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GAMUDA

PROJECT MANAGEMENT PLAN

Water Reuse Strategy

Sydney Metro West – Stations Package West

01/05/2026

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Sustainable Buildings Lead	**Environment Operations and Approvals Manager**	**Project Director**
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DOCUMENT CONTROL

The current document version number and date of revision are shown in the document footer. All changes made to the Management Plan during its implementation on a live project are to be recorded in the amendment tables below.

Revision History

Revision	Date	Description of changes	Prepared by	Approved by
00	01/05/2026	First Draft for SM Comments		
01	25/06/2026	Revision to address SM Comments		

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Abbreviations and Acronyms

Acronyms/Abbreviations	Definition
AS	Australian Standard
CBD	Central Business District
CEMF	Construction Environmental Management Framework
CoA	Conditions of Approval (Minister's)
CSSI	Critical State Significant Infrastructure
DGB	Dense Graded Base
EPA	Environmental Protection Agency
GBCA	Green Building Council of Australia
GS	General Specification
MEPF	Mechanical, Electrical, Plumbing, and Fire
NCC	National Construction Code
PS	Particular Specification
REMMs	Revised Environmental Management Measures
SMP	Sustainability Management Plan
SMW	Sydney Metro West
SPW	Station Package West
SWMP	Soil and Water Management Plan
WELS	Water Efficiency Labelling and Standards
WRS	Water Reuse Strategy

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1 INTRODUCTION

1.1 Project Description

Sydney Metro is Australia's biggest public transport project, with the vision "to transform Sydney with a world-class metro." There are currently 21 metro stations and more than 52 kilometres of metro rail in Sydney, revolutionising the way Australia's biggest city travels. By the end of the decade, the network will be expanded to include 46 stations and more than 113 kilometres of world-class metro for Sydney.

Sydney Metro West (SMW) is a new 24-kilometre metro line with stations confirmed at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont Street and Hunter Street in the Sydney CBD.

On completion in 2032, SMW will support a growing city and deliver world-class metro services to more communities. This new underground railway will connect Greater Parramatta and the Sydney CBD.

This once-in-a-century infrastructure investment will transform Sydney for generations to come, doubling rail capacity between the two CBDs, linking new communities to rail services, and supporting employment growth and housing supply. SMW is expected to create about 10,000 direct and 70,000 indirect jobs during construction.

Gamuda will deliver Sydney Metro West - Station Package West (SMW SPW) (hereafter referred to as the Project), including the design and construction of five new underground metro stations along the SMW alignment: Westmead, North Strathfield, Burwood North, Five Dock, and The Bays. Delivered as part of the 24-kilometre SMW line connecting Greater Parramatta to Sydney's CBD, the package scope will include the design and construction of station boxes, entrances and access points, station fit-out works and integration with surrounding precincts.

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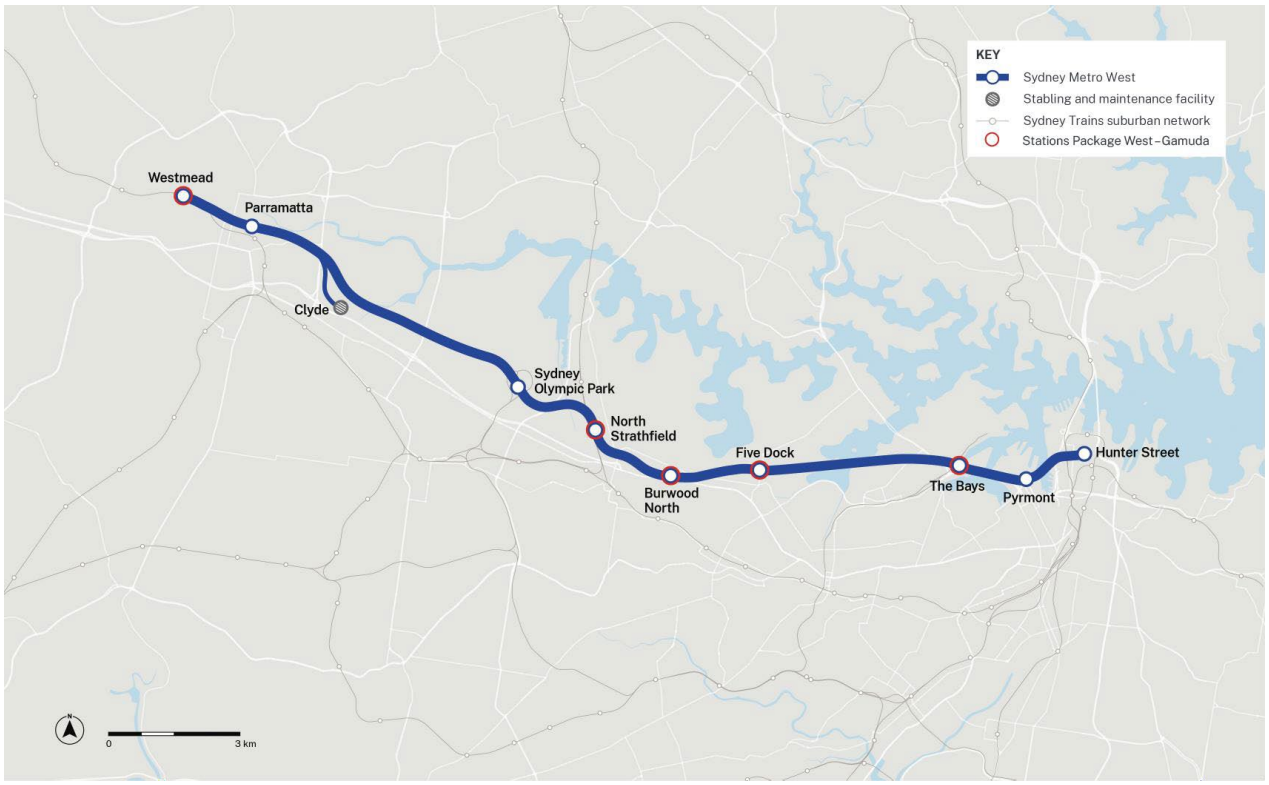

Figure 1: Project Overview

1.2 Context

This Water Reuse Strategy (WRS) has been developed as part of the Gamuda Sustainability Management Plan (SMP) (SMWSTSPW-GEA-SWD-EN-PLN-000013) for the SMW Sydney Package West (the Project). The SMP has been developed for the delivery of the Project.

This WRS has been prepared to address requirements of the Minister's Conditions of Approval (CoA) and the Revised Environmental Management Measures (REMMs) listed in the Sydney Metro West – Submissions Report, dated August 2022 and all applicable legislation as they relate to the Project. This WRS has also been developed to meet the requirements of the Sydney Metro Construction Environmental Management Framework (CEMF).

Section 2 describes the overview of the structure and content of this strategy, including the high level narrative of the purpose, scope, targets, and requirements of the Water Reuse Strategy.

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2 PURPOSE AND SCOPE

2.1 Purpose

The WRS outlines the water reuse management approach that will be utilised by Gamuda and subcontractors during construction of the Project. The strategy forms an integral part of the Project SMP. It applies to all works associated with the Project and establishes the environmental management controls relating to water reuse to be implemented by Gamuda and subcontractors.

The WRS will address the water reuse requirements of the:

- NSW Minister for Planning's Conditions of Approval (CoA)
- Sydney Metro Construction Environmental Management Framework (CEMF)
- Revised Environmental Management Measures (REMMs)
- SPW Station Delivery Deed including the sustainability requirements of the General Specification and Particular Specification
- Green Star Building Council (GBCA) Green Star Building Rating Tool (v1C) requirements
- Sustainability Management Plan
- Soil and Water Management Plan

2.2 Scope

The WRS outlines the measures Gamuda will use to address water usage and reuse of collected stormwater during the construction and operation of the Project, while complying with relevant approvals, statutory and contract requirements

2.3 Objectives and Targets

The key objectives of this Strategy are to ensure that reuse of collected stormwater is optimised, potable water use is minimised, and other non-potable alternatives are utilised whenever possible, in accordance with the principles and policies of Sydney Metro Sustainability Framework and Sydney Metro West Sustainability Plan.

- This includes the following:Integrate current best-practice water-efficient features, equipment and appliances at stations, stabling facility, and construction sites
- Avoid use of potable water for non-potable purposes where non-potable water is available
- Set and implement targets for the use of non-potable water in concrete
- Undertake a water balance study to inform feasibility for reuse initiatives
- Identify and implement opportunities for treatment and reuse on the project, including water from tunnelling works, concrete batching and casting facilities
- Connect to district recycled water networks where feasible and provision for future district recycled water networks where appropriate
- Harvest and reuse rainwater at permanent and temporary facilities, including provision of an appropriately sized rainwater tank at each station and stabling facility

This is to support the project's Sustainability Management Plan targets of:

- Reduce potable water use by at least 10 per cent compared to business as usual, and monitor consumption throughout construction and operations
- Demonstrate a minimum 33 per cent of water used in construction is from non-potable sources and maximise non-potable water use in operations

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- Reuse at least 80 per cent of concrete production operation water in concrete production at on-site and off-site batching plants

2.4 Project Requirements

This section describes the project requirements relevant to the Water Reuse Strategy, including referencing to how the document addresses the requirements from the Minister's Conditions of Approval, Contract Specifications, Construction Environmental Management Framework, Green Star Building v1c Rating Requirements, and other project objective and requirements..

2.4.1 Minister's Conditions of Approval

The relevant condition and how it has been addressed in this Strategy, is outlined in Table 1.

Table 1: Minister's Conditions of Approval relevant to Water Reuse

Conditions	Description	Document Reference
E102	A Water Reuse Strategy must be prepared, which sets out options for the reuse of collected stormwater. The Water Reuse Strategy must include, but not be limited to:	This document
	(a) evaluation of reuse options;	Section 3.4
	(b) details of the preferred reuse option(s), including volumes of water to be reused, proposed reuse locations and/or activities, proposed treatment (if required), and any additional licences or approvals that may be required;	Section 3.2 Section 3.3
	(c) measures to avoid misuse of recycled water as potable water;	Section 3.7.1
	(d) consideration of the public health risks from water recycling; and	Section 3.4.1.2
	(e) time frame for the implementation of the preferred reuse option(s).	Section 3.3
	The Water Reuse Strategy must be prepared based on best practice and advice sought from relevant agencies, as required. The Strategy must be applied during construction.	Section 3.4.1
	Justification must be provided to the Planning Secretary if it is concluded that no reuse options prevail.	Section 3.4
	A copy of the Water Reuse Strategy must be made publicly available.	Section 6.2
	Nothing in this condition prevents the Proponent from preparing separate Water Reuse Strategies for the construction of the CSSI.	Noted

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2.4.2 Specification Requirements

This Strategy has also been prepared to address the contractual requirements outlined in the Project General Specification (GS) and Particular Specification (PS). The requirements and where they are addressed is outlined in Table 2 below.

Table 2: Project contractual requirements

Conditions	Description	Project Phase	Document Reference
PS 1.4.11.4.1 (a)	The Station Contractor must undertake and submit a water balance study for Review (that identifies the sources, uses and estimated quantities of potable and non-potable water which will be either created or used in the performance of the Station Contractor's Activities):	Construction	Attachment A
PS 1.4.11.4.1 (a)(i)	at Design Stage 2;	Construction	Attachment A
PS 1.4.11.4.1 (a)(ii)	prior to the commencement of construction of the Station Project Works and Temporary Works; and	Construction	Attachment A
PS 1.4.11.4.1 (a)(iii)	following any change to the proposed water reuse methodology.	Construction	Attachment A
PS 1.4.11.4.1 (b)	The Station Contractor must implement initiatives to reduce water demand and to use non-potable water in-lieu of potable water to achieve a minimum of:	Construction and Operation	Section 3.7.1 and 4.2
PS 1.4.11.4.1 (b)(i)	a 15% reduction in potable water use compared to a reference building in accordance with the Green Star design guidelines, where the Station Project Works are without connection to a recycled water network; and	Operation	Section 3.5
PS 1.4.11.4.1 (b)(ii)	a 45% reduction in potable water use compared to a reference building in accordance with the Green Star design guidelines, where the Station Project Works include connection to a recycled water network.	Operation	Section 4.1.2.1
PS 1.4.11.4.1 (c)	The Station Contractor must use the Green Star Buildings Rating Tool water use calculator for the Station Project Works to demonstrate a minimum predicted operational potable water demand reduction below a reference of:	Operation	Section 4.1.2.1
PS 1.4.11.4.1 (c)(i)	20% for water cooled Stations and buildings.	Operation	Section 4.1.2.1
PS 1.4.11.4.1 (d)	The Station Contractor must provide a rainwater service for the Station that includes a rainwater tank with the capacity defined in Station Particular Specification 20, that is:	Operation	Section 4.1.2.1
PS 1.4.11.4.1 (d)(i)	if the Station Contractor provides cooling towers, sized to provide 100% of cooling tower make up water; or	Operation	Section 4.1.2.1

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Conditions	Description	Project Phase	Document Reference
PS 1.4.11.4.1 (d)(ii)	if cooling towers are not provided, sized to provide a rationalised tank size projected to meet the requirement set out in section 1.4.11.4.1(d)(i) of this Station Particular Specification 01 above.	Operation	Section 4.1.2.1
PS 1.4.11.4.1 (e)	The Station Contractor must minimise water demand including total water consumption and potable water consumption during the design and construction phases by:	Construction and Operation	Attachment A
PS 1.4.11.4.1 (e)(i)	using water efficient controls, fixtures, and fittings as per the Water Efficiency Labelling and Standards (WELS) rating under Green Star; and	Operation	Section 3.7
PS 1.4.11.4.1 (e)(ii)	harvesting rainwater wherever available.	Construction and Operation	Section 3.2.3 and 4.1.2.1
PS 1.4.11.4.1 (f)	The Station Contractor must not use potable water as a substitute for non-potable water where on-site or local sources of non-potable water that are suitable and available for the Station Contractor's Activities.	Construction	Section 3.2
PS 1.4.11.4.1 (g)	The Station Contractor must use best endeavours to ensure that 80% of offsite and onsite batching plant concrete production operation water is recycled and incorporated into concrete production, provided it meets the relevant requirements in applicable legislation, Codes and Standards and the concrete water requirements in accordance with the requirements of Station Particular Specification 03.	Construction	Section 3.7
PS 1.4.11.4.1 (h)	The Station Contractor must ensure that all construction equipment requiring water is selected taking into account the water efficiency of the equipment and associated construction methodology.	Construction	Section 3.1.1
PS 1.4.11.4.1 (i)	The Station Contractor must ensure that water efficient construction methods are described in all construction method statements.	Construction	Section 3.7
PS 1.4.11.4.1 (j)	The Station Contractor must meter the water supplied for the Station Contractor's Activities from both recycled water networks and potable sources in order to report against the targets set out in the Sydney Metro West Sustainability Plan.	Construction	Section 3.6
PS 1.4.11.4.1 (k)	The Station Contractor must deliver the Station Project Works to source 100% of non-potable water from non-potable sources where access to recycled water mains is available.	Construction	Section 3.7
PS 1.4.11.4.1 (l)	The Station Contractor must deliver the Station Project Works to reduce potable water consumption by 10% against a reference baseline.	Operation	Section 4.1.2.1

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Conditions	Description	Project Phase	Document Reference
PS 1.4.11.4.1 (m)	The Station Contractor must demonstrate a minimum 33% of water used during construction is from non-potable sources.	Construction	Section 3.5
PS 1.4.11.4.1 (n)	The Station Contractor must reduce potable water consumption by a minimum of 10% during construction against a reference baseline.	Construction	Attachment A
PS 1.4.11.4.1 (o)	Metering and sub-metering at the Station buildings must meet the minimum expectation criteria under the Green Star Buildings verification and handover credit.	Operation	Section 4.3
PS 20.5.1.4.2 (c)	At The Bays Station, the Station Contractor must provide a rainwater tank with a minimum capacity of 40 kL	Operation	Section 4.1.2.1
PS 20.6.1.4.2 (c)	At Five Dock Station, the Station Contractor must provide a rainwater service for the station that includes a rainwater tank with a minimum capacity of 20 kL	Operation	Section 4.1.2.1
PS 20.7.1.4.2 (c)	At Burwood North Station, the Station Contractor must provide a rainwater service for the station that includes at least a 15 kL rainwater tank	Operation	Section 4.1.2.1
PS 20.8.1.4.2 (c)	At North Strathfield Station, the Station Contractor must provide rainwater storage with a minimum capacity of 20 kL	Operation	Section 4.1.2.1
PS 20.12.1.4.2 (c)	At Westmead Station, the Station Contractor must provide a rainwater tank with a minimum capacity of 10 kL	Operation	Section 4.1.2.1

2.4.3 Construction Environmental Management Framework Requirements

Table 3 summarises the requirements of the CEMF relevant to water reuse.

Table 3: Requirements of the CEMF relevant to Water Reuse

Conditions	Description	Project Phase	Document Reference
11.1 (a)	The following soil and water management objectives will apply to construction:	Construction	Soil and Water Management Plan (SWMP)
11.1 (a)(ii)	Minimise leaks and spills from construction activities;	Construction	SWMP
11.1 (a)(iv)	Source construction water from non-potable sources, where feasible and reasonable.	Construction	Section 3.2

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Conditions	Description	Project Phase	Document Reference
11.2 (g)	The following water resources management objectives will apply to the construction of the project:	Construction	Section 3
11.2 (g)(i)	Minimise demand for, and use of potable water;	Construction	Section 3.1
11.2 (g)(ii)	Maximise opportunities for water re-use from captured stormwater, wastewater and groundwater;	Construction	Section 3.4
11.2 (g)(iii)	Examples of measures to minimise potable water consumption include: • Water efficient controls, fixtures and fittings in temporary facilities; • Collecting, treating and reusing water generated in tunnelling operations, concrete batching and casting facility processes; • Using recycled water or treated water from onsite sources in the formulation of concrete; • Harvesting and reusing rainwater from roofs of temporary facilities; • Using water from recycled water networks; • Collecting, treating and reusing groundwater and stormwater; • Using water efficient construction methods and equipment; and • Providing designated sealed areas for equipment wash down.	Construction	Section 3.7.1

2.4.4 Green Star Building (v1C) Rating Requirements

Gamuda's approach to managing water use in accordance with the Project Environment and Sustainability requirements in delivery of the Project also includes the Green Star Building (v1C) rating tool requirements. Gamuda's targets and measurement tools are detailed in Table 4.

Table 4: Green Star Building (v1C) Rating Tool targets applicable to water usage

Objective	Targets	Measurement Tools
Building has low water use Meet Green Star Building (v1C) rating tool requirements and objectives and applicable to water usage detailed in the Sustainability Management Plan	• Minimum expectation: The building installs efficient water fixtures, or the building uses 15% less potable water compared to a reference building	The Water Use calculator must be used alongside the Water Use calculation guide.
	• Credit achievement: The building uses 45% less potable water compared to a reference building and the building has infrastructure for recycled water connection	The Water Use calculator must be used alongside the Water Use calculation guide.

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2.4.5 Project Objectives and Requirements

The following water management objectives and requirements, shown in Table 5, have been established through the project deed, in particular the Project GS and PS. The tool to measure performance and the forecasted progress against the requirement is also included in Table 5 below.

Table 5: Water use targets and performance criteria

Objective	Phase	Requirement	Measurement Tool	Forecasted Outcome
Manage water wisely and maximise reuse	Operation	At least 15% reduction in potable water use, based on an approved baseline from Green Star design guidelines, where the Station Project Works are without connection to a recycled water network	Measurement of water use against base case	15%
	Operation	At least 45% reduction in potable water use, based on an approved baseline from Green Star design guidelines, where the Station Project Works include connection to a recycled water network	Measurement of water use against base case	45%
	Operation	At least 20% operational potable water reduction for water cooled Stations and buildings	Measurement of water use using the Green Star Building Rating Tool Water Use Calculator	20%
	Construction	Reuse 80% of concrete production water at onsite and offsite batching plants.	Measurement of water reuse at the concrete batch plant, calculated as a proportion of total water use	Captured water will be treated for reuse in the operation of the concrete batching plant and/or precast operations.
	Construction	Source 100% of non-potable water from non-potable sources where access to recycled water mains is available during construction	Measurement of water reuse	100%
	Construction	Reduce at least 10% of potable water consumption against a reference baseline	Measurement of water reuse	10%
	Construction	A minimum 33% of water used during construction is from non-potable sources	Measurement of water reuse	33%
	Construction	Reduce potable water consumption by a minimum of 10% during construction against a reference baseline	Measurement of water reuse	10%

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Objective	Phase	Requirement	Measurement Tool	Forecasted Outcome
	Construction	A maximum of 36,000 kilolitres of water from the potable water main will be used in the Station Contractor's Activities	Measurement of water use	36,000kL
	Construction	A minimum of 11,500 kilolitres of water from sources other than the potable water main will be used in the Station Contractor's Activities	Measurement of water use	11,500kL
	Operation	At The Bays Station, the Station Contractor must provide a rainwater tank with a minimum capacity of 40 kL	As-Built Design Drawing	40 kL
	Operation	At Five Dock Station, the Station Contractor must provide a rainwater service for the station that includes a rainwater tank with a minimum capacity of 20 kL	As-Built Design Drawing	20 kL
	Operation	At Burwood North Station, the Station Contractor must provide a rainwater service for the station that includes at least a 15 kL rainwater tank	As-Built Design Drawing	15 kL
	Operation	At North Strathfield Station, the Station Contractor must provide rainwater storage with a minimum capacity of 20 kL	As-Built Design Drawing	20 kL
	Operation	At Westmead Station, the Station Contractor must provide a rainwater tank with a minimum capacity of 10 kL	As-Built Design Drawing	10 kL

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3 CONSTRUCTION

3.1 Water Demand Sources

3.1.1 Construction Water Use

Table 6 identifies potential construction water uses and assesses the feasibility of substituting potable water with recycled sources. This table has been completed based on past project experiences, best practice measures, and our latest delivery methodology, with assumptions that stormwater is adequately managed to ensure usable quality, and that the water treatment plant operates at it's expected performance.

Table 6: Construction Water Uses and Potential Water Reuse

Water Uses	Method of Collection	Non-potable Water can be Used	Water can be captured for reuse
Site Facilities			
Potable Water (Drinking)			
Shower (Laundry services)			
Sinks (Handwashing water)			
Toilets (Flushing)	Rainwater Harvesting	Yes	
Wash Basins	Rainwater Harvesting	Yes	
Washdown	Runoff and Rainwater Harvesting	Yes	Yes
Dishwasher			
Construction			
Earthworks		Yes	
Piling		Yes	
Trenching	Runoff	Yes	Yes
Dust Suppression	Runoff	Yes	Yes
Establishment of landscaping		Yes	
Excavation	Runoff	Yes	Yes

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Water Uses	Method of Collection	Non-potable Water can be Used	Water can be captured for reuse
Masonry Works		Yes	
Concrete Works		Yes	
Concrete Curing		Yes	
Concrete Truck Washout	Captured through washout system and recycled	Yes	Yes
Compaction of Fill Material		Yes	
Cleaning/Washdown	Runoff and Rainwater Harvesting	Yes	Yes
Fitout Water Use			
Vehicles			
Street Sweepers		Yes	
Water Cart	Runoff	Yes	Yes
Wheel Wash	Captured through wheel wash and recycled	Yes	Yes

3.2 Water Supply Sources

The project will utilise water from a variety of sources depending on the requirements of use and site location.

To facilitate the capture, treatment, reuse, and disposal of water across the SPW sites in accordance with Condition E102(b), the following licences and approvals will be obtained and maintained as required:

- **Environment Protection Licence (EPL):** An EPL (whether new, amended, or transitioned from the previous Eastern Tunnelling Package) from the NSW EPA to legally operate active water treatment infrastructure and licensed environmental discharge points at the central hub (e.g., Discharge Point 6 at The Bays).
- **Trade Waste Agreements:** Formal Trade Waste Agreements obtained from Sydney Water for any instances where treated wastewater (polished by onsite package plants) or other liquid water sources are discharged to the local sewer network.
- **Interface Agreements:** Formal Project Collaboration Agreements or Interface Deeds with adjacent contractors (e.g., the Linewide Contractor) authorising the transfer and treatment of SPW water through their facilities.

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3.2.1 Potable Water (mains)

Potable water will be provided to the Project from the Sydney Water supply network. This supply is metered and is the cleanest and safest water to use from a human health perspective. Drinking and handwashing water will always be supplied by potable water. Where the use of recycled water sources is not reasonable and feasible, such as laundry services onsite, then potable water will also be used.

3.2.2 Surface Water and Groundwater Capture

Construction or utilisation of sumps and on-site water treatment plants will facilitate the capture and reuse of surface and groundwater. This will primarily accumulate runoff from rainfall but also from water uses contributing to runoff like dust suppression and washdown and from groundwater flow inflow within tunnels and station boxes. The captured water will be used as non-potable water supply for uses.

Stormwater management system will primarily accumulate runoff from rainfall but also from water uses contributing to runoff like dust suppression and washdown and from groundwater inflow within tunnels and station boxes. Reuse of captured surface and groundwater is prioritised where water quality permits. The captured water will be used as non-potable water supply for uses identified in Table 6. For captured water not suitable for reuse onsite, it will then be processed through a water treatment plant to meet the NSW EPA endorsed site specific discharge criteria. Details of groundwater reuse for each station will be provided. Estimated quantities of water available for capture through site drainage are shown below in Table 7.

The estimation will be updated when preliminary site plans are available and will be updated as these plans are progressed. Catchment size has been estimated based on available site drainage information. An average volumetric runoff coefficient of 0.9 has been assumed. Volumes shown are indicative of the total available volume of runoff and groundwater over the life of the project. Stormwater management and control measures will mean this is not all utilised. Data has been sourced from annual rainfall data by Bureau of Meteorology, as well as the Environmental Impact Statement associated with this project.

Table 7: Estimated Runoff and Groundwater Quantities Available for Capture

Site	Annual Rainfall (mm)	Catchment Area (m^2)	Volume Available Over Site Life (m^3)	Volume of Groundwater Expected (m^3/day)
The Bays	1638.8	5657	33374.49	~44m3/day
Five Dock	1472.1	2402.34	12731.34	Negligible
Westmead	941	3605	12212.30	<14m3/day
North Strathfield	1341.1	4368	21088.53	~35m3/day
Burwood North	1341.1	5508.73	26595.93	~18m3/day

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3.2.3 Rainwater Harvesting

3.2.4 Rainwater will be harvested at all sites where spatial limitations allow.
Other Water Sources

Where Sydney Water recycled water network connections are available, these will be considered depending on water quality.

Alternative water sources such as blackwater (wastewater from toilet systems), greywater (wastewater from basins and sinks), and sewage are known to contain high microbial quality. As a result, these sources are not considered feasible for reuse.

3.3 Implementation of the Preferred Reuse Options

Implementation of water reuse measures will occur at different times over the mobilisation and construction phases at each site. Table 8 shows an indicative timing of implementation of each option, it will be updated when preliminary site plans are available. The on-site and off-site concrete batching line item will be updated once more information is available from our selected concrete supplier.

Table 8: Indicative Implementation Timeline for Water Reuse Options

Indicative Construction Sequence	Delivery Timeline	Water Reuse Measure and Implementation Stage
Site Establishment and Site Accommodation	June 2026	• Temporary rainwater tanks • High efficiency wheel wash
Temporary Scaffolding, Access and Drainage	June 2026	• Temporary rainwater tanks • Water treatment plants
On-site and off-site concrete batching	August 2026	• Rainwater harvesting • Water treatment plants
Piling and Civil Site Works	August 2026	• Temporary rainwater tanks • Water treatment plants
Waterproofing and Slab and Perimeter Walls	Sept 2026	• Temporary rainwater tanks • Water treatment plants
Structural Concrete Works inc. Slab on ground, walls, columns, precast elements and suspended slabs	Oct 2026	• Temporary rainwater tanks • Water treatment plants
Steel Structure	Feb 2027	• Temporary rainwater tanks • Water treatment plants

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Indicative Construction Sequence	Delivery Timeline	Water Reuse Measure and Implementation Stage
Services (MEPF), Room Finishes	May 2027	• Temporary rainwater tanks • Water treatment plants
Cladding, Fitout and Architecture Finishes and Façade	June 2027	• Temporary rainwater tanks • Water treatment plants
Furniture, Fixtures, and Equipment	July 2027	• Temporary rainwater tanks • Water treatment plants

Where captured water (such as groundwater ingress or surface stormwater) is not immediately suitable for direct onsite reuse (e.g., for dust suppression or wheel washing), it will undergo necessary physical and chemical treatment. To minimise potable water use and manage accumulated water across the SPW sites, Gamuda will implement the following hierarchy for water treatment and reuse:

1. **Primary Option - Onsite Treatment and Reuse (Package Plants)**: At satellite station sites (Five Dock, North Strathfield, Burwood North, and Westmead), small package treatment plants may be established. These plants will not have environmental discharge points. Instead, they will treat and polish captured water exclusively to facilitate onsite construction reuse, or to meet the required water quality parameters for lawful discharge to the local sewer network under a Trade Waste Agreement.
2. **Secondary Option - Transfer to The Bays WaTP or Trade Waste**: Where onsite reuse is exhausted or package plants are not viable, captured water will either be discharged directly to the sewer via a Sydney Water Trade Waste Agreement, or transferred via tanker to The Bays construction Water Treatment Plant (WaTP). The Bays WaTP functions as the central treatment hub for the SPW package, utilising clarifiers, chemical dosing, and filtration to treat water for reuse or lawful environmental discharge.
3. **Tertiary Option - Linewide Interface**: As a final option, captured water may be treated or transferred through an established, lawful Interface Agreement with the Linewide Contractor to utilise their active WaTP infrastructure.

3.4 Evaluation of Water Reuse Options

Gamuda are committed to best practice water management on the Project. The use of recycled water will be prioritised over the use of potable water on all sites where suitable quality, volume, and flow is available. The supply of recycled water will be dependent on rainfall, groundwater inflow, construction activities, and storage capacity at each site.

3.4.1 Considerations for Water Reuse

The following water reuse considerations are based on best practice and advice has been sought from relevant agencies websites, as required.

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Gamuda defines best practice for this site through an internal multidisciplinary review of past project experience, adopting the following sequential hierarchy:

Avoid & Reduce: Minimizing water use through efficient construction methods (e.g., controlled dust suppression misting rather than high-volume spraying), diverting stormwater away from construction sites

Capture & Treat: Intercepting groundwater inflows and sediment-laden surface runoff, routing them to a dedicated on-site Water Treatment Plant (WTP).

On-Site Reuse: Utilizing treated water for all viable non-potable construction activities.

Off-Site Reuse/Discharge: Investigate sharing surplus treated water with Linewide contractor, or discharging to stormwater only as a last resort when storage capacity is exceeded.

This includes timely review of the effectiveness against our targets, and subsequent updates as per Section 6.1.

3.4.1.1 Water Restrictions

The current status of water restrictions across New South Wales is displayed in the Bureau of Meteorology's Water Restrictions website, and for metropolitan Sydney:

Water Restrictions: Water Information: Bureau of Meteorology

According to the Sydney Water Corporation *Water Wise Guidelines* it is currently permissible for building and construction sites to use non-potable water to:

- clean hard surfaces like paths, driveways, concrete or other paved areas for health, safety, emergency, or surface contamination reasons and for construction activities using a handheld hose fitted with an instant on-off mechanism, such as a trigger nozzle, or high-pressure water cleaning equipment
- for dust suppression if there is no alternative water source (such as recycled water) reasonably available
- safely operate cutting, drilling and tunnelling equipment, or for pipe jetting.

3.4.1.2 Public Health

According to NSW Health, all forms of household wastewater may pose a risk to human health and the environment:

https://www.health.nsw.gov.au/environment/water/Pages/wastewater.aspx

Because of the risk associated with these household types of wastewaters, these streams will not be reused on the Project.

3.4.1.3 Emergency Response Systems

To ensure the protection of human health, some emergency response systems, such as fire sprinkler systems and personal protection equipment (e.g. eye baths), are subject to specifications and standards (e.g., AS 2118.1:2017). Generally, these systems require potable water inputs to ensure there are no potential issues such as corrosion of lines, etc.

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3.5 Non-potable and Potable Water Consumption

Based on interim design and delivery methodology, a base case was estimated based on site boundaries, full operational months, the list of activities that demands water, matched with the supply of potable and non-potable water per month based on assumed inflows.

A detailed forecast of potable and non-potable water consumption across the Project will be provided after the finalisation of Design Stage 2 to determine the total projected water reuse quantities. The projected reduction in water use across the Project will be provided. Table 9 below estimates potable and non-potable water use based on project sites, noting that the aim is to meet the 33% water reuse requirement.

Further detail on water consumption per site, broken down into specific construction activities, and initiatives which have been implemented to reduce total water consumption, will be provided when Water Balance Study is updated upon completion of Design Stage 2 and Design Stage 3. The Water Reuse Strategy will be updated alongside the Water Balance Study, which is found in Attachment A.

Table 9: Non-potable and potable water use per site

Site/Location	Total Water Demand (kL)	Potable Water Use (kL)	Non-potable Water Use (kL)	Percentage of Non-potable Replacement
Project Office	3,146.67	2,674.77	471.90	14%
Westmead	5,451.51	4,941.09	510.40	9.36%
Five Dock	4,902.08	4,386.10	516.00	10.53%
Burwood North	4,493.91	3,979.81	514.10	11.44%
North Strathfield	4,902.08	4,386.10	516.00	10.53%
The Bays	4,760.83	3,057.38	1,703.40	35.78%
Eastern Creek Precast Yard	8,263.99	343.99	7,920.00	95.84%
Total	**35921.07**	**23,769.24**	**12,151.8**	**33.82%**

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3.6 Metering and Monitoring

To measure consumption and ensure compliance, metering, flow gauges or another form of direct monitoring of water will occur at the following locations:

- Main water connection
- Recycled water network connection as applicable
- Rainwater harvesting tanks
- All significant quantities of water entering site via road
- Water treatment plant discharge in accordance with the SWMP

Table 10 indicates potential water meter locations at each station to measure reuse:

Table 10: Potential water meter locations

Site/Scope	Potential Metering Locations
The Bays	• Mains supply • Water Treatment Plant Pumps
Burwood North	• Mains supply • Sump Pumps
North Strathfield	• Mains supply • Sump Pumps
Westmead	• Mains supply • Sump Pumps
Five Dock	• Mains supply • Sump Pumps

Water usage rates may also be derived from invoicing, permits or other administrative paperwork where direct measurements are not recorded.

Water usage will be reported as part of monthly reporting requirements and will include:

- Volume of potable and non-potable water consumed and harvested
- Sources of potable and non-potable water
- Performance against water consumption reduction and water consumption and harvesting targets
- Evaluation and Improvement

Gamuda will avoid the misuse of recycled water on site through taking the following actions:

- The water pipes will be marked to visually indicate the water type contained in each pipe
- Toolbox awareness training to inform water crews of the water reuse system
- Smart metering will be installed on critical junctions, and data will help determine flow rate trends, and determine water recycle rates. If unexpected trends occur, these will be investigated

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3.7 Mitigation Measures

3.7.1 Water Use Minimisation

Gamuda will reduce the amount of water required for construction works wherever possible to ensure sustainable water management. This will be achieved through implementing a range of initiatives throughout design and construction with the aim to reduce overall water use, including:

- Project office having at least a 4.5 Star NABERS Water rating
- Optimised design or scope to reduce water requirements during construction
- Reducing use of water consuming materials, primarily concrete
- Utilising polymer for dust suppression to minimise water required to spray down stockpiles and dusty areas
- Utilising DGB/gravel on temporary pavements to minimise dust suppression requirements
- Installation of high-water efficient fittings on site such as taps, toilets, showers, and appliances:
    - Taps with 5- or 6-star WELS rating
    - Urinals with 5- or 6-star WELS rating
    - Toilets with minimum 4-star WELS rating
    - Showers with 3- or 4-star WELS rating
    - Dishwashers with 5- or 6-star WELS rating
- Utilising dry vacuum trucks as opposed to wet
- Pre-start meetings and toolbox talks to cover water efficiency protocols including minimisation and timely reporting of leaks and spills
- Signage to reinforce point-of-use actions
- Use of a curing compound to reduce wet curing time of concrete
- High efficiency wheel washes which utilise recycled water
- Schedule water-consuming activities during cooler periods of the day where possible
- Reduction in required dust suppression through reduced vehicle speeds and application of temporary ground covers

4 OPERATION

Use best endeavours to ensure that 80% of offsite and onsite batching plant concrete production operation water is recycled and incorporated into concrete production, provided it meets the relevant requirements in applicable legislation, Codes and Standards and project requirements.

4.1 Water Supply to Stations

4.1.1 Potable Water

4.1.1.1 Cold Water

Domestic cold water (DCW) to the station will be taken from the potable water utility stub. Utility potable water will be supplied to the stations and SMF from the Sydney water network. Water mains will be brought to the station boundary as part of the utility design scope of works. The hydraulic design will extend the potable water into the station as a metered domestic cold-water service to meet the requirements of the NCC Volume 3 – Plumbing Code of Australia and the PS.

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4.1.1.2 Hot Water

The station's domestic hot water requirements will be provided by local electric hot water units located adjacent to the point of use. Two types of hot water units (storage or instantaneous types) are provided depending on the demand and space availability. Kitchenettes in staff areas will be provided with 4 in 1 combined water chilled and boiling water units.

Domestic hot water will be provided to the following areas:

- Public Basins in disabled amenities
- Staff bathrooms
- Sinks

4.1.2 Non-potable Water and Reuse Options

All stations and the SMF will be fitted with a reticulated, non-potable cold water (NPCW) system in accordance with NCC Volume 3 – Plumbing Code of Australia and the PS. This will serve all fixtures that are able to accept non potable water. The NPCW supply for the station amenities, cooling towers and plant will be fed from the tank via packaged booster pump set reticulating through a treatment train and into a ring main.

4.1.2.1 Rainwater Harvesting

Rainwater will be harvested from the roofs of each station and will be directed to rainwater storage tanks. As per PS20 requirements, each station will provide a minimum capacity of a rainwater tank:

- The Bays: 40kL
- Five Dock: 20kL
- Burwood North: 15kL
- North Strathfield: 20kL
- Westmead: 10kL

When the rainwater tank is full, it will overflow to the external stormwater system. Harvested roof area will be maximised with the few areas not able to be harvested discharging directly to the civil network. Water from the harvested rainwater tanks will be reticulated through the stations. Rainwater tanks will be operational from date of commission. Table 11 shows the interim operational water uses and reduction.

Rainwater volume availability are estimates sourced from the Green Star Design & As Built Potable Water Calculator Release 13, which is informed by the 10 year average rainfall data from the Bureau of Meteorology for the location (Postcode) of each station, interim design roofspaces, and available rainwater tank capacity.

Table 11: Interim operational water use reduction calculations

	The Bays	Five Dock	Burwood North	North Strathfield	Westmead
Reference Building Demand (kL)	6,852	8,813	8,846	9,766	8,548

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	The Bays	Five Dock	Burwood North	North Strathfield	Westmead
Total Proposed Water (kL)	4,869	6,234	6,141	6,830	6,071
Rainwater (kL)	852	817	1,032	817	752
Potable Water (kL)	4,017	5,417	5,109	6,013	5,319
Reduction in Potable Water	41.4%	37.9%	42.2%	38.4%	37.8%

4.1.2.2 Recycled Water Utilities

In addition to rainwater harvesting, NPCW will also be sourced from the Sydney water recycled water network where available. This is dependant on both the date of completion of Sydney Water infrastructure and the availability of recycled water within the network. Both these factors may limit availability at the beginning of operation. At this stage recycled water utilities will not be available at any of the stations. In the event that Sydney Water Recycled Water Network is made available, Gamuda will source 100% of residual non-potable water demand from these networks. Residual non-potable water demand is non-potable water demand reduced by on-site collected water.

4.2 Water Use Minimisation

The following measures are being considered in the hydraulic design for stations:

- Water efficient cooling towers (with high cycles of concentration)
- Water efficient fixtures and fittings will be selected and specified in accordance with Green Star Buildings Credit 25 Water Use requirements
- Rainwater harvesting tanks for water reuse in toilet flushing and fire testing
- Where there will be landscape, native vegetation and drought tolerant plants will be selected to reduce irrigation water demand
- On the fire services, fire pump test water will be recollected back into fire system tanks instead of discharging into stormwater system

4.3 Metering and Monitoring

Domestic Cold Water and Non-Potable Cold Water supplied to mechanical services equipment and other high water uses will be individually metered via water sub meters and monitored by Building Management and Control System in accordance with the Green Star requirements and requirements of the PS and GS.

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5 COMPLIANCE MANAGEMENT

5.1 Roles and Responsibilities

The Gamuda Project teams' organisational structure and overall roles and responsibilities are outlined in the SMP. Key roles with regards to the management of water use are identified in Table 12.

Table 12: Roles and responsibilities relevant to water use

Roles	Authority and Responsibilities
Environment and Sustainability Manager	• Develop and implement this Strategy • Oversee water usage monitoring • Oversee compliance tracking and reporting • Oversee maintenance of all water usage records • Engage suitably qualified consultants to support implementation, as required • In consultation with the Construction Manager, drive the sustainability agenda, and oversee the investigation and reporting of incidents arising from water usage
Sustainability Manager/Sustainability Advisors	• Complete inspections and monitoring • Complete reporting and associated data collection • Respond to water use incidents and non-conformances • Review and improve water use practices • Educate the project team about resource scarcity and why it is relevant on the Project
Project Manager/s	• Ensure resources and directions are provided to workforce to implement water reuse options and measures described in this strategy
Supervisor/s	• Ensure teams are aware of the water network available on site (i.e., potable, and non-potable) and the safe and suitable uses of each water source.
Plant Manager/s	• Design/Implement a Project wide reuse water network • Ensure that water connections are labelled, and any recycled lines are clearly identified (e.g., different coloured pipes). • Ensure that water recycling is undertaken safely, and the appropriate metering is in place.
All personnel	• Notify Site Supervisor of any observations of water leakages, irregularities of water treatment plants including physical deformities, irregular odour, or visual difference in water quality of used water. • Identify further opportunities for water reuse.

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5.2 Reporting Requirements

To ensure compliance with this Strategy and the Project sustainability commitments, Gamuda will prepare monthly sustainability data reports and quarterly sustainability performance reports which will both include the total potable and non-potable water consumed during the period.

Throughout construction, water consumption and reuse will be reviewed as part of quarterly internal sustainability audits. Annual external sustainability audits will also be conducted and will include review of water reuse performance against targets. Relevant targets include:

- Deliver the Station Project Works to reduce potable water consumption by 10% against a reference baseline
- Demonstrate a minimum 33% of water used during construction is from non-potable sources.
- The Station Contractor must reduce potable water consumption by a minimum of 10% during construction against a reference baseline.

Data collected will form evidence for the Project GS and PS, and Green Star Building (v1C) rating requirements.

For further information, please refer to the Sustainability Management Plan's Reporting section.

6 REVIEW AND IMPROVEMENT

Continuous improvement of water recycling will be undertaken by the ongoing review and evaluation of water reuse performance against the Project sustainability targets. Continual improvement will be achieved through regular measurement, evaluation, audit, and management review.

For further information, please refer to the Sustainability Management Plan's Continuous Improvement section.

6.1 Document Update

This strategy is a dynamic document. The processes described above may result in the need to update or review the document. This will occur as needed and may only be approved by the Environment and Sustainability Manager, or delegate.

6.2 Distribution

All Gamuda personnel and contractors will have access to this Strategy via the Project document control management system.

As required by CoA D79, this Strategy will also be made publicly available.

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ATTACHMENT A – WATER BALANCE STUDY

Summary

Item	Unit	Value
Design life	years	100
Delivery period (design and construction)	months	40
Actual case		
Total water uses during delivery	kL	35,921.07
Monthly water uses during delivery	kL/month	898.03
Annual operational water use	kL/year	9,069
Base case		
Total water uses during delivery	kL	36,000
Monthly water uses during delivery	kL/month	900
Annual operational water use	kL/year	12,860
Replace Potable Water		
Total water uses over the full infrastructure lifecycle	kL	35,921.07
Total non-potable water uses over the full infrastructure lifecycle	kL	12,151.8
Percentage substitution with non-potable water	%	32.52%

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Offices

Project Offices

Project Office	Base Case	Design Case	Units
80 Pacific Highway	9506.67	3146.67	kL

Site Offices

Site Facility – End Use	Design Case	Units
Toilets	1884.17	kL
Taps	1555.83	kL
Total Site Facilities	3440	kL

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The Bays

Activity	Description	Served by non-potable water sources (Yes/No)	Total (kL)
Piling	Based on water use for drilling and dust control; aligns with EPA and state construction estimates.	No	240
Pile Breaking	Similar consumption to piling; water required for dust suppression during concrete breaking.	Yes	96
FRP	Water for formwork cleaning and curing; typical for small crew-scale use.	Yes	304
FRP - Concreter	For concrete mixing (if onsite), equipment washout, and surface curing.	No	152
Waterproofing	Low-volume use; includes surface washing and mix water.	No	177
FRP - Formworker & Steel Fixer	Minimal water needed; mostly for cleaning and minor mixing.	No	183.15
FRP - Precast Install	Assumes water used in installation cleaning and grouting.	No	175
Destressing of Anchors	Minor water use for cleaning and potential lubrication.	No	50
Earthworks	Low due to handover status; used only for trimming/backfill compaction.	Yes	228
Sweepers	Estimated based on reduced dust suppression; aligns with low-end water truck use.	Yes	416
MEPF-Electrical	Small quantity used for testing or incidental cleaning.	No	152
MEPF-Mech	Water for flushing/testing pipework or HVAC systems.	No	114
MEPF-Plumbing	Consistent with low-rate commissioning and flushing.	No	57
MEPF-fire	Used during hydrostatic testing and flushing of fire systems.	No	29

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Activity	Description	Served by non-potable water sources (Yes/No)	Total (kL)
Blockwork	Water for mortar mixing and surface curing.	No	75
Rendering	Rendering is water-intensive due to mixing and surface preparation.	No	290
Flooring	Cleaning and adhesive mixing; consistent with tiling and finish installs.	No	290
Ceiling	Minimal cleaning and adhesive mixing.	No	290
Doors/Roller	Limited to cleaning and minor installation use.	No	72.5
Glass	Mostly cleaning water during and post-install.	No	72.5
Painting	Water for surface preparation and cleaning.	No	0
Façade	Washing façade panels and minor installation needs.	No	126.25
Finishes & Facades	Low-end average of other finishes; catch-all for final touches.	No	215
Civil / Utilities	Flushing pipes, compaction, and minor trenching work.	Yes	200
Escalator (Schindler)	Minimal; water for cleanup and installation.	No	14
Lift (Schindler)	Same as above.	No	3.5
PIDS (HoneyWell)	Electronic systems; negligible water use aside from hand tools cleanup.	No	4
External Craneage Crew	Allowance for vehicle and equipment washdown.	No	37

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Burwood North

Activity	Description	Served by non-potable water sources (Yes/No)	Total (kL)
FRP	Water for formwork cleaning and curing; typical for small crew-scale use.	Yes	760
Sweepers	Estimated based on reduced dust suppression; aligns with low-end water truck use.	Yes	416
MEPF-Electrical	Small quantity used for testing or incidental cleaning.	No	154
MEPF-Mech	Water for flushing/testing pipework or HVAC systems.	No	115.5
MEPF-Plumbing	Consistent with low-rate commissioning and flushing.	No	57.75
MEPF-fire	Used during hydrostatic testing and flushing of fire systems.	No	38.5
Blockwork	Water for mortar mixing and surface curing.	No	137.5
Rendering	Rendering is water-intensive due to mixing and surface preparation.	No	275
Flooring	Cleaning and adhesive mixing; consistent with tiling and finish installs.	No	275
Ceiling	Minimal cleaning and adhesive mixing.	No	275
Doors/Roller	Limited to cleaning and minor installation use.	No	68.75
Glass	Mostly cleaning water during and post-install.	No	68.75
Painting	Water for surface preparation and cleaning.	No	550
Finishes & Facades	Low-end average of other finishes; catch-all for final touches.	No	260

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Activity	Description	Served by non-potable water sources (Yes/No)	Total (kL)
Civil / Utilities	Flushing pipes, compaction, and minor trenching work.	Yes	250
Escalator (Schindler)	Minimal; water for cleanup and installation.	No	22
Lift (Schindler)	Same as above.	No	7.5
PIDS (HoneyWell)	Electronic systems; negligible water use aside from hand tools cleanup.	No	3.2
BMCS (HoneyWell)	As above	No	3
External Craneage Crew	Allowance for vehicle and equipment washdown.	No	71

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Westmead

Activity	Description	Served by non-potable water sources (Yes/No)	Total (kL)
Sweepers	Estimated based on reduced dust suppression; aligns with low-end water truck use.	Yes	416
Rendering	Rendering is water-intensive due to mixing and surface preparation.	No	425