<1	<1
Toluene	µg/L	<1	<1
Ethylbenzene	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
o-xylene	µg/L	<1	<1
Naphthalene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	107	105
Surrogate toluene-d8	%	98	98
Surrogate 4-BFB	%	98	97

svTRH (C10-C40) in Water						
Our Reference		321532-1	321532-2	321532-3	321532-4	321532-7
Your Reference	UNITS	SMW_BH004_S	SMW_BH004_W	SMW_WTP-BH02	SMW_WTP-BH03A	R05
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Date analysed	-	02/05/2023	02/05/2023	02/05/2023	02/05/2023	02/05/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	200	96	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	830	1,100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	250	300	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	1,300	1,500	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	600	700	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	600	700	<50
TRH >C_{16} - C_{34}	µg/L	<100	130	590	700	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	130	1,200	1,400	<50
Surrogate o-Terphenyl	%	87	108	84	78	82

PAHs in Water					
Our Reference		321532-1	321532-2	321532-3	321532-4
Your Reference	UNITS	SMW_BH004_S	SMW_BH004_W	SMW_WTP-BH02	SMW_WTP-BH03A
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Naphthalene	µg/L	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	120	128	85	85

Organochlorine Pesticides in Water					
Our Reference		321532-1	321532-2	321532-3	321532-4
Your Reference	UNITS	SMW_BH004_S	SMW_BH004_W	SMW_WTP-BH02	SMW_WTP-BH03A
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023
alpha-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
HCB	µg/L	<0.2	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	95	102	84	89

OP Pesticides in Water					
Our Reference		321532-1	321532-2	321532-3	321532-4
Your Reference	UNITS	SMW_BH004_S	SMW_BH004_W	SMW_WTP-BH02	SMW_WTP-BH03A
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Dichlorvos	µg/L	<0.2	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	95	102	84	89

PCBs in Water					
Our Reference		321532-1	321532-2	321532-3	321532-4
Your Reference	UNITS	SMW_BH004_S	SMW_BH004_W	SMW_WTP-BH02	SMW_WTP-BH03A
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Aroclor 1016	µg/L	<2	<2	<2	<2
Aroclor 1221	µg/L	<2	<2	<2	<2
Aroclor 1232	µg/L	<2	<2	<2	<2
Aroclor 1242	µg/L	<2	<2	<2	<2
Aroclor 1248	µg/L	<2	<2	<2	<2
Aroclor 1254	µg/L	<2	<2	<2	<2
Aroclor 1260	µg/L	<2	<2	<2	<2
Surrogate TCMX	%	95	102	84	89

Total Phenolics in Water					
Our Reference		321532-1	321532-2	321532-3	321532-4
Your Reference	UNITS	SMW_BH004_S	SMW_BH004_W	SMW_WTP-BH02	SMW_WTP-BH03A
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	26/04/2023	26/04/2023	26/04/2023	26/04/2023
Date analysed	-	26/04/2023	26/04/2023	26/04/2023	26/04/2023
Total Phenolics (as Phenol)	mg/L	<0.05	<0.05	<0.05	<0.05

HM in water - dissolved						
Our Reference		321532-1	321532-2	321532-3	321532-4	321532-7
Your Reference	UNITS	SMW_BH004_S	SMW_BH004_W	SMW_WTP-BH02	SMW_WTP-BH03A	R05
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Arsenic-Dissolved	µg/L	<1	<1	2	<1	<1
Beryllium-Dissolved	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Boron-Dissolved	µg/L	50	20	<20	<20	<20
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	3	<1	<1
Copper-Dissolved	µg/L	7	9	90	5	<1
Cobalt-Dissolved	µg/L	6	<1	<1	<1	<1
Lead-Dissolved	µg/L	<1	<1	3	<1	<1
Manganese-Dissolved	µg/L	55	8	7	19	<5
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	3	27	4	2	<1
Selenium-Dissolved	µg/L	3	<1	<1	<1	<1
Zinc-Dissolved	µg/L	30	9	13	24	<1

Miscellaneous Inorganics					
Our Reference		321532-1	321532-2	321532-3	321532-4
Your Reference	UNITS	SMW_BH004_S	SMW_BH004_W	SMW_WTP-BH02	SMW_WTP-BH03A
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023
pH	pH Units	6.3	6.6	9.6	6.6
Electrical Conductivity	µS/cm	310	120	790	84
Total Dissolved Solids (grav)	mg/L	160	76	510	49
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005	<0.005
Ammonia as N in water	mg/L	<0.005	<0.005	0.005	0.043
Nitrate as N in water	mg/L	2.9	<0.005	0.33	0.23
Nitrite as N in water	mg/L	<0.005	<0.005	<0.005	0.010
NOx as N in water	mg/L	2.9	<0.005	0.3	0.2
TKN in water	mg/L	0.8	0.2	0.6	0.5
Phosphate as P in water	mg/L	0.01	0.01	0.11	0.04
Total Nitrogen in water	mg/L	3.8	0.2	0.9	0.8

Metals in Waters - Total					
Our Reference		321532-1	321532-2	321532-3	321532-4
Your Reference	UNITS	SMW_BH004_S	SMW_BH004_W	SMW_WTP-BH02	SMW_WTP-BH03A
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Phosphorus - Total	mg/L	0.07	0.08	0.1	0.1

Ion Balance					
Our Reference		321532-1	321532-2	321532-3	321532-4
Your Reference	UNITS	SMW_BH004_S	SMW_BH004_W	SMW_WTP-BH02	SMW_WTP-BH03A
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Calcium - Dissolved	mg/L	9.0	12	3	9.6
Potassium - Dissolved	mg/L	3	3	16	1
Sodium - Dissolved	mg/L	47	8.9	190	8.0
Magnesium - Dissolved	mg/L	7.0	1	0.7	0.8
Hardness	mgCaCO 3 /L	51	36	11	27
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	49	29	210	29
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5	170	<5
Total Alkalinity as $CaCO_3$	mg/L	49	29	380	29
Sulphate, SO4	mg/L	32	5	14	4
Chloride, Cl	mg/L	43	16	23	6
Ionic Balance	%	5.0	1.0	1.0	6.0

PFAS in Waters Short					
Our Reference		321532-1	321532-2	321532-3	321532-4
Your Reference	UNITS	SMW_BH004_S	SMW_BH004_W	SMW_WTP-BH02	SMW_WTP-BH03A
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	26/04/2023	26/04/2023	26/04/2023	26/04/2023
Date analysed	-	26/04/2023	26/04/2023	26/04/2023	26/04/2023
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.02	<0.01	0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	0.03	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	95	102	102	103
Surrogate $^{13}C_2$ *PFOA*	%	96	106	93	98
Extracted ISTD $^{18}O_2$ *PFHxS*	%	102	100	98	103
Extracted ISTD $^{13}C_4$ *PFOS*	%	105	96	100	100
Extracted ISTD $^{13}C_4$ *PFOA*	%	107	99	104	106
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	111	134	124	132
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	133	150	172	173
Total Positive PFHxS & PFOS	µg/L	0.02	<0.01	0.01	<0.01
Total Positive PFOA & PFOS	µg/L	0.05	<0.01	0.01	<0.01
Total Positive PFAS	µg/L	0.05	<0.01	0.01	<0.01

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Inorg-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation below:- TDS = EC * 0.6
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Inorg-040	The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% ie total anions = total cations +/-15%.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			24/04/2023	2	24/04/2023	26/04/2023		24/04/2023	[NT]
Date analysed	-			26/04/2023	2	26/04/2023	27/04/2023		26/04/2023	[NT]
Methylene chloride	µg/L	4	Org-023	<4	2	<4	<4	0	[NT]	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	2	<10	<10	0	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	2	<10	<10	0	[NT]	[NT]
Vinyl Chloride	µg/L	0.3	Org-023	<0.3	2	<0.3	<0.3	0	[NT]	[NT]
Bromomethane	µg/L	2	Org-023	<2	2	<2	<2	0	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	2	<10	<10	0	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	2	<10	<10	0	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	2	<1	<1	0	105	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	2	<1	<1	0	127	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	2	<1	<1	0	110	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	2	<1	<1	0	97	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	2	<1	<1	0	100	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	2	<1	<1	0	106	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	2	<1	<1	0	108	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	2	<1	<1	0	104	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	2	<2	<2	0	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
o-xylene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	µg/L	0.3	Org-023	<0.3	2	<0.3	<0.3	0	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	0.7	Org-023	<0.7	2	<0.7	<0.7	0	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	105	2	108	109	1	102	[NT]
Surrogate toluene-d8	%		Org-023	99	2	98	98	0	98	[NT]
Surrogate 4-BFB	%		Org-023	102	2	100	101	1	100	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			24/04/2023	2	24/04/2023	26/04/2023		24/04/2023	[NT]
Date analysed	-			26/04/2023	2	26/04/2023	27/04/2023		26/04/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	2	<10	<10	0	107	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	2	<10	<10	0	107	[NT]
Benzene	µg/L	1	Org-023	<1	2	<1	<1	0	103	[NT]
Toluene	µg/L	1	Org-023	<1	2	<1	<1	0	105	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	2	<1	<1	0	108	[NT]
m+p-xylene	µg/L	2	Org-023	<2	2	<2	<2	0	109	[NT]
o-xylene	µg/L	1	Org-023	<1	2	<1	<1	0	106	[NT]
Naphthalene	µg/L	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	105	2	108	109	1	102	[NT]
Surrogate toluene-d8	%		Org-023	99	2	98	98	0	98	[NT]
Surrogate 4-BFB	%		Org-023	102	2	100	101	1	100	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			01/05/2023	1	01/05/2023	01/05/2023		01/05/2023	[NT]
Date analysed	-			02/05/2023	1	02/05/2023	02/05/2023		02/05/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	105	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	<100	0	117	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	86	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	<50	<50	0	105	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	117	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	86	[NT]
Surrogate o-Terphenyl	%		Org-020	99	1	87	88	1	79	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	321532-2
Date extracted	-			01/05/2023	1	01/05/2023	01/05/2023		01/05/2023	01/05/2023
Date analysed	-			01/05/2023	1	01/05/2023	01/05/2023		01/05/2023	01/05/2023
Naphthalene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	75	66
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	80	73
Fluorene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	81	75
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	102	86
Anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	77
Pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	96	84
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	62	64
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	107
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	103	1	120	123	2	107	112

QUALITY CONTROL: Organochlorine Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	321532-2
Date extracted	-			01/05/2023	1	01/05/2023	01/05/2023		01/05/2023	01/05/2023
Date analysed	-			01/05/2023	1	01/05/2023	01/05/2023		01/05/2023	01/05/2023
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	76	72
HCB	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	77	74
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	83	76
delta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	86	75
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	84	72
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	95	84
Dieldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	95	92
Endrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	76	88
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	95	87
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	76	82
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	86	1	95	98	3	85	95

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	321532-2
Date extracted	-			01/05/2023	1	01/05/2023	01/05/2023		01/05/2023	01/05/2023
Date analysed	-			01/05/2023	1	01/05/2023	01/05/2023		01/05/2023	01/05/2023
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	88	88
Dimethoate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	74	66
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	67	74
Malathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	82	88
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	95	86
Parathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	67	74
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	84	100
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	86	1	95	98	3	85	95

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	321532-2
Date extracted	-			01/05/2023	1	01/05/2023	01/05/2023		01/05/2023	01/05/2023
Date analysed	-			01/05/2023	1	01/05/2023	01/05/2023		01/05/2023	01/05/2023
Aroclor 1016	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	1	<2	<2	0	75	76
Aroclor 1260	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	86	1	95	98	3	85	95

QUALITY CONTROL: Total Phenolics in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			26/04/2023	[NT]	[NT]	[NT]	[NT]	26/04/2023	[NT]
Date analysed	-			26/04/2023	[NT]	[NT]	[NT]	[NT]	26/04/2023	[NT]
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-031	<0.05	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date prepared	-			01/05/2023	1	01/05/2023	01/05/2023		01/05/2023	[NT]
Date analysed	-			01/05/2023	1	01/05/2023	01/05/2023		01/05/2023	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	99	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	1	<0.5	<0.5	0	97	[NT]
Boron-Dissolved	µg/L	20	Metals-022	<20	1	50	60	18	112	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	102	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	101	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	7	8	13	98	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	<1	1	6	6	0	99	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	104	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	1	55	57	4	100	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	[NT]		118	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	3	3	0	99	[NT]
Selenium-Dissolved	µg/L	1	Metals-022	<1	1	3	3	0	97	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	30	25	18	99	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date prepared	-			24/04/2023	1	24/04/2023	24/04/2023		24/04/2023	[NT]
Date analysed	-			24/04/2023	1	24/04/2023	24/04/2023		24/04/2023	[NT]
pH	pH Units		Inorg-001	[NT]	1	6.3	[NT]		100	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	1	310	[NT]		100	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	<5	1	160	230	36	107	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	[NT]		96	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	<0.005	[NT]		103	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	2.9	[NT]		107	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	[NT]		103	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	<0.005	1	2.9	[NT]		107	[NT]
TKN in water	mg/L	0.1	Inorg-062	<0.1	1	0.8	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	<0.005	1	0.01	[NT]		106	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	3.8	[NT]		95	[NT]

QUALITY CONTROL: Metals in Waters - Total					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			28/04/2023	[NT]	[NT]	[NT]	[NT]	28/04/2023	[NT]
Date analysed	-			28/04/2023	[NT]	[NT]	[NT]	[NT]	28/04/2023	[NT]
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	86	[NT]

QUALITY CONTROL: Ion Balance						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			24/04/2023	[NT]	[NT]	[NT]	[NT]	24/04/2023	[NT]
Date analysed	-			24/04/2023	[NT]	[NT]	[NT]	[NT]	24/04/2023	[NT]
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	105	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	101	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	100	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	108	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	98	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	[NT]	[NT]	[NT]	[NT]	119	[NT]
Chloride, Cl	mg/L	1	Inorg-081	<1	[NT]	[NT]	[NT]	[NT]	110	[NT]

QUALITY CONTROL: PFAS in Waters Short						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date prepared	-			26/04/2023	2	26/04/2023	26/04/2023		26/04/2023	[NT]
Date analysed	-			26/04/2023	2	26/04/2023	26/04/2023		26/04/2023	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	2	<0.01	<0.01	0	95	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	2	<0.01	<0.01	0	95	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	2	<0.01	<0.01	0	92	[NT]
6:2 FTS	µg/L	0.01	Org-029	<0.01	2	<0.01	<0.01	0	103	[NT]
8:2 FTS	µg/L	0.02	Org-029	<0.02	2	<0.02	<0.02	0	92	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	98	2	102	102	0	96	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	95	2	106	95	11	93	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	102	2	100	102	2	103	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	105	2	96	101	5	100	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	117	2	99	107	8	108	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	108	2	134	140	4	104	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	122	2	150	152	1	122	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

PFAS: For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

Total metals: no unfiltered, preserved sample was received, therefore analysis was conducted from the unpreserved sample bottle. Note: there is a possibility some elements may be underestimated.

epic ENVIRONMENTAL

Chain of Custody Record

Project No:	SC210108.03 - GWMP	Lab:	Envirolab Sydney
Project/Site:	SC210108.03 - GWMP	Lab Quote No:	
Sampled By:	Natalie Chandra	Lab Batch No:	
Phone / Email:		Date Results Required:	Standard TAT
Results to:	pcarroll@epicenvironmental.com.au /		
Page 1 of 1		Sample Disposal After:	
Number of Eskies:	1		

CONTAINER TYPE & PRESERVATIVE

LAB ID	Sample ID	Date/Time	Matrix	PFAS jar	Plastic Bag	water/liquid: 40ml Amber Vial	100-500ml Amber Bottle	60ml Metals	60ml Nutrients	250-500ml Plastic (Unpreserved)	60-250ml Plastic (PFAS)	ASS	Combo 8L (13 Metals - Low level)	VOC Suite - ADWG Level	PFAS (Short Suite)	Nutrient Suite	Ionic Balance	Hexavalent Chromium	TDS, pH, EC	Trip: TRH C6-C10/BTEXN	Rinsate: TRH C6-C40	Rinsate: 8 metals
1	SMW-ENV009	24/4	W										X						X			
2	SMW-BH008-W												X						X			
3	QC05												X						X			
4	QC06												X						X			
5	RB06																				X	X
6	TB40																			X		
7	TS40																			X		
			TOTALS										0	0	0	0	0	0	0	0		0

ENVIROLAB GROUP
Envirolab Services
12 Ashley St
Chatswood NSW 2007
Ph: (02) 9910 6200

Job No: 321713
Date Received: 26/4
Time Received: 1250
Received By: SD
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished By:			Received By:		
NAME Natalie Chandra	SIGNATURE	DATE 24/4	NAME	SIGNATURE	DATE

Custody Seals Intact	Y	N
Samples Received Chilled	Y	N
Method of Shipment		

NOTES: Bottles supplied for As speciation to be placed on HOLD and not analysed.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 321713

Client Details

Client	Epic Environmental (Sydney) Pty Ltd
Attention	Patrick Carroll
Address	Suite 5, Level 9, 189 Kent Street, SYDNEY, NSW, 2000

Sample Details

Your Reference	**SC210108.03-GWMP**
Number of Samples	7 Water
Date samples received	26/04/2023
Date completed instructions received	26/04/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

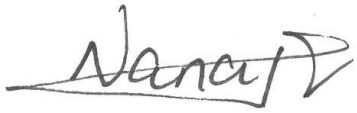
Date results requested by	03/05/2023
Date of Issue	03/05/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Alexander Mitchell Maclean, Senior Chemist
Diego Bigolin, Inorganics Supervisor
Hannah Nguyen, Metals Supervisor
Kyle Gavrily, Senior Chemist
Loren Bardwell, Development Chemist

Authorised By



Nancy Zhang, Laboratory Manager

VOCs in water					
Our Reference		321713-1	321713-2	321713-3	321713-4
Your Reference	UNITS	SMW_ENV009	SMW_BH008_W	QC05	QC06
Date Sampled		24/04/2023	24/04/2023	24/04/2023	24/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	26/04/2023	26/04/2023	26/04/2023	26/04/2023
Date analysed	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Methylene chloride	µg/L	<4	<4	<4	<4
Dichlorodifluoromethane	µg/L	<10	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10	<10
Vinyl Chloride	µg/L	<0.3	<0.3	<0.3	<0.3
Bromomethane	µg/L	<2	<2	<2	<2
Chloroethane	µg/L	<10	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1	<1
Chloroform	µg/L	<1	<1	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1	<1
Benzene	µg/L	<1	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1	<1

VOCs in water					
Our Reference	UNITS	321713-1	321713-2	321713-3	321713-4
Your Reference		SMW_ENV009	SMW_BH008_W	QC05	QC06
Date Sampled		24/04/2023	24/04/2023	24/04/2023	24/04/2023
Type of sample		Water	Water	Water	Water
Ethylbenzene	µg/L	<1	<1	<1	<1
Bromoform	µg/L	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2
Styrene	µg/L	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1	<1
o-xylene	µg/L	<1	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1	<1
1,4-dichlorobenzene	µg/L	<0.3	<0.3	<0.3	<0.3
4-isopropyl toluene	µg/L	<1	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1	<1
Hexachlorobutadiene	µg/L	<0.7	<0.7	<0.7	<0.7
1,2,3-trichlorobenzene	µg/L	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	97	98	99	98
Surrogate toluene-d8	%	91	92	91	91
Surrogate 4-BFB	%	99	98	98	97

vTRH(C6-C10)/BTEXN in Water						
Our Reference		321713-1	321713-2	321713-3	321713-4	321713-5
Your Reference	UNITS	SMW_ENV009	SMW_BH008_W	QC05	QC06	RB06
Date Sampled		24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
Date analysed	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	97	98	99	98	98
Surrogate toluene-d8	%	91	92	91	91	92
Surrogate 4-BFB	%	99	98	98	97	97

vTRH(C6-C10)/BTEXN in Water			
Our Reference		321713-6	321713-7
Your Reference	UNITS	TB40	TS40
Date Sampled		24/04/2023	24/04/2023
Type of sample		Water	Water
Date extracted	-	26/04/2023	26/04/2023
Date analysed	-	27/04/2023	27/04/2023
TRH C_6 - C_9	µg/L	<10	[NA]
TRH C_6 - C_{10}	µg/L	<10	[NA]
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	[NA]
Benzene	µg/L	<1	95%
Toluene	µg/L	<1	97%
Ethylbenzene	µg/L	<1	99%
m+p-xylene	µg/L	<2	92%
o-xylene	µg/L	<1	98%
Naphthalene	µg/L	<1	[NA]
Surrogate Dibromofluoromethane	%	98	98
Surrogate toluene-d8	%	91	93
Surrogate 4-BFB	%	99	94

svTRH (C10-C40) in Water						
Our Reference		321713-1	321713-2	321713-3	321713-4	321713-5
Your Reference	UNITS	SMW_ENV009	SMW_BH008_W	QC05	QC06	RB06
Date Sampled		24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	02/05/2023	02/05/2023	02/05/2023	02/05/2023	02/05/2023
Date analysed	-	03/05/2023	03/05/2023	03/05/2023	03/05/2023	03/05/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	96	67	85	83	85

PAHs in Water					
Our Reference		321713-1	321713-2	321713-3	321713-4
Your Reference	UNITS	SMW_ENV009	SMW_BH008_W	QC05	QC06
Date Sampled		24/04/2023	24/04/2023	24/04/2023	24/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	02/05/2023	02/05/2023	02/05/2023	02/05/2023
Date analysed	-	02/05/2023	03/05/2023	03/05/2023	03/05/2023
Naphthalene	µg/L	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	0.2	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	0.18	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	100	79	86	76

Organochlorine Pesticides in Water					
Our Reference	UNITS	321713-1	321713-2	321713-3	321713-4
Your Reference		SMW_ENV009	SMW_BH008_W	QC05	QC06
Date Sampled		24/04/2023	24/04/2023	24/04/2023	24/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	02/05/2023	02/05/2023	02/05/2023	02/05/2023
Date analysed	-	02/05/2023	03/05/2023	03/05/2023	03/05/2023
alpha-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
HCB	µg/L	<0.2	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	86	70	82	77

OP Pesticides in Water					
Our Reference		321713-1	321713-2	321713-3	321713-4
Your Reference	UNITS	SMW_ENV009	SMW_BH008_W	QC05	QC06
Date Sampled		24/04/2023	24/04/2023	24/04/2023	24/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	02/05/2023	02/05/2023	02/05/2023	02/05/2023
Date analysed	-	02/05/2023	03/05/2023	03/05/2023	03/05/2023
Dichlorvos	µg/L	<0.2	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	86	70	82	77

PCBs in Water					
Our Reference		321713-1	321713-2	321713-3	321713-4
Your Reference	UNITS	SMW_ENV009	SMW_BH008_W	QC05	QC06
Date Sampled		24/04/2023	24/04/2023	24/04/2023	24/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	02/05/2023	02/05/2023	02/05/2023	02/05/2023
Date analysed	-	02/05/2023	03/05/2023	03/05/2023	03/05/2023
Aroclor 1016	µg/L	<2	<2	<2	<2
Aroclor 1221	µg/L	<2	<2	<2	<2
Aroclor 1232	µg/L	<2	<2	<2	<2
Aroclor 1242	µg/L	<2	<2	<2	<2
Aroclor 1248	µg/L	<2	<2	<2	<2
Aroclor 1254	µg/L	<2	<2	<2	<2
Aroclor 1260	µg/L	<2	<2	<2	<2
Surrogate TCMX	%	86	70	82	77

Total Phenolics in Water					
Our Reference		321713-1	321713-2	321713-3	321713-4
Your Reference	UNITS	SMW_ENV009	SMW_BH008_W	QC05	QC06
Date Sampled		24/04/2023	24/04/2023	24/04/2023	24/04/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Date analysed	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Total Phenolics (as Phenol)	mg/L	<0.05	<0.05	<0.05	<0.05

HM in water - dissolved						
Our Reference		321713-1	321713-2	321713-3	321713-4	321713-5
Your Reference	UNITS	SMW_ENV009	SMW_BH008_W	QC05	QC06	RB06
Date Sampled		24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	02/05/2023	02/05/2023	02/05/2023	02/05/2023	02/05/2023
Date analysed	-	02/05/2023	02/05/2023	02/05/2023	02/05/2023	02/05/2023
Arsenic-Dissolved	µg/L	<1	2	2	2	<1
Beryllium-Dissolved	µg/L	<0.5	<0.5	<0.5	<0.5	[NA]
Boron-Dissolved	µg/L	290	100	100	100	[NA]
Cadmium-Dissolved	µg/L	<0.1	<0.1	0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	51	73	61	<1
Cobalt-Dissolved	µg/L	<1	<1	<1	<1	[NA]
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Manganese-Dissolved	µg/L	850	86	89	89	[NA]
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	<1	<1	<1	<1	<1
Selenium-Dissolved	µg/L	<1	<1	<1	<1	[NA]
Zinc-Dissolved	µg/L	<1	4	4	3	<1

Miscellaneous Inorganics					
Our Reference	UNITS	321713-1	321713-2	321713-3	321713-4
Your Reference		SMW_ENV009	SMW_BH008_W	QC05	QC06
Date Sampled		24/04/2023	24/04/2023	24/04/2023	24/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	26/04/2023	26/04/2023	26/04/2023	26/04/2023
Date analysed	-	26/04/2023	26/04/2023	26/04/2023	26/04/2023
pH	pH Units	6.9	6.6	6.6	6.6
Electrical Conductivity	µS/cm	1,900	19,000	19,000	19,000
Total Dissolved Solids (grav)	mg/L	1,100	13,000	14,000	14,000
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005	<0.005
Ammonia as N in water	mg/L	7.8	2.8	2.8	2.8
Nitrate as N in water	mg/L	0.008	<0.005	<0.005	<0.005
Nitrite as N in water	mg/L	<0.005	<0.005	<0.005	<0.005
NOx as N in water	mg/L	0.008	<0.005	<0.005	<0.005
TKN in water	mg/L	10	3.3	3.4	3.4
Phosphate as P in water	mg/L	<0.005	<0.005	0.02	0.02
Total Nitrogen in water	mg/L	10	3.4	3.4	3.4

Metals in Waters - Total					
Our Reference		321713-1	321713-2	321713-3	321713-4
Your Reference	UNITS	SMW_ENV009	SMW_BH008_W	QC05	QC06
Date Sampled		24/04/2023	24/04/2023	24/04/2023	24/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Phosphorus - Total	mg/L	0.4	<0.05	<0.05	<0.05

Ion Balance					
Our Reference		321713-1	321713-2	321713-3	321713-4
Your Reference	UNITS	SMW_ENV009	SMW_BH008_W	QC05	QC06
Date Sampled		24/04/2023	24/04/2023	24/04/2023	24/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	26/04/2023	26/04/2023	03/05/2023	03/05/2023
Date analysed	-	26/04/2023	26/04/2023	03/05/2023	03/05/2023
Calcium - Dissolved	mg/L	120	280	280	280
Potassium - Dissolved	mg/L	17	59	59	59
Sodium - Dissolved	mg/L	180	3,500	3,600	3,600
Magnesium - Dissolved	mg/L	52	500	500	500
Hardness	mgCaCO 3 /L	510	2,700	2,800	2,700
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	690	1,000	1,100	1,100
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	690	1,000	1,100	1,100
Sulphate, SO4	mg/L	14	400	420	420
Chloride, Cl	mg/L	250	6,900	7,300	7,300
Ionic Balance	%	-7.0	-3.0	-5.0	-5.0

PFAS in Waters Short					
Our Reference	UNITS	321713-1	321713-2	321713-3	321713-4
Your Reference		SMW_ENV009	SMW_BH008_W	QC05	QC06
Date Sampled		24/04/2023	24/04/2023	24/04/2023	24/04/2023
Type of sample		Water	Water	Water	Water
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	02/05/2023	02/05/2023	02/05/2023	02/05/2023
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	97	93	97	99
Surrogate $^{13}C_2$ *PFOA*	%	109	108	104	102
Extracted ISTD $^{18}O_2$ *PFHxS*	%	107	108	99	94
Extracted ISTD $^{13}C_4$ *PFOS*	%	105	108	104	98
Extracted ISTD $^{13}C_4$ *PFOA*	%	106	97	96	95
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	114	73	74	71
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	102	66	74	68
Total Positive PFHxS & PFOS	µg/L	0.02	<0.01	<0.01	<0.01
Total Positive PFOA & PFOS	µg/L	0.01	<0.01	<0.01	<0.01
Total Positive PFAS	µg/L	0.02	<0.01	<0.01	<0.01

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Inorg-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation below:- TDS = EC * 0.6
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Inorg-040	The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% ie total anions = total cations +/-15%.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			26/04/2023	[NT]	[NT]	[NT]	[NT]	26/04/2023	[NT]
Date analysed	-			27/04/2023	[NT]	[NT]	[NT]	[NT]	27/04/2023	[NT]
Methylene chloride	µg/L	4	Org-023	<4	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Vinyl Chloride	µg/L	0.3	Org-023	<0.3	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromomethane	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-dichlorobenzene	µg/L	0.3	Org-023	<0.3	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorobutadiene	µg/L	0.7	Org-023	<0.7	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	96	[NT]	[NT]	[NT]	[NT]	97	[NT]
Surrogate toluene-d8	%		Org-023	92	[NT]	[NT]	[NT]	[NT]	95	[NT]
Surrogate 4-BFB	%		Org-023	101	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			26/04/2023	[NT]	[NT]	[NT]	[NT]	26/04/2023	[NT]
Date analysed	-			27/04/2023	[NT]	[NT]	[NT]	[NT]	27/04/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	103	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	103	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	103	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	96	[NT]	[NT]	[NT]	[NT]	97	[NT]
Surrogate toluene-d8	%		Org-023	92	[NT]	[NT]	[NT]	[NT]	95	[NT]
Surrogate 4-BFB	%		Org-023	101	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			02/05/2023	[NT]	[NT]	[NT]	[NT]	02/05/2023	[NT]
Date analysed	-			02/05/2023	[NT]	[NT]	[NT]	[NT]	02/05/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	103	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	103	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
Surrogate o-Terphenyl	%		Org-020	92	[NT]	[NT]	[NT]	[NT]	87	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			02/05/2023	[NT]	[NT]	[NT]	[NT]	02/05/2023	[NT]
Date analysed	-			03/05/2023	[NT]	[NT]	[NT]	[NT]	03/05/2023	[NT]
Naphthalene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	85	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	117	[NT]
Anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	112	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	121	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	126	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	95	[NT]	[NT]	[NT]	[NT]	106	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			02/05/2023	[NT]	[NT]	[NT]	[NT]	02/05/2023	[NT]
Date analysed	-			03/05/2023	[NT]	[NT]	[NT]	[NT]	03/05/2023	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	90	[NT]
HCB	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	83	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	90	[NT]
delta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	96	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	89	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	94	[NT]
Dieldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	92	[NT]
Endrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	99	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	112	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	90	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	94	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			02/05/2023	[NT]	[NT]	[NT]	[NT]	02/05/2023	[NT]
Date analysed	-			03/05/2023	[NT]	[NT]	[NT]	[NT]	03/05/2023	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	85	[NT]
Dimethoate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	81	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	61	[NT]
Malathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	85	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	92	[NT]
Parathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	73	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	73	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	94	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			02/05/2023	[NT]	[NT]	[NT]	[NT]	02/05/2023	[NT]
Date analysed	-			03/05/2023	[NT]	[NT]	[NT]	[NT]	03/05/2023	[NT]
Aroclor 1016	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	127	[NT]
Aroclor 1260	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	94	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: Total Phenolics in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			27/04/2023	[NT]	[NT]	[NT]	[NT]	27/04/2023	[NT]
Date analysed	-			27/04/2023	[NT]	[NT]	[NT]	[NT]	27/04/2023	[NT]
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-031	<0.05	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			02/05/2023	1	02/05/2023	02/05/2023		02/05/2023	[NT]
Date analysed	-			02/05/2023	1	02/05/2023	02/05/2023		02/05/2023	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	96	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	1	<0.5	<0.5	0	99	[NT]
Boron-Dissolved	µg/L	20	Metals-022	<20	1	290	300	3	99	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	98	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	95	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	96	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	96	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	104	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	1	850	840	1	94	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	112	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	98	[NT]
Selenium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	98	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	99	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date prepared	-			26/04/2023	[NT]	[NT]	[NT]	[NT]	26/04/2023	[NT]
Date analysed	-			26/04/2023	[NT]	[NT]	[NT]	[NT]	26/04/2023	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	<5	[NT]	[NT]	[NT]	[NT]	107	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	[NT]	[NT]	[NT]	[NT]	98	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	[NT]	[NT]	[NT]	[NT]	102	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	[NT]	[NT]	[NT]	[NT]	108	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	[NT]	[NT]	[NT]	[NT]	103	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	<0.005	[NT]	[NT]	[NT]	[NT]	108	[NT]
TKN in water	mg/L	0.1	Inorg-062	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	<0.005	[NT]	[NT]	[NT]	[NT]	107	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	[NT]	[NT]	[NT]	[NT]	89	[NT]

QUALITY CONTROL: Metals in Waters - Total					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			28/04/2023	[NT]	[NT]	[NT]	[NT]	28/04/2023	[NT]
Date analysed	-			28/04/2023	[NT]	[NT]	[NT]	[NT]	28/04/2023	[NT]
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	99	[NT]

QUALITY CONTROL: Ion Balance						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			[NT]	1	26/04/2023	26/04/2023		[NT]	[NT]
Date analysed	-			[NT]	1	26/04/2023	26/04/2023		[NT]	[NT]
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	120	120	0	95	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	17	17	0	88	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	180	180	0	93	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	52	52	0	93	[NT]
Hardness	mgCaCO 3 /L	3	Metals-020	[NT]	1	510	510	0	[NT]	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	[NT]		[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	690	[NT]		[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	[NT]		[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	690	[NT]		97	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	1	14	[NT]		111	[NT]
Chloride, Cl	mg/L	1	Inorg-081	<1	1	250	[NT]		106	[NT]
Ionic Balance	%		Inorg-040	[NT]	1	-7.0	[NT]		[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Short						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	321713-2
Date prepared	-			28/04/2023	1	28/04/2023	28/04/2023		28/04/2023	28/04/2023
Date analysed	-			02/05/2023	1	02/05/2023	02/05/2023		02/05/2023	02/05/2023
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	0.01	0.01	0	97	122
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	0.01	0.01	0	99	100
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	106	99
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	112	103
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	90	129
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	100	1	97	97	0	97	96
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	105	1	109	112	3	99	100
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	105	1	107	114	6	99	100
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	105	1	105	105	0	99	100
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	105	1	106	110	4	95	98
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	106	1	114	111	3	95	79
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	101	1	102	107	5	117	79

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Total metals: no unfiltered, preserved sample was received, therefore analysis was conducted from the unpreserved sample bottle.
Note: there is a possibility some elements may be underestimated.

Environmental Division
Sydney
Work Order Reference
ES2312848

Telephone : +61-2-8784 8555

#321086.
18104123
VC.

epic ENVIRONMENTAL

Chain of Custody Record

| | | |

CERTIFICATE OF ANALYSIS

Work Order	: **ES2312848**	Page	: 1 of 9
Client	: **EPIC ENVIRONMENTAL**	Laboratory	: Environmental Division Sydney
Contact	: P Carroll	Contact	: Jason Dighton
Address	: SUITE 5, LEVEL 9/189 KENT STREET SYDNEY 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: SC210108.03 - GWMP	Date Samples Received	: 19-Apr-2023 15:25
Order number	: ----	Date Analysis Commenced	: 19-Apr-2023
C-O-C number	: ----	Issue Date	: 28-Apr-2023 10:51
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC02	----	----	----	----
				Sampling date / time	17-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2312848-001	--------	--------	--------	--------
					Result	----	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		**7.03**	----	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		**3280**	----	----	----	----
EA016: Calculated TDS (from Electrical Conductivity)									
Total Dissolved Solids (Calc.)	----	1	mg/L		**2130**	----	----	----	----
EA065: Total Hardness as CaCO3									
Total Hardness as CaCO3	----	1	mg/L		**1880**	----	----	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		**499**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L		**499**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		**1620**	----	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		**358**	----	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		**644**	----	----	----	----
Magnesium	7439-95-4	1	mg/L		**67**	----	----	----	----
Sodium	7440-23-5	1	mg/L		**216**	----	----	----	----
Potassium	7440-09-7	1	mg/L		**10**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		**0.009**	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L		<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
Iron	7439-89-6	0.05	mg/L		**4.04**	----	----	----	----
EG035F: Dissolved Mercury by FIMS									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC02	----	----	----	----
			Sampling date / time	17-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2312848-001	--------	--------	--------	--------
				Result	----	----	----	----
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.4**	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.76**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	----	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	----	----	----	----
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	**53.8**	----	----	----	----
ø Total Cations	----	0.01	meq/L	**47.3**	----	----	----	----
ø Ionic Balance	----	0.01	%	**6.42**	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	----	----	----	----
beta-BHC	319-85-7	0.5	µg/L	<0.5	----	----	----	----
gamma-BHC	58-89-9	0.5	µg/L	<0.5	----	----	----	----
delta-BHC	319-86-8	0.5	µg/L	<0.5	----	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	----	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<0.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L	<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC02	----	----	----	----
				Sampling date / time	17-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2312848-001	--------	--------	--------	--------
					Result	----	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued									
4.4`-DDD	72-54-8	0.5	µg/L		<0.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDT	50-29-3	2.0	µg/L		<2.0	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<0.5	----	----	----	----
Methoxychlor	72-43-5	2.0	µg/L		<2.0	----	----	----	----
^ **Total Chlordane (sum)**	----	0.5	µg/L		<0.5	----	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.5	µg/L		<0.5	----	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.5	µg/L		<0.5	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.5	µg/L		<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L		<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L		<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L		<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L		<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L		<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L		<2.0	----	----	----	----
Malathion	121-75-5	0.5	µg/L		<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L		<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L		<0.5	----	----	----	----
Parathion	56-38-2	2.0	µg/L		<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L		<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L		<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L		<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L		<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L		<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L		<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L		<0.5	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	----	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	1.0	µg/L		<1.0	----	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L		<1.0	----	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L		<1.0	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC02	----	----	----	----
				Sampling date / time	17-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2312848-001	--------	--------	--------	--------
					Result	----	----	----	----
EP075(SIM)A: Phenolic Compounds - Continued									
3- & 4-Methylphenol	1319-77-3	2.0	µg/L		<2.0	----	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L		<1.0	----	----	----	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L		<1.0	----	----	----	----
2.4-Dichlorophenol	120-83-2	1.0	µg/L		<1.0	----	----	----	----
2.6-Dichlorophenol	87-65-0	1.0	µg/L		<1.0	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L		<1.0	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L		<1.0	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L		<1.0	----	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L		<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	----	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	µg/L		<0.5	----	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	µg/L		<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L		<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC02	----	----	----	----
				Sampling date / time	17-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2312848-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ **Total Xylenes**	----	2	µg/L		<2	----	----	----	----
^ **Sum of BTEX**	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP080-UT / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		**0.04**	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.03**	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.02**	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.05**	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		**0.03**	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC02	----	----	----	----
				Sampling date / time	17-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2312848-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	----	----	----	----
EP231P: PFAS Sums									
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.05**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.17**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		**93.2**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		**70.5**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		**21.5**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		**49.2**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%		**70.8**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		**63.2**	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%		**77.0**	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		**76.5**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**118**	----	----	----	----
Toluene-D8	2037-26-5	2	%		**131**	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**130**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**91.3**	----	----	----	----
13C8-PFOA	----	0.02	%		**83.9**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	67	111
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	67	111
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 321257 M

Date Received: 19/04/23
Time Received: 1645
Received By: Dr
Temp: Cool/Ambient
Cooling: Ice/Icepack 5°C
Security: Intact/Broken/None

Environmental Division
Sydney
Work Order Reference
ES2313090

Telephone : + 61-2-8784 8555

epic ENVIRONMENTAL

Chain of Custody Record

Project No:	SC210108.03 - GWMP	Lab:	ALS Sydney
Project/Site:	SC210108.03 - GWMP	Lab Quote No:	
Sampled By:		Lab Batch No:	
Phone / Email:		Date Results Required:	Standard TAT
Results to:	pcarroll@epicenvironmental.com.au /		
Page 1 of		Sample Disposal After:	
Number of Eskies:			

CONTAINER TYPE & PRESERVATIVE

LAB ID	Sample ID	Date/Time	Matrix	PFAS jar	Plastic Bag	water/liquid 40ml Amber Vial	100-500ml Amber Bottle	60ml Metals	60ml Nutrients	250-500ml Plastic (Unpreserved)	60-250ml Plastic (PFAS)	ASS	TRH (C6-C40) / BTEXN / PAH / Phenols / OC / OP (W-33)	Extended water suite (NT-13)	11 metals (W-30)	PFAS (Short Suite) - EP231					
1	QC04	19.04	W			2	2	1	1	1	1		X	X	X	X					
			TOTALS										0	0	0	0	0	0	0	0	0

Relinquished by
EU Sud
20/4. 1130
CM

HT

Relinquished By:				Received By:				
NAME	Jioli XIE ~~[illegible]~~ Joy	SIGNATURE	[illegible]	NAME	Jock	SIGNATURE	[illegible]	DATE 24/04/23 1500
DATE	1904							

Custody Seals Intact Y N
Samples Received Chilled Y N
Method of Shipment

NOTES: Bottles supplied for As speciation to be placed on HOLD and not analysed.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2313090**	Page	: 1 of 9
Client	: **EPIC ENVIRONMENTAL**	Laboratory	: Environmental Division Sydney
Contact	: P Carroll	Contact	: Jason Dighton
Address	: SUITE 5, LEVEL 9/189 KENT STREET SYDNEY 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: SC210108.03 - GWMP	Date Samples Received	: 20-Apr-2023 15:00
Order number	: ----	Date Analysis Commenced	: 21-Apr-2023
C-O-C number	: ----	Issue Date	: 27-Apr-2023 17:53
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC04	----	----	----	----
				Sampling date / time	19-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2313090-001	--------	--------	--------	--------
					Result	----	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		**6.80**	----	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		**10400**	----	----	----	----
EA016: Calculated TDS (from Electrical Conductivity)									
Total Dissolved Solids (Calc.)	----	1	mg/L		**6760**	----	----	----	----
EA065: Total Hardness as CaCO3									
Total Hardness as CaCO3	----	1	mg/L		**1030**	----	----	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		**242**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L		**242**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		**338**	----	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		**3660**	----	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		**73**	----	----	----	----
Magnesium	7439-95-4	1	mg/L		**206**	----	----	----	----
Sodium	7440-23-5	1	mg/L		**1810**	----	----	----	----
Potassium	7440-09-7	1	mg/L		**10**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L		**0.001**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		**0.006**	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L		<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
Iron	7439-89-6	0.05	mg/L		**8.48**	----	----	----	----
EG035F: Dissolved Mercury by FIMS									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	QC04	----	----	----	----
			Sampling date / time	19-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2313090-001	--------	--------	--------	--------
				Result	----	----	----	----
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.1**	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.06**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	----	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	----	----	----	----
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	**115**	----	----	----	----
ø Total Cations	----	0.01	meq/L	**99.6**	----	----	----	----
ø Ionic Balance	----	0.01	%	**7.23**	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	----	----	----	----
beta-BHC	319-85-7	0.5	µg/L	<0.5	----	----	----	----
gamma-BHC	58-89-9	0.5	µg/L	<0.5	----	----	----	----
delta-BHC	319-86-8	0.5	µg/L	<0.5	----	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	----	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<0.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L	<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC04	----	----	----	----
				Sampling date / time	19-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2313090-001	--------	--------	--------	--------
					Result	----	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued									
4.4`-DDD	72-54-8	0.5	µg/L		<0.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDT	50-29-3	2.0	µg/L		<2.0	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<0.5	----	----	----	----
Methoxychlor	72-43-5	2.0	µg/L		<2.0	----	----	----	----
^ **Total Chlordane (sum)**	----	0.5	µg/L		<0.5	----	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.5	µg/L		<0.5	----	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.5	µg/L		<0.5	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.5	µg/L		<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L		<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L		<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L		<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L		<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L		<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L		<2.0	----	----	----	----
Malathion	121-75-5	0.5	µg/L		<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L		<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L		<0.5	----	----	----	----
Parathion	56-38-2	2.0	µg/L		<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L		<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L		<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L		<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L		<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L		<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L		<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L		<0.5	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	----	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	1.0	µg/L		<1.0	----	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L		<1.0	----	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L		<1.0	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC04	----	----	----	----
				Sampling date / time	19-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2313090-001	--------	--------	--------	--------
					Result	----	----	----	----
EP075(SIM)A: Phenolic Compounds - Continued									
3- & 4-Methylphenol	1319-77-3	2.0	µg/L		<2.0	----	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L		<1.0	----	----	----	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L		<1.0	----	----	----	----
2.4-Dichlorophenol	120-83-2	1.0	µg/L		<1.0	----	----	----	----
2.6-Dichlorophenol	87-65-0	1.0	µg/L		<1.0	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L		<1.0	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L		<1.0	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L		<1.0	----	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L		<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	----	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	µg/L		<0.5	----	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	µg/L		<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L		<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC04	----	----	----	----
				Sampling date / time	19-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2313090-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ **Total Xylenes**	----	2	µg/L		<2	----	----	----	----
^ **Sum of BTEX**	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP080-UT / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC04	----	----	----	----
				Sampling date / time	19-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2313090-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	----	----	----	----
EP231P: PFAS Sums									
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		**74.0**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		**91.6**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		**25.5**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		**58.2**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%		**84.0**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		**74.0**	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%		**89.3**	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		**92.9**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**124**	----	----	----	----
Toluene-D8	2037-26-5	2	%		**104**	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**103**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**98.3**	----	----	----	----
13C8-PFOA	----	0.02	%		**83.4**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	67	111
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	67	111
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

321713.

Chain of Custody Record

Project No:	SC210108.03 - GWMP
Project/Site:	SC210108.03 - GWMP
Sampled By:	NATALIE CHANDRA
Phone / Email:	nchandra@epicenvironmental.com.au
Results to:	pcarroll@epicenvironmental.com.au
Page	1
Number of Eskies:	

Lab:	ALS
Lab Quote No:	
Lab Batch No:	
Date Results Required:	Standard 5 day TAT
Sample Disposal After:	

LAB ID	Sample ID	Depth (m)	Date/Time	Matrix	CONTAINER TYPE & PRESERVATIVE: Glass Jar	HDPE JAR (PFAS)	ON HOLD	Dissolved Chromium	Dissolved Metals	Physicals	PFAS				TRH, BTEXN, C6, C10
(1)	QC06		24/04/2023	W					X						
				TOTALS	0	0	0	0	1	0	0	0	0	0	0

Environmental Division Sydney
Work Order Reference
ES2316368

Telephone : +61-2-8784 8555

Relinquished By:	ELSYD			17/05/23, 1145	Received By:			17/05/23 1405	
NAME	Sarah P	NATALIE CHANDRA	SIGNATURE	DATE 16/05/2023	NAME	Jack	SIGNATURE	DATE	

Custody Seals Intact	Y	N
Samples Received Chilled	Y	N
Method of Shipment		

NOTES: Analysis to come via email.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2316368**	Page	: 1 of 2
Client	: **EPIC ENVIRONMENTAL**	Laboratory	: Environmental Division Sydney
Contact	: NATALIE CHANDRA	Contact	: Jason Dighton
Address	: SUITE 5, LEVEL 9/189 KENT STREET SYDNEY 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: SC210108.03 - GWMP	Date Samples Received	: 17-May-2023 14:05
Order number	: ----	Date Analysis Commenced	: 19-May-2023
C-O-C number	: ----	Issue Date	: 23-May-2023 11:39
Sampler	: NATALIE CHANDRA		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC06	----	----	----	----
				Sampling date / time	24-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2316368-001	--------	--------	--------	--------
					Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		**0.033**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		**0.002**	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----

APPENDIX F – CALIBRATION CERTIFICATES

January 2023 monitoring event

Multi Parameter Water Meter

Instrument **YSI Quatro Pro Plus**
Serial No. **17B100729**

airmet
Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 7.00		pH 7.00		386467	pH 7.01
2. pH 4.00		pH 4.00		399527	pH 4.00
3. mV		234.3mV		393734/393728	234.6mV
4. EC		2.76mS		396172	2.76mS
5. D.O		0.00%		12110	0.00%
6. Temp		22.6°C		MultiTherm	22.4°C

Calibrated by: **Yu Jiang**

Calibration date: **11/01/2023**

Next calibration due: **10/02/2023**

Multi Parameter Water Meter

Instrument **YSI Quatro Pro Plus**
Serial No. **17C103049**

airmet
Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. D.O		0%		391223	0.00%
2. Conductivity		2760 uS		396172	2770 uS
3. pH7		pH 7.00		386467	pH 7.00
4. pH4		pH 4.00		389384	pH 4.10
5. ORP mV		229.9		395557/395763	222
6. Temp °C		23.6°C		MultiThem	23.7°C

Calibrated by: **Yu Jiang**

Calibration date: **31-Jan-23**

Next calibration due: **30-Jul-23**

April 2023 monitoring event

WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION AND SHOULD BE CHECKED AGAINST THE ELECTRONIC VERSION FOR VALIDITY

15/05/2023

Multi Parameter Water Meter

Instrument **YSI Quatro Pro Plus**
Serial No. **11C100763**

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 7.00		pH 7.00		393774	pH 6.99
2. pH 4.00		pH 4.00		399627	pH 3.99
3. mV		232.72 mV		398884/400204	232.5 mV
4. EC		2760 mS		396172	2758 mV
5. D.O		0.0%		391223	-0.1%
6. Temp		23.3°C		MultiTherm	21.3°C

Calibrated by: **Izack Muhlbock**

Calibration date: **15/05/2023**

Next calibration due: **14/06/2023**

Oil / Water Interface Meter

Instrument Interface Meter (30M)
Serial No. 485186

airmet
Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Compartment	✓	
	Capacity	✓	
Probe	Cleaned/Decon.	✓	
	Operation	✓	
Connectors	Condition	✓	
		✓	
Tape Check	Cleaned	✓	
	Checked for cuts	✓	
Instrument Test	At surface level	✓	

Certificate of Calibration

This is to certify that the above instrument has been cleaned and tested.

Calibrated by: Jemma Treseder

Calibration date: 12/05/2023

Next calibration due: 11/07/2023