CONSTRUCTION TRAFFIC & TRANSPORT MANAGEMENT PLAN

Sydney Metro West – Western Tunnelling Package

Sydney Olympic Park

November 2023 to December 2024

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Rev	Date	Comments
A	12/10/2023	Initial submission
B	31/10/2023	Revised following stakeholder comments
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Document Authorisation

Action Type	Position	Name	Signature	Date Signed
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Reviewed by	Project Manager			30/05/2024
I hereby confirm this activity and all associated work, have been appropriately planned and the relevant resources are available to conduct the work in accordance with the agreed method. I hereby approve this activity to commence, as the stated controls applications are the most appropriate and are in accordance with the Risk Matrix.				
Approved by	Project Manager			30/05/2024

NOTES:

Once all signatures have been obtained, the Document Author is responsible for ensuring the signed and approved hard and soft copies are uploaded on to the project share drive or passed to the Responsible Person for filing.

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Definitions/ Abbreviations

Acronym	Definition
CPC	City of Parramatta Council
CEMP	Construction Environmental Management Plan
CJP	Customer Journey Planning (formerly TC)
CTMF	Construction Traffic Management Framework
CTMP	Construction Traffic Management Plan
DMS	Delivery Management System
DPE	Department of Planning and Environment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EPL	Environment Protection License
GLC	Gamuda and Laing O'Rourke Consortium
HVLR	Heavy Vehicle Local Road report
LTC	Local Traffic Committee (Council)
MCoA	Ministerial Conditions of Approval
NSW	New South Wales
ROL	Road Occupancy License
ROP	Road Opening Permit
SMW	Sydney Metro West
SOPA	Sydney Olympic Park Authority
SOPMS	Sydney Olympic Park Metro Station
SZA	Speed Zone Authorisation
TBM	Tunnel Boring Machine
TC	Transport Coordination (now known as CJP)
TCG	Traffic Control Group
TCP	Traffic Control Plan (now known as TGS)
TfNSW	Transport for NSW
TGS	Traffic Guidance Scheme (formerly TCP)
TMC	Transport Management Centre
TTLG	Traffic and Transport Liaison Group
REMM	Revised Environmental Management Measure

1 INTRODUCTION

Sydney Metro is Australia's biggest public transport project, with the vision "to transform Sydney with a world-class metro." In 2024, Sydney will have 31 metro stations and more than 66 kilometres of new metro rail, 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 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 and Hunter Street in the Sydney CBD.

On completion in 2030, the Sydney Metro West project 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. The Sydney Metro West project is expected to create about 10,000 direct and 70,000 indirect jobs during construction.

The new 24-kilometre Sydney Metro West tunnel and excavation works for nine new stations will be delivered in three contracts—the Western Tunnelling Package (WTP), the Central Tunnelling Package (CTP) and the Eastern Tunnelling Package (ETP).

The Gamuda Australia and Laing O'Rourke Consortium (GLC) will deliver the Sydney Metro West (SMW) Western Tunnelling Package (WTP), which includes:

- Westmead Station box excavation, including temporary support, stub tunnels, partially mined station cavern and crossover cavern including permanent lining and support
- Parramatta Station, including excavation of station box and associated support
- Clyde Maintenance and Stabling Facility (MSF), including permanent dive structure, portal, spur running tunnels, spur tunnel junction cavern, bulk earthworks, civil structures, utilities corridor, road crossing and creek diversion
- Rosehill Services Facility, including shaft excavation, permanent lining and lateral support
- A precast segment manufacturing facility at Eastern Creek
- Demolition and site clearance works

Tunnelling between Sydney Olympic Park (SOP) and Westmead. Tunnelling will be undertaken by placing the tunnel boring machines (TBMs) at the Rosehill Services Facility box and retrieved out at the SYDNEY OLYMPIC PARK Station Box and then placed back at the Rosehill Services Facility and retrieved at the Westmead Station Box. No surface works are proposed at SYDNEY OLYMPIC PARK except for the retrieval of the TBM.

1.1 Purpose

This Sydney Olympic Park site specific Construction Traffic Management Plan (CTMP or this plan) has been developed by Gamuda Laing O'Rourke (GLC) to identify the traffic management measures at the Sydney Olympic Park worksite associated with the Sydney Metro West Western Tunnelling Package (WTP Works) for the retrieval of the Tunnel Boring Machine to return it back to the Rosehill site.

This plan sets out the traffic management initiatives that will be deployed to minimise disruption and ensure the safety of the wide range of stakeholders potentially affected by the station box and tunnelling works including but not limited to motorists, pedestrians, cyclists, public transport users, local residents, property owners, business owners and workers/ staff.

GLC will be accessing the site the sameway the existing AF JV are accessing the site. The driveway off Herb Elliot Avenue will be a shared access driveway.

1.2 Sydney Olympic Park Construction Traffic Management Plans

Plan #	Plan name	Description	Status
SMWSTWTP-GLO-1NL-NL000-TF-PLN-00001	Project Wide CTMP	Overarching Traffic Management Plan	Approved
SMWSTWTP-GLO-OLP-TF-PLN-00001	Sydney Olympic Park CTMP	For works associated with the Sydney Olympic Park site and TBM delivery (identical to AF JV)	**THIS PLAN**
Plans have been prepared in accordance with SSI 10038 Planning Approval Condition D85 and will be submitted to the Planning Secretary of the NSW Department of Planning and Environment for information prior to the commencement of any construction in the area identified and managed within this CTMP			

Table 1 – Sydney Olympic Park CTMP status

1.3 Objectives

GLC are committed to striving to achieve the objectives as outlined in the CTMF and the environmental performance outcomes, namely:

a) Minimising disruption and eliminate, where possible, any safety risks to pedestrian, cyclists, motorists and public transport users and providers
b) Ensuring construction traffic access to the arterial network as soon as practicable on route to and immediately after leaving the construction site
c) Minimising change to traffic operations and kerbside access
d) Minimising construction traffic generation during network peak periods, as outlined in the EIS
e) Maintaining access to properties, businesses, and utility providers/ maintainers
f) Remain incident and injury free to workers and members of the public
g) Working collaboratively with other stakeholders and other major projects to mitigate traffic and transport impacts

2 LOCATION OF WORKS

The site is located south of the Sydney Trains Station and is bounded by Olympic Boulevard to the west, Figtree Drive to the south, Australia Avenue to the east and Herb Elliott Avenue to the north, as shown on Figure 2-1.

Figure 2-1: Site locality

2.1 Existing Road Network

2.1.1 Homebush Bay Drive

Homebush Bay Drive is a classified state arterial road which forms part of the major north-south link across Parramatta River. Homebush Bay Drive is generally configured with three traffic lanes in each direction separated by a 2.5m wide central median. Parking is not permitted along both sides of the road. The posted speed limit of Homebush Bay Drive is 80km/h.

2.1.2 Australia Avenue

Australia Avenue is a major road through the Sydney Olympic Park precinct. Australia Avenue is a two-way road with two traffic lanes in each direction. Parking is prohibited along both sides of the road. The posted speed restriction on Australia Avenue is 60km/h.

2.1.3 Herb Elliott Avenue

Herb Elliott Avenue is a SOPA road primarily serving access to commercial office buildings. Herb Elliott Avenue is a two-lane, two-way road with a road carriageway width of approximately 13m. Ticketed kerbside parking is available along both sides of the road. The posted speed restriction on Herb Elliott Avenue is 40km/h.

2.1.4 Figtree Drive

Figtree Drive is a minor road within the Sydney Olympic Park precinct serving access to existing commercial buildings and recreational facilities. Figtree Drive has a road carriageway width of approximately 7m to accommodate the eastbound and westbound travel lanes. There are some sections of indented parallel parking bays for restricted parking (2P) along both sides of the road. The posted speed restriction on Figtree Drive is 40km/h.

2.1.5 Olympic Boulevard

Olympic Boulevard is a north-south road between Kevin Coombs Avenue and Shirley Strickland Avenue. Olympic Boulevard is configured with two lanes in each direction separated by a 4m wide central median between Dawn Fraser Avenue and Shirley Strickland Avenue. From north of Dawn approximately 18m.

2.1.6 Sarah Durack Avenue

Sarah Durack Avenue is one of the main roads that bound the Sydney Olympic Park precinct. Sarah Durack Avenue is configured with two traffic lanes in each direction separated by a 4.5m wide central median in the east-west alignment. Parking is prohibited along both sides of the road. In addition, there are on-road cycle lanes along the north and south sides of the road.

3 SCOPE OF WORKS

Time: Nov 2023 to 29th October 2024

Duration: 12 months

The works will consist of the following:

Task	Proposed Dates	Refer to
Sydney Olympic Park Site setup & Operations	18th November 2023	Section 3.1.1
TBM retrieval and transportation to Rosehill	May 2024 – September 2024	Section 3.1.2

Table 2- Scope of Works

3.1 Works and Operations

The following works and arrangements for Sydney Olympic Park have been identified.

3.1.1 Sydney Olympic Park Site Setup & Operations

The Sydney Olympic Park site has been established by the Central Tunnel Package contractor and a portion of the site will be handed over to GLC. GLC will establish our site in the areas highlighted in green on the plan shown in 3.1 below. The driveway from Herb Elliott Ave will be a shared entry and exit driveway between GLC and CTP contractors. Site access and egress on Herb Elliott Ave will be as per the EIS. The gate will have 'No Entry' - 'Construction Vehicles Excepted' and the gate number signage installed.

All works external to the site will be completed under Traffic Guidance Scheme's and Road Occupancy approvals through TfNSW and SOPA.

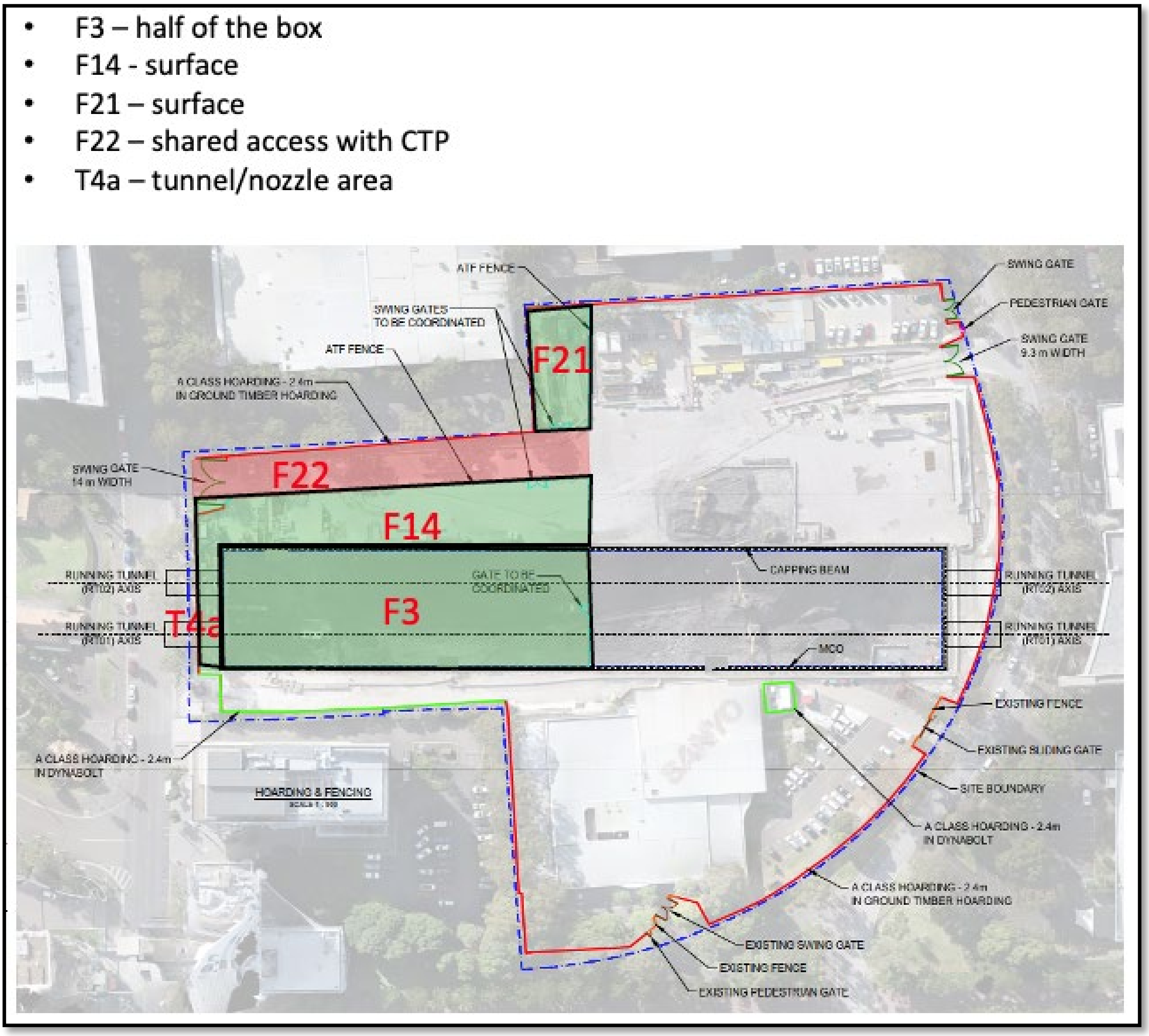


Figure 3-1: Sydney Olympic Park Site Overview

SOP site both during GLC Site Establishment and Site Operations Heavy vehicles will follow the proposed heavy vehicle route and will entry site from Herb Elliott Ave eastbound right turn and exit via left turn on to Herb Elliott Ave onto Herb Elliott Ave to Olympic Blvd.

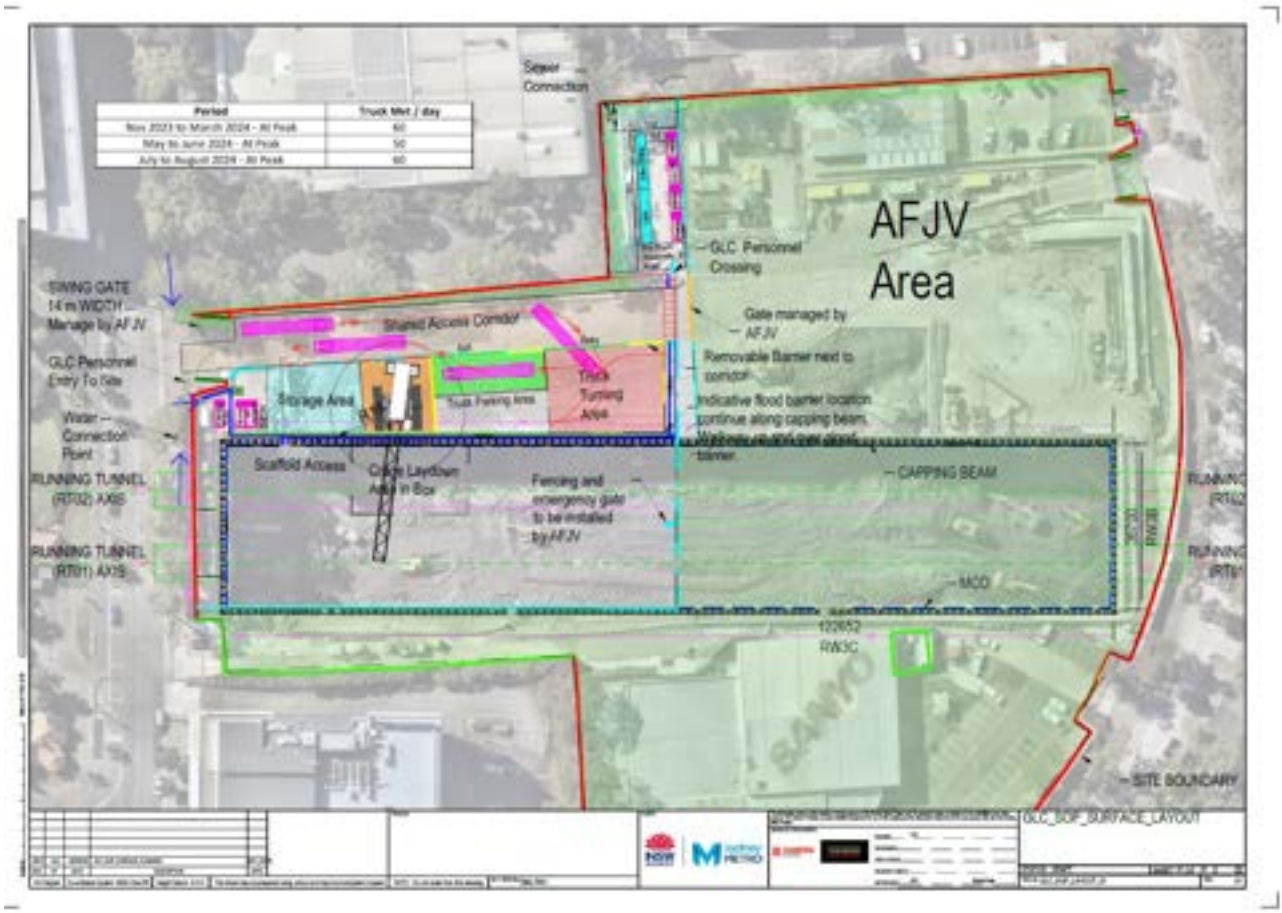


Figure 3-2: Sydney Olympic Park Internal Site Overview

The figure above demonstrates how the site will be laid out to facilitate heavy vehicle movements within the GLC project boundary.

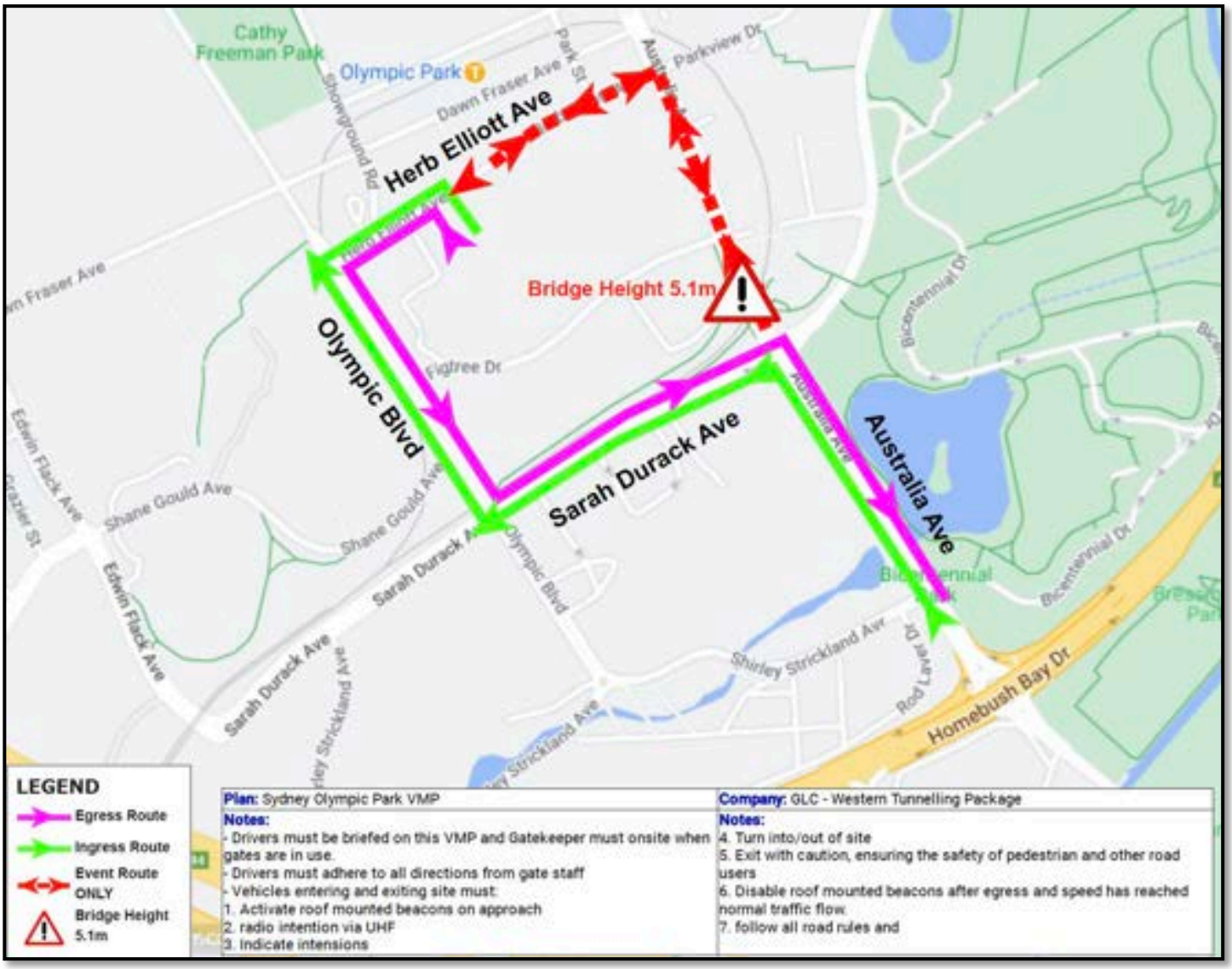


Figure 3-3: Sydney Olympic Park Proposed Site Access and Egress Routes

Figure 3-4 shows the existing TGS that AF JV have set up. GLC will be using the same setup and signage for their operations. GLC will use Herb Elliot Avenue for both entry and exit due to not having possession of the full site. In order to mitigate delays and congestion on Herb Elliot Avenue vehicles arriving will be given priority over vehicles leaving. The majority of semi-trailer deliveries will also occur at night when GLC is demobilising the TBM.

Figure 3-4: TGS for Herb Elliott Ave for Gate Entry and Exit

3.1.1.1 Swept Paths

Swept paths have been assessed for the Heavy Vehicles entering and exiting the site. The driveway in and out of the SOPA site has been constructed to accommodate the swept path requirements for 19m semi-trailers entering and exiting the site from Herb Elliott Ave. Swept paths have also been provided for all access and egress routes from Homebush Bay Dr. Swept paths can be found in Appendix G.

3.1.1.2 Traffic Control Signal Design and Approval

There are no Traffic Control Signal changes proposed for this site. All existing traffic control is unchanged from existing approved CTMP implemented.

3.1.2 TBM Retrieval and transportation to Rosehill

GLC requires two Tunnel Boring Machines to be removed from Sydney Olympic Park and transported to the Rosehill site to undertake tunnelling works towards Westmead for the Western Tunnelling Package. The delivery is forecasted to commence as of August 2024 through until end of September 2024. The TMB's will be delivered to the Rosehill site under over size over mass permits. Parking restrictions will need to be in place for some of the wider loads.

Each TBM consists of 28 individual components delivered in a specific sequence, with the initial phase completing the tunnelling between Rosehill and Sydney Olympic Park the TBM's will be deconstructed into the same size components as per original delivery and transported back to Rosehill to be rebuilt and relaunched towards Westmead.

The TBM's will be delivered in sections with the largest component being the two gripper shields at 6.99m Wide, 4.33m in Height and 130 tonne.

3.1.2.1 TBM Delivery Route

56 TBM components will be transported to the Rosehill site. There are 2 different routes to site that have been assessed. TBM Route 1 (Figure 3-23) is for the widest and heaviest loads and route 2 is the standard route for loads up to the size of the gantries. All movements will occur at night under approved OSOM permits and when required, ROL and Council permits.

- Route 1 – 14 loads

COMPONENTS: Cutterheads, Front Shields, Main Drives, Gripper shields, Inner telescopic shields, Outer telescopic shields & Tail skins

VIA: Herb Elliott Ave, Olympic Blvd, Sarah Durack Ave, Australia Ave, Homebush Bay Dr, right onto the M4 through the removed bollards, Silverwater Rd, Parramatta Rd, James Ruse Dr, Grand Ave, Colquhoun St, Unwin St, into Gate 1 at the Rosehill Site.

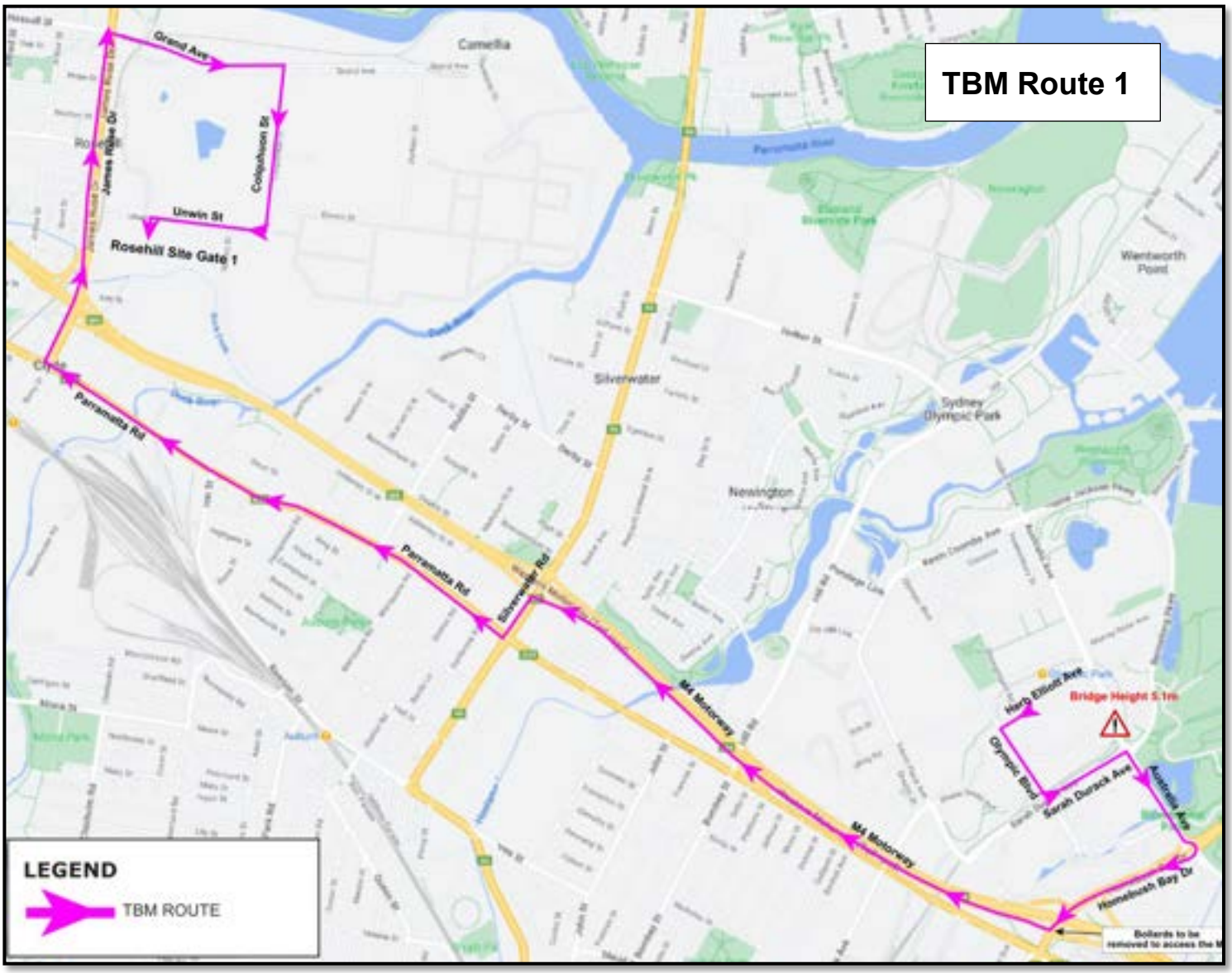


Figure 3-23: TBM Route 1

- TBM Route 2 – 42 loads

COMPONENTS: Erector loads, Gantries and remaining small loads.

VIA: Herb Elliott Ave, Olympic Blvd, Sarah Durack Ave, Australia Ave, Homebush Bay Dr, left into the G loop onto the M4, James Ruse Dr, Grand Ave, Colquhoun St, Unwin St, into Gate 1 at the Rosehill Site.

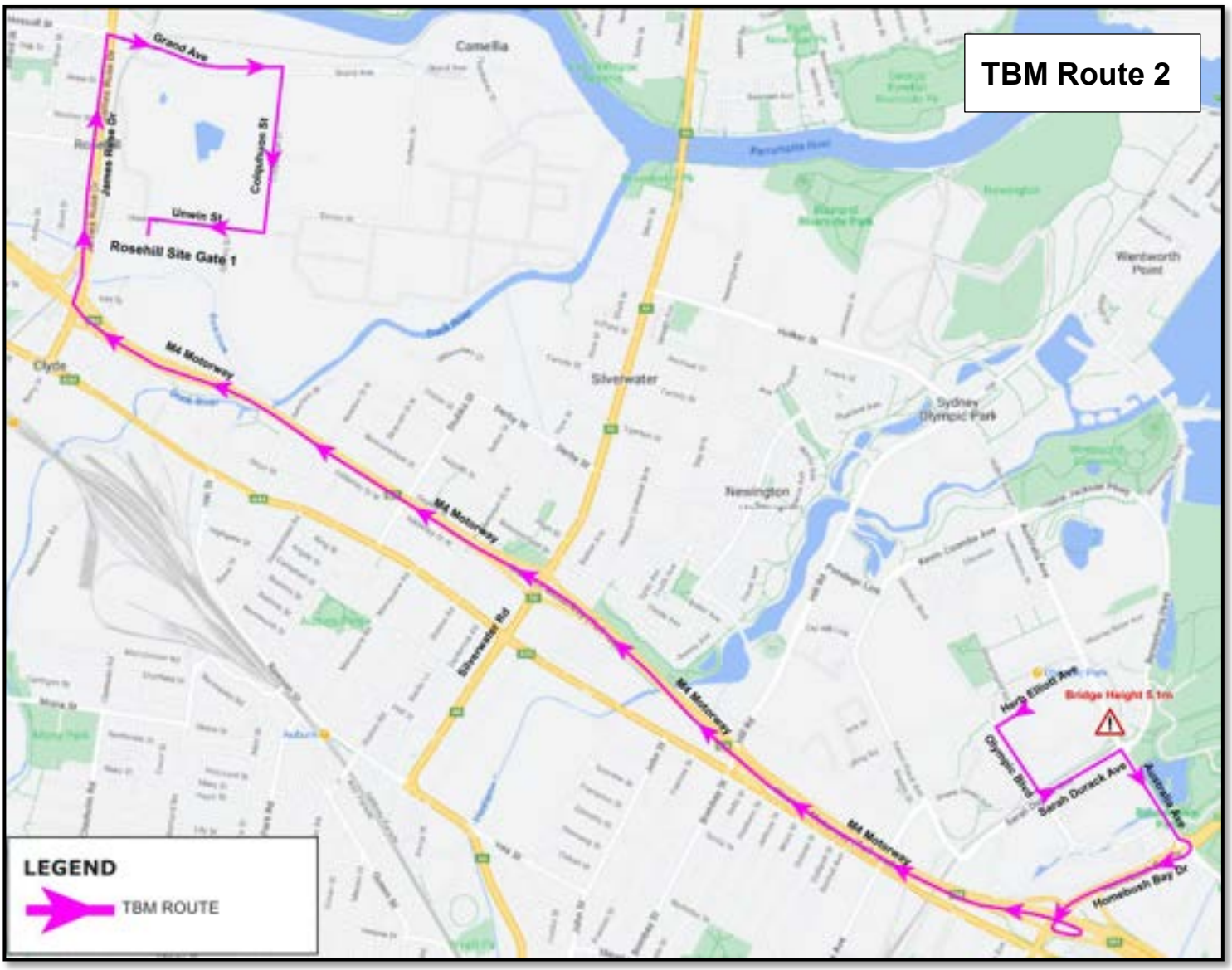


Figure 3-24: TBM Route 2

16 No. deliveries per TBM will require the bollards to be removed to enter the M4 under a right turn from Homebush Bay Dr Southbound and Traffic Control assistance once they reach the Rosehill area. User Pays Police and a tow truck are proposed to be onsite to allow for the removal of any vehicles that remain in the parking lane. The remaining loads do not require any additional assistance on top of the normal pilot vehicle associated with the movement.

3.1.3 Staged temporary removal of parking for Over Size & Over Mass Deliveries

During the life of the project, there might be some additional need for temporary parking removal to facilitate deliveries with Oversize and Overmass vehicles (OSOM). The potential impact and mitigation approach will be reviewed on a case-by-case basis including consideration of duration of works and impact on relevant stakeholders. Where disruption cannot be avoided, alternative parking arrangements will be investigated and implemented where feasible and practical to ensure impact is minimised. The appropriate approvals and permits will be sought from Transport for NSW and SOPA as described in the relevant CTMPs.

GLC will obtain an approved SOPA Work Permit and approved Road Occupancy Permit prior to undertaking any staged temporary removal of parking for Over Size Over Mass deliveries, and make payment of any associated permit fees.

During TBM retrieval operations a total of 10 parking spaces on Herb Elliott Ave opposite the site will be removed (See Figure 3.1). An additional 2 spaces on Herb Elliott Ave opposite the Pullman Hotel will be removed to allow the loads to access Olympic Boulevard (See Figure 3.2). Parking will be reinstated once the loads have exited SOP.

A night time parking survey carried out in April shows that the effect of the temporary parking removal will have a limited effect (See Figure 3.3). The temporary parking removal has been discussed with SOPA during the fortnightly GLC/SOPA Comms/Operations meeting on April 29. It was agreed GLC would forward the TGS showing the amount of spaces to be removed and develop a communications strategy for the parking removal.

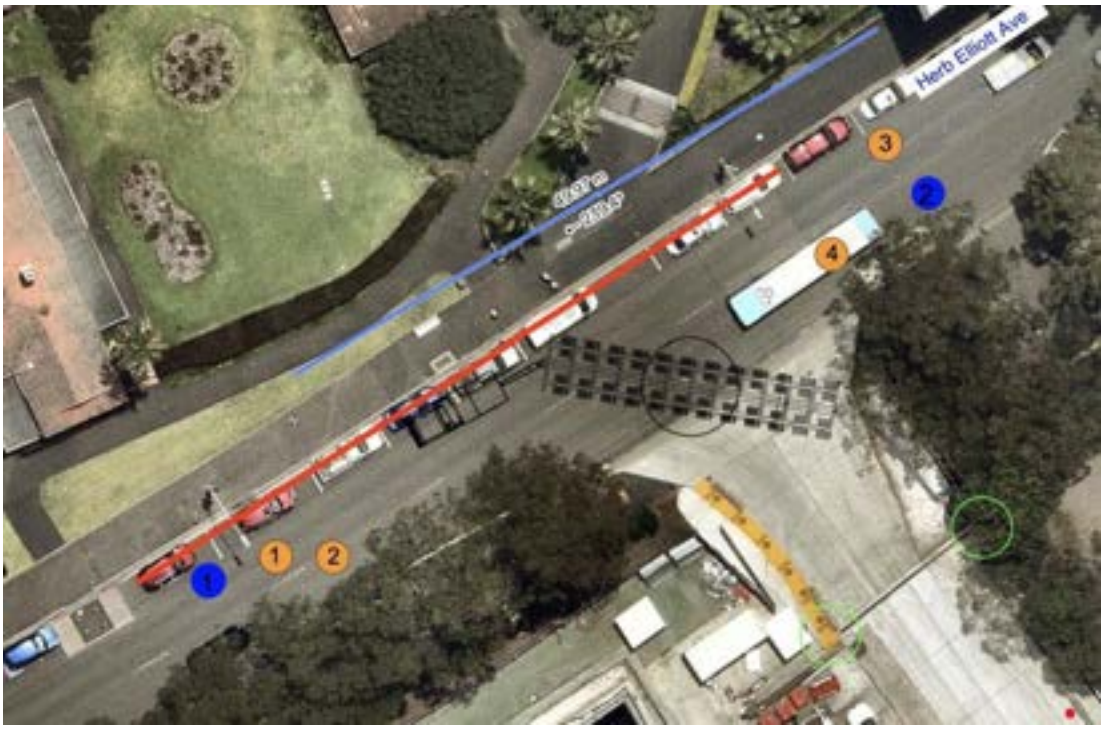


Figure 3.1: Temporary Parking Removal

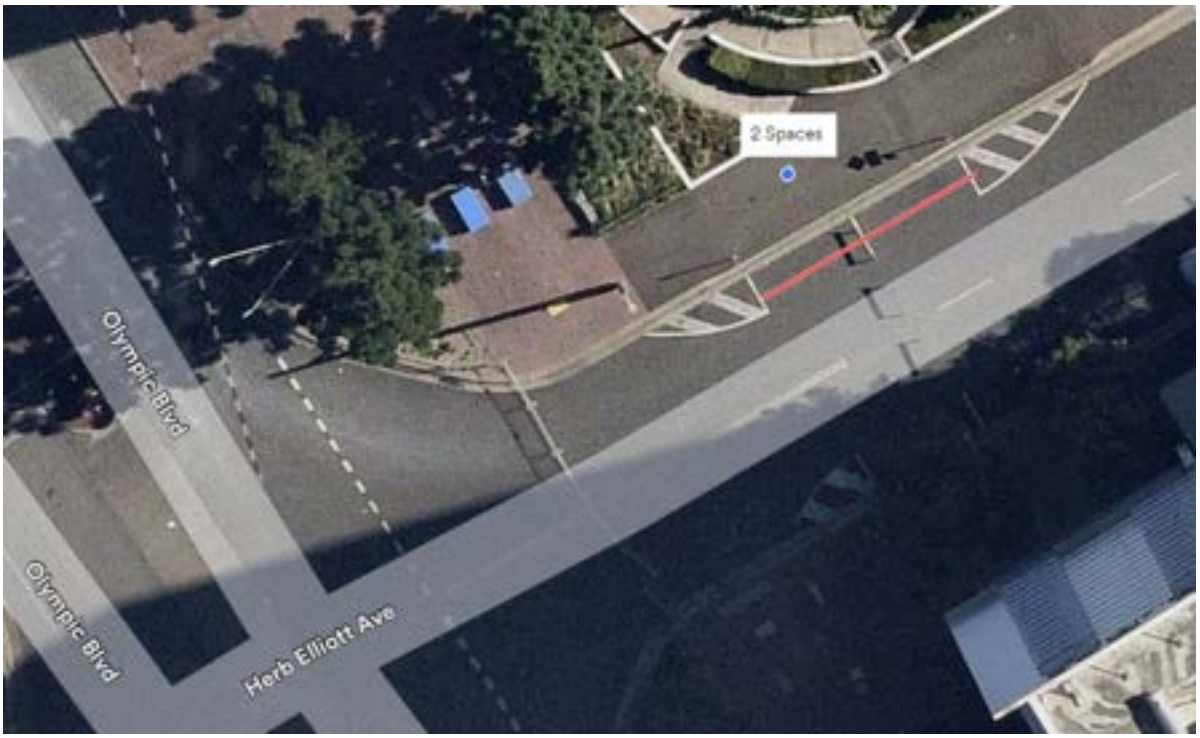


Figure 3.2: Temporary Parking Removal

Date	Time	Total Parking Spaces Available	Parking Spaces Utilised
19/04/2024	9pm	12	8
19/04/2024	12am	12	3
22/042024	9pm	12	10
25/04/2024	12am	12	4

Figure 3.3: Night Time Survey of Parking Usage on Herb Elliot Ave

3.2 Works Impacts

The Sydney Metro SOPA site has been in operation for over two years and GLC will operate and use the site in a similar manner.

3.2.1 Impact on public transport

There will be no additional impacts on the existing bus routes or stops in Sydney Olympic Park due to the scope outlined in this CTMP.

Access to the Sydney Olympic Park train station will be maintained at all times.

3.2.2 Impact on active transport

Sydney Olympic Park is connected with footpaths and shared paths provided along both sides of all roads. There are on-road cycleways available on Australia Avenue, Kevin Coombs Avenue, Edwin Flack Avenue, Sarah Durack Avenue, Olympic Boulevard, Marjorie Jackson Parkway and Bennelong Parkway. The recreational and parkland areas within Sydney Olympic Park precinct have shared paths available throughout the area. Dates for the retrieval of the TBM will take into account any events within SOPA and assess the impact and adjust dates as required.

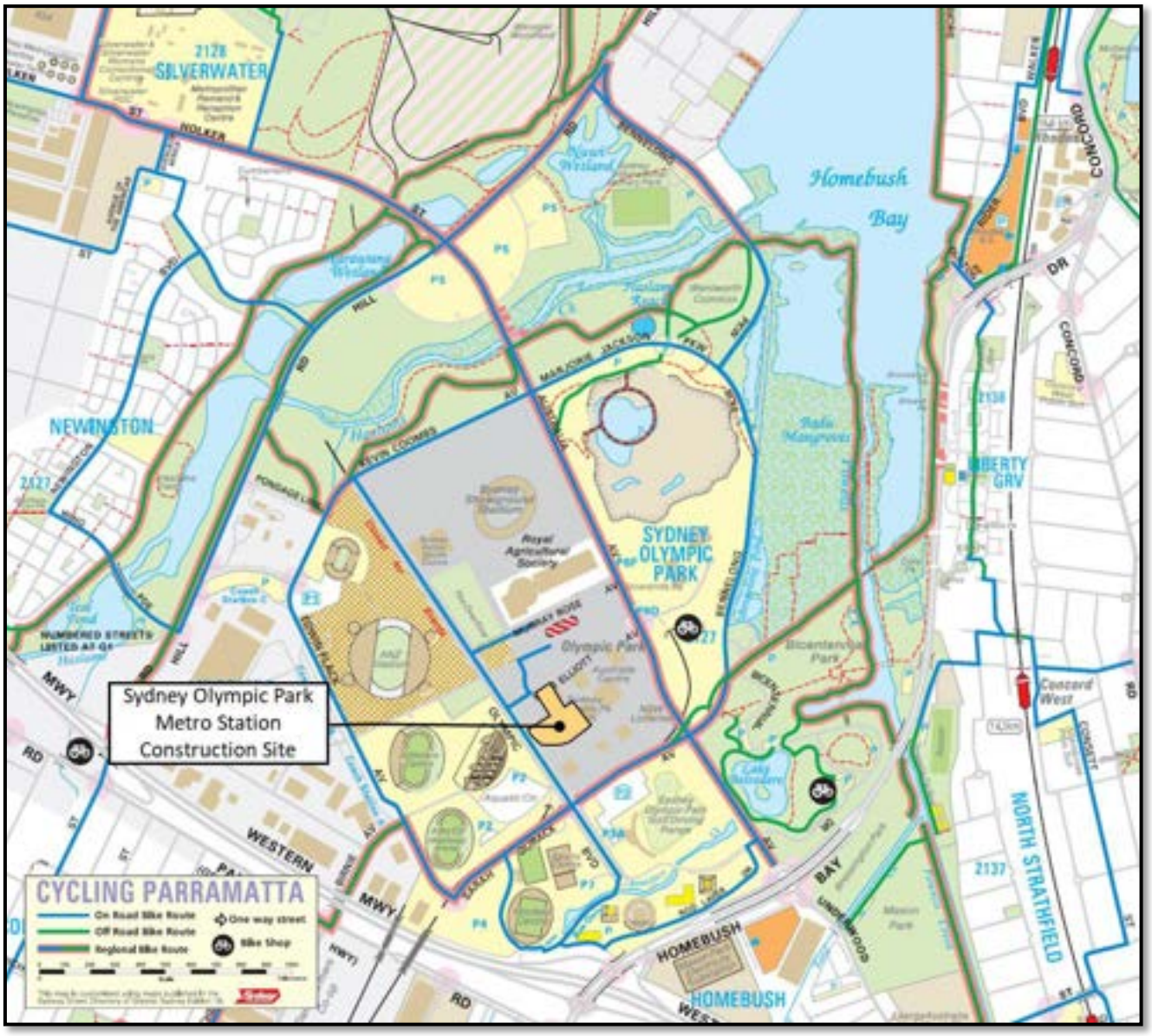


Figure 3-2: SOPA Cycle Network

TfNSW have also implemented a Be truck aware campaign which aims to show road users, the challenges that truck drivers face every day. Truck aware decals will be reinstated by the current Sydney Metro contractor at the Sydney Olympic Park site.

Figure 3-9: Truck Aware Decal & Location Plan

GLC will not block or disrupt access across pedestrian or shared user paths at any time unless alternate access is provided which complies with the applicable standard and an approved ROL and Council permit has been obtained.

3.2.3 Impact on properties and utilities

There will be no additional impacts on top of the current arrangement at Sydney Olympic Park during the site setup or the site operations.

GLC will ensure that access to all utilities and properties will be maintained during works, unless otherwise agreed with the relevant utility owner, landowner, or occupier. Where access is affected, GLC will reinstate the access to an equivalent standard within one month of the completion of works, or as agreed by the landowner or occupier.

3.2.4 Cumulative impacts

Regular contact will be maintained throughout the life of the project, through attendance at the Traffic Control Group (TCG) and Traffic and Transport Liaison Group (TTLG). GLC will also attend monthly coordination meetings with Sydney Olympic Park Authority and other contractors working within the SOPA precinct to ensure any cumulative impacts are identified and adequately managed.

3.2.5 Impact on traffic flow

The EIS for the Sydney Metro West Stage 1 project, noted for light vehicles that the site operations phase of the works would have distinct peak travel periods, typically prior and post the standard construction hours and that light vehicle numbers would be fairly constant over the work day, refer to Figure 3-9. GLC works at SOP site are minimal (minor mobilisation, headwall construction and TBM retrieval) and would only generate minimal numbers of heavy and light vehicles to the site. GLC have confirmed with AFJV that they are currently using EIS Sydney Metro West Stage 2 vehicle movement numbers & have two approved haulage routes. AFJV Haulage routes for Option 1 & Option 2 are provided below in figure 6 & 7.

Figure 3: AFJV Option 1

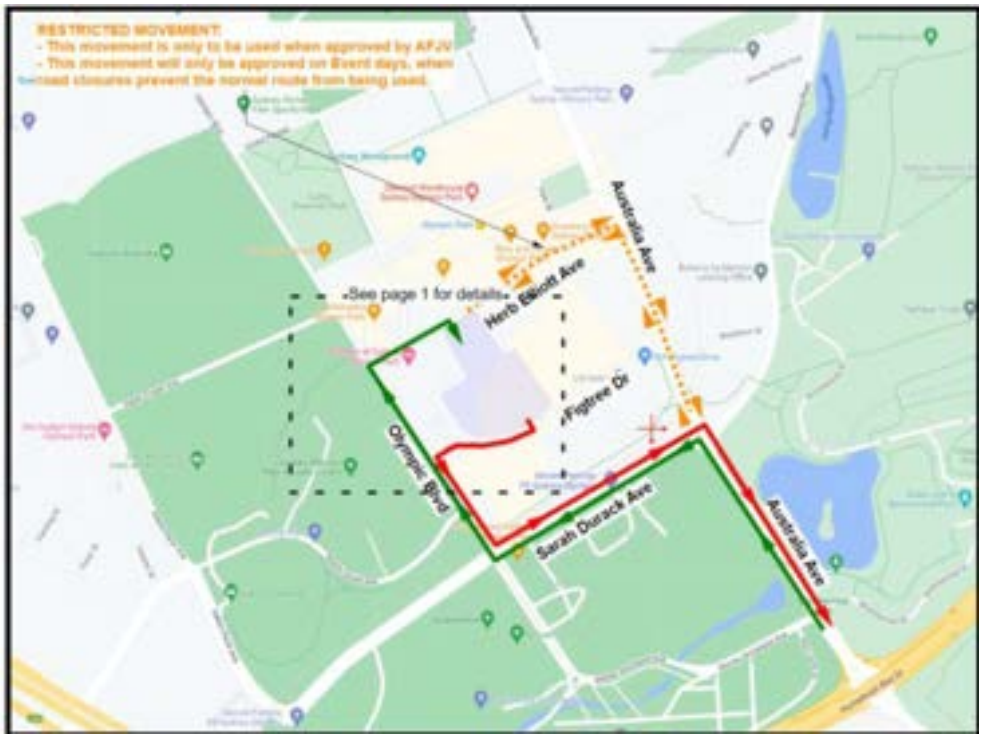


Figure 4: AFJV Option 2

AFJV are using Route Option 1 (Figure 6) as their primary route. Route Option 2 (above) is an AFJV secondary route, used only during peak times to relieve pressure on the surrounding network. By the end of the year, AFJV's intention is to stay on 'EIS stage 2' and not use route option 2 (Figure 7) so their vehicle movements will reduce to 8 and they will only be using route 1 (Figure 6).

Table 3: AFJV Site Operations heavy movements (numbers) per hour (November 2023- December 2023)

AFJV Numbers 2023								
EIS Stage	Route Option	07:00 – 08:00	08:00 – 09:00	09:00 – 10:00	16:00 – 17:00	17:00 – 18:00	Total	Total both routes
2	1	8	8	8	8	8	156	306
	2	30	30	30	30	30	150	

Table 4: AFJV Site Operations heavy movements (numbers) per hour (January 2024 onwards)

AFJV Numbers 2024							
EIS Stage	Route Option	07:00 – 08:00	08:00 – 09:00	09:00 – 10:00	16:00 – 17:00	17:00 – 18:00	Total
2	1	8	8	8	8	8	156

Table 5: GLC Site Operations heavy movements (numbers) per hour

GLC Numbers							
07:00 – 08:00	08:00 – 09:00	09:00 – 10:00	10:00 – 16:00	16:00 – 17:00	17:00 – 18:00	18:00 – 06:00	Total
8	8	8	8	8	8	8	156

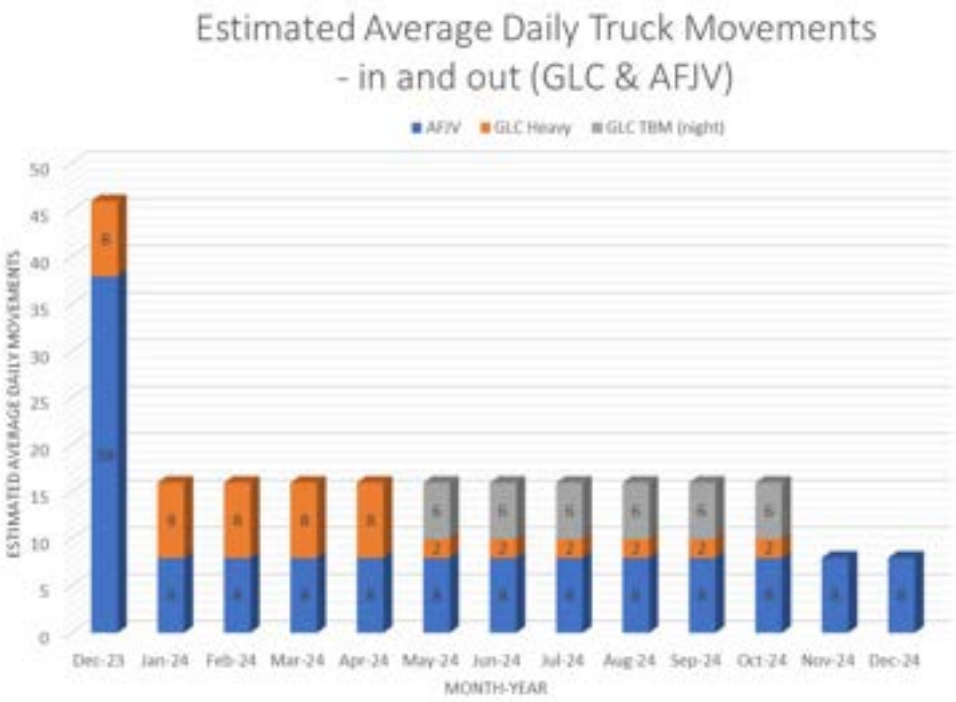
Table 6: GLC and AFJV Combined heavy movements (numbers) per hour (January 2024 – onwards)

GLC			AFJV – January 2023 onwards			EIS Numbers			GLC & AFJV Combined
Peak Times	Outside of peak	Total	Peak Times	Outside of peak	Total	Peak Times	Outside of peak	Total	
8	8	156	8	8	156	8	14	306	312

Given the limited construction scope (headwall construction only) GLC has at the Sydney Olympic Park Site the movements per hour will be for concrete operations only, where at peak (Feb 2024 – April 2024) we will require between 6-8 concrete agitators per hour, but only on two to three days a week; this may include a Saturday. so the day-to-day numbers will be significantly below the 6 to 8 number. Figure 8 below shows the average daily truck movements for GLC and AFJV combined, again noting that on some days GLC will not be running concrete agitators

Note: that while Figure 8 shows increased combined movements in December 2023 this will only be until Dec 22nd when both sites will shut down for the Christmas period. Work begins again on 3rd January and it will begin slowly not reaching the number shown in Figure 8 and Table 6 until at least the 3rd week of January 2024.

Figure 5: Estimated Average Daily Truck Movements.



For heavy vehicle movements, the EIS predicted movements were reduced during the AM and PM peak periods and evenly spread over the course of the rest of the work day, refer to *Figure 3-*

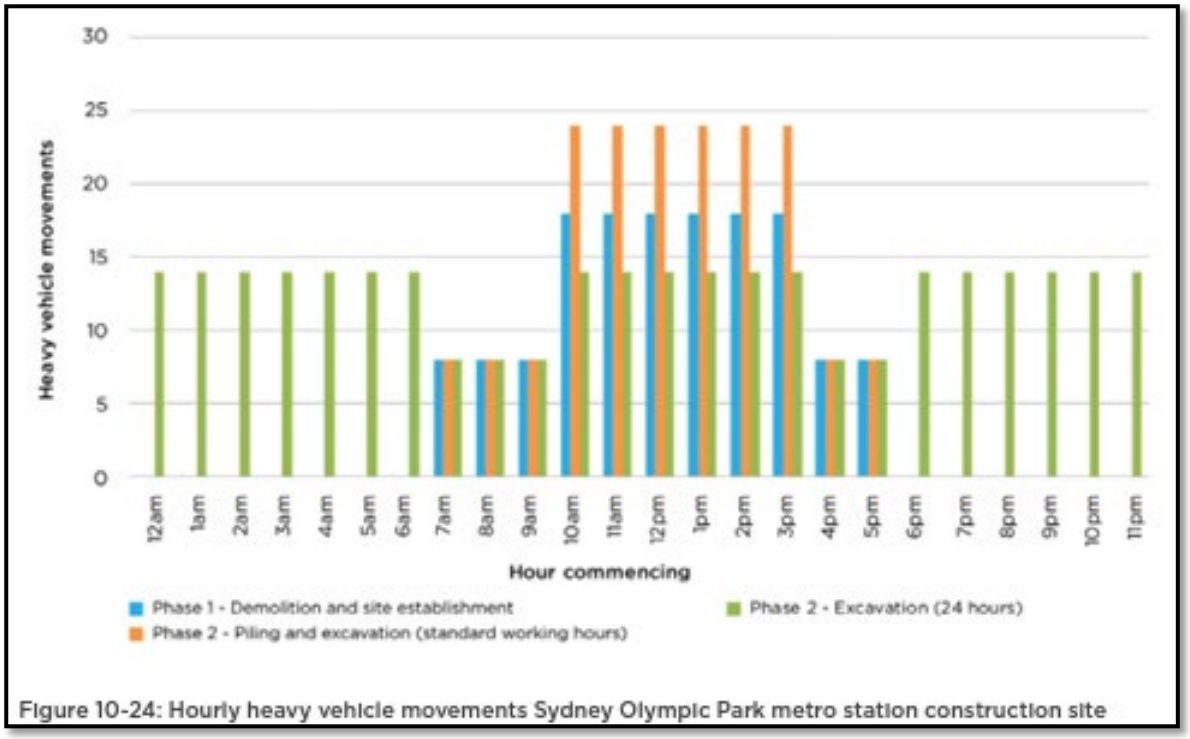


Figure 3-8: EIS hourly heavy vehicle movements (source: EIS Chapter 10 page 10-13)

Table 7: GLC Site Operations light vehicle movements (numbers) per hour

Time	GLC Light	AFJV Light	EIS	Combined Numbers
6AM to 7AM	15	40	46	61
7AM to 8PM	15	40	46	61
8AM to 9AM	10	40	46	56
9AM to 2PM	12	40	46	58
2PM to 3PM	12	40	46	58
3PM to 4PM	12	40	46	58
4PM to 5PM	15	40	46	61
5PM to 6PM	15	40	46	61
6PM to 9PM	10	40	46	56
9PM to 11PM	8	12	46	54
11PM to 6AM	4	2	46	50

Note: GLC numbers are significantly under the AFJV numbers.

GLC is estimated to only require 25 No. light vehicles at anyone time. The maximum movements per hour are reflected above.

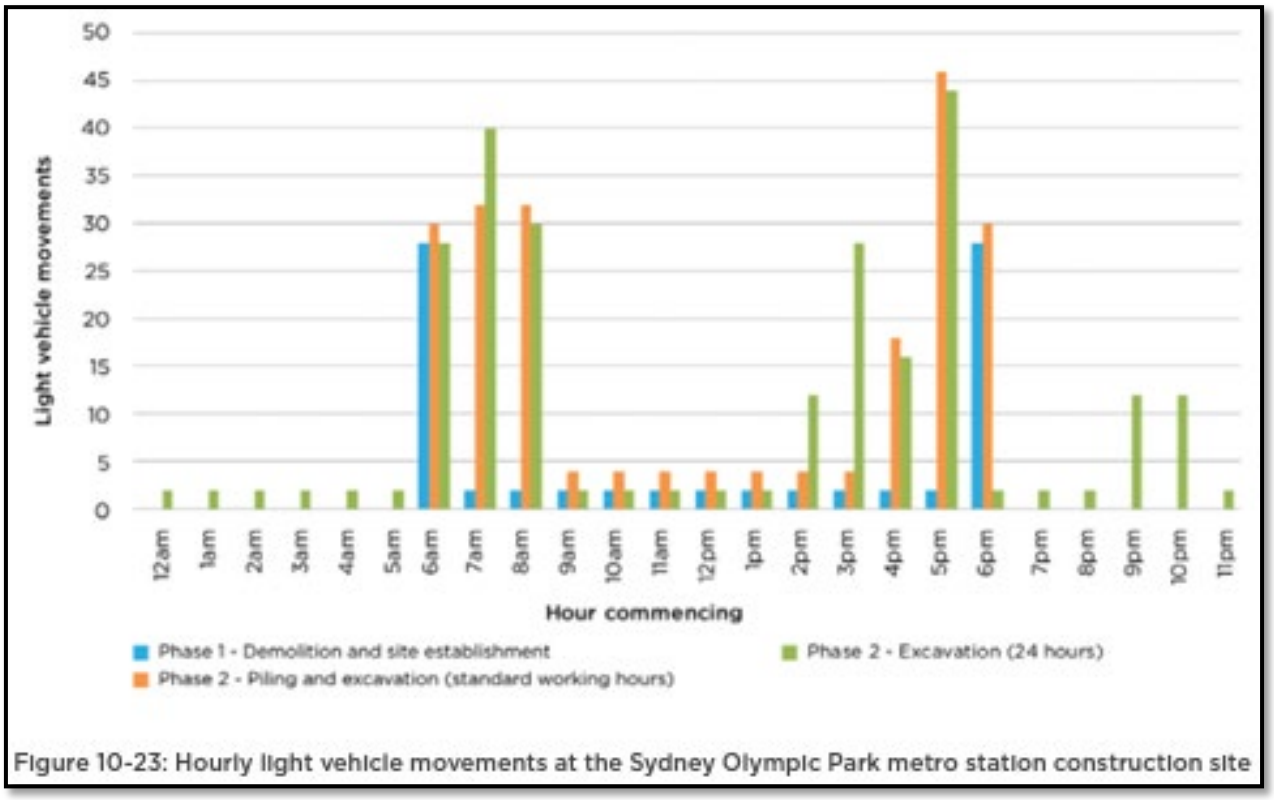


Figure 3-9: EIS light vehicle movements

3.3 Special events

Traffic management measures such as temporary road closures may be implemented for major events. GLC will communicate with SOPA to ensure that the disturbance between the proposed works and major events are minimal. All out of hours vehicle movements will be coordinated in advance with Sydney Olympic Park Authority so that there is sufficient time for resident / community notifications. GLC will ensure major events are given priority and heavy vehicles where possible will be scheduled to occur outside of these events. GLC attend a monthly coordination meeting with Sydney Olympic Park Authority where upcoming events are reviewed against GLC heavy haulage operations.

Current major events which may affect works the dates of the TBM retrieval:

- Sydney Royal Easter Show
- State of Origin & Major Sporting Events
- Music Festivals

Each of the impacting events will be discussed with SOPA representatives to understand impacts including potential increase in foot traffic and any necessary controls to manage the interface of increased footpath traffic and site vehicles movements.

A detailed list of upcoming events can be found at: https://www.sydneyolympicpark.com.au/Whats-On/Events

3.4 Staff transport and parking

Additional overflow parking is available at the Clyde/Rosehill site where staff can get a GLC minibus to Parramatta train station for access to Sydney Trains to catch a train onto Sydney Olympic Park.

3.5 Temporary Works Approvals

3.5.1 Road occupation and restoration

SOPA permits will be lodged electronically in accordance with the Sydney Olympic Park Authority requirements. For any works where parking is temporary impacted, GLC will ensure that the parking removal is staged to minimise the time of parking space occupation.

For any road opening required, the relevant Road Opening Permit (ROP) will be applied for. The ROP will also be accompanied by a ROL. Details on the permits required are found at SOPA.

4 HEAVY VEHICLE ROUTES

Trucks to be used on the project will be compliant with NSW legislation, Sydney Metro's Principal Contractor Health and Safety Standard, relevant Australian Design Rules and vehicle standards and the Heavy Vehicle National Legislation. All heavy vehicle operations will be conducted in accordance with GLC's Chain of Responsibility (CoR) Management Plan, including monitoring of compliance with nominated haulage routes.

A combination of truck types will be used during the site operations works, with trucks being truck and dog, 19m semi-trailers, 12.5m Single Unit trucks and low loaders. All trucks will enter and exit the site in a forward direction, where reasonable and feasible. Where there is a requirement to undertake reversing movements on the public road system, appropriate traffic control will be implemented.

Construction site traffic will be managed to minimise movements during peak periods. This will be achieved through scheduling of vehicles and staggered start and finish times. GLC will provide sufficient area to manage heavy vehicles within the site boundary. This will ensure that vehicles are not idling or queuing on state, regional and local roads. In the event that vehicles are unable to be accommodated, vehicles will be directed to the Clyde site as an extended marshalling facility. Given the amount of space available at the Clyde site there is no requirement for any further marshalling facilities.

4.1 Heavy vehicle routes and compliance

Generally, the heavy vehicle routes will be via arterial roads/ freeways/ tollways. Where possible the routes have considered the requirements of the Environmental Impact Statement (EIS). The route proposed by GLC into the site is via the approved CTP route, left off Homebush Bay Dr, left onto Australia Ave, left into Sarah Durack Ave and right into Olympic Blvd, right into Herb Elliott Ave and right into the site. The egress route will also follow the approved CTP route via Herb Elliott Ave, Left into Olympic Blvd, left into Sarah Durack Ave, right onto Australia Ave and right at the roundabout onto Homebush Bay Dr. During special events in the SOPA precinct, that impact Olympic Blvd, vehicles will turn right out of site onto Herb Elliott Ave and right onto Australia Ave to Homebush Bay Dr. During special events with Olympic Blvd closed vehicles over 5.1m will not be able to enter or exit site due to the height restrictions on Australia Ave

All routine heavy vehicle drivers will undergo Sydney Metro Heavy Haulage Training and complete the heavy vehicle GLC driver induction. A routine delivery is defined as a vehicle and or driver that makes 5 or more visits to the site. A heavy vehicle is defined as a vehicle over 4.5T.

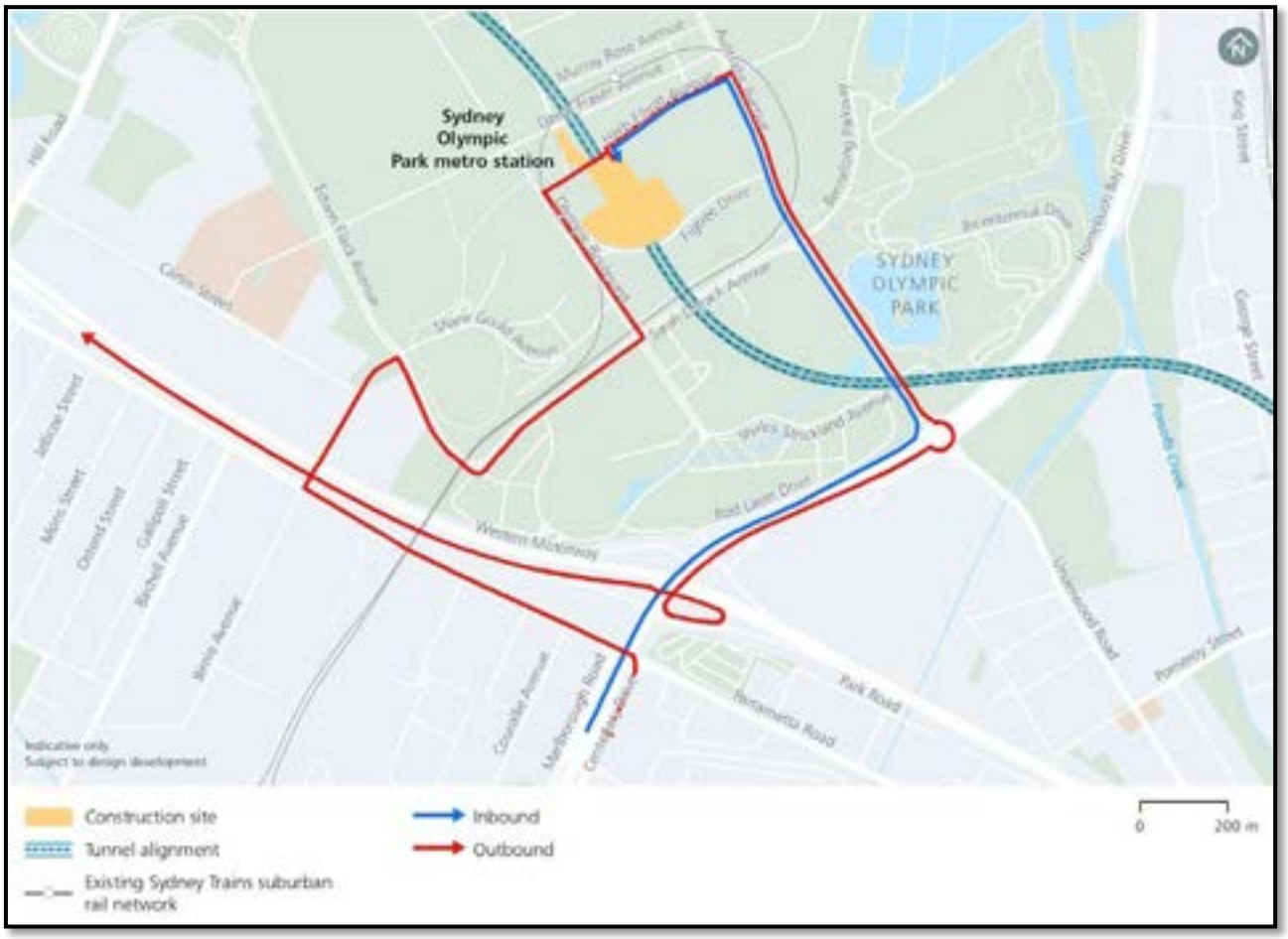


Figure 4-1: EIS nominated heavy vehicle routes

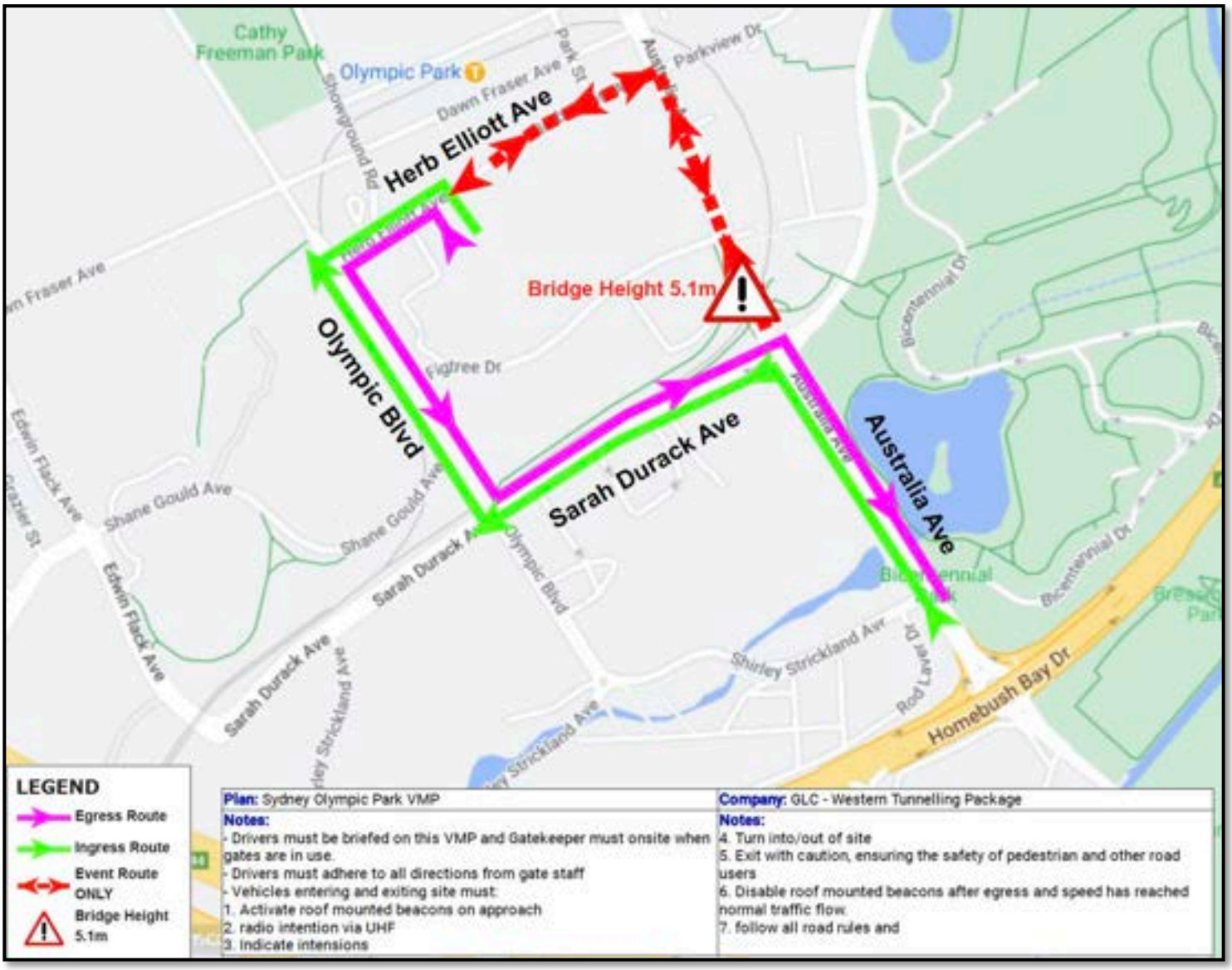


Figure 4-2: GLC proposed heavy vehicle routes.

4.2 Permits / Over dimensional vehicles.

Permit issue for vehicles greater than 4.5 tonnes is through the National Heavy Vehicle Regulator (NHVR). This applies to particular special purse vehicles (SPV) such as mobile cranes and other oversize/ over ass (OSOM) vehicles. At present, TfNSW is currently undertaking this permit issue.

For over dimensional vehicles, generally vehicles that are greater than 25m in length or 3,5m width require a pilot(s). Extremely long or wide vehicles will require an escort (fee payable). Permits will be applied for by the transport operator.

Oversize vehicles will be required at this site for the delivery of large plant, tunnel boring machine and piling rigs. These deliveries will occur outside of peak hours. Contractors will manage their own permits.

5 MINISTERIAL CONDITIONS OF APPROVAL

There are a number of plans/ reports that are required under the Ministerial Conditions of Approval (MCoA) as noted in Appendix A and included in subsequent appendices of this CTMP.

5.1 Heavy Vehicle Local Road (HVLR) report

A Heavy Vehicle Local Road is to be provided to the Planning Secretary for approval, for use of local roads not identified in the EIS or other planning documents. The report includes the following:

a) A swept path analysis
b) Demonstration that the use of local roads by Heavy Vehicles for the CSSI will not compromise the safety of pedestrians and cyclists of the safety of two way traffic flow on two way roadways
c) Details as to the date of completion of the road dilapidation surveys for the subject local roads and
d) Measures that will be implemented to avoid where practicable the use of local roads past schools, aged care facilities and child care facilities during their peak operation times and
e) Written advice from an appropriately qualified professional on the suitability of the proposed Heavy Vehicle route which takes into consideration items a) to d).

Additional to the EIS Local roads that are proposed to be used include:

- Sarah Durack Ave between Olympic Blvd and Australia Ave

5.2 Construction Parking and Access Strategy (CPAS)

GLC have been working with representatives from SOPA to understand what impact we would have if we used the existing secure parking. GLC requires 25 carpark spaces for approximately 12 months between Monday – Friday 06:00 – 18:00 & Saturday 07:00 – 13:00.

SOPA have informed GLC that we would qualify for the long-term parking permits and should use carpark P3 that has 1,447 spaces. The current midweek usage averages out at 350 per day (outside of event times).

With GLC using 25 of these spaces the impact is expected to be minimal to non-existent i.e. currently the carpark is only utilised to 24% of its capacity. With GLC taking an additional 25 spaces the carpark is still only utilised 25% of its capacity. This means that there is still 1,072 spaces for the public to use.

The P3 Secure carpark is located 550m from the site which equates to an approximate 9 minute walk.

Road dilapidation report

Road dilapidation reports has been provided for the local roads used by construction vehicles. These reports will be undertaken prior to the use of these roads. A copy of the report has been provided to the relevant road authority on 27th October 2023. The requirement is to submit this plan within three weeks of completing the survey and no later than one (1) month before the road is used.

If damage to roads occurs as a result of heavy vehicle use associated with the construction works, GLC, will, at the relevant road authority's discretion:

- Compensate the relevant road authority for the damage so caused or
- Rectify the damage to restore the road to at least the condition it was in pre-work as identified in the road dilapidation report

A copy of the Road Dilapidation Report transmittal to the Sydney Olympic Park Authority has been provided separately.

6 COMMUNITY AND CONSULTATION

6.1 Communications and the community

Table 8 notes the notifications to be provided to the local community and travelling public for the site operations works, associated with this CTMP.

Any enquiries, compliments or complaints will be directed to GLC's communications team via

- Information line 1800 612 173
- Email metrotunnels@transport.nsw.gov.au
- Mailing address Sydney Metro West, PO BOX K659, Haymarket, NSW 1240

Notification	Applicable?
Newsletters	Yes
Construction email updates	Yes
Fact sheets	Yes
Site signage	Yes
GLC website	Pending
Sydney Metro website	Pending

Table 8: Proposed community notifications

A stakeholder engagement plan has been developed and is shown in appendix E.

6.2 Stakeholders

Various stakeholders will be consulted for further development of this CTMP. Stakeholder details that have been consulted are provided in table 9 below.

Table 9: Stakeholder consultation details

Stakeholder	Date	Consultation type
Sydney Metro Traffic Control Group TfNSW-Customer Journey Planning	TTLG – 26/10/2023 TCG – 05/10/2023	Presentation
TfNSW Customer Journey Planning	TTLG – 26/10/2023 TCG – 05/10/2023	Presentation Submission of CTMP
Sydney Metro West	TTLG – 26/10/2023 TCG – 05/10/2023	Presentation Submission of CTMP
Sydney Olympic Park Authority	Presentation - 12/10/2023	Presentation Submission of CTMP Meetings
Additional Stakeholder communications can be found in Appendix D		

7 OTHER CONSIDERATIONS

7.1 Road safety audits

Road safety audits will be undertaken during the development of the CTMP, refer to Appendix C.

7.2 Inspections and monitoring

Inspections and monitoring are as per Table 9.

Table 10: Inspections and frequency

Stage	Activity	Timetable
Planning	TGS verification	Carried out by the Traffic Manager all TGS
	Road Safety Audit	Desktop RSA carried out on all CTMPs
During temporary traffic management	Weekly inspections	Carried weekly onsite
	Shift inspection	Carried out by Lack Group on the commencement of any works
	CTMP review	Overarching CTMP is reviewed monthly by the Traffic Manager
	Road Safety Audits	Carried out on new CTMP arrangements onsite
Post completion	Post completion inspection	Carried out by the Traffic Manager and site representative prior to a new road or footpath opening to the public

7.3 Emergency services and incident management

7.3.1 Emergency Services Impacts

Emergency services will not be directly impacted by our works at Sydney Olympic Park. Access to properties for emergency vehicles will be provided at all times.

Relevant Emergency Services will be informed, in a timely manner of relevant activities proposed within this CTMP. The initial communication to these stakeholders will be via the TTLG. Regular updates will be provided to Emergency Services representatives noting changes to the road network, changes to road conditions and worksite access locations.

7.3.2 Incident Management

In the event of an incident that has the potential to impact traffic or public transport, at sites managed by GLC, GLC will ensure that traffic control resources are provided through our traffic control contractors to assist. These resources include:

- Traffic control personnel
- Traffic control vehicle containing:
    - Barrier boards
    - Cones/ bollards
    - Flashing arrow
    - Signs
    - Spill kit

GLC, after contacting the relevant emergency services and the Transport Management Centre (13 17 00), will report all traffic incidents to Sydney Metro and Customer Journey Planning within the first hour of becoming aware of the incident. In the event that an incident occurs outside of normal working hours the onsite contact list in section 7.4 can be used to arrange resources required.

7.4 On site contacts

Site contacts who can be contacted 24/7

Table 11: Site Contacts

Name	Position	Organisation	Contact #	Email
Martin O'Shea	Logistics Manager	GLC	0461 372 455	martinoshea@glcwtp.com.au
Jean-Francois Kielt	Project Manager	GLC	0412 666 301	jeanfrancois.kielt@glcwtp.com.au
Leon Moran	Site Supervisor	GLC	0437 432 405	Leon.moran@glcwtp.com.au
John Gadallah	Surface Works Construction Manger	GLC	0409 017 039	john.gadallah@glcwtp.com.au
Olivia Rich	Place Manager	GLC	0420 949 402	Olivia.rich@glcwtp.com.au

APPENDIX A – STAKEHOLDER COMMENTS

Sydney Metro West

Traffic Control Group

- Daniel Kelly / Kelly Royter
- October 2023

sydneymetro.info

Acknowledgement of Country

Sydney Metro pays respect to Elders past and present, and recognises and celebrates the diversity of Aboriginal peoples and their ongoing cultures and connections to the lands and waters of NSW.

Introduction

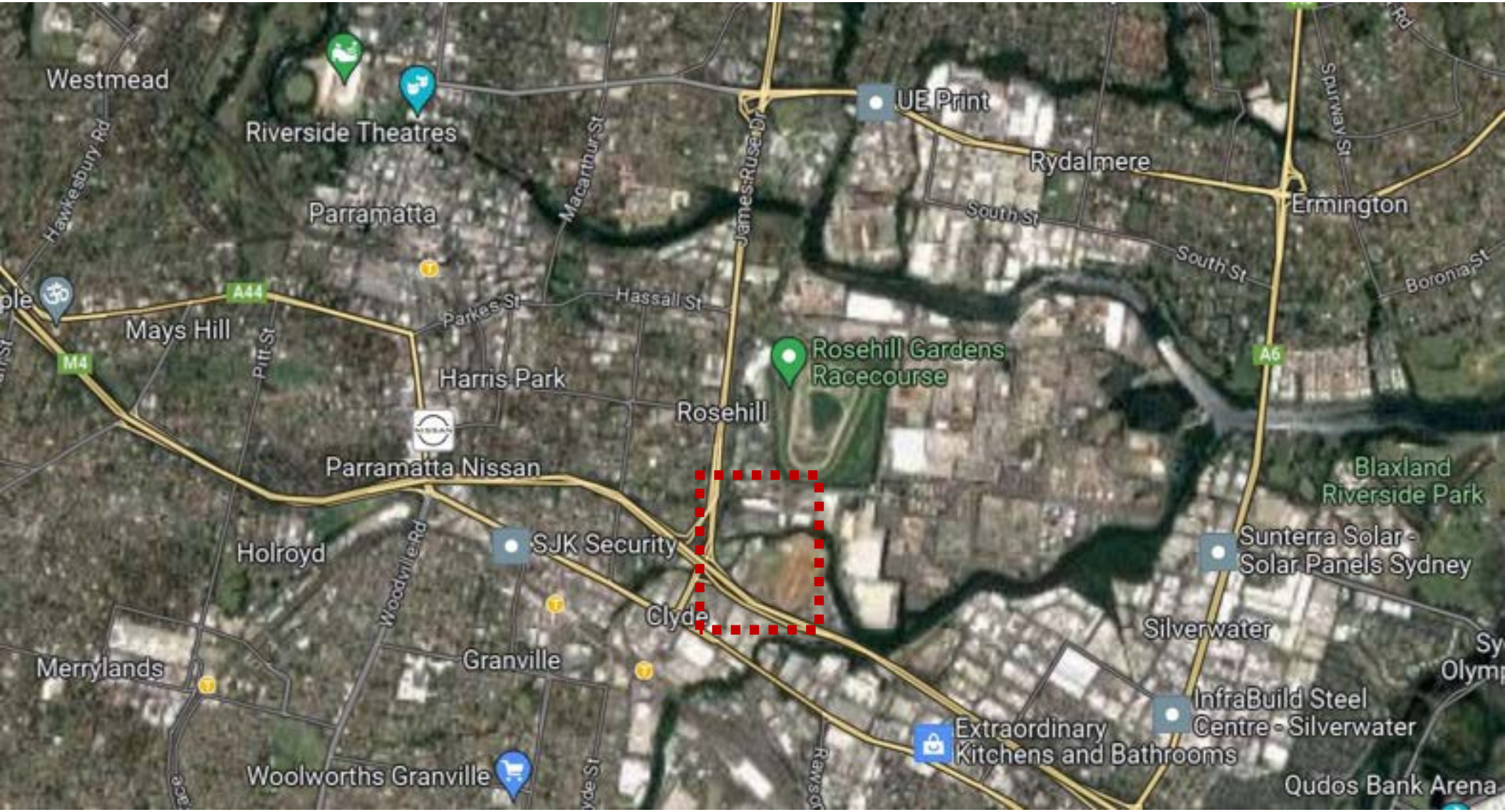
1. Traffic document status
2. Unwin / Kay / Wentworth St's temporary footpath realignment
3. Sydney Olympic Park

1. Traffic document status

Location	Document	Revision	Status
Clyde/Rosehill	CPAS	Rev F	Approved
	HVLR	Rev E	Approved
	CTMP Site Operations	Rev E	Approved
Eastern Creek	CTMP Site Operations	Rev D	Approved
Westmead	CPAS Site Establishment	Rev C	Approved
	HVLR Site Establishment	Rev E	Approved
	CTMP Site Establishment	Rev C	Approved
	CPAS Site Operations	Rev G	Approved
	CTMP Site Operations	Rev D	Approved
Parramatta	CPAS	Rev C	Approved
	HVLR Site Establishment	Rev C	Approved
	CTMP Site Establishment	Rev E	Approved
	CTMP Site Operations	Rev D	Approved

1. Traffic document status

Location	Document	Revision	Status
Sydney Olympic Park	CPAS	Rev 0	Drafting – not issued
	HVLR	Rev 0	Drafting – not issued
	CTMP Site Operations	Rev 0	Drafting – not issued


Westmead
Riverside Theatres
Hawkesbury Rd
Parramatta
Macarthur St
James Ruse Dr
UE Print
Rydalmere
Ermington
Spurway St
South St
Boronia St
A44
Parkes St
Hassall St
Mays Hill
M4
Pitt St
Harris Park
Rosehill Gardens Racecourse
A6
Rosehill
Parramatta Nissan
Blaxland Riverside Park
SJK Security
Holroyd
Woodville Rd
Sunterra Solar - Solar Panels Sydney
Clyde
Silverwater
Granville
Merrylands
InfraBuild Steel Centre - Silverwater
Extraordinary Kitchens and Bathrooms
Woolworths Granville
Qudos Bank Arena

9th October commence new footpath construction

- All within site, behind hoarding, no effect on existing footpath or road
- Hoarding removed
- Fencing installed
- Lighting installed

30th October footpath/pedestrian switched from existing to new

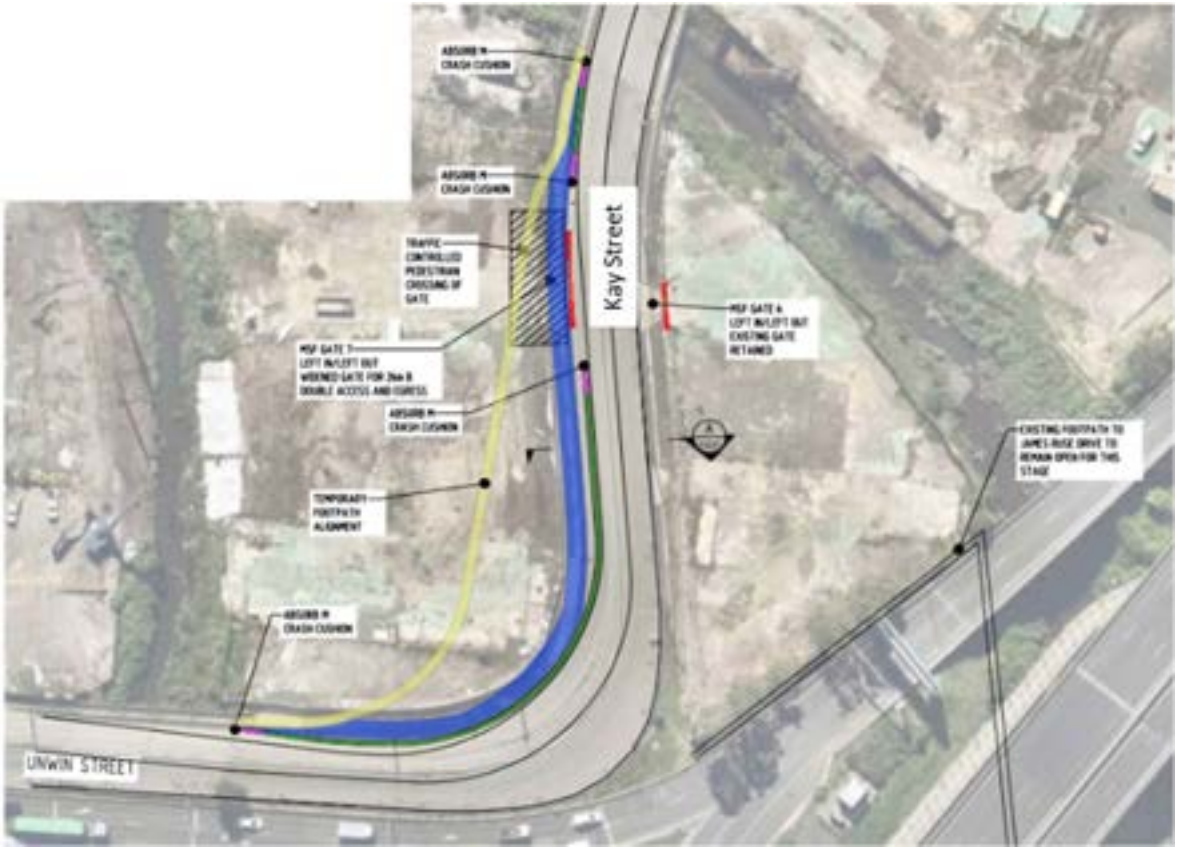
- Relevant signs & barriers installed

31st October commence demolishing existing footpath

- Under night and day time ROLs and Council ROLs

All future stages affect traffic flow and will be detailed in a CTMP

Construction Stage 1 – New Pedestrian footpath

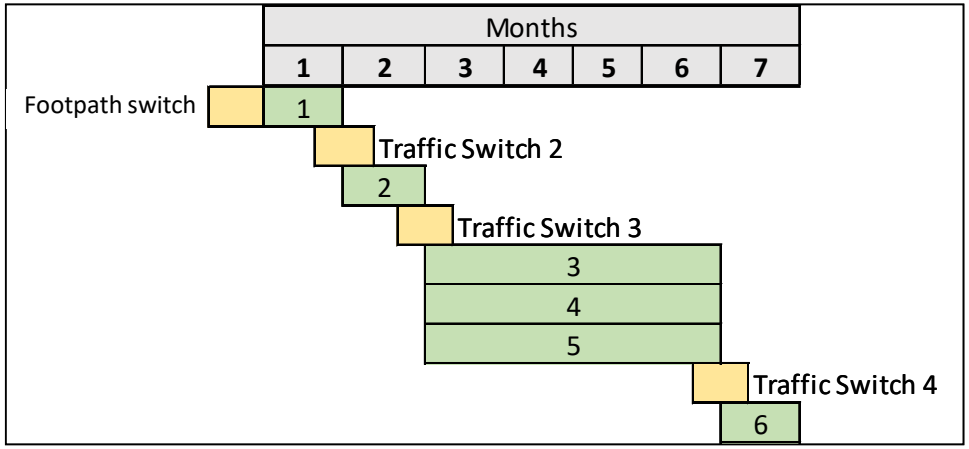


TGS to be provided for vehicle access into site In future

Signage plan to be provided for pedestrian diversion

Timeline for works

- Works are to be completed over 6 to 7 months
- Proposed start date October 2023

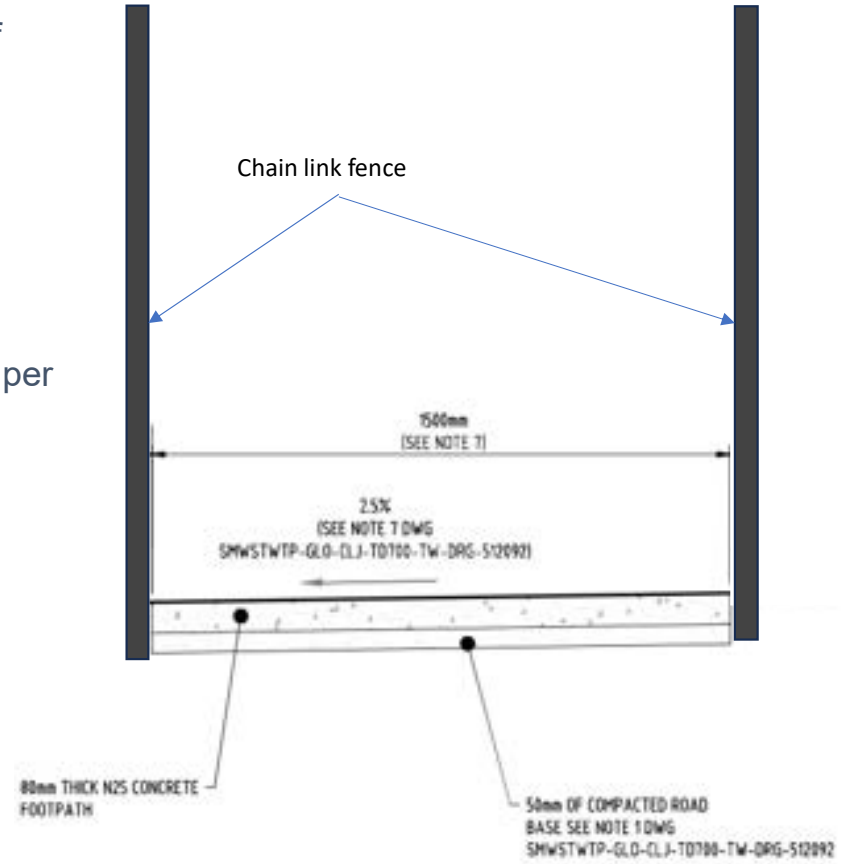


6 Construction Stages

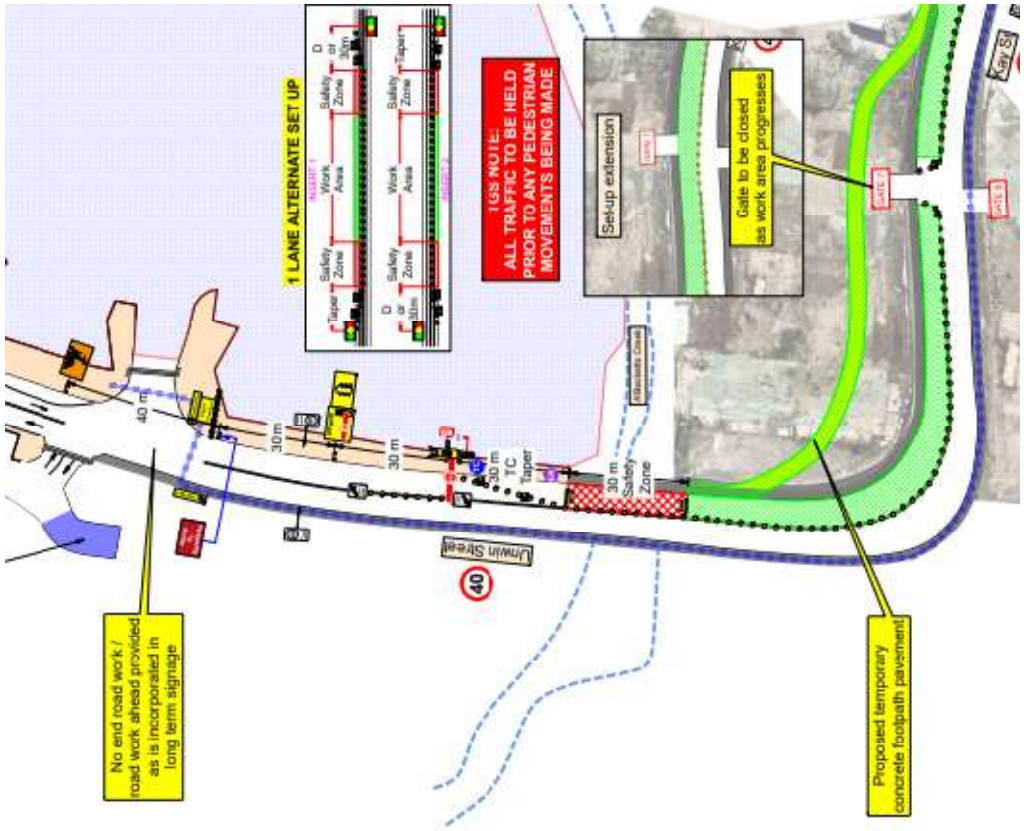
4 Traffic Switches

Construction Stage 1 – New Pedestrian footpath

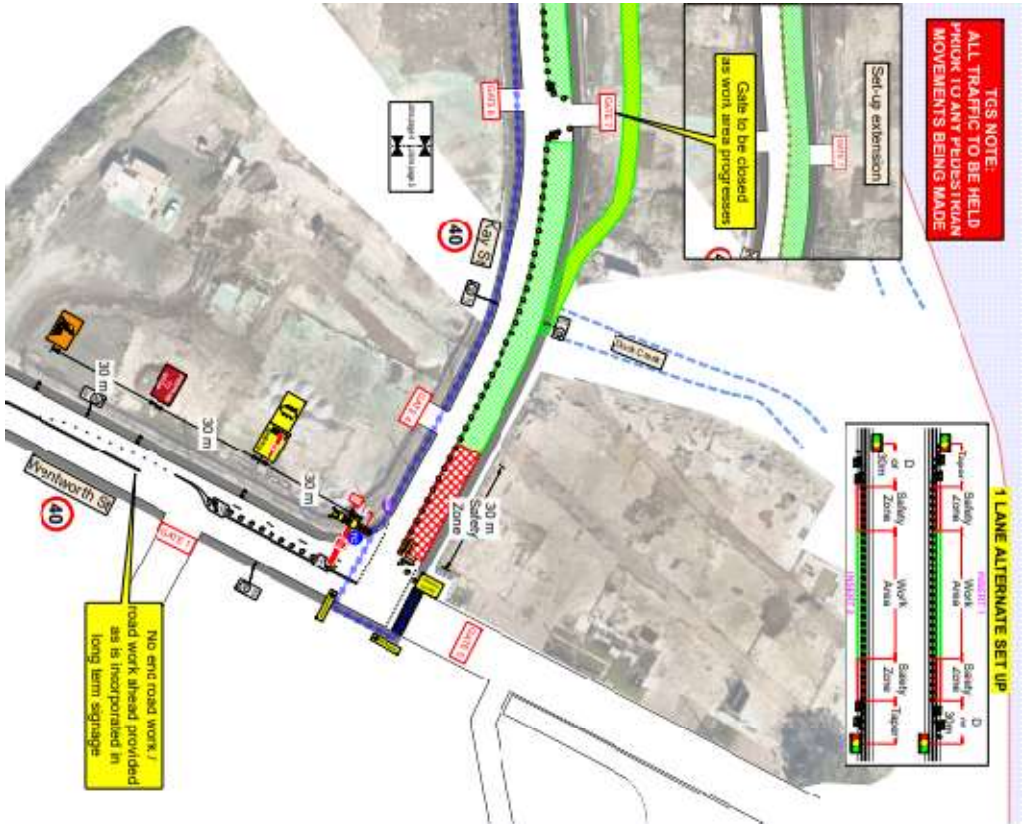
1. 80mm thick N25 Concrete footpath that is 1.5m wide with cross fall of 2.5% to prevent water ponding
2. Chain link fence 1.8m high with shade cloth installed on either side of walkway
3. Lighting installed every 20m along chain link fence
4. Vehicle Access Gate managed by traffic control when in operation as per TGS (refer to slide 11)



Construction Stage 1 – TGS Removal of existing Footpath

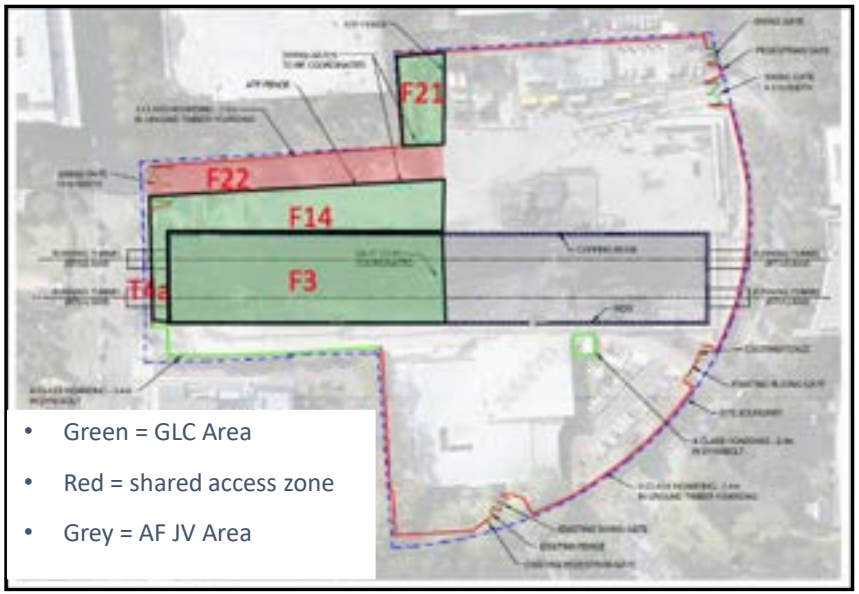


Construction Stage 1 – TGS Removal of existing Footpath



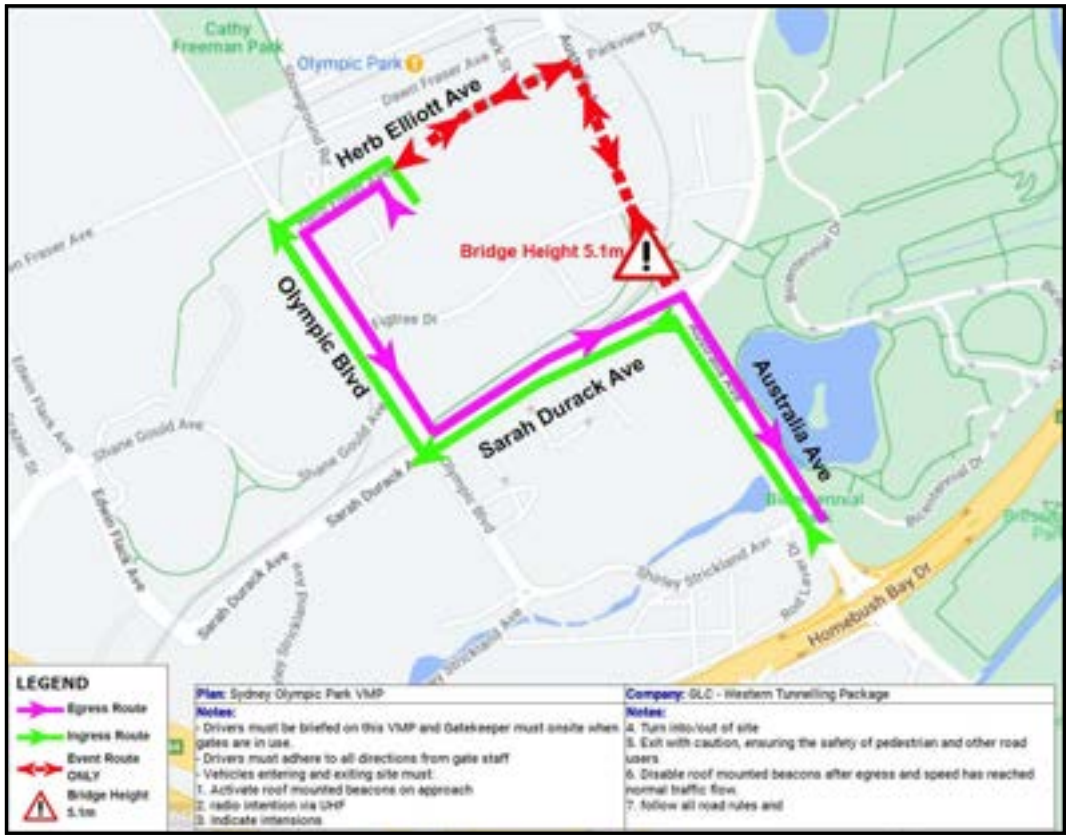
SOP - Overview

Task	Proposed Dates
Sydney Olympic Park Site setup & Operations	18th November 2023
TBM retrieval and transportation to Rosehill	August – September 2024
Handover & Demobilisation	October 2024

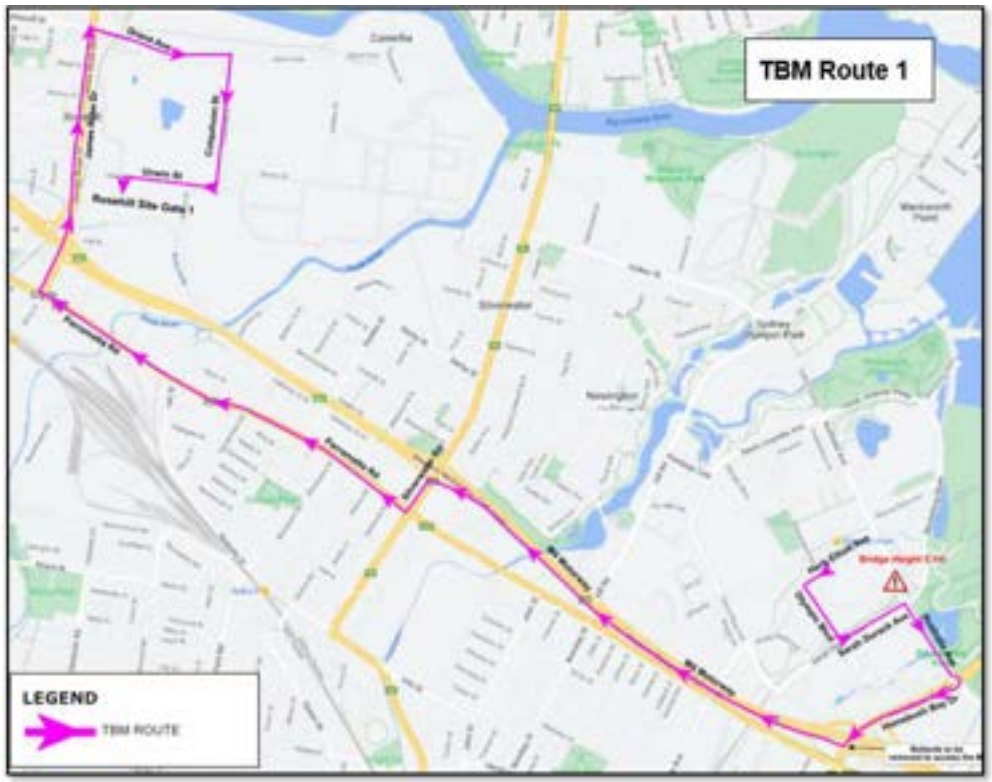


- Green = GLC Area
- Red = shared access zone
- Grey = AF JV Area

SOP – Existing Haul Route



SOP – TBM Haul Route



*Under OSOM permit

SOP – TGS Herb Elliot Avenue (Existing Access Gate)

Note – same TGS as AF JV

Sydney Metro West

APPENDIX B – TRAFFIC GUIDANCE SCHEMES

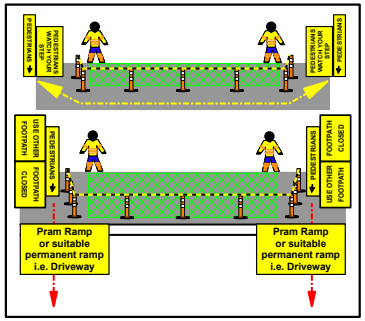
Locality Map

Personnel Requirements	Asset Requirements
Traffic Controllers	0
UTE	0
CONE TRUCK	0
ESAS	0
TMA	0
ESTOP	0
BOOM GATE	0
EXTRA REQUIREMENTS	0

Above requirements are for guidance only as they may change due to unforeseen circumstances

Legend

- Work Area
- Bollard
- Safety Barrier
- Safety Zone
- Traffic Controller
- Escape Route
- Portable Traffic Signal
- Portaboom
- Barrier Board
- Tiger Tail
- Trailer VMS
- Traffic Cone
- Temporary Bus Stop
- Open Bus stop
- Closed Bus stop
- Arrowboard
- Sign Cover
- Existing Signs
- Traffic Flow
- Traffic Flow
- Pedestrian Flow
- TMA
- Cone Truck
- Work Vehicle
- Police Car
- VMS Vehicle
- Traffic Vehicle



Pedestrian / Cyclist Note: Crossing location must consider site conditions including sight distance, number of lanes, traffic volumes, traffic speed, numbers of pedestrians

Pedestrian Management Options Analysis

Options Available	THROUGH	PAST	AROUND
Options Selected			

Cyclist Management Options Analysis

Options Available	THROUGH	PAST	AROUND
Options Selected			

Traffic Management Options Analysis

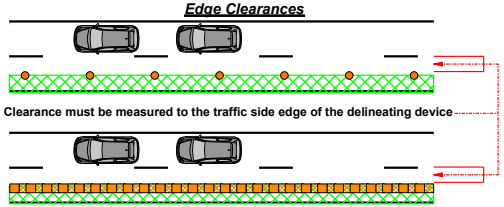
OPTION	DESCRIPTION	METHOD TYPE	TGS SELECTED
AROUND	Vehicles detoured via existing road network or sidetrack	Full road closure / One-way road closure / Detour	
PAST	Vehicles past delineated work zones	Lateral Shift	
		Shoulder closure	
		Contraflow (2 way traffic maintained)	
		Single or Multi Lane Closure	
		Single Lane Shuttle Flow	
THROUGH	Vehicles through work zone	Temporary Road Closure / Hold & Release / Local Traffic Access / Pilot Vehicle	

Dimension "D" (Main Roads)	40	metres
Dimension "D" (Minor Roads)	40	metres

Taper Lengths

Approximate speed of traffic	Traffic control at beginning of taper	Lateral shift taper	Merge taper
45 or less	15	15	15
46 - 55	15	15	30
56 - 65	30	30	60
66 - 75	N/A	70	115
76 - 85	N/A	80	130
86 - 95	N/A	90	145
96 - 105	N/A	100	160
> 105	N/A	110	180

Edge Clearances



Clearance must be measured to the traffic side edge of the delineating device

Speed (km/h)	Distance between tapers (m)
45 or less	10
46 to 55	25
56 to 65	70
Greater than 65	1.5 x Speed Limit (D)

Delineation Spacing

Purpose & Usage	Speed zone of device location km/h	Maximum Spacing m
On approach to a traffic controller position (center line or edge line)	All cases	4
Merge Tapers	55 to 75 Greater than 76	9 12
Lateral shift tapers	55 to 75 Greater than 76	12 18
Protecting freshly painted lines	56 to 75 Greater than 76	24 60
All other puporses	less than or equal to 55 26 to 75 greater than 76	4 12 18

TGS Verification Checklist:

Verified By:	Position:	Signature:
Qualification:	Expiry / Issue Date:	Date of Verification:

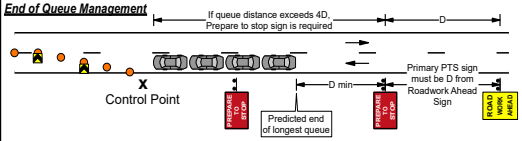
Traffic Guidance Scheme Modifications:

Modified By:	Qualification Number:	
Expiry / Issue Date:	Signature:	Date of Modification:
Modification Notes:		

Traffic Guidance Scheme Installation:

Installed By:	Qualification Number:	
Expiry / Issue Date:	Signature:	Date of Installation:

End of Queue Management



Estimated end of queue lengths to be noted here:_____

Edge of traffic lane to:	Edge Clearence
Line of traffic cones or bollards	- 0.5 m for traffic speeds less than 65 km/h - 1.0 m for traffic speeds greater than 65 km/h
Barrier boards, temporary guide posts or temporary hazard markers	- 1.0 m
Road safety barrier system	- 0.3 m for traffic speeds less than 45 km/h - 0.5 m for traffic speeds 45 to 65 km/h - 1.0 m for traffic speeds 65 to 85 km/h - 2.0 m for traffic speeds greater than 85 km/h

Installation & Removal of Signs & Devices

Two-lane, two-way roads:
The sequence of installation should be as illustrated in the following order:
1: Install the termination signs when initially leaving work area, 'End Road Work/speed reinstatement' (affected direction).
2: Use the existing road network to turn where safe to do so.
3 to 7: Place approach signs in unaffected direction, including the PTCD (traffic controller to remain with the PTCD).
8: Install 'End Road Work/speed reinstatement' (unaffected direction).
9: Use the existing road network to turn where safe to do so.
10 to 14: Place approach signs in the affected direction, including the PTCD (traffic controller to remain with PTCD).
15 and 16: Traffic controller/s to stop traffic and taper/lane closure delineation implemented.
17: ITCP qualified person completes drive around to confirm TGS is installed as designed.

Multi-lane roads:
The sequence of installation should be as illustrated in the following order:
1: Locate advance warning vehicle and TMA to shadow sign installation vehicle.
2 to 5: Install advance warning signs in unaffected lane.
6: Install 'End Roadwork'/speed reinstatement.
7: Use the existing road network to turn where safe to do so.
8: Locate advance warning vehicle and TMA to shadow sign installation vehicle.
9 to 12: Install advance warning signs in obstructed (affected) lane.
13: Install 'Flashing Arrow' and delineation devices on approach to start of taper.
14: Position TMA in travel lane to shadow installation of taper.
14 and 15: Install taper and delineation devices to form taper, safety buffer and past work area.
16: Install 'End Roadwork'/speed reinstatement.
17: Use the existing road network to turn where safe to do so.
18: TMA positioned to shadow work area.
19: ITCP qualified person completes drive around to confirm TGS is installed as designed.

Sign spacing requirements

Number of signs	Approach Speed	
	less than 65 km/h	65 km/h or greater
One advanced sign	D	2D
Multiple advanced signs	D	D

ALTERNATE SIGN SPACING
Dimension 'D': AGTTM: A distance expressed in metres, determined in accordance with Table 2.2 and used for positioning of advance signs. To be considered if TCAWS dimension "D" cannot be provided due to site conditions.

Speed of Traffic km/h	Dimension m
55 or less	15
56 to 65	45
Greater than 65	speed of traffic, in Km/h

Issue	Desg	Appd	Date & Time	Amendment Description
01	AC	PL	06/10/2023 09:30	Original Issue
02				
03				
04				
05				

TGS Name & Number: LGP - 61624 - GLC 142 - Herb Elliott Ave - Sydney Oly Park - Perm signage plan

TGS Designed By: Alec Czarnowski **PWZTMP:** TCT1010645 **Exp:** N/A **Signature:**

TGS Approved By: Peter Lozano **PWZTMP:** TCT0058486 **Exp:** N/A **Signature:**

Works Location: Herb Elliott Avenue - Sydney Olympic Park

Client Company: Gamuda Australia

Client Contact: Daniel Kelly **Contact Number:** 0437 315 649

Project Name: Sydney Metro Werstern Tunnelling

Project Description: Gate ingress/egress

Date of Approval: 06/10/2023

Scale: 1 : 750 | Original Size A3

Lack Group acknowledges the traditional owners of country throughout Australia and recognises their continuing connection to land, waters and community. We pay our respect to them and their cultures; and to elders both past and present.

TGS Risk Assessment

Hierarchy of Controls

1. Eliminate the hazard altogether.
eg. Road closures.
2. Substitute the hazard with a safer alternative.
eg. Using PTCDs instead of stop bats.
3. Isolate the hazard from anyone who could be harmed.
eg. Drop zones for clients works in elevated work zones.
4. Use engineering controls to reduce the risk.
eg. The use of traffic control devices to protect work area.
5. Use administrative controls to reduce the risk.
eg. Ensure personnel are trained in their field.
6. Use PPE.
eg. Wearing gloves while manual handling.

More Effective ↑ ↓ Less Effective

Step 1 - Consequence (impact)

	Negligible (1)	Minor (2)	Moderate (3)	Major (4)	Severe (5)
Health & Safety	First Aid Treatment	Medical Treatment	Lost Time Injury	Permanent Impairment Injury	Fatality
Enviro	Very minor injury that requires no treatment or simple first aid	Injury / illness, which requires medical treatment and may temporarily restrict a persons capacity to work	Injury / illness, which temporarily renders a person unfit to work in any capacity	Injury / illness, which permanently alters a persons future (eg. Spinal injury, amputation or death)	
Quality	Short term damage	Limited but medium term damage	Significant but recoverable ecological damage	Heavy ecological damage, costly restoration	Permanent widespread ecological damage
	Brief delay / slight impact on service delivery	Local or worksite specific impact on service delivery or customer satisfaction	Temporary impact on service delivery or customer satisfaction at a local event / project level	Serious impact on service delivery or customer satisfaction at a state client or large project level	Long term or very severe impact on service delivery or customer satisfaction resulting in loss of business nationally

Step 2 - Probability

				Negligible (1)	Minor (2)	Moderate (3)	Major (4)	Severe (5)
Almost Certain (5)	The threat can be expected to occur 75% - 99%	Common / Frequent Occurance	More than 1 event per month	Moderate (8)	High (16)	High (18)	High (21)	Extreme (25)
Likely (4)	The threat will quite commonly occur 50% - 75%	Is know to occur or "it has happened regularly"	More than 1 event per year	Moderate (7)	Moderate (10)	High (17)	High (20)	High (24)
Possible (3)	The threat may occur occasionally 25% - 50%	Could occur or "I've heard of it happening"	1 event per 1 to 10 years	Low (3)	Moderate (9)	Moderate (12)	High (19)	High (23)
Unlikely (2)	The threat could infrequently occur 10% - 25%	Not likely to occur very often	1 event per 10 to 100 years	Low (2)	Low (5)	Moderate (11)	Moderate (14)	High (22)
Rare (1)	The threat may occur in exceptional circumstances The threat may occur occasionally 0% - 10%	Conceivable but only in exceptional circumstances	Less than 1 event per 100 years	Low (1)	Low (4)	Low (6)	Moderate (13)	Moderate (15)

Step 3 - The risk rating is where the consequence and the probability intersect

Item #	Worksite Component	Potential Hazard	Initial Risk C	Initial Risk P	Initial Risk R	Present	Control Measures	Residual Risk C	Residual Risk P	Residual Risk R
Acceptance										
1.0	TGS Drawn / implemented by unqualified person or organization	TGS Drawn / implemented by unqualified person or organization	5	3	23	Y	- Design and implement TGS in accordance with TCAWS, AS1742.3 and AGTTM. - Ensure all relevant traffic management personnel involved in the design and implementation of the TGS are certified as competent persons to perform the traffic management tasks they are required to undertake.	4	1	13
Departures										
2.0	Stop bat used instead of PTCD	Traffic controller hit by vehicle	5	4	24	NA	- Consider use of shadow vehicles if practical, or other type of static hard cover available (i.e. safety barrier) - Ensure best possible escape route considered when allocating control point on TGS - to be reassessed onsite continuously - Ensure best line of sight where practical. Should the best line of sight not be possible, repeater signs in advance warning to be used. - Traffic controller to always remain clear from travelled path. - Ensure appropriate speed signage has been installed and meets minimum and maximum length requirements.	4	2	14
Advanced Warning										
3.0	VMS	Motorist collides with VMS, motorist confused by VMS	4	4	20	NA	- Always place VMS behind an approved safety barrier or as far away from the edge of traffic lane as is practical in a position determined suitable based on a documented risk assessment. - The location is to be confirmed by Risk Assessment	3	2	11
3.1	Long Term Works	Confused motorist collides with worker	4	4	20	Y	- Always install RWA (T1-1) on long-term road work sites - Consider using VMS's	3	3	12
3.2	Delays or Queue extends beyond advanced warning signs	Motorist collides with end of queue	4	4	20	N	Always: - Work in accordance with the approved and appropriate ROL - Use two-way communication with trucks and give them priority whenever possible - Monitor queue lengths - Install additional signs or use additional traffic controllers or stop work and clear traffic if end of queue extends beyond the advance warning signs - Give emergency vehicles & wide loads priority (i.e. stop work & traffic) Consider: - Working outside peak periods - Liaising with TMC for assistance with traffic signal phasing - Using VMS's - Notifying emergency services - Use of flashing beacon to be added to advance warning signage - Use of queue monitors - Ensure TGS has been designed to cater for the predicted queue lengths where required.	4	2	14
3.3	Changed traffic conditions (eg Slippery surface, no lines, changed line marking, banned turning movements, detours)	Motorist loses control, is confused, or attempts a banned manoeuvre causing MVA	4	4	20	Y	Always: - Install RWA (T1-1) if diverting traffic along a sidetrack, detour, or unexpected conditions such as loose stones or the absence of line marking - Erect Condition signs in accordance with TCAWS Manual - Provide delineation or temporary line marking and ensure this is clearly shown on the TGS - Use Traffic Control to manage changed traffic conditions where required. - Check setup before commencing work - Ensure appropriate permission for any detours - Speed reduction installed to suit road conditions - Consider using VMS's	3	2	11
3.4	After care	Inadequate signage resulting in motorist loosing control and crashing or motorist becomes frustrated due to inappropriate signage	4	4	20	N	Always: - Install RWA (T1-1) if diverting traffic along a sidetrack, detour, or unexpected conditions, such as loose stones or the absence of line marking - Cover any signs that are not applicable - Erect Condition signs in accordance with TCWS Manual - Provide delineation or temporary line marking - Aftercare speed limit to suit road conditions	3	3	12
3.5	Poor sight distance or speed compliance or Approach speed > 85km/h, or multi lane roads with traffic volume > 10,000vpd	Speeding vehicle doesn't have time to react and fails to negotiate merge taper	5	4	24	NA	Always: - Install RW 1km Ahead if approach speed is > 85km/h or sight distance is less than 150m - Use 700mm cones where traffic speed is greater than 75km/h - Use 900mm cones on high speed to high volume roads (e.g., expressway) or on any work site where increased visibility is required - Duplicate Lane status sign. Consider: - Installing RWA (T1-1) - Increasing taper lengths - Increasing the number of advance warning signage installed - Increasing the size of signage installed - Need for duplication of signs.	4	2	14
3.6	Side Roads	Vehicles enters work site from a side road and collides with workers	3	4	17	Y	- Always install advance warning signage for vehicles entering from side road in advance of the work site.	3	2	11
3.7	Temporary Speed Zone	Motorist travelling too fast for the conditions causing MVA	5	4	24	NA	- Ensure speed zones are designed in accordance with TCAWS, AS1742.3 and AGTTM. - Ensure speed zoning is consistent with the work activity and road environment. - Consider the use of speed radar VMS to monitor traffic speeds and advise motorists. - Review the TGS and adjust where possible to enhance traffic calming through the work site.	4	2	14
Transition										
4.0	Lane closure	Motorist fails to negotiate taper and collides with worker, vehicle or plant	5	4	24	NA	Always: - Install taper lengths and cones in accordance with TCAWS Manual - Install & duplicate/repeat Lane Status Sign (T2-6-1 or 2) on multi lane roads - Use a minimum of 2 temporary hazard markers (T5-4 or 5) on tapers - Install a 30m minimum buffer zone at the end of tapers - Check setup before commencing work - Consider using a shadow vehicle (or vehicles) with flashing lights to protect workers - Ensure appropriate site distance to start of taper	4	2	14
Work Area										
5.0	Traffic Control	Motorist not concentrating or speeding collides with end of queue or traffic controller	5	4	24	NA	- Design and implement TGS in accordance with TCAWS, AS1742.3 and AGTTM. - Ensure all relevant traffic management personnel involved in the design and implementation of the TGS are certified as competent persons to perform the traffic management tasks they are required to undertake. - Conduct regular inspections in accordance with TCAWS, AS1742.3 and AGTTM. - Rectify any deficiencies as a matter of urgency. - Review traffic controls to suit changes in site conditions.	4	2	14
5.1	Working adjacent to travel lane	Motorist collides with worker, vehicle or plant	4	4	20	NA	Always: - Install workman T1-5 sign if workers on road - Space cones in accordance with TCAWS Manual - Check setup before commencing work - Reduce speed based on lateral clearance between the work area and travel lane Consider: - Using a shadow vehicle(s) with flashing lights to protect workers - Using spotters with workers - Using safety barriers	4	2	14
General										
6.0	Night work	Due to poor visibility motorist collides with end of queue, worker, vehicle or plant	5	4	20	Y	- Consider providing portable lighting to ensure traffic controllers are visible and ensure the positions of any temporary lighting are clearly shown on the TGS & always use applicable night PPE.	4	2	14
6.1	Wind / Rain / Fog / Obstructions	Rain/fog reduces visibility and causes road to be slippery increasing risk of a collision with workers, plant or other traffic Wind blows over signs Vehicle parks in front of sign	5	4	20	Y	- Always monitor weather and traffic - Always regularly check setup to ensure signs are visible. If visibility has been obstructed, consider shifting signs, duplication, or repetition. - Consider additional advance warning signage - Liaise with client to reconsider setup or continuation of works	3	3	12
6.2	Vehicle Movements	Plant collides with motorist, workers, or other plant	4	3	19	Y	Always: - Ensure positive communications Consider: - Using Traffic Control and/or Spotters to manage work vehicles - Installation of exclusion Zones - Preparing a VMP where required.	3	3	12
6.3	Pedestrians and Cyclists	Pedestrian and/or cyclist enters the work zone or travel lane and is hit by vehicle or plant	4	5	21	Y	- Ensure TGS design caters for all road users including pedestrians and cyclists. - Always clearly delineate the work area. - Do not obstruct pedestrian and cyclists travel paths with traffic control signs and devices. - Consider the use of additional warning and guidance signage for pedestrians, cyclists and motorists. - Comply with shoulder and lane width criteria in the design of the TGS. - Consider the use of traffic control at crossing points especially where contra-flow arrangements are in place. - Consider the use of additional traffic controllers to monitor and assist pedestrian and cyclist movements where required. - Ensure the use of existing or temporary ramps for crossing points. - Undertake consultation to determine existing travel paths, desire lines, volumes, and types of users.	4	2	14

Issue	Desg	Appd	Date & Time	Amendment Description
01	AC	PL	06/10/2023 09:30	Original Issue
02				
03				
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05				

TGS Name & Number: LGP - 61624 - GLC 142 - Herb Elliott Ave - Sydney Oly Park - Perm signage plan

Works Location: Herb Elliott Avenue - Sydney Olympic Park

Project Name: Sydney Metro Werstern Tunnelling

Project Description: Gate ingress/egress

TGS Designed By: Alec Czarnowski **PWZTMP:** TCT1010645 **Exp:** N/A **Signature:**

TGS Approved By: Peter Lozano **PWZTMP:** TCT0058486 **Exp:** N/A **Signature:**

Client Company: Gamuda Australia

Client Contact: Daniel Kelly **Contact Number:** 0437 315 649

GAMUDA Australia

Date of Approval: 06/10/2023

Scale: 1 : 750 | Original Size A3

Lack Group acknowledges the traditional owners of country throughout Australia and recognises their continuing connection to land, waters and community. We pay our respect to them and their cultures; and to elders both past and present.

Item #	Worksite Component	Potential Hazard	Initial Risk C	Initial Risk P	Initial Risk R	Present	Control Measures	Residual Risk C	Residual Risk P	Residual Risk R
6.4	Bus stops	Bus unable to pull up safely causing MVA	3	3	12	N	- Consider notifying bus companies that operate in the area - Always provide adequate provision for buses or carry out work at night when buses aren't operating - Where temporary bus stops are created, ensure buses are able to meet the curb - Ensure TGS clearly shows affected stops - Traffic controllers to manage and assist where safe and possible	2	2	5
6.5	Property accesses - commercial or private	Collisions due to propertie acess restrictions	3	4	17	Y	- Consider staging work outside of business hours - Create physical barrier to prevent traffic entering site & driveways	2	2	5
6.6	Excavations within work area	Errant vehicle drives into excavation	5	4	25	NA	- For excavations shallower than 0.5m and within 3m of the edge of traffic lane, delineate the excavation with plastic mesh fencing, barrier boards placed perpendicular to the traffic flow or cones/bollards. - For excavations deeper than 0.5m and within 3m of the edge of traffic lane, a temporary safety barrier must be installed. When traffic is greater than 3m from the excavation, the requirement for a temporary safety barrier should be considered based on a documented risk assessment. - Where the excavation is deeper than 200mm, is open for more than 2 weeks and the distance from the edge of traffic lane is less than 3m for 60km/h, 6m for 80km/h and 9m for 100km/h, a temporary safety barrier must be installed.	4	2	14
6.7	Parking	Parked vehicle or worker exiting vehicle hit by passing vehicle	4	4	20	Y	- Always check adequate parking is available for workers and visitors - Consider providing safe parking within the work area	4	2	14
6.8	Concurrent Works	Motorist confused by conflicting signs causing MVA	3	4	17	Y	- Always establish communication with other site if possible - Always cover any conflicting signs and adjust TGS as necessary - Complete conflict checks where required	3	3	12
6.9	Heavy Vehicles and OSOM Vehicles	HV cannot travel past work site without knocking over delineation	4	4	20	Y	- Comply with shoulder and lane width criteria in the design of the TGS. - During the design of the TGS, check vehicle swept path where necessary to ensure the largest known vehicle travelling through the work site can negotiate the changed traffic conditions. - Traffic controllers to communicate with heavy vehicle and OSOM drivers to warn and guide them through the work site as required. - Traffic control to monitor heavy vehicle movements and if required, make adjustments to the signs and devices within approved tolerances. If more significant changes are required, liaise with Client/Supervisor and arrange for TGS to be reviewed and modified by the designer.	4	2	14
Dynamic Works										
7.0	General Traffic	Motorists speeding / not concentrating / tired / distracted. Not having enough time to merge causing MVA	5	5	25	NA	- Always use a minimum 1 AWV and consider the use of a 2nd AWV. - Consider use of TMA on higher speed roads >85km - Use speed reduction best suited to work activity and road environment - Use applicable AW signage displayed on AWV - Ensure sight distances between AWV, shadow vehicles are clearly labelled on TGS - Ensure 20-40m buffer zone between shadow vehicle and work vehicle. No less than 40m when using a TMA as a shadow vehicle - Positive communications to be held at all times - Workers to remain shadowed at all times - Monitor traffic queues on all road configurations, convoy to clear roadway if required until traffic has cleared	4	2	14

Item	Additional Control Control Measures
8.0	
9.0	
10.0	
11.0	

Item	Departures: State the departure and reason for departure
12.0	
13.0	
14.0	

Departures Sign Off (CLIENT):

Client Name:

Client Signature: **Date:**

NOTES:

GENERAL NOTES

1. This Traffic Guidance Scheme (TGS) is to be used in conjunction with the Traffic Management Plan (TMP) and associated road authority permits and management plans, including Road Occupancy Licence (ROL), vehicle movement plan (VMP) and pedestrian movement plan (PMP) where applicable.
2. This TGS has been produced by a Prepare Work Zone Traffic Management Plan (PWZTMP) qualified person in accordance with the requirements of the TfNSW Traffic Control at Work Sites manual, Issue 6.1 dated 28 February 2022 (TCAWS 6.1) and with reference to AS1742.3 and AUSTROADS Guide to Temporary Traffic Management Parts 1 – 10, version 1.1 dated September 2021 (AGTTM).
3. This TGS is suitable for short term/long term works.
4. Lack Group does not accept responsibility for this TGS if it is implemented or modified by external parties.

APPROVALS

5. The TGS must be approved for use before implementation.
6. Ensure all road authority approvals and associated conditions of approval are met prior to implementing the TGS.

TGS VERIFICATION

7. Prior to use on site, the selected or designed TGS must be verified to ensure it is suitable for the works and location by undertaking an inspection of the work site where the TGS will be implemented. The TGS verification must be completed in accordance with TCAWS 6.1, Section 8.1.2 by an Implement Traffic Control Plan (ITCP) or PWZTMP qualified person. Refer Page 1 of this TGS for Site Verification sign-off.

RISK ASSESSMENT

8. A desktop risk assessment has been undertaken in developing this TGS. However, when implementing this TGS on site, the site supervisor should undertake a site specific risk assessment to ensure that the TGS has considered and mitigated all identified hazards and risks.

INSTALLATION AND REMOVAL OF SIGNS AND DEVICES

9. All traffic management signs and devices prescribed for use in this TGS are in accordance with TCAWS 6.1 with reference to AS1742.3 and AGTTM.
10. The TGS must be installed, maintained and removed in a planned and safe manner. The implementation must only be undertaken by an ITCP qualified person.
11. All signage shown on this TGS is not to conflict with any long-term existing signage arrangements in the area. If this occurs, cover all conflicting road signage where required.

PLACEMENT OF SIGNS AND DEVICES

12. Signs must be properly displayed and securely mounted at all times and within the line of sight of the intended road user. Regulatory and detour signs must be located nearest to the travel edge of the lane. Signs must not: Be obscured from view, such as by vegetation or parked cars; Obscure other devices from the line of sight of the intended road users; Create a hazard to road workers and road users, including pedestrians and cyclists; Be a hazard that deflects traffic into an undesirable path; Restrict sight distance for drivers entering from side roads or streets, or private driveways; and Be installed using supports that could be a hazard if struck by a vehicle.
13. Signs mounted on frames for short-term works should be mounted a minimum 200mm from the ground to the lower edge of the sign.
14. Signs mounted on posts for long-term works in open road situations, the underside of the sign must be at least 1.5m above the level of the nearest edge of the travelled path. When installed on a kerb or footpath, the underside of the sign must be at least 2.2m above the level of the nearest edge of the travelled path.

ORIENTATION OF SIGNS

15. On the outside of a curve, the sign face must be at 0 degrees, or 'normal to traffic'. On a straight, the sign face must be angled at approximately 5 degrees normal to oncoming traffic and on the inside of a curve, the sign ace must be angled at approximately 5 degrees normal to oncoming traffic at 200m preceding the sign.

TOLERANCES

16. Local constraints may not allow signage and devices to be placed in accordance with this TGS. Unless stated otherwise on the TGS, the tolerances on the positioning of signs, length of tapers or pavement markings detailed in the TGS is a minimum 10% less and a maximum 25% more than the distances or lengths stated and for the spacing of delineation devices a maximum 10% more than the spacing detailed in the TGS.
17. Any variation to the positioning of signs and devices within the approved tolerances must be marked and initialed on the TGS held on site, with the name of the person making the changes shown on the TGS.

MODIFYING TGS

18. Modifications to a Site Specific or Site Suitable TGS must be approved by a person holding the PWZTMP qualification and must be supported by a TMP or risk assessment to ensure that the TGS has considered and mitigated all identified site specific conditions and risks.
19. If it is identified that by implementing the TGS with modifications outside of the approved tolerances it will generate risks, then the works must be stopped (including the implementation of the TGS), the site must be made safe and an updated TGS must be provided by a PWZTMP qualified person prior to works recommencing. Any concerns regarding the suitability of the TGS must be raised with the Site Manager and your immediate Supervisor.

TRAFFIC CONTROLLERS

20. The implementation of traffic control must be conducted in line with the hierarchy of controls with the elimination of harm to workers and the travelling public considered in the first instance.
21. Where traffic control is required, a portable traffic control device (PTCD) must be used rather than using a manual traffic controller when the existing permanent speed limit is greater than 45 km/h.
22. TCAWS 6.1, Section 5.4 provides the conditions under which a manual traffic controller may be used.
23. Where PTCDs or traffic controllers are used, approach speeds of traffic must be reduced to less than 65 km/h.
24. All persons operating a portable traffic control device or performing manual traffic control must be qualified with 'Traffic Control' training; and authorised by the relevant road authority.

ROAD USER MANAGEMENT

25. The needs of specific road users, including travel paths and desire lines, must be considered and managed for the extent of the works to ensure safety and access is maintained. Specific road user groups to be considered include: Pedestrians including high-risk pedestrians such as persons with a disability, children, the elderly or persons using mobility aid devices; Cyclists; Motorcyclists; Heavy Vehicles, including oversize overmass vehicles; Public transport; and Emergency services. The needs of these specific road users have been considered in the design of this TGS, however the needs of all road users should be considered in the site specific risk assessment before implementing the TGS to ensure the TGS is appropriate.
26. Road users are to be monitored for the duration of the works. If additional signage and/or devices are required to manage the needs of specific road users, such as pedestrians and cyclists, this would be subject to following the procedure for modifying a TGS.

ACCESS MANAGEMENT

27. Access to properties located within the extent of works must be maintained at all times.
28. Property access impacted by the works should be identified and addressed in the TGS. Consultation with the property owner/resident must be undertaken prior to implementing the TGS if required.

INCIDENT MANAGEMENT

29. The site contractor is to determine the appropriate procedure for incident management where appropriate.
30. If an incident occurs within the extent of the traffic control arrangement: Call for assistance if incident requires (emergency services 000 or 112); Notify the work site supervisor or Team Leader immediately of any incident; Maintain effective traffic control, if necessary, relocate the traffic control station to a suitable location clear of any further danger; and Record sufficient notes of the incident, including observations, to complete an incident report.

INSPECTIONS

31. Temporary traffic management monitoring activities must be unbdse4rtaken in all instances where work is being performed or aftercare is in place. This includes day and night times as required. The type of inspections and frequency are to be in accordance with TCAWS 6.1, Section 8.1.1.

REVIEW OF TGS

32. Generic TGSs must be reviewed by a PWZTMP qualified person every 12 months so that they remain appropriate. Once reviewed the date and details of the PWZTMP person must be updated on the TGS to ensure persons selecting can confirm currency.
33. All active site specific and site suitable TGS are designed for the nominated work activity and are only valid for the time period of works specified on the TGS. They must be reviewed as part of the weekly inspections as detailed in TCAWS 6.1, Section 8.1. If the work activity is intended to be longer than 12 months, then the TGS musty be formally reviewed by a PWZTMP qualified person at least every 12 months and issued with the review date and the details of the person undertaking the review.

RECORD KEEPING

34. Supervisory personnel are to keep daily records of the TGS implementation including: Site specific risk assessments; Approved TGS used, including versions where modifications or updates have been made; Completed inspection checklists that have been undertaken; Records of traffic related incidents that occurred during the works; and Any other relevant document generated by the process of completing the temporary traffic management works.

Issue	Desg	Appd	Date & Time	Amendment Description
01	AC	PL	06/10/2023 09:30	Original Issue
02				
03				
04				
05				

TGS Name & Number: LGP - 61624 - GLC 142 - Herb Elliott Ave - Sydney Oly Park - Perm signage plan

TGS Designed By: Alec Czarnowski **PWZTMP:** TCT1010645 **Exp:** N/A **Signature:**

TGS Approved By: Peter Lozano **PWZTMP:** TCT0058486 **Exp:** N/A **Signature:**

Works Location: Herb Elliott Avenue - Sydney Olympic Park

Client Company: Gamuda Australia

Client Contact: Daniel Kelly **Contact Number:** 0437 315 649

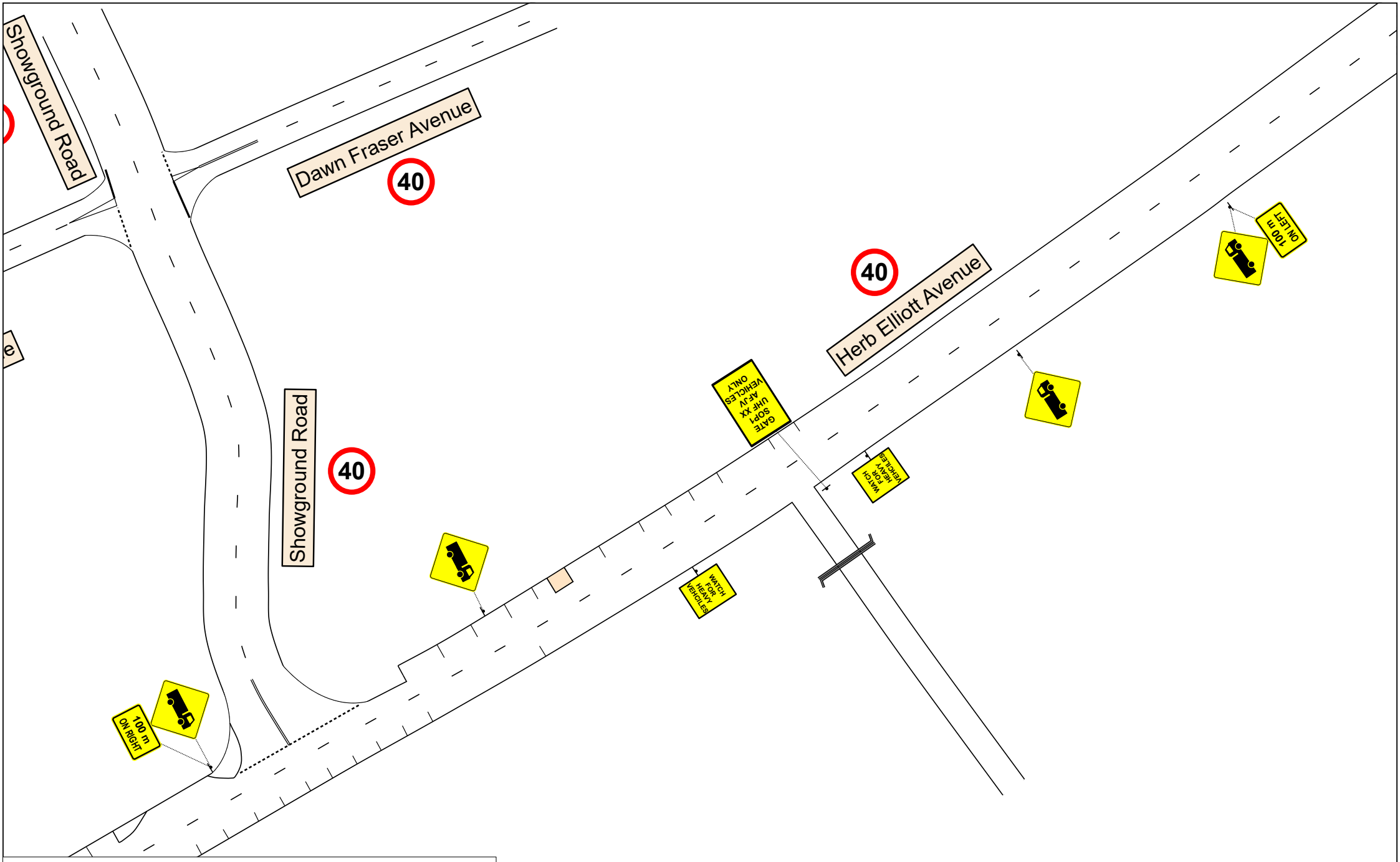
Project Name: Sydney Metro Werstern Tunnelling

Project Description: Gate ingress/egress

Date of Approval: 06/10/2023

Scale: 1 : 750 **Original Size A3**

Lack Group acknowledges the traditional owners of country throughout Australia and recognises their continuing connection to land, waters and community. We pay our respect to them and their cultures; and to elders both past and present.



Date of works:_____ Start time of works:_____ End time of works:_____ (24 hour time)

Issue	Desg	Appd	Date & Time	Amendment Description
01	AC	PL	06/10/2023 09:30	Original Issue
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Lack Group

N

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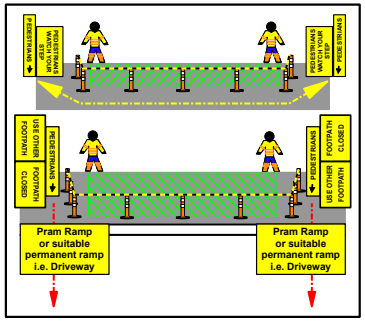
Locality Map

Personnel Requirements	Asset Requirements
Traffic Controllers	3
UTE	1
CONE TRUCK	0
ESAS	0
TMA	0
ESTOP	0
BOOM GATE	2
EXTRA REQUIREMENTS	0

Above requirements are for guidance only as they may change due to unforeseen circumstances

Legend

- Work Area
- Bollard
- Safety Barrier
- Safety Zone
- Traffic Controller
- Escape Route
- Portable Traffic Signal
- Portaboom
- Barrier Board
- Tiger Tail
- Trailer VMS
- Traffic Cone
- Temporary Bus Stop
- Open Bus stop
- Closed Bus stop
- Arrowboard
- Sign Cover
- Existing Signs
- Traffic Flow
- Traffic Flow
- Pedestrian Flow
- TMA
- Cone Truck
- Work Vehicle
- Police Car
- VMS Vehicle
- Traffic Vehicle



Pedestrian / Cyclist Note: Crossing location must consider site conditions including sight distance, number of lanes, traffic volumes, traffic speed, numbers of pedestrians

Pedestrian Management Options Analysis

Options Available	THROUGH	PAST	AROUND
Options Selected		Selected	

Cyclist Management Options Analysis

Options Available	THROUGH	PAST	AROUND
Options Selected		Selected	

Traffic Management Options Analysis

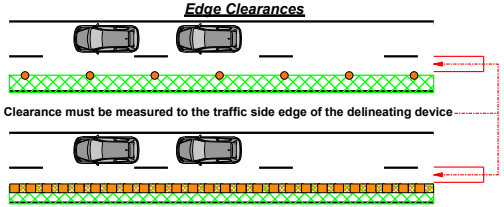
OPTION	DESCRIPTION	METHOD TYPE	TGS SELECTED
AROUND	Vehicles detoured via existing road network or sidetrack	Full road closure / One-way road closure / Detour	
PAST	Vehicles past delineated work zones	Lateral Shift	
		Shoulder closure	
		Contraflow (2 way traffic maintained)	
		Single or Multi Lane Closure	
		Single Lane Shuttle Flow	
THROUGH	Vehicles through work zone	Temporary Road Closure / Hold & Release / Local Traffic Access / Pilot Vehicle	Selected

Dimension "D" (Main Roads)	40	metres
Dimension "D" (Minor Roads)	40	metres

Taper Lengths

Approximate speed of traffic	Traffic control at beginning of taper	Lateral shift taper	Merge taper
45 or less	15	15	15
46 - 55	15	15	30
56 - 65	30	30	60
66 - 75	N/A	70	115
76 - 85	N/A	80	130
86 - 95	N/A	90	145
96 - 105	N/A	100	160
> 105	N/A	110	180

Edge Clearances



Clearance must be measured to the traffic side edge of the delineating device

Speed (km/h)	Distance between tapers (m)
45 or less	10
46 to 55	25
56 to 65	70
Greater than 65	1.5 x Speed Limit (D)

TGS Verification Checklist:

Verified By:	Position:	Signature:
Qualification:	Expiry / Issue Date:	Date of Verification:

Traffic Guidance Scheme Modifications:

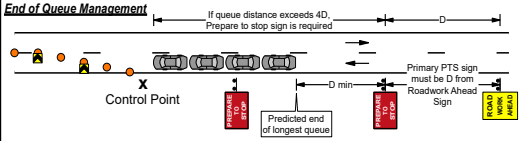
Modified By:	Qualification Number:	
Expiry / Issue Date:	Signature:	Date of Modification:

Modification Notes:

Traffic Guidance Scheme Installation:

Installed By:	Qualification Number:	
Expiry / Issue Date:	Signature:	Date of Installation:

End of Queue Management



Estimated end of queue lengths to be noted here:_____

Edge of traffic lane to:	Edge Clearence
Line of traffic cones or bollards	- 0.5 m for traffic speeds less than 65 km/h - 1.0 m for traffic speeds greater than 65 km/h
Barrier boards, temporary guide posts or temporary hazard markers	- 1.0 m
Road safety barrier system	- 0.3 m for traffic speeds less than 45 km/h - 0.5 m for traffic speeds 45 to 65 km/h - 1.0 m for traffic speeds 65 to 85 km/h - 2.0 m for traffic speeds greater than 85 km/h

Delineation Spacing

Purpose & Usage	Speed zone of device location km/h	Maximum Spacing m
On approach to a traffic controller position (center line or edge line)	All cases	4
Merge Tapers	55 to 75 Greater than 76	9 12
Lateral shift tapers	55 to 75 Greater than 76	12 18
Protecting freshly painted lines	56 to 75 Greater than 76	24 60
All other puporses	less than or equal to 55 26 to 75 greater than 76	4 12 18

Installation & Removal of Signs & Devices

Two-lane, two-way roads:
The sequence of installation should be as illustrated in the following order:
1: Install the termination signs when initially leaving work area, 'End Road Work/speed reinstatement' (affected direction).
2: Use the existing road network to turn where safe to do so.
3 to 7: Place approach signs in unaffected direction, including the PTCD (traffic controller to remain with the PTCD).
8: Install 'End Road Work/speed reinstatement' (unaffected direction).
9: Use the existing road network to turn where safe to do so.
10 to 14: Place approach signs in the affected direction, including the PTCD (traffic controller to remain with PTCD).
15 and 16: Traffic controller/s to stop traffic and taper/lane closure delineation implemented.
17: ITCP qualified person completes drive around to confirm TGS is installed as designed.

Multi-lane roads:
The sequence of installation should be as illustrated in the following order:
1: Locate advance warning vehicle and TMA to shadow sign installation vehicle.
2 to 5: Install advance warning signs in unaffected lane.
6: Install 'End Roadwork'/speed reinstatement.
7: Use the existing road network to turn where safe to do so.
8: Locate advance warning vehicle and TMA to shadow sign installation vehicle.
9 to 12: Install advance warning signs in obstructed (affected) lane.
13: Install 'Flashing Arrow' and delineation devices on approach to start of taper.
14: Position TMA in travel lane to shadow installation of taper.
14 and 15: Install taper and delineation devices to form taper, safety buffer and past work area.
16: Install 'End Roadwork'/speed reinstatement.
17: Use the existing road network to turn where safe to do so.
18: TMA positioned to shadow work area.
19: ITCP qualified person completes drive around to confirm TGS is installed as designed.

Sign spacing requirements

Number of signs	Approach Speed	
	less than 65 km/h	65 km/h or greater
One advanced sign	D	2D
Multiple advanced signs	D	D

ALTERNATE SIGN SPACING
Dimension 'D': AGTTM: A distance expressed in metres, determined in accordance with Table 2.2 and used for positioning of advance signs. To be considered if TCAWS dimension "D" cannot be provided due to site conditions.

Speed of Traffic km/h	Dimension m
55 or less	15
56 to 65	45
Greater than 65	speed of traffic, in Km/h

Issue	Desg	Appd	Date & Time	Amendment Description
01	AC	PL	05/10/2023 13:30	Original Issue
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03				
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TGS Name & Number: LGP - 61447 - GLC 141 - Herb Elliott Ave - Sydney Oly Park - Semi delivery

Works Location: Herb Elliott Avenue - Sydney Olympic Park

Project Name: Sydney Metro Werstern Tunnelling

Project Description: Gate ingress/egress

TGS Designed By: Alec Czarnowski **PWZTMP:** TCT1010645 **Exp:** N/A **Signature:**

TGS Approved By: Peter Lozano **PWZTMP:** TCT0058486 **Exp:** N/A **Signature:**

Client Company: Gamuda Australia

Client Contact: Daniel Kelly **Contact Number:** 0437 315 649

GAMUDA Australia

Date of Approval: 05/10/2023

Scale: 1 : 750 | **Original Size A3**

Lack Group acknowledges the traditional owners of country throughout Australia and recognises their continuing connection to land, waters and community. We pay our respect to them and their cultures; and to elders both past and present.

TGS Risk Assessment

Hierarchy of Controls

1. Eliminate the hazard altogether.
eg. Road closures.
2. Substitute the hazard with a safer alternative.
eg. Using PTCDs instead of stop bats.
3. Isolate the hazard from anyone who could be harmed.
eg. Drop zones for clients works in elevated work zones.
4. Use engineering controls to reduce the risk.
eg. The use of traffic control devices to protect work area.
5. Use administrative controls to reduce the risk.
eg. Ensure personnel are trained in their field.
6. Use PPE.
eg. Wearing gloves while manual handling.

More Effective ↑ ↓ Less Effective

Step 1 - Consequence (impact)

	Negligible (1)	Minor (2)	Moderate (3)	Major (4)	Severe (5)
Health & Safety	First Aid Treatment	Medical Treatment	Lost Time Injury	Permanent Impairment Injury	Fatality
Enviro	Very minor injury that requires no treatment or simple first aid	Injury / illness, which requires medical treatment and may temporarily restrict a persons capacity to work	Injury / illness, which temporarily renders a person unfit to work in any capacity	Injury / illness, which permanently alters a persons future (eg. Spinal injury, amputation or death)	
Quality	Short term damage	Limited but medium term damage	Significant but recoverable ecological damage	Heavy ecological damage, costly restoration	Permanent widespread ecological damage
	Brief delay / slight impact on service delivery	Local or worksite specific impact on service delivery or customer satisfaction	Temporary impact on service delivery or customer satisfaction at a local event / project level	Serious impact on service delivery or customer satisfaction at a state client or large project level	Long term or very severe impact on service delivery or customer satisfaction resulting in loss of business nationally

Step 2 - Probability

				Negligible (1)	Minor (2)	Moderate (3)	Major (4)	Severe (5)
Almost Certain (5)	The threat can be expected to occur 75% - 99%	Common / Frequent Occurance	More than 1 event per month	Moderate (8)	High (16)	High (18)	High (21)	Extreme (25)
Likely (4)	The threat will quite commonly occur 50% - 75%	Is know to occur or "it has happened regularly"	More than 1 event per year	Moderate (7)	Moderate (10)	High (17)	High (20)	High (24)
Possible (3)	The threat may occur occasionally 25% - 50%	Could occur or "I've heard of it happening"	1 event per 1 to 10 years	Low (3)	Moderate (9)	Moderate (12)	High (19)	High (23)
Unlikely (2)	The threat could infrequently occur 10% - 25%	Not likely to occur very often	1 event per 10 to 100 years	Low (2)	Low (5)	Moderate (11)	Moderate (14)	High (22)
Rare (1)	The threat may occur in exceptional circumstances The threat may occur occasionally 0% - 10%	Conceivable but only in exceptional circumstances	Less than 1 event per 100 years	Low (1)	Low (4)	Low (6)	Moderate (13)	Moderate (15)

Step 3 - The risk rating is where the consequence and the probability intersect

Item #	Worksite Component	Potential Hazard	Initial Risk C	Initial Risk P	Initial Risk R	Present	Control Measures	Residual Risk C	Residual Risk P	Residual Risk R
	Acceptance									
1.0	TGS Drawn / implemented by unqualified person or organization	TGS Drawn / implemented by unqualified person or organization	5	3	23	Y	- Design and implement TGS in accordance with TCAWS, AS1742.3 and AGTTM. - Ensure all relevant traffic management personnel involved in the design and implementation of the TGS are certified as competent persons to perform the traffic management tasks they are required to undertake.	4	1	13
	Departures									
2.0	Stop bat used instead of PTCD	Traffic controller hit by vehicle	5	4	24	N	- Consider use of shadow vehicles if practical, or other type of static hard cover available (i.e. safety barrier) - Ensure best possible escape route considered when allocating control point on TGS - to be reassessed onsite continuously - Ensure best line of sight where practical. Should the best line of sight not be possible, repeater signs in advance warning to be used. - Traffic controller to always remain clear from travelled path. - Ensure appropriate speed signage has been installed and meets minimum and maximum length requirements.	4	2	14
	Advanced Warning									
3.0	VMS	Motorist collides with VMS, motorist confused by VMS	4	4	20	N	- Always place VMS behind an approved safety barrier or as far away from the edge of traffic lane as is practical in a position determined suitable based on a documented risk assessment. - The location is to be confirmed by Risk Assessment	3	2	11
3.1	Long Term Works	Confused motorist collides with worker	4	4	20	N	- Always install RWA (T1-1) on long-term road work sites - Consider using VMS's	3	3	12
3.2	Delays or Queue extends beyond advanced warning signs	Motorist collides with end of queue	4	4	20	Y	Always: - Work in accordance with the approved and appropriate ROL - Use two-way communication with trucks and give them priority whenever possible - Monitor queue lengths - Install additional signs or use additional traffic controllers or stop work and clear traffic if end of queue extends beyond the advance warning signs - Give emergency vehicles & wide loads priority (i.e. stop work & traffic) Consider: - Working outside peak periods - Liaising with TMC for assistance with traffic signal phasing - Using VMS's - Notifying emergency services - Use of flashing beacon to be added to advance warning signage - Use of queue monitors - Ensure TGS has been designed to cater for the predicted queue lengths where required.	4	2	14
3.3	Changed traffic conditions (eg Slippery surface, no lines, changed line marking, banned turning movements, detours)	Motorist loses control, is confused, or attempts a banned manoeuvre causing MVA	4	4	20	Y	Always: - Install RWA (T1-1) if diverting traffic along a sidetrack, detour, or unexpected conditions such as loose stones or the absence of line marking - Erect Condition signs in accordance with TCAWS Manual - Provide delineation or temporary line marking and ensure this is clearly shown on the TGS - Use Traffic Control to manage changed traffic conditions where required. - Check setup before commencing work - Ensure appropriate permission for any detours - Speed reduction installed to suit road conditions - Consider using VMS's	3	2	11
3.4	After care	Inadequate signage resulting in motorist loosing control and crashing or motorist becomes frustrated due to inappropriate signage	4	4	20	N	Always: - Install RWA (T1-1) if diverting traffic along a sidetrack, detour, or unexpected conditions, such as loose stones or the absence of line marking - Cover any signs that are not applicable - Erect Condition signs in accordance with TCWS Manual - Provide delineation or temporary line marking - Aftercare speed limit to suit road conditions	3	3	12
3.5	Poor sight distance or speed compliance or Approach speed > 85km/h, or multi lane roads with traffic volume > 10,000vpd	Speeding vehicle doesn't have time to react and fails to negotiate merge taper	5	4	24	Y	Always: - Install RW 1km Ahead if approach speed is > 85km/h or sight distance is less than 150m - Use 700mm cones where traffic speed is greater than 75km/h - Use 900mm cones on high speed to high volume roads (e.g., expressway) or on any work site where increased visibility is required - Duplicate Lane status sign. Consider: - Installing RWA (T1-1) - Increasing taper lengths - Increasing the number of advance warning signage installed - Increasing the size of signage installed - Need for duplication of signs.	4	2	14
3.6	Side Roads	Vehicles enters work site from a side road and collides with workers	3	4	17	Y	- Always install advance warning signage for vehicles entering from side road in advance of the work site.	3	2	11
3.7	Temporary Speed Zone	Motorist travelling too fast for the conditions causing MVA	5	4	24	N	- Ensure speed zones are designed in accordance with TCAWS, AS1742.3 and AGTTM. - Ensure speed zoning is consistent with the work activity and road environment. - Consider the use of speed radar VMS to monitor traffic speeds and advise motorists. - Review the TGS and adjust where possible to enhance traffic calming through the work site.	4	2	14
	Transition									
4.0	Lane closure	Motorist fails to negotiate taper and collides with worker, vehicle or plant	5	4	24	Y	Always: - Install taper lengths and cones in accordance with TCAWS Manual - Install & duplicate/repeat Lane Status Sign (T2-6-1 or 2) on multi lane roads - Use a minimum of 2 temporary hazard markers (T5-4 or 5) on tapers - Install a 30m minimum buffer zone at the end of tapers - Check setup before commencing work - Consider using a shadow vehicle (or vehicles) with flashing lights to protect workers - Ensure appropriate site distance to start of taper	4	2	14
	Work Area									
5.0	Traffic Control	Motorist not concentrating or speeding collides with end of queue or traffic controller	5	4	24	Y	- Design and implement TGS in accordance with TCAWS, AS1742.3 and AGTTM. - Ensure all relevant traffic management personnel involved in the design and implementation of the TGS are certified as competent persons to perform the traffic management tasks they are required to undertake. - Conduct regular inspections in accordance with TCAWS, AS1742.3 and AGTTM. - Rectify any deficiencies as a matter of urgency. - Review traffic controls to suit changes in site conditions.	4	2	14
5.1	Working adjacent to travel lane	Motorist collides with worker, vehicle or plant	4	4	20	Y	Always: - Install workman T1-5 sign if workers on road - Space cones in accordance with TCAWS Manual - Check setup before commencing work - Reduce speed based on lateral clearance between the work area and travel lane Consider: - Using a shadow vehicle(s) with flashing lights to protect workers - Using spotters with workers - Using safety barriers	4	2	14
	General									
6.0	Night work	Due to poor visibility motorist collides with end of queue, worker, vehicle or plant	5	4	20	Y	- Consider providing portable lighting to ensure traffic controllers are visible and ensure the positions of any temporary lighting are clearly shown on the TGS & always use applicable night PPE.	4	2	14
6.1	Wind / Rain / Fog / Obstructions	Rain/fog reduces visibility and causes road to be slippery increasing risk of a collision with workers, plant or other traffic Wind blows over signs Vehicle parks in front of sign	5	4	20	Y	- Always monitor weather and traffic - Always regularly check setup to ensure signs are visible. If visibility has been obstructed, consider shifting signs, duplication, or repetition. - Consider additional advance warning signage - Liaise with client to reconsider setup or continuation of works	3	3	12
6.2	Vehicle Movements	Plant collides with motorist, workers, or other plant	4	3	19	Y	Always: - Ensure positive communications Consider: - Using Traffic Control and/or Spotters to manage work vehicles - Installation of exclusion Zones - Preparing a VMP where required.	3	3	12
6.3	Pedestrians and Cyclists	Pedestrian and/or cyclist enters the work zone or travel lane and is hit by vehicle or plant	4	5	21	Y	- Ensure TGS design caters for all road users including pedestrians and cyclists. - Always clearly delineate the work area. - Do not obstruct pedestrian and cyclists travel paths with traffic control signs and devices. - Consider the use of additional warning and guidance signage for pedestrians, cyclists and motorists. - Comply with shoulder and lane width criteria in the design of the TGS. - Consider the use of traffic control at crossing points especially where contra-flow arrangements are in place. - Consider the use of additional traffic controllers to monitor and assist pedestrian and cyclist movements where required. - Ensure the use of existing or temporary ramps for crossing points. - Undertake consultation to determine existing travel paths, desire lines, volumes, and types of users.	4	2	14

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Works Location: Herb Elliott Avenue - Sydney Olympic Park

Project Name: Sydney Metro Werstern Tunnelling

Project Description: Gate ingress/egress

TGS Designed By: Alec Czarnowski **PWZTMP:** TCT1010645 **Exp:** N/A **Signature:**

TGS Approved By: Peter Lozano **PWZTMP:** TCT0058486 **Exp:** N/A **Signature:**

Client Company: Gamuda Australia

Client Contact: Daniel Kelly **Contact Number:** 0437 315 649

GAMUDA Australia

Date of Approval: 05/10/2023

Scale: 1 : 750 | Original Size A3

Item #	Worksite Component	Potential Hazard	Initial Risk C	Initial Risk P	Initial Risk R	Present	Control Measures	Residual Risk C	Residual Risk P	Residual Risk R
6.4	Bus stops	Bus unable to pull up safely causing MVA	3	3	12	N	- Consider notifying bus companies that operate in the area - Always provide adequate provision for buses or carry out work at night when buses aren't operating - Where temporary bus stops are created, ensure buses are able to meet the curb - Ensure TGS clearly shows affected stops - Traffic controllers to manage and assist where safe and possible	2	2	5
6.5	Property accesses - commercial or private	Collisions due to propertie acess restrictions	3	4	17	Y	- Consider staging work outside of business hours - Create physical barrier to prevent traffic entering site & driveways	2	2	5
6.6	Excavations within work area	Errant vehicle drives into excavation	5	4	25	Y	- For excavations shallower than 0.5m and within 3m of the edge of traffic lane, delineate the excavation with plastic mesh fencing, barrier boards placed perpendicular to the traffic flow or cones/bollards. - For excavations deeper than 0.5m and within 3m of the edge of traffic lane, a temporary safety barrier must be installed. When traffic is greater than 3m from the excavation, the requirement for a temporary safety barrier should be considered based on a documented risk assessment. - Where the excavation is deeper than 200mm, is open for more than 2 weeks and the distance from the edge of traffic lane is less than 3m for 60km/h, 6m for 80km/h and 9m for 100km/h, a temporary safety barrier must be installed.	4	2	14
6.7	Parking	Parked vehicle or worker exiting vehicle hit by passing vehicle	4	4	20	Y	- Always check adequate parking is available for workers and visitors - Consider providing safe parking within the work area	4	2	14
6.8	Concurrent Works	Motorist confused by conflicting signs causing MVA	3	4	17	Y	- Always establish communication with other site if possible - Always cover any conflicting signs and adjust TGS as necessary - Complete conflict checks where required	3	3	12
6.9	Heavy Vehicles and OSOM Vehicles	HV cannot travel past work site without knocking over delineation	4	4	20	Y	- Comply with shoulder and lane width criteria in the design of the TGS. - During the design of the TGS, check vehicle swept path where necessary to ensure the largest known vehicle travelling through the work site can negotiate the changed traffic conditions. - Traffic controllers to communicate with heavy vehicle and OSOM drivers to warn and guide them through the work site as required. - Traffic control to monitor heavy vehicle movements and if required, make adjustments to the signs and devices within approved tolerances. If more significant changes are required, liaise with Client/Supervisor and arrange for TGS to be reviewed and modified by the designer.	4	2	14
Dynamic Works										
7.0	General Traffic	Motorists speeding / not concentrating / tired / distracted. Not having enough time to merge causing MVA	5	5	25	N	- Always use a minimum 1 AWV and consider the use of a 2nd AWV. - Consider use of TMA on higher speed roads >85km - Use speed reduction best suited to work activity and road environment - Use applicable AW signage displayed on AWV - Ensure sight distances between AWV, shadow vehicles are clearly labelled on TGS - Ensure 20-40m buffer zone between shadow vehicle and work vehicle. No less than 40m when using a TMA as a shadow vehicle - Positive communications to be held at all times - Workers to remain shadowed at all times - Monitor traffic queues on all road configurations, convoy to clear roadway if required until traffic has cleared	4	2	14

Item	Additional Control Control Measures
8.0	
9.0	
10.0	
11.0	

Item	Departures: State the departure and reason for departure
12.0	
13.0	
14.0	

Departures Sign Off (CLIENT):

Client Name:

Client Signature: **Date:**

NOTES:

GENERAL NOTES

1. This Traffic Guidance Scheme (TGS) is to be used in conjunction with the Traffic Management Plan (TMP) and associated road authority permits and management plans, including Road Occupancy Licence (ROL), vehicle movement plan (VMP) and pedestrian movement plan (PMP) where applicable.
2. This TGS has been produced by a Prepare Work Zone Traffic Management Plan (PWZTMP) qualified person in accordance with the requirements of the TfNSW Traffic Control at Work Sites manual, Issue 6.1 dated 28 February 2022 (TCAWS 6.1) and with reference to AS1742.3 and AUSTROADS Guide to Temporary Traffic Management Parts 1 – 10, version 1.1 dated September 2021 (AGTTM).
3. This TGS is suitable for short term/long term works.
4. Lack Group does not accept responsibility for this TGS if it is implemented or modified by external parties.

APPROVALS

5. The TGS must be approved for use before implementation.
6. Ensure all road authority approvals and associated conditions of approval are met prior to implementing the TGS.

TGS VERIFICATION

7. Prior to use on site, the selected or designed TGS must be verified to ensure it is suitable for the works and location by undertaking an inspection of the work site where the TGS will be implemented. The TGS verification must be completed in accordance with TCAWS 6.1, Section 8.1.2 by an Implement Traffic Control Plan (ITCP) or PWZTMP qualified person. Refer Page 1 of this TGS for Site Verification sign-off.

RISK ASSESSMENT

8. A desktop risk assessment has been undertaken in developing this TGS. However, when implementing this TGS on site, the site supervisor should undertake a site specific risk assessment to ensure that the TGS has considered and mitigated all identified hazards and risks.

INSTALLATION AND REMOVAL OF SIGNS AND DEVICES

9. All traffic management signs and devices prescribed for use in this TGS are in accordance with TCAWS 6.1 with reference to AS1742.3 and AGTTM.
10. The TGS must be installed, maintained and removed in a planned and safe manner. The implementation must only be undertaken by an ITCP qualified person.
11. All signage shown on this TGS is not to conflict with any long-term existing signage arrangements in the area. If this occurs, cover all conflicting road signage where required.

PLACEMENT OF SIGNS AND DEVICES

12. Signs must be properly displayed and securely mounted at all times and within the line of sight of the intended road user. Regulatory and detour signs must be located nearest to the travel edge of the lane. Signs must not: Be obscured from view, such as by vegetation or parked cars; Obscure other devices from the line of sight of the intended road users; Create a hazard to road workers and road users, including pedestrians and cyclists; Be a hazard that deflects traffic into an undesirable path; Restrict sight distance for drivers entering from side roads or streets, or private driveways; and Be installed using supports that could be a hazard if struck by a vehicle.
13. Signs mounted on frames for short-term works should be mounted a minimum 200mm from the ground to the lower edge of the sign.
14. Signs mounted on posts for long-term works in open road situations, the underside of the sign must be at least 1.5m above the level of the nearest edge of the travelled path. When installed on a kerb or footpath, the underside of the sign must be at least 2.2m above the level of the nearest edge of the travelled path.

ORIENTATION OF SIGNS

15. On the outside of a curve, the sign face must be at 0 degrees, or 'normal to traffic'. On a straight, the sign face must be angled at approximately 5 degrees normal to oncoming traffic and on the inside of a curve, the sign ace must be angled at approximately 5 degrees normal to oncoming traffic at 200m preceding the sign.

TOLERANCES

16. Local constraints may not allow signage and devices to be placed in accordance with this TGS. Unless stated otherwise on the TGS, the tolerances on the positioning of signs, length of tapers or pavement markings detailed in the TGS is a minimum 10% less and a maximum 25% more than the distances or lengths stated and for the spacing of delineation devices a maximum 10% more than the spacing detailed in the TGS.
17. Any variation to the positioning of signs and devices within the approved tolerances must be marked and initialed on the TGS held on site, with the name of the person making the changes shown on the TGS.

MODIFYING TGS

18. Modifications to a Site Specific or Site Suitable TGS must be approved by a person holding the PWZTMP qualification and must be supported by a TMP or risk assessment to ensure that the TGS has considered and mitigated all identified site specific conditions and risks.
19. If it is identified that by implementing the TGS with modifications outside of the approved tolerances it will generate risks, then the works must be stopped (including the implementation of the TGS), the site must be made safe and an updated TGS must be provided by a PWZTMP qualified person prior to works recommencing. Any concerns regarding the suitability of the TGS must be raised with the Site Manager and your immediate Supervisor.

TRAFFIC CONTROLLERS

20. The implementation of traffic control must be conducted in line with the hierarchy of controls with the elimination of harm to workers and the travelling public considered in the first instance.
21. Where traffic control is required, a portable traffic control device (PTCD) must be used rather than using a manual traffic controller when the existing permanent speed limit is greater than 45 km/h.
22. TCAWS 6.1, Section 5.4 provides the conditions under which a manual traffic controller may be used.
23. Where PTCDs or traffic controllers are used, approach speeds of traffic must be reduced to less than 65 km/h.
24. All persons operating a portable traffic control device or performing manual traffic control must be qualified with 'Traffic Control' training; and authorised by the relevant road authority.

ROAD USER MANAGEMENT

25. The needs of specific road users, including travel paths and desire lines, must be considered and managed for the extent of the works to ensure safety and access is maintained. Specific road user groups to be considered include: Pedestrians including high-risk pedestrians such as persons with a disability, children, the elderly or persons using mobility aid devices; Cyclists; Motorcyclists; Heavy Vehicles, including oversize overmass vehicles; Public transport; and Emergency services. The needs of these specific road users have been considered in the design of this TGS, however the needs of all road users should be considered in the site specific risk assessment before implementing the TGS to ensure the TGS is appropriate.
26. Road users are to be monitored for the duration of the works. If additional signage and/or devices are required to manage the needs of specific road users, such as pedestrians and cyclists, this would be subject to following the procedure for modifying a TGS.

ACCESS MANAGEMENT

27. Access to properties located within the extent of works must be maintained at all times.
28. Property access impacted by the works should be identified and addressed in the TGS. Consultation with the property owner/resident must be undertaken prior to implementing the TGS if required.

INCIDENT MANAGEMENT

29. The site contractor is to determine the appropriate procedure for incident management where appropriate.
30. If an incident occurs within the extent of the traffic control arrangement: Call for assistance if incident requires (emergency services 000 or 112); Notify the work site supervisor or Team Leader immediately of any incident; Maintain effective traffic control, if necessary, relocate the traffic control station to a suitable location clear of any further danger; and Record sufficient notes of the incident, including observations, to complete an incident report.

INSPECTIONS

31. Temporary traffic management monitoring activities must be unbdse4rtaken in all instances where work is being performed or aftercare is in place. This includes day and night times as required. The type of inspections and frequency are to be in accordance with TCAWS 6.1, Section 8.1.1.

REVIEW OF TGS

32. Generic TGSs must be reviewed by a PWZTMP qualified person every 12 months so that they remain appropriate. Once reviewed the date and details of the PWZTMP person must be updated on the TGS to ensure persons selecting can confirm currency.
33. All active site specific and site suitable TGS are designed for the nominated work activity and are only valid for the time period of works specified on the TGS. They must be reviewed as part of the weekly inspections as detailed in TCAWS 6.1, Section 8.1. If the work activity is intended to be longer than 12 months, then the TGS musty be formally reviewed by a PWZTMP qualified person at least every 12 months and issued with the review date and the details of the person undertaking the review.

RECORD KEEPING

34. Supervisory personnel are to keep daily records of the TGS implementation including: Site specific risk assessments; Approved TGS used, including versions where modifications or updates have been made; Completed inspection checklists that have been undertaken; Records of traffic related incidents that occurred during the works; and Any other relevant document generated by the process of completing the temporary traffic management works.

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Client Company: Gamuda Australia

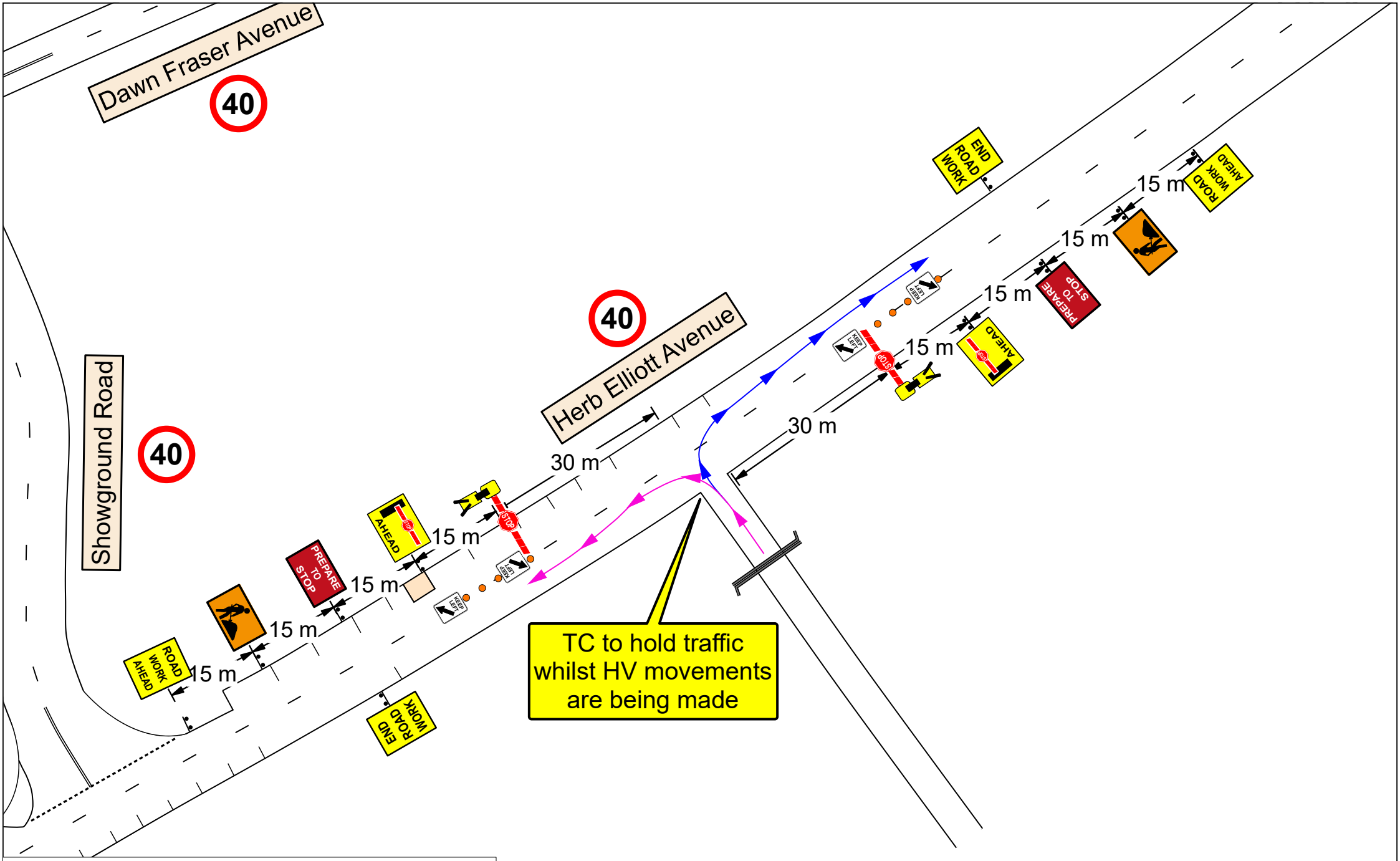
Client Contact: Daniel Kelly **Contact Number:** 0437 315 649

GAMUDA Australia

Date of Approval: 05/10/2023

Scale: 1 : 750 **Original Size A3**

Lack Group acknowledges the traditional owners of country throughout Australia and recognises their continuing connection to land, waters and community. We pay our respect to them and their cultures; and to elders both past and present.



Date of works:_____ Start time of works:_____ End time of works:_____ (24 hour time)

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GAMUDA Australia

Lack Group

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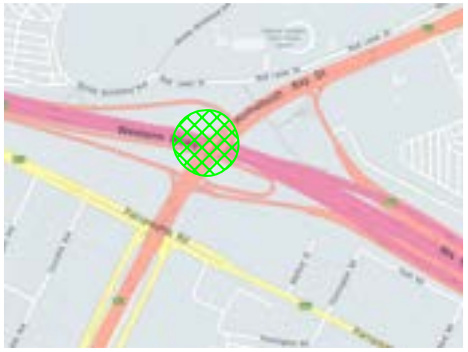
Locality Map

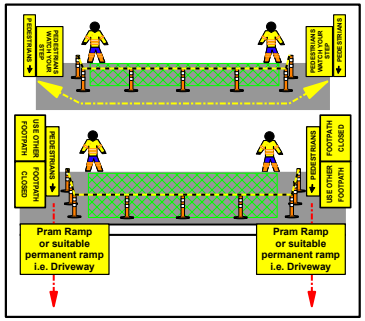


Personnel Requirements	Asset Requirements
Traffic Controllers	10
UTE	3
CONE TRUCK	2
ESAS	0
TMA	1
ESTOP	4
ARROW BOARD	3
ADVANCED WARNING VEHICLE	1

Above requirements are for guidance only as they may change due to unforeseen circumstances

Legend

- Work Area
- Bollard
- Safety Barrier
- Safety Zone
- Tiger Tail
- Traffic Controller
- Escape Route
- Portable Traffic Signal
- Portaboom
- Barrier Board
- Trailer VMS
- Traffic Cone
- Temporary Bus Stop
- Open Bus stop
- Closed Bus stop
- Arrowboard
- Sign Cover
- Existing Signs
- Traffic Flow
- Traffic Flow
- Pedestrian Flow
- TMA
- Cone Truck
- Work Vehicle
- Police Car
- VMS Vehicle
- Traffic Vehicle



Pedestrian / Cyclist Note: Crossing location must consider site conditions including sight distance, number of lanes, traffic volumes, traffic speed, numbers of pedestrians

Traffic Management Options Analysis

OPTION	DESCRIPTION	METHOD TYPE	TGS SELECTED
AROUND	Vehicles detoured via existing road network or sidetrack	Full road closure / One-way road closure / Detour	
PAST	Vehicles past delineated work zones	Lateral Shift	
		Shoulder closure	
		Contraflow (2 way traffic maintained)	
		Single or Multi Lane Closure	Selected
		Single Lane Shuttle Flow	Selected
THROUGH	Vehicles through work zone	Temporary Road Closure / Hold & Release / Local Traffic Access / Pilot Vehicle	Selected

Pedestrian Management Options Analysis

	THROUGH	PAST	AROUND
Options Available			
Options Selected		Selected	

Cyclist Management Options Analysis

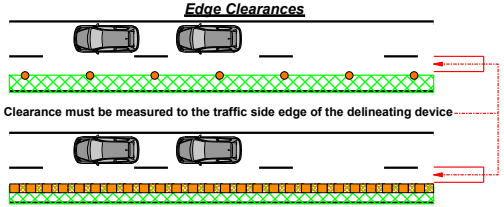
	THROUGH	PAST	AROUND
Options Available			
Options Selected		Selected	

Dimension "D" (Main Roads)	90,80	metres
Dimension "D" (Minor Roads)	90,80,60,50	metres

Taper Lengths

Approximate speed of traffic	Traffic control at beginning of taper	Lateral shift taper	Merge taper
45 or less	15	15	15
46 - 55	15	15	30
56 - 65	30	30	60
66 - 75	N/A	70	115
76 - 85	N/A	80	130
86 - 95	N/A	90	145
96 - 105	N/A	100	160
> 105	N/A	110	180

Edge Clearances



Clearance must be measured to the traffic side edge of the delineating device

Speed (km/h)	Distance between tapers (m)
45 or less	10
46 to 55	25
56 to 65	70
Greater than 65	1.5 x Speed Limit (D)

Delineation Spacing

Purpose & Usage	Speed zone of device location km/h	Maximum Spacing m
On approach to a traffic controller position (center line or edge line)	All cases	4
Merge Tapers	55 to 75 Greater than 76	9 12
Lateral shift tapers	55 to 75 Greater than 76	12 18
Protecting freshly painted lines	56 to 75 Greater than 76	24 60
All other puporses	less than or equal to 55 26 to 75 greater than 76	4 12 18

TGS Verification Checklist:

Verified By:	**Position:**	**Signature:**
Qualification:	**Expiry / Issue Date:**	**Date of Verification:**

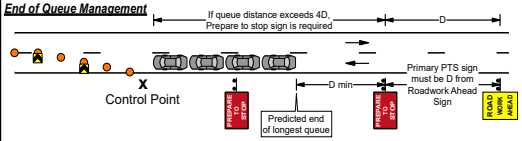
Traffic Guidance Scheme Modifications:

Modified By:		**Qualification Number:**
Expiry / Issue Date:	**Signature:**	**Date of Modification:**
Modification Notes:		

Traffic Guidance Scheme Installation:

Installed By:		**Qualification Number:**
Expiry / Issue Date:	**Signature:**	**Date of Installation:**

End of Queue Management



Estimated end of queue lengths to be noted here:_____

Edge of traffic lane to:	Edge Clearence
Line of traffic cones or bollards	- 0.5 m for traffic speeds less than 65 km/h - 1.0 m for traffic speeds greater than 65 km/h
Barrier boards, temporary guide posts or temporary hazard markers	- 1.0 m
Road safety barrier system	- 0.3 m for traffic speeds less than 45 km/h - 0.5 m for traffic speeds 45 to 65 km/h - 1.0 m for traffic speeds 65 to 85 km/h - 2.0 m for traffic speeds greater than 85 km/h

Installation & Removal of Signs & Devices

Two-lane, two-way roads:
The sequence of installation should be as illustrated in the following order:
1: Install the termination signs when initially leaving work area, 'End Road Work/speed reinstatement' (affected direction).
2: Use the existing road network to turn where safe to do so.
3 to 7: Place approach signs in unaffected direction, including the PTCD (traffic controller to remain with the PTCD).
8: Install 'End Road Work/speed reinstatement' (unaffected direction).
9: Use the existing road network to turn where safe to do so.
10 to 14: Place approach signs in the affected direction, including the PTCD (traffic controller to remain with PTCD).
15 and 16: Traffic controller/s to stop traffic and taper/lane closure delineation implemented.
17: ITCP qualified person completes drive around to confirm TGS is installed as designed.

Multi-lane roads:
The sequence of installation should be as illustrated in the following order:
1: Locate advance warning vehicle and TMA to shadow sign installation vehicle.
2 to 5: Install advance warning signs in unaffected lane.
6: Install 'End Roadwork'/speed reinstatement.
7: Use the existing road network to turn where safe to do so.
8: Locate advance warning vehicle and TMA to shadow sign installation vehicle.
9 to 12: Install advance warning signs in obstructed (affected) lane.
13: Install 'Flashing Arrow' and delineation devices on approach to start of taper.
14: Position TMA in travel lane to shadow installation of taper.
14 and 15: Install taper and delineation devices to form taper, safety buffer and past work area.
16: Install 'End Roadwork'/speed reinstatement.
17: Use the existing road network to turn where safe to do so.
18: TMA positioned to shadow work area.
19: ITCP qualified person completes drive around to confirm TGS is installed as designed.

Sign spacing requirements

Number of signs	Approach Speed	
	less than 65 km/h	65 km/h or greater
One advanced sign	D	2D
Multiple advanced signs	D	D

ALTERNATE SIGN SPACING
Dimension 'D': AGTTM: A distance expressed in metres, determined in accordance with Table 2.2 and used for positioning of advance signs. To be considered if TCAWS dimension "D" cannot be provided due to site conditions.

Speed of Traffic km/h	Dimension m
55 or less	15
56 to 65	45
Greater than 65	speed of traffic, in Km/h

Issue	Desg	Appd	Date & Time	Amendment Description
01	AC	PL	03/10/2023 11:30	Original Issue
02	AC	PL	05/10/2023 10:00	Amended as per comments
03	AC	PL	12/10/2023 13:35	Removed SB TTM due to police escort
04				
05				

TGS Name & Number: LGP - 60883 - GLC 140 - Homebush Bay Dr - Sydney Oly Park - Barrier removal

Works Location: Homebush Bay Dr - Sydney Oly Park

Project Name: Sydney Metro Werstern Tunnelling

Project Description: Barrier removal for TBM movements

TGS Designed By: Alec Czarnowski **PWZTMP:** TCT1010645 **Exp:** N/A **Signature:**

TGS Approved By: Peter Lozano **PWZTMP:** TCT0058486 **Exp:** N/A **Signature:**

Client Company: Gamuda Australia

Client Contact: Daniel Kelly **Contact Number:** 0437 315 649

GAMUDA Australia

Date of Approval: 12/10/2023

Scale: 1 : 750 **Original Size A3**

Lack Group acknowledges the traditional owners of country throughout Australia and recognises their continuing connection to land, waters and community. We pay our respect to them and their cultures; and to elders both past and present.

TGS Risk Assessment

Hierarchy of Controls

1. Eliminate the hazard altogether.
eg. Road closures.
2. Substitute the hazard with a safer alternative.
eg. Using PTCDs instead of stop bats.
3. Isolate the hazard from anyone who could be harmed.
eg. Drop zones for clients works in elevated work zones.
4. Use engineering controls to reduce the risk.
eg. The use of traffic control devices to protect work area.
5. Use administrative controls to reduce the risk.
eg. Ensure personnel are trained in their field.
6. Use PPE.
eg. Wearing gloves while manual handling.

More Effective ↑ ↓ Less Effective

Step 1 - Consequence (impact)

	Negligible (1)	Minor (2)	Moderate (3)	Major (4)	Severe (5)
Health & Safety	First Aid Treatment	Medical Treatment	Lost Time Injury	Permanent Impairment Injury	Fatality
Enviro	Very minor injury that requires no treatment or simple first aid	Injury / illness, which requires medical treatment and may temporarily restrict a persons capacity to work	Injury / illness, which temporarily renders a person unfit to work in any capacity	Injury / illness, which permanently alters a persons future (eg. Spinal injury, amputation or death)	
Quality	Short term damage	Limited but medium term damage	Significant but recoverable ecological damage	Heavy ecological damage, costly restoration	Permanent widespread ecological damage
	Brief delay / slight impact on service delivery	Local or worksite specific impact on service delivery or customer satisfaction	Temporary impact on service delivery or customer satisfaction at a local event / project level	Serious impact on service delivery or customer satisfaction at a state client or large project level	Long term or very severe impact on service delivery or customer satisfaction resulting in loss of business nationally

Step 2 - Probability

Almost Certain (5)	The threat can be expected to occur 75% - 99%	Common / Frequent Occurance	More than 1 event per month	Moderate (8)	High (16)	High (18)	High (21)	Extreme (25)
Likely (4)	The threat will quite commonly occur 50% - 75%	Is know to occur or "it has happened regularly"	More than 1 event per year	Moderate (7)	Moderate (10)	High (17)	High (20)	High (24)
Possible (3)	The threat may occur occasionally 25% - 50%	Could occur or "I've heard of it happening"	1 event per 1 to 10 years	Low (3)	Moderate (9)	Moderate (12)	High (19)	High (23)
Unlikely (2)	The threat could infrequently occur 10% - 25%	Not likely to occur very often	1 event per 10 to 100 years	Low (2)	Low (5)	Moderate (11)	Moderate (14)	High (22)
Rare (1)	The threat may occur in exceptional circumstances The threat may occur occasionally 0% - 10%	Conceivable but only in exceptional circumstances	Less than 1 event per 100 years	Low (1)	Low (4)	Low (6)	Moderate (13)	Moderate (15)

Step 3 - The risk rating is where the consequence and the probability intersect

Item #	Worksite Component	Potential Hazard	Initial Risk C	Initial Risk P	Initial Risk R	Present	Control Measures	Residual Risk C	Residual Risk P	Residual Risk R
Acceptance										
1.0	TGS Drawn / implemented by unqualified person or organization	TGS Drawn / implemented by unqualified person or organization	5	3	23	Y	- Design and implement TGS in accordance with TCAWS, AS1742.3 and AGTTM. - Ensure all relevant traffic management personnel involved in the design and implementation of the TGS are certified as competent persons to perform the traffic management tasks they are required to undertake.	4	1	13
Departures										
2.0	Stop bat used instead of PTCD	Traffic controller hit by vehicle	5	4	24	N	- Consider use of shadow vehicles if practical, or other type of static hard cover available (i.e. safety barrier) - Ensure best possible escape route considered when allocating control point on TGS - to be reassessed onsite continuously - Ensure best line of sight where practical. Should the best line of sight not be possible, repeater signs in advance warning to be used. - Traffic controller to always remain clear from travelled path. - Ensure appropriate speed signage has been installed and meets minimum and maximum length requirements.	4	2	14
Advanced Warning										
3.0	VMS	Motorist collides with VMS, motorist confused by VMS	4	4	20	Y	- Always place VMS behind an approved safety barrier or as far away from the edge of traffic lane as is practical in a position determined suitable based on a documented risk assessment. - The location is to be confirmed by Risk Assessment	3	2	11
3.1	Long Term Works	Confused motorist collides with worker	4	4	20	N	- Always install RWA (T1-1) on long-term road work sites - Consider using VMS's	3	3	12
3.2	Delays or Queue extends beyond advanced warning signs	Motorist collides with end of queue	4	4	20	NA	Always: - Work in accordance with the approved and appropriate ROL - Use two-way communication with trucks and give them priority whenever possible - Monitor queue lengths - Install additional signs or use additional traffic controllers or stop work and clear traffic if end of queue extends beyond the advance warning signs - Give emergency vehicles & wide loads priority (i.e. stop work & traffic) Consider: - Working outside peak periods - Liaising with TMC for assistance with traffic signal phasing - Using VMS's - Notifying emergency services - Use of flashing beacon to be added to advance warning signage - Use of queue monitors - Ensure TGS has been designed to cater for the predicted queue lengths where required.	4	2	14
3.3	Changed traffic conditions (eg Slippery surface, no lines, changed line marking, banned turning movements, detours)	Motorist loses control, is confused, or attempts a banned manoeuvre causing MVA	4	4	20	Y	Always: - Install RWA (T1-1) if diverting traffic along a sidetrack, detour, or unexpected conditions such as loose stones or the absence of line marking - Erect Condition signs in accordance with TCAWS Manual - Provide delineation or temporary line marking and ensure this is clearly shown on the TGS - Use Traffic Control to manage changed traffic conditions where required. - Check setup before commencing work - Ensure appropriate permission for any detours - Speed reduction installed to suit road conditions - Consider using VMS's	3	2	11
3.4	After care	Inadequate signage resulting in motorist loosing control and crashing or motorist becomes frustrated due to inappropriate signage	4	4	20	N	Always: - Install RWA (T1-1) if diverting traffic along a sidetrack, detour, or unexpected conditions, such as loose stones or the absence of line marking - Cover any signs that are not applicable - Erect Condition signs in accordance with TCWS Manual - Provide delineation or temporary line marking - Aftercare speed limit to suit road conditions	3	3	12
3.5	Poor sight distance or speed compliance or Approach speed > 85km/h, or multi lane roads with traffic volume > 10,000vpd	Speeding vehicle doesn't have time to react and fails to negotiate merge taper	5	4	24	Y	Always: - Install RW 1km Ahead if approach speed is > 85km/h or sight distance is less than 150m - Use 700mm cones where traffic speed is greater than 75km/h - Use 900mm cones on high speed to high volume roads (e.g., expressway) or on any work site where increased visibility is required - Duplicate Lane status sign. Consider: - Installing RWA (T1-1) - Increasing taper lengths - Increasing the number of advance warning signage installed - Increasing the size of signage installed - Need for duplication of signs.	4	2	14
3.6	Side Roads	Vehicles enters work site from a side road and collides with workers	3	4	17	Y	- Always install advance warning signage for vehicles entering from side road in advance of the work site.	3	2	11
3.7	Temporary Speed Zone	Motorist travelling too fast for the conditions causing MVA	5	4	24	Y	- Ensure speed zones are designed in accordance with TCAWS, AS1742.3 and AGTTM. - Ensure speed zoning is consistent with the work activity and road environment. - Consider the use of speed radar VMS to monitor traffic speeds and advise motorists. - Review the TGS and adjust where possible to enhance traffic calming through the work site.	4	2	14
Transition										
4.0	Lane closure	Motorist fails to negotiate taper and collides with worker, vehicle or plant	5	4	24	Y	Always: - Install taper lengths and cones in accordance with TCAWS Manual - Install & duplicate/repeat Lane Status Sign (T2-6-1 or 2) on multi lane roads - Use a minimum of 2 temporary hazard markers (T5-4 or 5) on tapers - Install a 30m minimum buffer zone at the end of tapers - Check setup before commencing work - Consider using a shadow vehicle (or vehicles) with flashing lights to protect workers - Ensure appropriate site distance to start of taper	4	2	14
Work Area										
5.0	Traffic Control	Motorist not concentrating or speeding collides with end of queue or traffic controller	5	4	24	Y	- Design and implement TGS in accordance with TCAWS, AS1742.3 and AGTTM. - Ensure all relevant traffic management personnel involved in the design and implementation of the TGS are certified as competent persons to perform the traffic management tasks they are required to undertake. - Conduct regular inspections in accordance with TCAWS, AS1742.3 and AGTTM. - Rectify any deficiencies as a matter of urgency. - Review traffic controls to suit changes in site conditions.	4	2	14
5.1	Working adjacent to travel lane	Motorist collides with worker, vehicle or plant	4	4	20	Y	Always: - Install workman T1-5 sign if workers on road - Space cones in accordance with TCAWS Manual - Check setup before commencing work - Reduce speed based on lateral clearance between the work area and travel lane Consider: - Using a shadow vehicle(s) with flashing lights to protect workers - Using spotters with workers - Using safety barriers	4	2	14
General										
6.0	Night work	Due to poor visibility motorist collides with end of queue, worker, vehicle or plant	5	4	20	Y	- Consider providing portable lighting to ensure traffic controllers are visible and ensure the positions of any temporary lighting are clearly shown on the TGS & always use applicable night PPE.	4	2	14
6.1	Wind / Rain / Fog / Obstructions	Rain/fog reduces visibility and causes road to be slippery increasing risk of a collision with workers, plant or other traffic Wind blows over signs Vehicle parks in front of sign	5	4	20	Y	- Always monitor weather and traffic - Always regularly check setup to ensure signs are visible. If visibility has been obstructed, consider shifting signs, duplication, or repetition. - Consider additional advance warning signage - Liaise with client to reconsider setup or continuation of works	3	3	12
6.2	Vehicle Movements	Plant collides with motorist, workers, or other plant	4	3	19	Y	Always: - Ensure positive communications Consider: - Using Traffic Control and/or Spotters to manage work vehicles - Installation of exclusion Zones - Preparing a VMP where required.	3	3	12
6.3	Pedestrians and Cyclists	Pedestrian and/or cyclist enters the work zone or travel lane and is hit by vehicle or plant	4	5	21	Y	- Ensure TGS design caters for all road users including pedestrians and cyclists. - Always clearly delineate the work area. - Do not obstruct pedestrian and cyclists travel paths with traffic control signs and devices. - Consider the use of additional warning and guidance signage for pedestrians, cyclists and motorists. - Comply with shoulder and lane width criteria in the design of the TGS. - Consider the use of traffic control at crossing points especially where contra-flow arrangements are in place. - Consider the use of additional traffic controllers to monitor and assist pedestrian and cyclist movements where required. - Ensure the use of existing or temporary ramps for crossing points. - Undertake consultation to determine existing travel paths, desire lines, volumes, and types of users.	4	2	14

Issue	Desg	Appd	Date & Time	Amendment Description
01	AC	PL	03/10/2023 11:30	Original Issue
02	AC	PL	05/10/2023 10:00	Amended as per comments
03	AC	PL	12/10/2023 13:35	Removed SB TTM due to police escort
04				
05				

TGS Name & Number: LGP - 60883 - GLC 140 - Homebush Bay Dr - Sydney Oly Park - Barrier removal

Works Location: Homebush Bay Dr - Sydney Oly Park

Project Name: Sydney Metro Werstern Tunnelling

Project Description: Barrier removal for TBM movements

TGS Designed By: Alec Czarnowski **PWZTMP:** TCT1010645 **Exp:** N/A **Signature:**

TGS Approved By: Peter Lozano **PWZTMP:** TCT0058486 **Exp:** N/A **Signature:**

Client Company: Gamuda Australia

Client Contact: Daniel Kelly **Contact Number:** 0437 315 649

GAMUDA Australia

Date of Approval: 12/10/2023

N

Scale: 1 : 750 **Original Size A3**

Lack Group acknowledges the traditional owners of country throughout Australia and recognises their continuing connection to land, waters and community. We pay our respect to them and their cultures; and to elders both past and present.

Item #	Worksite Component	Potential Hazard	Initial Risk C	Initial Risk P	Initial Risk R	Present	Control Measures	Residual Risk C	Residual Risk P	Residual Risk R
6.4	Bus stops	Bus unable to pull up safely causing MVA	3	3	12	N	- Consider notifying bus companies that operate in the area - Always provide adequate provision for buses or carry out work at night when buses aren't operating - Where temporary bus stops are created, ensure buses are able to meet the curb - Ensure TGS clearly shows affected stops - Traffic controllers to manage and assist where safe and possible	2	2	5
6.5	Property accesses - commercial or private	Collisions due to propertie acess restrictions	3	4	17	Y	- Consider staging work outside of business hours - Create physical barrier to prevent traffic entering site & driveways	2	2	5
6.6	Excavations within work area	Errant vehicle drives into excavation	5	4	25	N	- For excavations shallower than 0.5m and within 3m of the edge of traffic lane, delineate the excavation with plastic mesh fencing, barrier boards placed perpendicular to the traffic flow or cones/bollards. - For excavations deeper than 0.5m and within 3m of the edge of traffic lane, a temporary safety barrier must be installed. When traffic is greater than 3m from the excavation, the requirement for a temporary safety barrier should be considered based on a documented risk assessment. - Where the excavation is deeper than 200mm, is open for more than 2 weeks and the distance from the edge of traffic lane is less than 3m for 60km/h, 6m for 80km/h and 9m for 100km/h, a temporary safety barrier must be installed.	4	2	14
6.7	Parking	Parked vehicle or worker exiting vehicle hit by passing vehicle	4	4	20	Y	- Always check adequate parking is available for workers and visitors - Consider providing safe parking within the work area	4	2	14
6.8	Concurrent Works	Motorist confused by conflicting signs causing MVA	3	4	17	Y	- Always establish communication with other site if possible - Always cover any conflicting signs and adjust TGS as necessary - Complete conflict checks where required	3	3	12
6.9	Heavy Vehicles and OSOM Vehicles	HV cannot travel past work site without knocking over delineation	4	4	20	Y	- Comply with shoulder and lane width criteria in the design of the TGS. - During the design of the TGS, check vehicle swept path where necessary to ensure the largest known vehicle travelling through the work site can negotiate the changed traffic conditions. - Traffic controllers to communicate with heavy vehicle and OSOM drivers to warn and guide them through the work site as required. - Traffic control to monitor heavy vehicle movements and if required, make adjustments to the signs and devices within approved tolerances. If more significant changes are required, liaise with Client/Supervisor and arrange for TGS to be reviewed and modified by the designer.	4	2	14
							Dynamic Works			
7.0	General Traffic	Motorists speeding / not concentrating / tired / distracted. Not having enough time to merge causing MVA	5	5	25	N	- Always use a minimum 1 AWV and consider the use of a 2nd AWV. - Consider use of TMA on higher speed roads >85km - Use speed reduction best suited to work activity and road environment - Use applicable AW signage displayed on AWV - Ensure sight distances between AWV, shadow vehicles are clearly labelled on TGS - Ensure 20-40m buffer zone between shadow vehicle and work vehicle. No less than 40m when using a TMA as a shadow vehicle - Positive communications to be held at all times - Workers to remain shadowed at all times - Monitor traffic queues on all road configurations, convoy to clear roadway if required until traffic has cleared	4	2	14

Item	Additional Control Control Measures
8.0	BARRIER BOARDS PROVIDED WITHIN CLOSURES
9.0	TC VEHICLE PROVIDED TO ACT AS HARD COVER FOR TC'S OPERATING PTCD's.
10.0	ADVANCE WARNING VEHICLE PROVIDED
11.0	

Item	Departures: State the departure and reason for departure
12.0	EXTENDED AND REDUCED DISTANCES DUE TO INSUFFICIENT ROOM and/or BARRIERS and/or BRIDGE LOCALITY(s)
13.0	
14.0	

Departures Sign Off (CLIENT):

Client Name:

Client Signature: **Date:**

NOTES:

GENERAL NOTES

1. This Traffic Guidance Scheme (TGS) is to be used in conjunction with the Traffic Management Plan (TMP) and associated road authority permits and management plans, including Road Occupancy Licence (ROL), vehicle movement plan (VMP) and pedestrian movement plan (PMP) where applicable.
2. This TGS has been produced by a Prepare Work Zone Traffic Management Plan (PWZTMP) qualified person in accordance with the requirements of the TfNSW Traffic Control at Work Sites manual, Issue 6.1 dated 28 February 2022 (TCAWS 6.1) and with reference to AS1742.3 and AUSTROADS Guide to Temporary Traffic Management Parts 1 – 10, version 1.1 dated September 2021 (AGTTM).
3. This TGS is suitable for short term/long term works.
4. Lack Group does not accept responsibility for this TGS if it is implemented or modified by external parties.

APPROVALS

5. The TGS must be approved for use before implementation.
6. Ensure all road authority approvals and associated conditions of approval are met prior to implementing the TGS.

TGS VERIFICATION

7. Prior to use on site, the selected or designed TGS must be verified to ensure it is suitable for the works and location by undertaking an inspection of the work site where the TGS will be implemented. The TGS verification must be completed in accordance with TCAWS 6.1, Section 8.1.2 by an Implement Traffic Control Plan (ITCP) or PWZTMP qualified person. Refer Page 1 of this TGS for Site Verification sign-off.

RISK ASSESSMENT

8. A desktop risk assessment has been undertaken in developing this TGS. However, when implementing this TGS on site, the site supervisor should undertake a site specific risk assessment to ensure that the TGS has considered and mitigated all identified hazards and risks.

INSTALLATION AND REMOVAL OF SIGNS AND DEVICES

9. All traffic management signs and devices prescribed for use in this TGS are in accordance with TCAWS 6.1 with reference to AS1742.3 and AGTTM.
10. The TGS must be installed, maintained and removed in a planned and safe manner. The implementation must only be undertaken by an ITCP qualified person.
11. All signage shown on this TGS is not to conflict with any long-term existing signage arrangements in the area. If this occurs, cover all conflicting road signage where required.

PLACEMENT OF SIGNS AND DEVICES

12. Signs must be properly displayed and securely mounted at all times and within the line of sight of the intended road user. Regulatory and detour signs must be located nearest to the travel edge of the lane. Signs must not: Be obscured from view, such as by vegetation or parked cars; Obscure other devices from the line of sight of the intended road users; Create a hazard to road workers and road users, including pedestrians and cyclists; Be a hazard that deflects traffic into an undesirable path; Restrict sight distance for drivers entering from side roads or streets, or private driveways; and Be installed using supports that could be a hazard if struck by a vehicle.
13. Signs mounted on frames for short-term works should be mounted a minimum 200mm from the ground to the lower edge of the sign.
14. Signs mounted on posts for long-term works in open road situations, the underside of the sign must be at least 1.5m above the level of the nearest edge of the travelled path. When installed on a kerb or footpath, the underside of the sign must be at least 2.2m above the level of the nearest edge of the travelled path.

ORIENTATION OF SIGNS

15. On the outside of a curve, the sign face must be at 0 degrees, or 'normal to traffic'. On a straight, the sign face must be angled at approximately 5 degrees normal to oncoming traffic and on the inside of a curve, the sign ace must be angled at approximately 5 degrees normal to oncoming traffic at 200m preceding the sign.

TOLERANCES

16. Local constraints may not allow signage and devices to be placed in accordance with this TGS. Unless stated otherwise on the TGS, the tolerances on the positioning of signs, length of tapers or pavement markings detailed in the TGS is a minimum 10% less and a maximum 25% more than the distances or lengths stated and for the spacing of delineation devices a maximum 10% more than the spacing detailed in the TGS.
17. Any variation to the positioning of signs and devices within the approved tolerances must be marked and initialed on the TGS held on site, with the name of the person making the changes shown on the TGS.

MODIFYING TGS

18. Modifications to a Site Specific or Site Suitable TGS must be approved by a person holding the PWZTMP qualification and must be supported by a TMP or risk assessment to ensure that the TGS has considered and mitigated all identified site specific conditions and risks.
19. If it is identified that by implementing the TGS with modifications outside of the approved tolerances it will generate risks, then the works must be stopped (including the implementation of the TGS), the site must be made safe and an updated TGS must be provided by a PWZTMP qualified person prior to works recommencing. Any concerns regarding the suitability of the TGS must be raised with the Site Manager and your immediate Supervisor.

TRAFFIC CONTROLLERS

20. The implementation of traffic control must be conducted in line with the hierarchy of controls with the elimination of harm to workers and the travelling public considered in the first instance.
21. Where traffic control is required, a portable traffic control device (PTCD) must be used rather than using a manual traffic controller when the existing permanent speed limit is greater than 45 km/h.
22. TCAWS 6.1, Section 5.4 provides the conditions under which a manual traffic controller may be used.
23. Where PTCDs or traffic controllers are used, approach speeds of traffic must be reduced to less than 65 km/h.
24. All persons operating a portable traffic control device or performing manual traffic control must be qualified with 'Traffic Control' training; and authorised by the relevant road authority.

ROAD USER MANAGEMENT

25. The needs of specific road users, including travel paths and desire lines, must be considered and managed for the extent of the works to ensure safety and access is maintained. Specific road user groups to be considered include: Pedestrians including high-risk pedestrians such as persons with a disability, children, the elderly or persons using mobility aid devices; Cyclists; Motorcyclists; Heavy Vehicles, including oversize overmass vehicles; Public transport; and Emergency services. The needs of these specific road users have been considered in the design of this TGS, however the needs of all road users should be considered in the site specific risk assessment before implementing the TGS to ensure the TGS is appropriate.
26. Road users are to be monitored for the duration of the works. If additional signage and/or devices are required to manage the needs of specific road users, such as pedestrians and cyclists, this would be subject to following the procedure for modifying a TGS.

ACCESS MANAGEMENT

27. Access to properties located within the extent of works must be maintained at all times.
28. Property access impacted by the works should be identified and addressed in the TGS. Consultation with the property owner/resident must be undertaken prior to implementing the TGS if required.

INCIDENT MANAGEMENT

29. The site contractor is to determine the appropriate procedure for incident management where appropriate.
30. If an incident occurs within the extent of the traffic control arrangement: Call for assistance if incident requires (emergency services 000 or 112); Notify the work site supervisor or Team Leader immediately of any incident; Maintain effective traffic control, if necessary, relocate the traffic control station to a suitable location clear of any further danger; and Record sufficient notes of the incident, including observations, to complete an incident report.

INSPECTIONS

31. Temporary traffic management monitoring activities must be unbdse4rtaken in all instances where work is being performed or aftercare is in place. This includes day and night times as required. The type of inspections and frequency are to be in accordance with TCAWS 6.1, Section 8.1.1.

REVIEW OF TGS

32. Generic TGSs must be reviewed by a PWZTMP qualified person every 12 months so that they remain appropriate. Once reviewed the date and details of the PWZTMP person must be updated on the TGS to ensure persons selecting can confirm currency.
33. All active site specific and site suitable TGS are designed for the nominated work activity and are only valid for the time period of works specified on the TGS. They must be reviewed as part of the weekly inspections as detailed in TCAWS 6.1, Section 8.1. If the work activity is intended to be longer than 12 months, then the TGS musty be formally reviewed by a PWZTMP qualified person at least every 12 months and issued with the review date and the details of the person undertaking the review.

RECORD KEEPING

34. Supervisory personnel are to keep daily records of the TGS implementation including: Site specific risk assessments; Approved TGS used, including versions where modifications or updates have been made; Completed inspection checklists that have been undertaken; Records of traffic related incidents that occurred during the works; and Any other relevant document generated by the process of completing the temporary traffic management works.

Issue	Desg	Appd	Date & Time	Amendment Description
01	AC	PL	03/10/2023 11:30	Original Issue
02	AC	PL	05/10/2023 10:00	Amended as per comments
03	AC	PL	12/10/2023 13:35	Removed SB TTM due to police escort
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05				

TGS Name & Number: LGP - 60883 - GLC 140 - Homebush Bay Dr - Sydney Oly Park - Barrier removal

Works Location: Homebush Bay Dr - Sydney Oly Park

Project Name: Sydney Metro Werstern Tunnelling

Project Description: Barrier removal for TBM movements

TGS Designed By: Alec Czarnowski **PWZTMP:** TCT1010645 **Exp:** N/A **Signature:**

TGS Approved By: Peter Lozano **PWZTMP:** TCT0058486 **Exp:** N/A **Signature:**

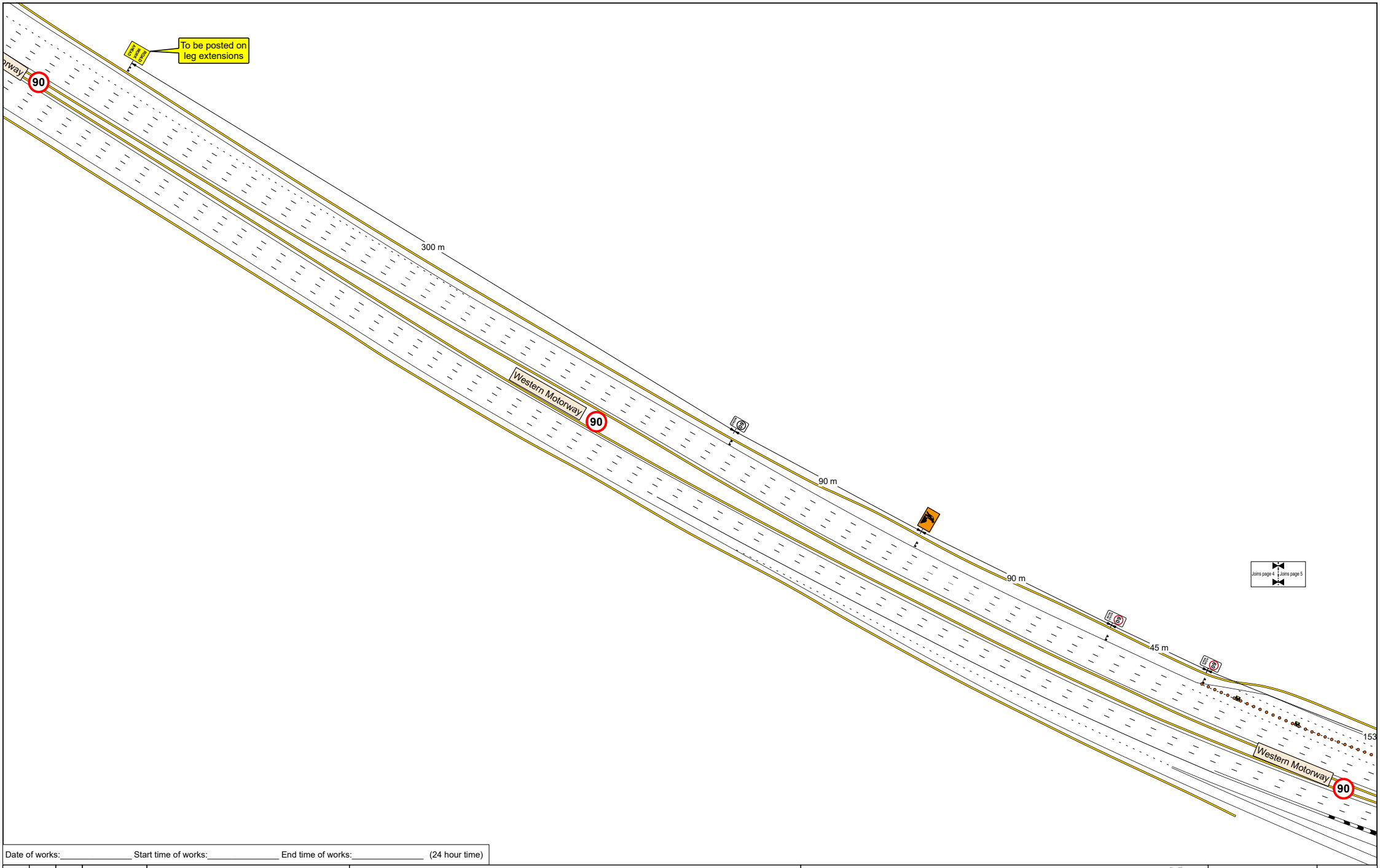
Client Company: Gamuda Australia

Client Contact: Daniel Kelly **Contact Number:** 0437 315 649

Date of Approval: 12/10/2023

Scale: 1 : 750 **Original Size A3**

Lack Group acknowledges the traditional owners of country throughout Australia and recognises their continuing connection to land, waters and community. We pay our respect to them and their cultures; and to elders both past and present.



Date of works:_____ Start time of works:_____ End time of works:_____ (24 hour time)

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GAMUDA Australia

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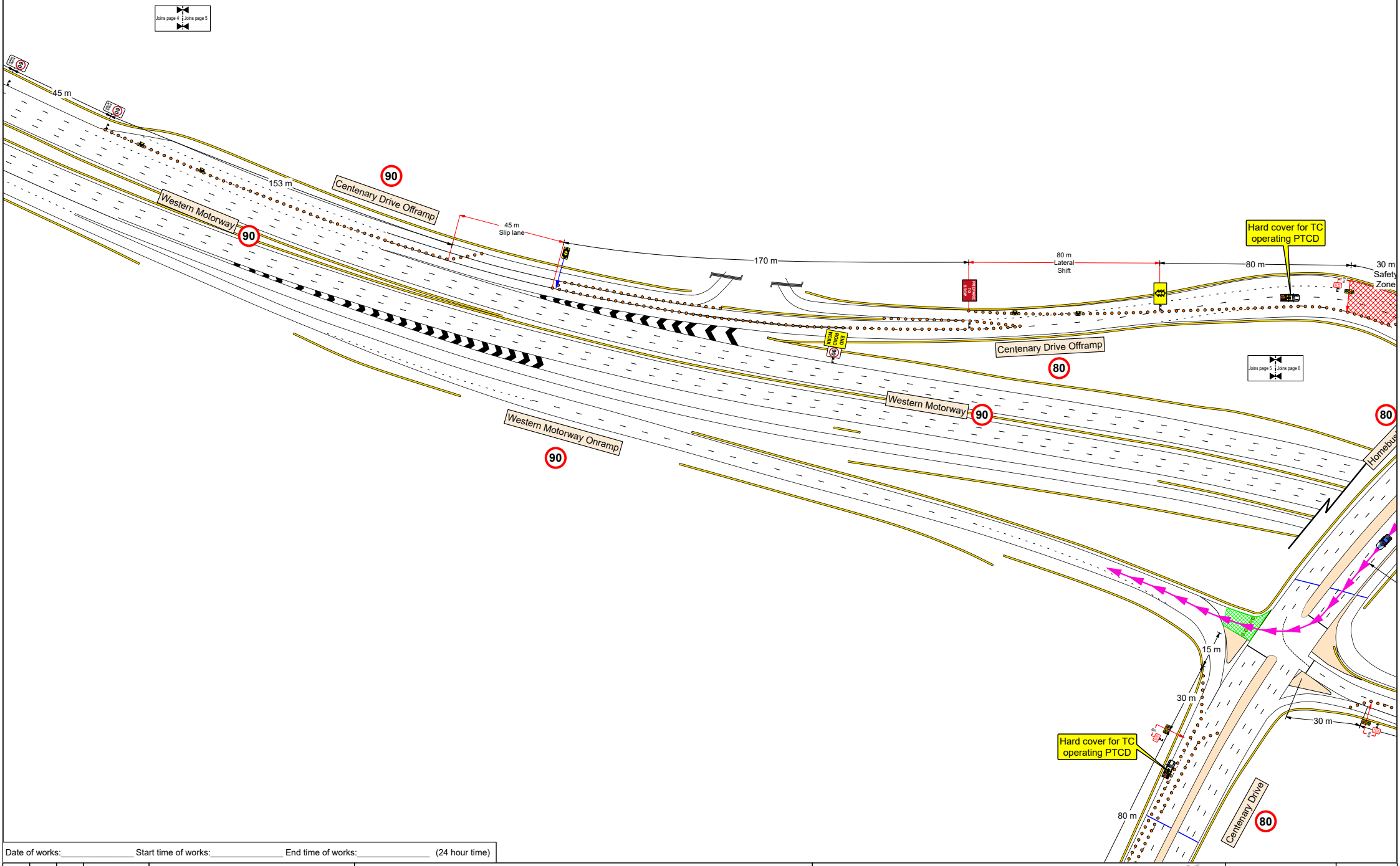

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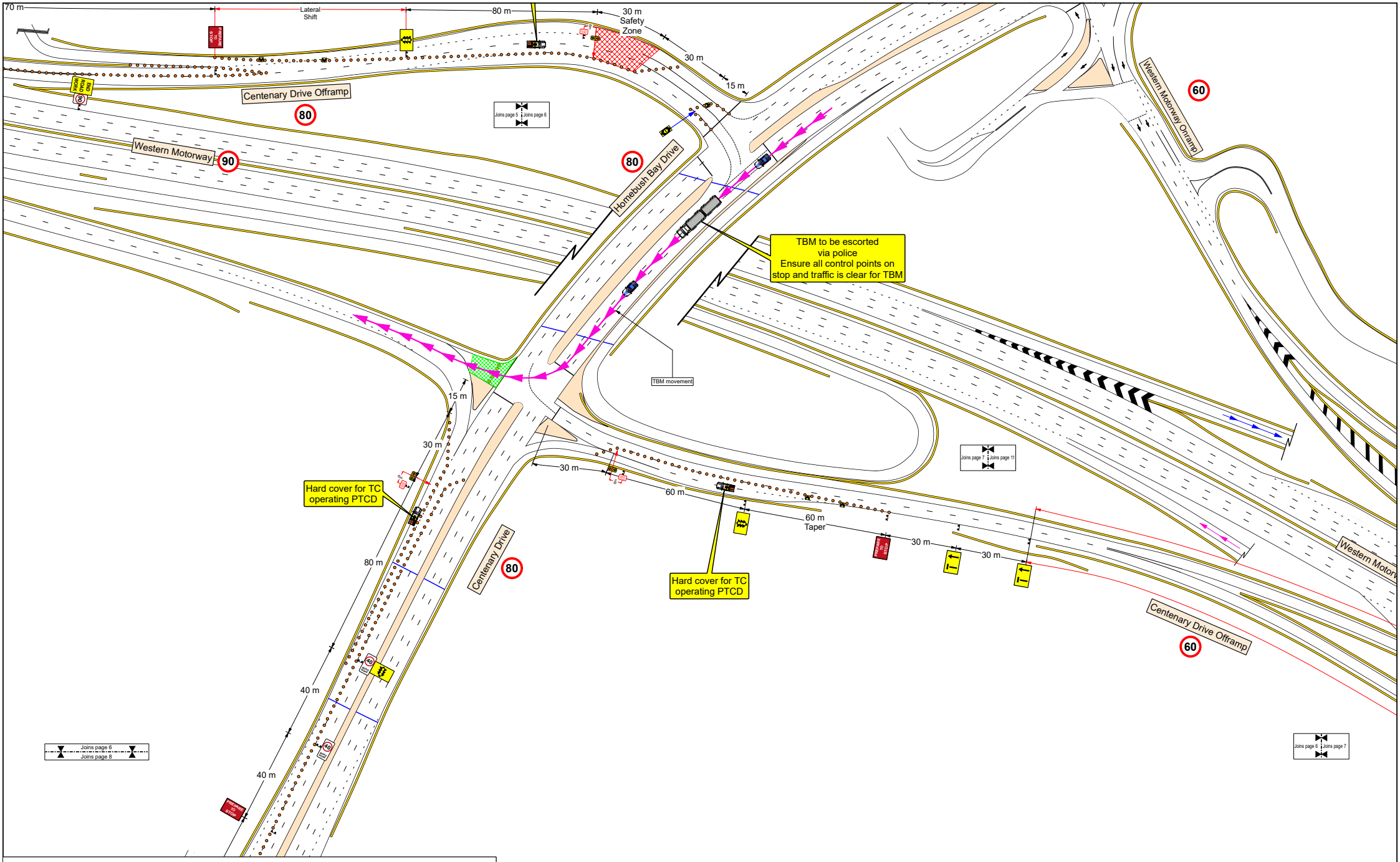

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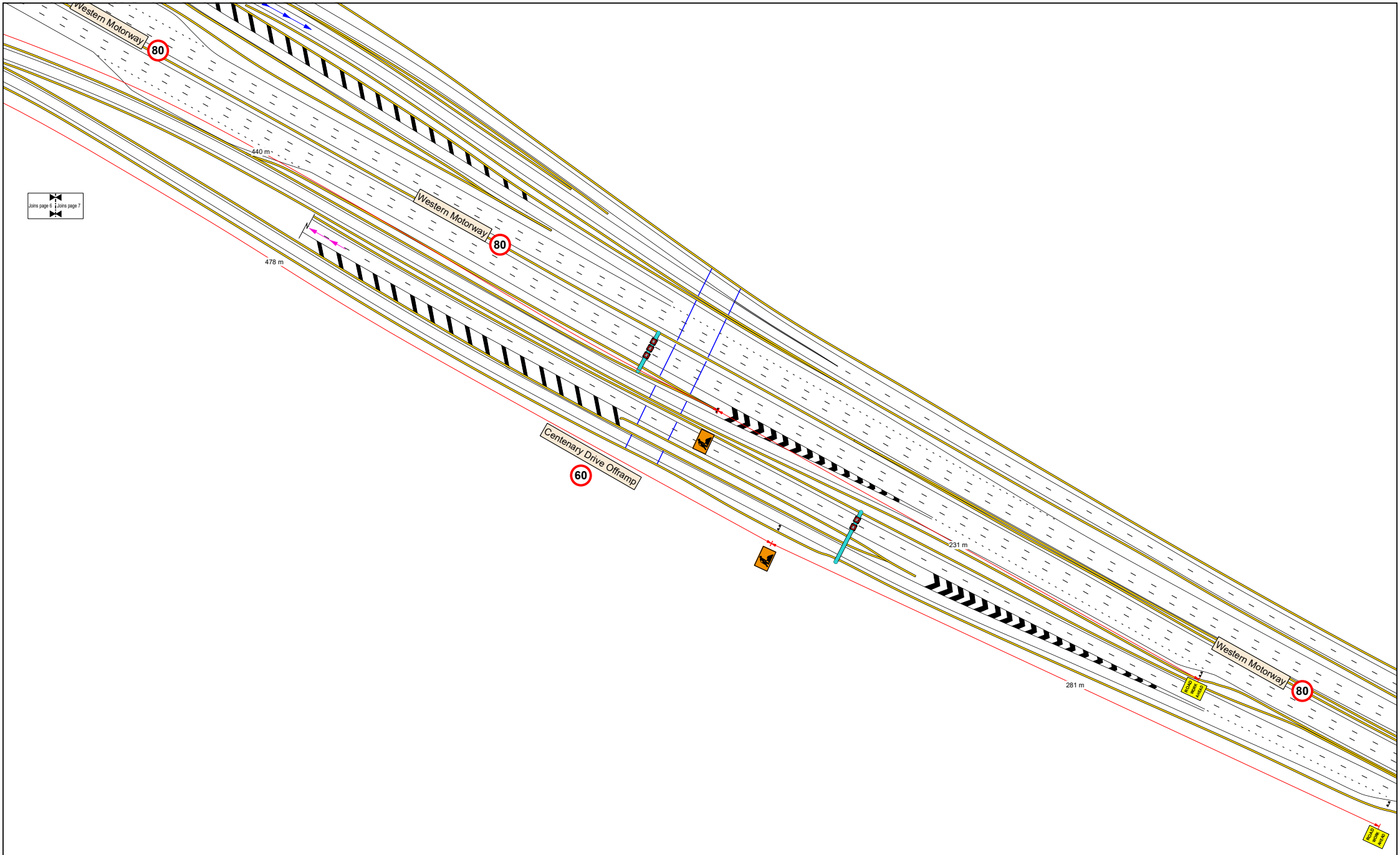

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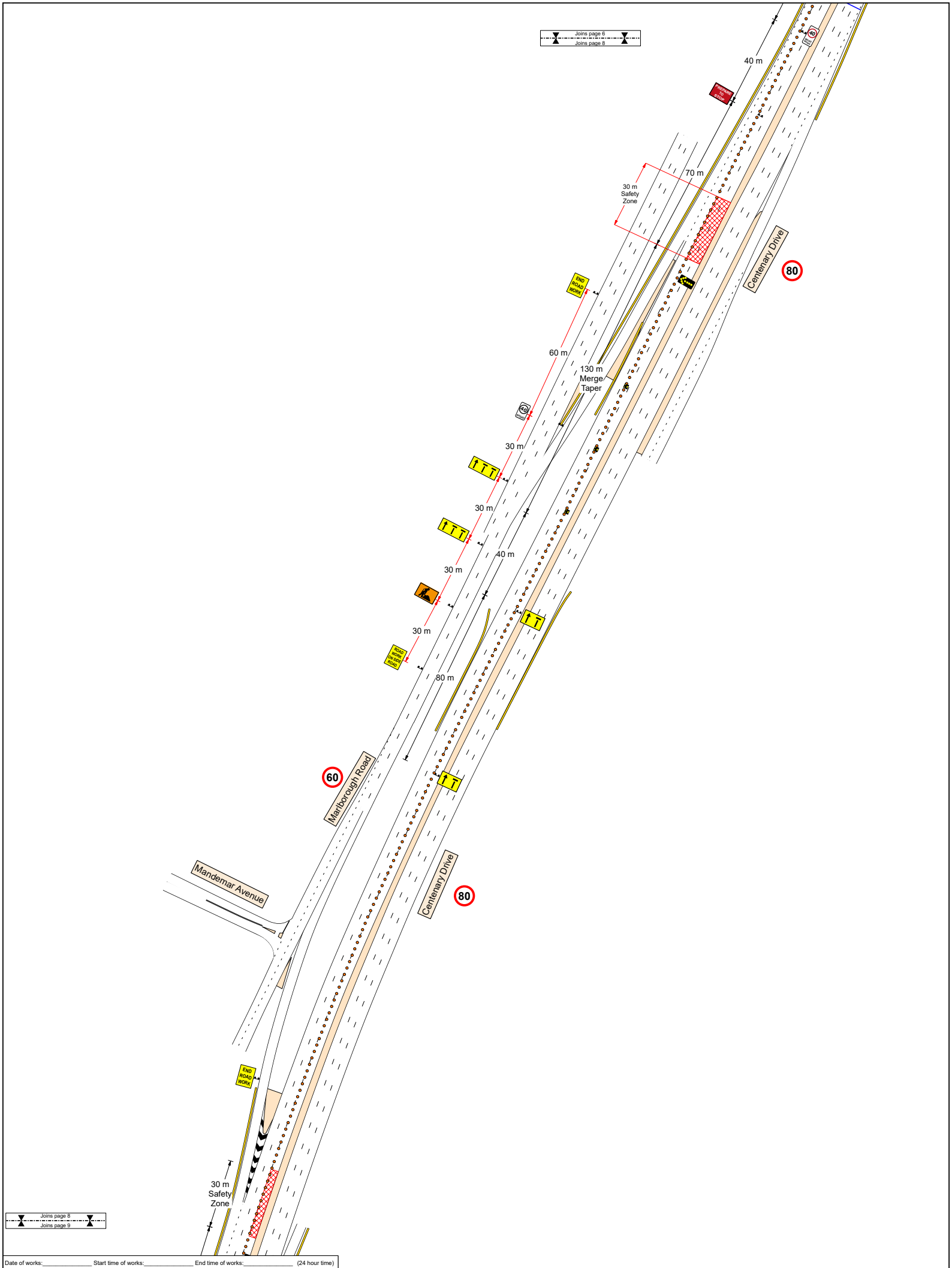

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Date of Approval: 12/10/2023

Page 8 / 9

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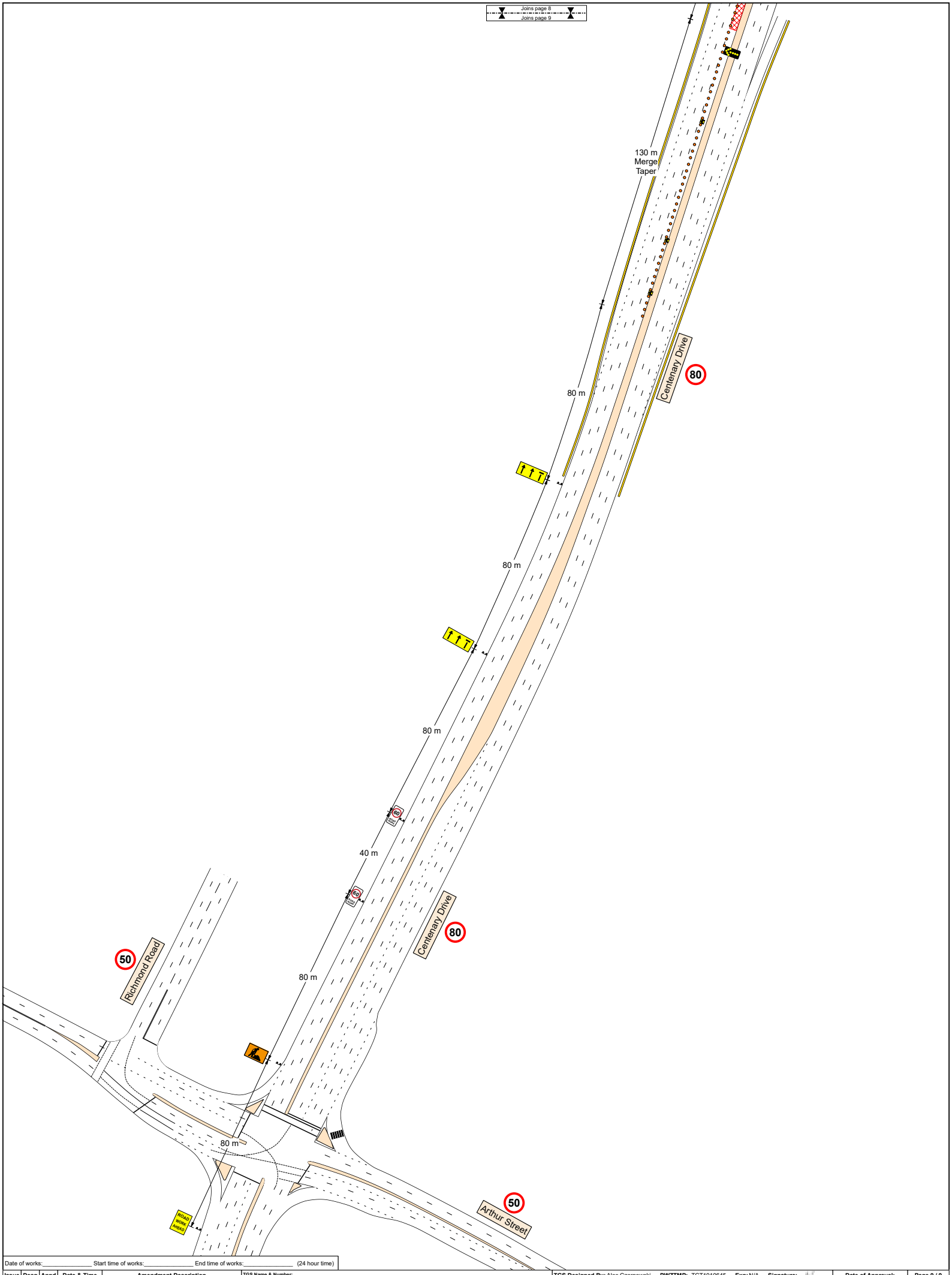

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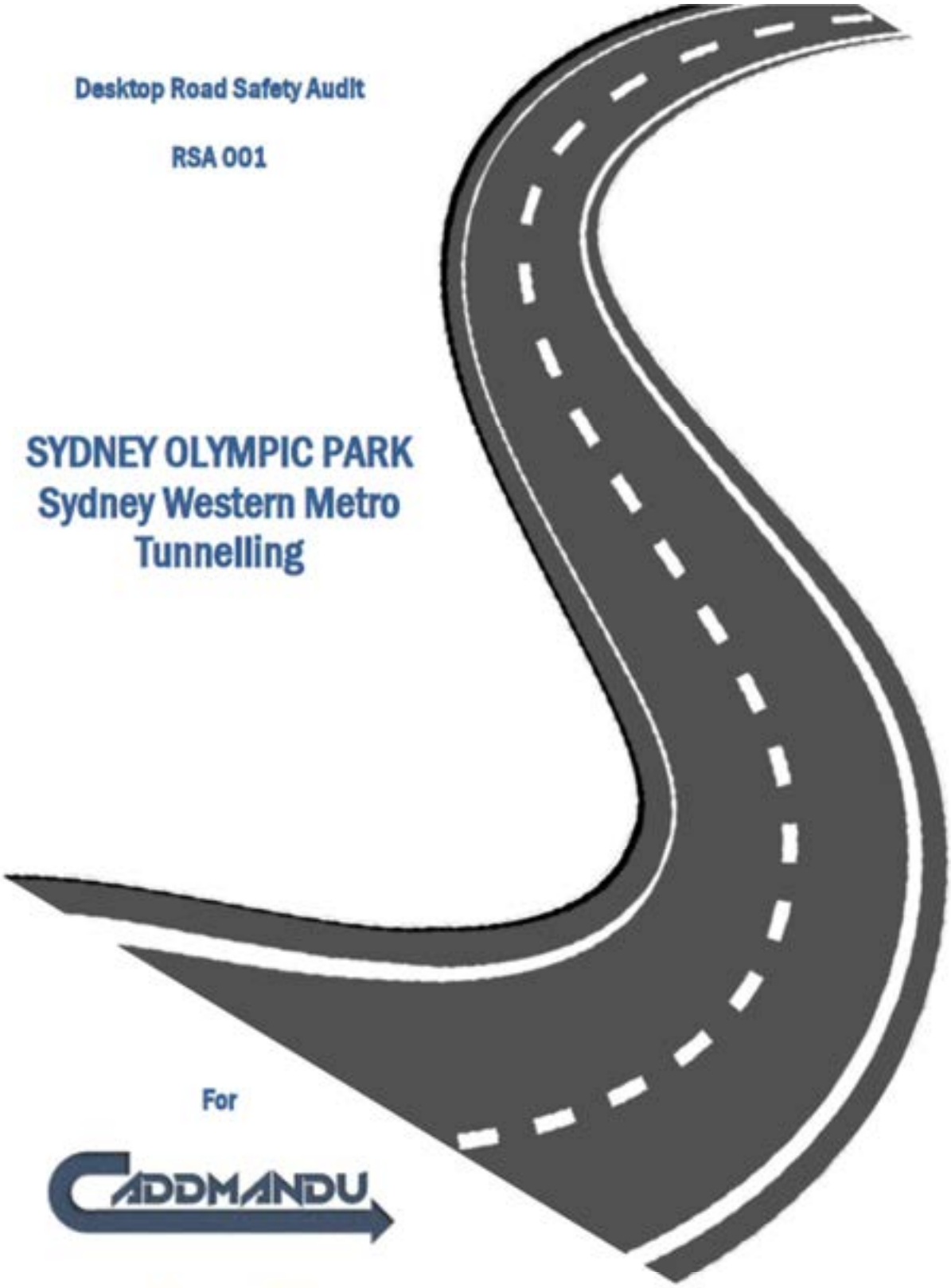
APPENDIX C – ROAD SAFETY AUDIT

Desktop Road Safety Audit

RSA 001

SYDNEY OLYMPIC PARK
Sydney Western Metro Tunnelling



For

CADDMANDU

11 October 2023

CONTENTS

1. TABLE 5 – AUDIT FINDINGS

Audit Results	Audit Finding (Risk / Hazard, extent, crash type)	Risk Level	Recommendation/s	Client Response	
Audit Finding Ref.				Accept (Yes / No)	Action / comments
Appendix B – TGS Herb Elliott Ave Plans					
LGP-61447-GLC _ Herb Elliott Avenue, Sydney Oly Pk – Semi delivery (Sheets 1 – 4)					
Sheets 1 - 4	Nil comments			*N.A*	*N.A*
Appendix B – TGS Plans					
LGP-61447-GLC Herb Elliott Avenue, Sydney Oly Pk – Barrier Removal (Sheets 1 – 14)					
Sheet 4/14	• Roadworks speed zone signage is required to be placed on each edge of the through traffic formation. (Table 4.9 – TCAWS V6.1) • Suggest 40km/h Ahead signage given Homebush Bay Drive is a main road. • All signage should be duplicated on RHS of through formation where multiple lanes.		Comment Only	*YES*	*1) Signage not as per 4.9 due to exposing traffic crews to unnecessary risks by getting out of LHS of traffic vehicle exposing workers on foot to live traffic. Table 4.9 States: Where this is not possible a second sign is to be erected 0.5D from the start*

1. TABLE 5 – AUDIT FINDINGS

Audit Results	Audit Finding (Risk / Hazard, extent, crash type)	Risk Level	Recommendation/s	Client Response	
Audit Finding Ref.				Accept (Yes / No)	Action / comments
					of the zone. Although it is possible to erect signage as per 4.9, post risk assessment deems it safer to keep all signage on LHS. No action required Refer
Sheet 5/14	• All signage should be duplicated on RHS of through formation where multiple lanes.		Comment Only	*YES*	*Refer to point 1*
Sheet 6/14	• Roadworks speed zone signage is required to be placed on each edge of the through traffic formation. (Table 4.9 – TCAWS V6.1) • How will left slip onto Western Motorway On Ramp work when lanes on Homebush Bay Drive are reduced to 1 one lane and the distance between the end of the lane drop and the left slip turn is only 40m.How will the merge out of the Local Business Access work in peak traffic periods when		Comment Only Comment Only	*YES*	*Refer to point 1* *This drawing has been revised to remove the southbound cones as The cones will be moved prior to the*

1. TABLE 5 – AUDIT FINDINGS

Audit Results	Audit Finding (Risk / Hazard, extent, crash type)	Risk Level	Recommendation/s	Client Response	
Audit Finding Ref.				Accept (Yes / No)	Action / comments
	Homebush Bay Drive is down to 1 lane. • How will traffic be managed in the event of a traffic incident during this traffic management setup		Comment Only		*TBM will be escorted with police escort and pilots this activity will be completed at night i.e. outside of peak traffic movements.*
Sheet 7/14	• How will traffic be managed during peak periods where there is a reduction in available lane thus reducing capacity and increasing traffic flow times. (i.e. Centenary Drive Off Ramp E/B) Will this impact traffic flow on the Western Motorway?		Comment Only	*YES*	*Refer to point 1*
Sheet 8/14	• Roadworks speed zone signage is required to be placed on each edge of the through traffic formation. (Table 4.9 – TCAWS V6.1) • All signage should be duplicated on RHS of through formation where multiple lanes.		Comment Only	*YES*	*Refer to point 1*
Sheet 9/14	• All signage should be duplicated on RHS of through formation where multiple lanes.		Comment Only	*YES*	*Refer to point 1*

1. TABLE 5 – AUDIT FINDINGS

Audit Results	Audit Finding (Risk / Hazard, extent, crash type)	Risk Level	Recommendation/s	Client Response	
Audit Finding Ref.				Accept (Yes / No)	Action / comments
Sheet 10/14	• Roadworks speed zone signage is required to be placed on each edge of the through traffic formation. (Table 4.9 – TCAWS V6.1) • All signage should be duplicated on RHS of through formation where multiple lanes.		Comment Only	*YES*	*Refer to point 1*
Sheet 11/14	• All signage should be duplicated on RHS of through formation where multiple lanes.		Comment Only	*YES*	*Refer to point 1*
Sheet 12/14	Nil observations			*N.A*	*N.A*
Sheet 13/14	Nil observations			*N.A*	*N.A*
Sheet 14/14	Nil observations			*N.A*	*N.A*
General	Will lane closures impact on other road users i.e. pedestrians, cyclists, garbage collection etc.		Comment Only	*YES*	Lane closures not affecting cyclists as will follow all road rules and TTM control measures.

1. TABLE 5 – AUDIT FINDINGS

Audit Results	Audit Finding (Risk / Hazard, extent, crash type)	Risk Level	Recommendation/s	Client Response	
Audit Finding Ref.				Accept (Yes / No)	Action / comments
					Lane closures not affecting pedestrians as all pedestrian walk ways to remain open. Garbage collection not required as no access restricted to any businesses/residential.
LGP-61447-GLC Herb Elliott Avenue, Sydney Oly Pk – Permanent Signage Plan					
Sheet 4/14	Nil observations			*N.A*	*N.A*
D0089-DRG-TS-02 Swept Turnpaths (1) – (Sheets 1 -16)					
1 - 16	Will cars parked parallel to kerb reduce turnpath space i.e. will kerbside parking need to be closed off with signage/cones to ensure full road-width is available.		Comment Only		

APPENDIX D – SWEPTPATHS

CITY OF PARRAMATTA COUNCIL

SOPA SITE - SWEPT PATHS

SYDNEY METRO - WESTERN TUNNEL PACKAGE

SWEPT PATHS

LOCALITY PLAN
NOT TO SCALE

ACCEPTED FOR CONSTRUCTION

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0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME E:\Mike\Eclipse Consultants Dropbox\ECFP01\Projects\D0089 Wentworth St and Unwin St\AutoCAD\Drawings\TS Traffic Staging\D0089-DRG-TS-02-1001_[A].dwg		LINEAR REFERENCING START: FINISH:		PLOT DATE / TIME 02 Oct 2023 14:36:29	PLOT BY MJP
PREPARED BY CIDDM LENDU ECLIPSE CONSULTANTS PTY LTD	CONTRACTOR	DESIGNED SIGNED NAME TITLE DATE	REVIEWED SIGNED NAME TITLE DATE	VERIFIED SIGNED NAME TITLE DATE	RMS PROJECT MANAGER NAME TITLE VALIDATION AND ACCEPTANCE OF THESE DRAWINGS AND THE DESIGN SHOWN THEREON IS TO BE CARRIED OUT UNDER SEPARATE PROCESS

CLIENT sydney METRO	CITY OF PARRAMATTA COUNCIL SOPA SITE - SWEPT PATHS SYDNEY OLYMPIC PARK SITE SWEPT PATHS			A3
PREPARED FOR	RMS PROJECT No.	DESIGN PROJECT No.		
	RMS REGISTRATION No.			PART
	ISSUE STATUS FOR CONSTRUCTION	EDMS No.	SHEET No. TS-02-1001	ISSUE A

FOR CONSTRUCTION
SOPA SITE - SWEPT PATHS
DRAWING INDEX

DRAWING	TITLE
D0089-DRG-TS-02-1001	COVER SHEET SHEET 1 OF 1
D0089-DRG-TS-02-1011	DRAWING INDEX SHEET 1 OF 1
D0089-DRG-TS-02-1101	SWEPT PATHS - 19m ARTICULATED VEHICLE - INGRESS / EGRESS ROUTE
D0089-DRG-TS-02-1102	SWEPT PATHS - 19m ARTICULATED VEHICLE - INGRESS / EGRESS ROUTE
D0089-DRG-TS-02-1103	SWEPT PATHS - 19m ARTICULATED VEHICLE - INGRESS / EGRESS ROUTE
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D0089-DRG-TS-02-1105	SWEPT PATHS - 19m ARTICULATED VEHICLE - EVENT DAY ROUTE
D0089-DRG-TS-02-1106	SWEPT PATHS - 19m ARTICULATED VEHICLE - EVENT DAY ROUTE
D0089-DRG-TS-02-1107	SWEPT PATHS - 19m ARTICULATED VEHICLE - EVENT DAY ROUTE
D0089-DRG-TS-02-1108	SWEPT PATHS - TRUCK AND DOG - INGRESS / EGRESS ROUTE
D0089-DRG-TS-02-1109	SWEPT PATHS - TRUCK AND DOG - INGRESS / EGRESS ROUTE
D0089-DRG-TS-02-1110	SWEPT PATHS - TRUCK AND DOG - INGRESS / EGRESS ROUTE
D0089-DRG-TS-02-1111	SWEPT PATHS - TRUCK AND DOG - INGRESS / EGRESS ROUTE
D0089-DRG-TS-02-1112	SWEPT PATHS - TRUCK AND DOG - EVENT DAY ROUTE
D0089-DRG-TS-02-1113	SWEPT PATHS - TRUCK AND DOG - EVENT DAY ROUTE
D0089-DRG-TS-02-1114	SWEPT PATHS - TRUCK AND DOG - EVENT DAY ROUTE

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DESIGN LOT CODE:

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING:

PLOT DATE / TIME: 02 Oct 2023 14:36:49 PLOT BY: Mike

CLIENT: sydney METRO

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DRAWINGS / DESIGN PREPARED BY: CAPPM ANDU; ECLIPSE CONSULTANTS PTY LTD

CONTRACTOR:

CO-ORDINATE SYSTEM: MGA ZONE 56

HEIGHT DATUM: AHD

TITLE	NAME	DATE
DRAWN	M.POMPLUN	03.10.23
DRG CHECK	L.NEL	03.10.23
DESIGN	L.NEL	03.10.23
DESIGN CHECK	J.COX	03.10.23
DESIGN MNGR		
PROJECT MNGR		

PREPARED FOR:

CITY OF PARRAMATTA COUNCIL
SOPA SITE - SWEPT PATHS
SYDNEY OLYMPIC PARK SITE
SWEPT PATHS

A3

DRAWING INDEX

SHEET 1 OF 1

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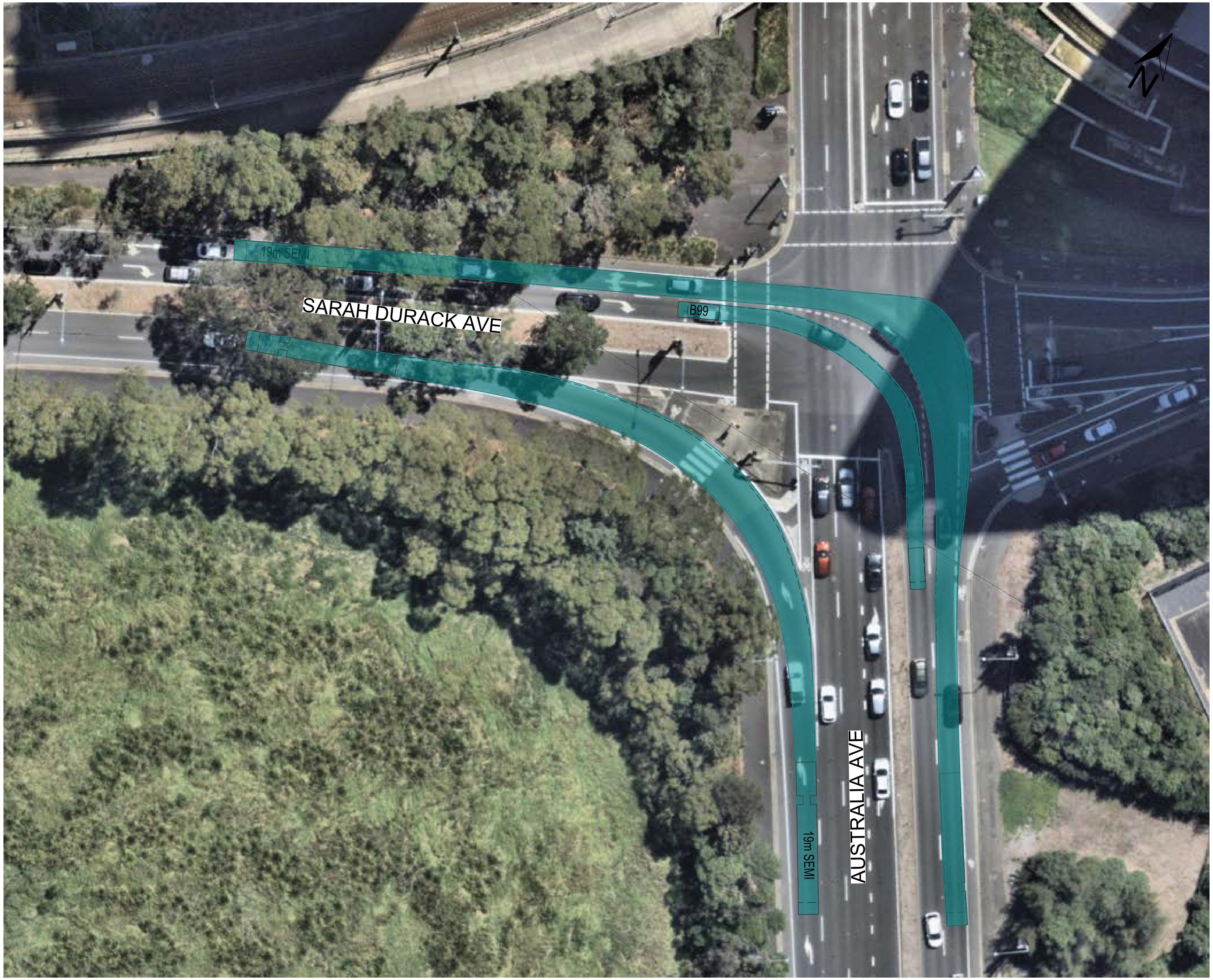
PART:

ISSUE STATUS: FOR CONSTRUCTION

EDMS No.:

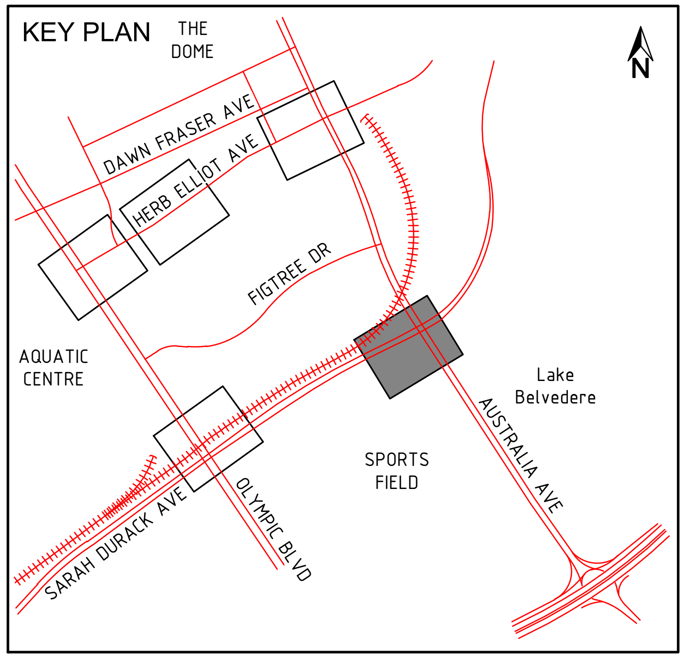
SHEET No.: TS-02-1011

ISSUE: A



LEGEND

- VEHICLE SWEPT PATH ENVELOPE
- VEHICLE WHEEL PATH
- VEHICLE TYPE
- TRAFFIC CONTROLLERS TO BE USED TO FACILITATE VEHICLE MANOEUVRES, AS REQUIRED.



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CONTRACTOR

CO-ORDINATE SYSTEM: MGA ZONE 56

HEIGHT DATUM: AHD

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DESIGN	L.NEL	03.10.23
DESIGN CHECK	J.COX	03.10.23
DESIGN MNGR		
PROJECT MNGR		

CLIENT: sydney METRO

PREPARED FOR

CITY OF PARRAMATTA COUNCIL
SOPA SITE - SWEPT PATHS
19m ARTICULATED VEHICLE
INGRESS / EGRESS ROUTE

A3

SWEPT PATHS — SHEET 1 OF 14

RMS REGISTRATION No.

PART

ISSUE STATUS: FOR CONSTRUCTION

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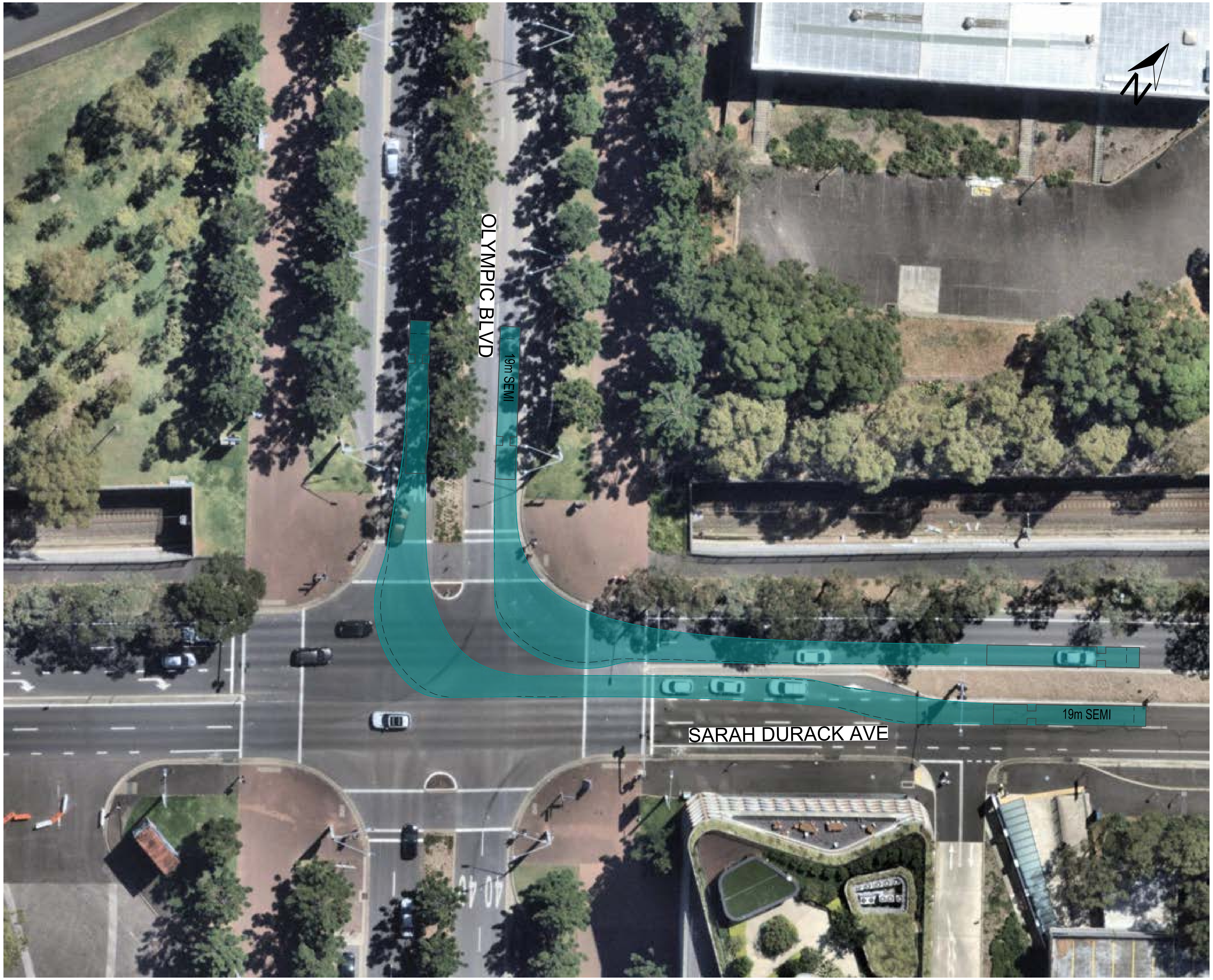
SHEET No.: TS-02-1101

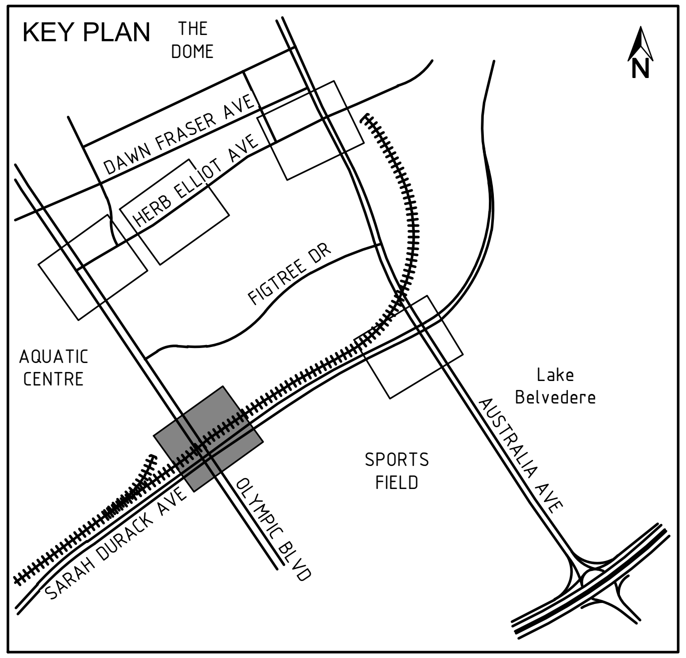
ISSUE: A



LEGEND

- VEHICLE SWEPT PATH ENVELOPE
- VEHICLE WHEEL PATH
- VEHICLE TYPE
- TRAFFIC CONTROLLERS TO BE USED TO FACILITATE VEHICLE MANOEUVRES, AS REQUIRED.

KEY PLAN



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DESIGN LOT CODE

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING

SCALES ON A3 SIZE DRAWING: SCALE 5 0 5 10 1:500

CO-ORDINATE SYSTEM: MGA ZONE 56

HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY: CADDMANDU, ECLIPSE CONSULTANTS PTY LTD

CONTRACTOR

PLOT DATE / TIME: 02 Oct 2023 14:37:55 | PLOT BY: Mike

TITLE	NAME	DATE
DRAWN	M.POMPLUN	03.10.23
DRG CHECK	L.NEL	03.10.23
DESIGN	L.NEL	03.10.23
DESIGN CHECK	J.COX	03.10.23
DESIGN MNGR		
PROJECT MNGR		

CLIENT: sydney METRO

PREPARED FOR

CITY OF PARRAMATTA COUNCIL
SOPA SITE - SWEPT PATHS
19m ARTICULATED VEHICLE
INGRESS / EGRESS ROUTE

A3

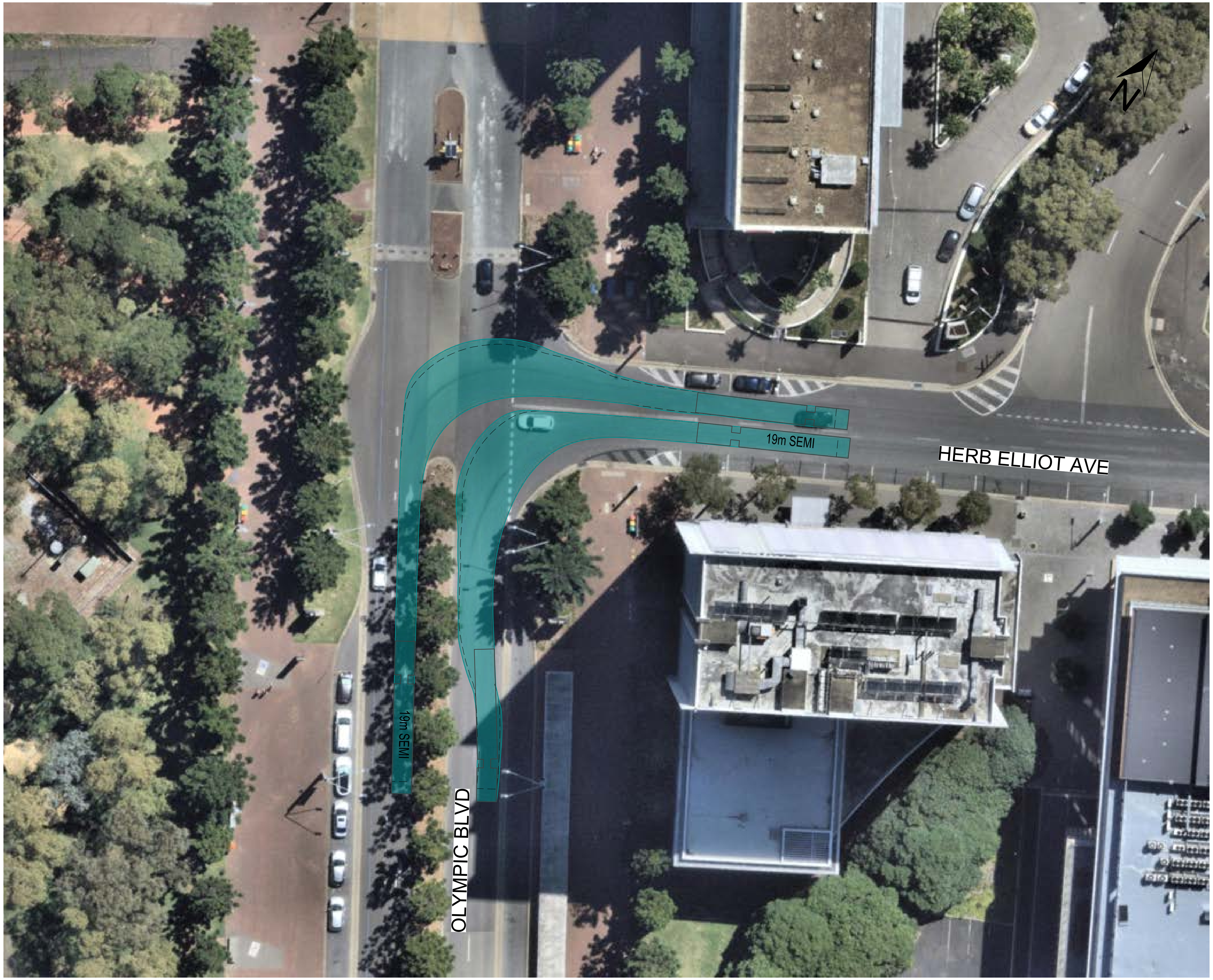
SWEPT PATHS

SHEET 2 OF 14

RMS REGISTRATION No.

PART

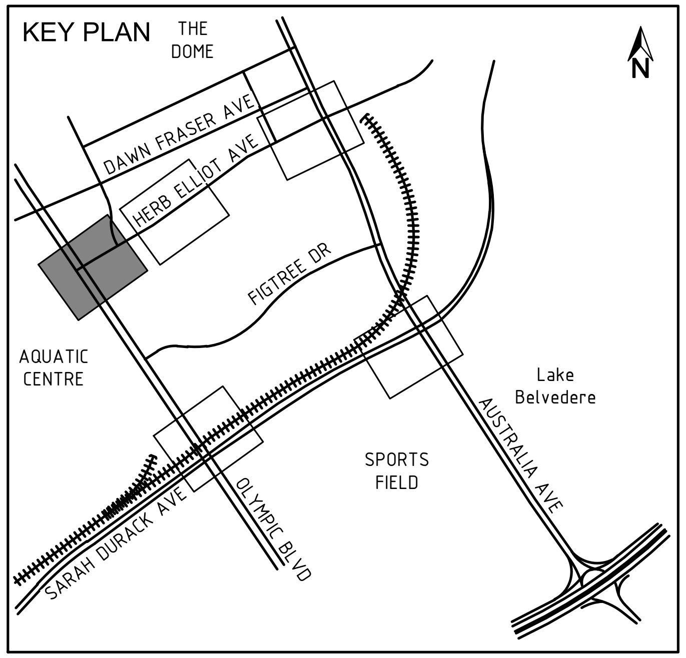
ISSUE STATUS: FOR CONSTRUCTION | EDMS No. | SHEET No.: TS-02-1102 | ISSUE: A



LEGEND

- VEHICLE SWEPT PATH ENVELOPE
- VEHICLE WHEEL PATH
- VEHICLE TYPE
- TRAFFIC CONTROLLERS TO BE USED TO FACILITATE VEHICLE MANOEUVRES, AS REQUIRED.

KEY PLAN



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50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME E:\Mike\Eclipse Consultants Dropbox\ECFP01\Projects\D0089 Wentworth St and Unwin St\AutoCAD\Drawings\TS Traffic Staging\D0089-DRG-TS-02-1103_[A].dwg				DESIGN LOT CODE		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING
EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING
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DRAWINGS / DESIGN PREPARED BY	CADDMANDU; ECLIPSE CONSULTANTS PTY LTD
CONTRACTOR	
CO-ORDINATE SYSTEM	MGA ZONE 56
HEIGHT DATUM	AHD

PLOT DATE / TIME	02 Oct 2023 14:38:28	PLOT BY: Mike
TITLE	NAME	DATE
DRAWN	M.POMPLUN	03.10.23
DRG CHECK	L.NEL	03.10.23
DESIGN	L.NEL	03.10.23
DESIGN CHECK	J.COX	03.10.23
DESIGN MNGR		
PROJECT MNGR		

CLIENT: sydney METRO

PREPARED FOR

CITY OF PARRAMATTA COUNCIL
SOPA SITE - SWEPT PATHS
19m ARTICULATED VEHICLE
INGRESS / EGRESS ROUTE

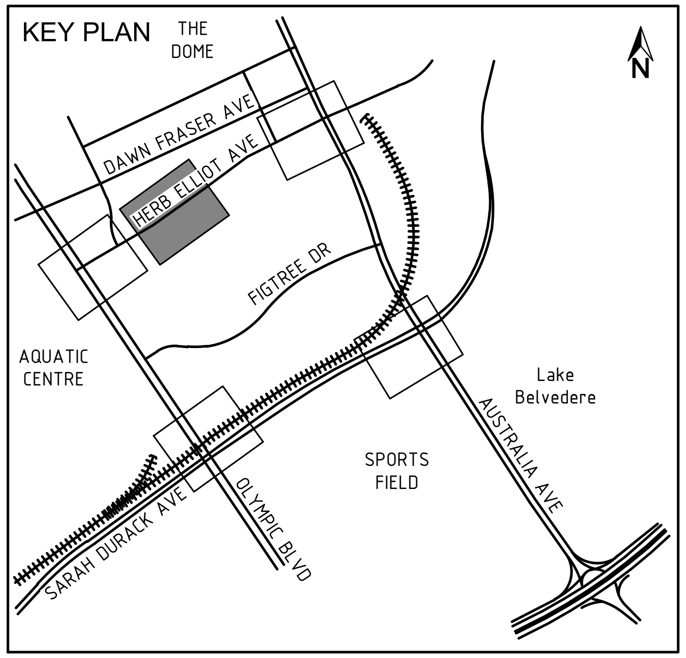
A3

SWEPT PATHS — SHEET 3 OF 14

RMS REGISTRATION No.			PART
ISSUE STATUS	EDMS No.	SHEET No.	ISSUE
FOR CONSTRUCTION		TS-02-1103	A

LEGEND

- VEHICLE SWEPT PATH ENVELOPE
- VEHICLE WHEEL PATH
- VEHICLE TYPE
- TRAFFIC CONTROLLERS TO BE USED TO FACILITATE VEHICLE MANOEUVRES, AS REQUIRED.



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50mm ON A3 SIZE ORIGINAL

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DESIGN LOT CODE

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING

EXTERNAL REFERENCE FILES
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SOPA-paths
x_ga_aerial_SOPA
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REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.10.23	ISSUED FOR CONSTRUCTION	-	-

SCALES ON A3 SIZE DRAWING
SCALE 5 0 5 10 1:500

CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY: CADDMANDU / ECLIPSE CONSULTANTS PTY LTD

CONTRACTOR

PLOT DATE / TIME: 02 Oct 2023 14:39:01
PLOT BY: Mike

TITLE	NAME	DATE
DRAWN	M.POMPLUN	03.10.23
DRG CHECK	L.NEL	03.10.23
DESIGN	L.NEL	03.10.23
DESIGN CHECK	J.COX	03.10.23
DESIGN MNGR		
PROJECT MNGR		

CLIENT: sydney METRO

PREPARED FOR

CITY OF PARRAMATTA COUNCIL
SOPA SITE - SWEPT PATHS
19m ARTICULATED VEHICLE
INGRESS / EGRESS ROUTE

A3

SWEPT PATHS — SHEET 4 OF 14

RMS REGISTRATION No.

PART

ISSUE STATUS: FOR CONSTRUCTION

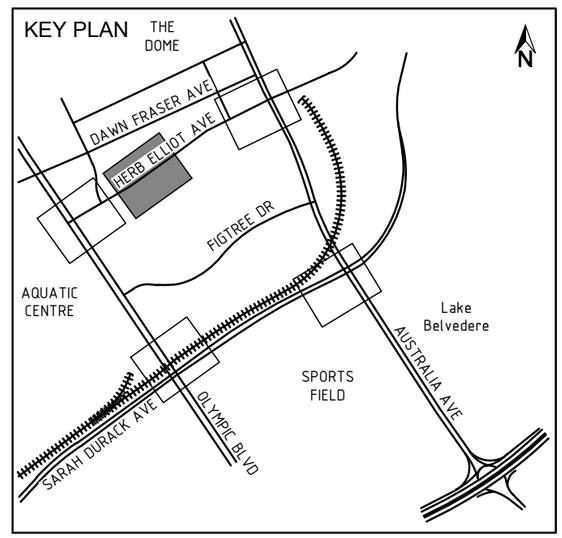
EDMS No.

SHEET No.: TS-02-1104

ISSUE: A

LEGEND

- VEHICLE SWEPT PATH ENVELOPE
- VEHICLE WHEEL PATH
- VEHICLE TYPE
- TRAFFIC CONTROLLERS TO BE USED TO FACILITATE VEHICLE MANOEUVRES, AS REQUIRED.



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DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING:

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SCALES ON A3 SIZE DRAWING: SCALE 5 0 5 10 1:500

CO-ORDINATE SYSTEM: MGA ZONE 56

HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY: CARDNO ANDU ECLIPSE CONSULTANTS PTY LTD

CONTRACTOR:

PLOT DATE / TIME	PLOT BY
02 Oct 2023 14:39:34	Mike

TITLE	NAME	DATE
DRAWN	M.POMPLUN	03.10.23
DRG CHECK	L.NEL	03.10.23
DESIGN	L.NEL	03.10.23
DESIGN CHECK	J.COX	03.10.23
DESIGN MNGR		
PROJECT MNGR		

CLIENT: sydney METRO

PREPARED FOR:

CITY OF PARRAMATTA COUNCIL
SOPA SITE - SWEPT PATHS
19m ARTICULATED VEHICLE EVENT DAY ROUTE

SWEPT PATHS — SHEET 5 OF 14

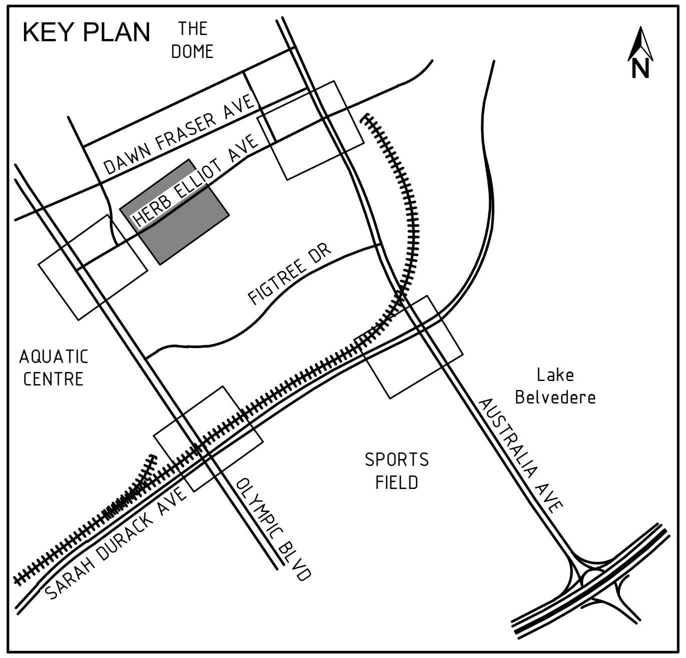
A3

RMS REGISTRATION No.: PART

ISSUE STATUS	EDMS No.	SHEET No.	ISSUE
FOR CONSTRUCTION		TS-02-1105	A

LEGEND

- VEHICLE SWEPT PATH ENVELOPE
- VEHICLE WHEEL PATH
- VEHICLE TYPE
- TRAFFIC CONTROLLERS TO BE USED TO FACILITATE VEHICLE MANOEUVRES, AS REQUIRED.



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50mm ON A3 SIZE ORIGINAL

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REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.10.23	ISSUED FOR CONSTRUCTION	-	-

DESIGN LOT CODE

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING

SCALES ON A3 SIZE DRAWING: SCALE 5 0 5 10 1:500

CO-ORDINATE SYSTEM: MGA ZONE 56

HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY: CADDMANDU, ECLIPSE CONSULTANTS PTY LTD

CONTRACTOR

PLOT DATE / TIME: 02 Oct 2023 14:40:05 — PLOT BY: Mike

TITLE	NAME	DATE
DRAWN	M.POMPLUN	03.10.23
DRG CHECK	L.NEL	03.10.23
DESIGN	L.NEL	03.10.23
DESIGN CHECK	J.COX	03.10.23
DESIGN MNGR		
PROJECT MNGR		

CLIENT: sydney METRO

PREPARED FOR

CITY OF PARRAMATTA COUNCIL
SOPA SITE - SWEPT PATHS
19m ARTICULATED VEHICLE
EVENT DAY ROUTE

SWEPT PATHS

SHEET 6 OF 14

A3

RMS REGISTRATION No.

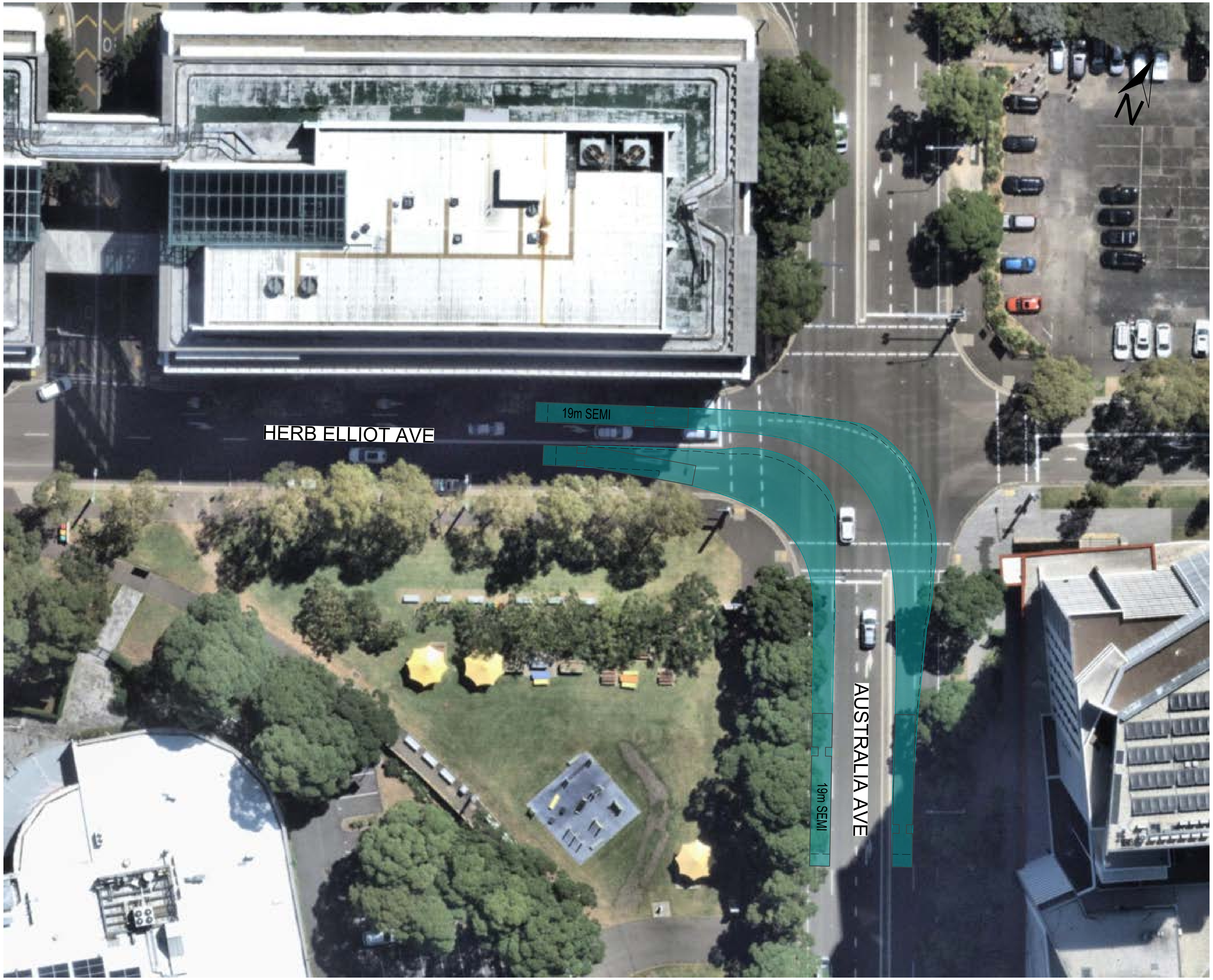
PART

ISSUE STATUS: FOR CONSTRUCTION

EDMS No.

SHEET No.: TS-02-1106

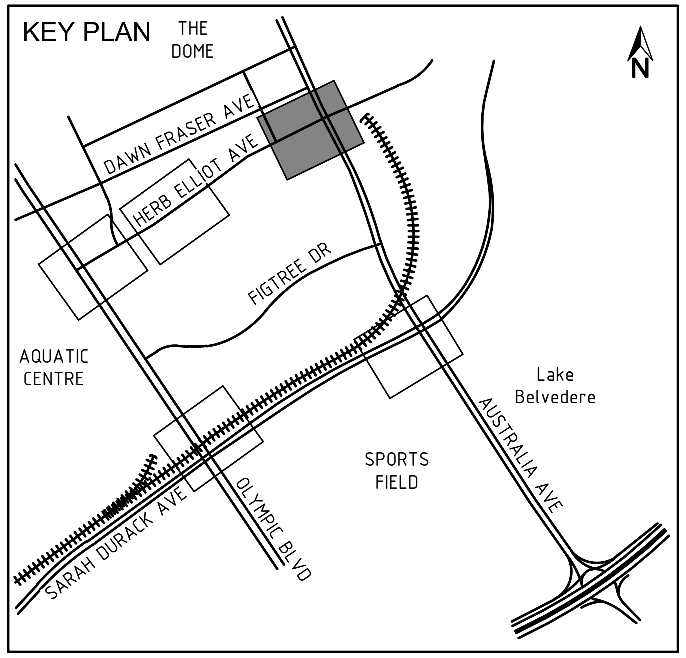
ISSUE: A



LEGEND

- VEHICLE SWEPT PATH ENVELOPE
- VEHICLE WHEEL PATH
- VEHICLE TYPE
- TRAFFIC CONTROLLERS TO BE USED TO FACILITATE VEHICLE MANOEUVRES, AS REQUIRED.

KEY PLAN



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DESIGN LOT CODE

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING

EXTERNAL REFERENCE FILES
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SOPA-paths
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x_gs_frame_500 - SOPA
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x_gs_key_plan-SOPA

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.10.23	ISSUED FOR CONSTRUCTION	-	-

SCALES ON A3 SIZE DRAWING
SCALE 5 0 5 10 1:500

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CADDMANDU
ECLIPSE CONSULTANTS PTY LTD

CONTRACTOR

CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

PLOT DATE / TIME: 02 Oct 2023 14:40:34
PLOT BY: Mike

TITLE	NAME	DATE
DRAWN	M.POMPLUN	03.10.23
DRG CHECK	L.NEL	03.10.23
DESIGN	L.NEL	03.10.23
DESIGN CHECK	J.COX	03.10.23
DESIGN MNGR		
PROJECT MNGR		

CLIENT
sydney METRO

PREPARED FOR

CITY OF PARRAMATTA COUNCIL
SOPA SITE - SWEPT PATHS
19m ARTICULATED VEHICLE
EVENT DAY ROUTE

A3

SWEPT PATHS
SHEET 7 OF 14

RMS REGISTRATION No.

PART

ISSUE STATUS: FOR CONSTRUCTION
EDMS No.
SHEET No.: TS-02-1107
ISSUE: A

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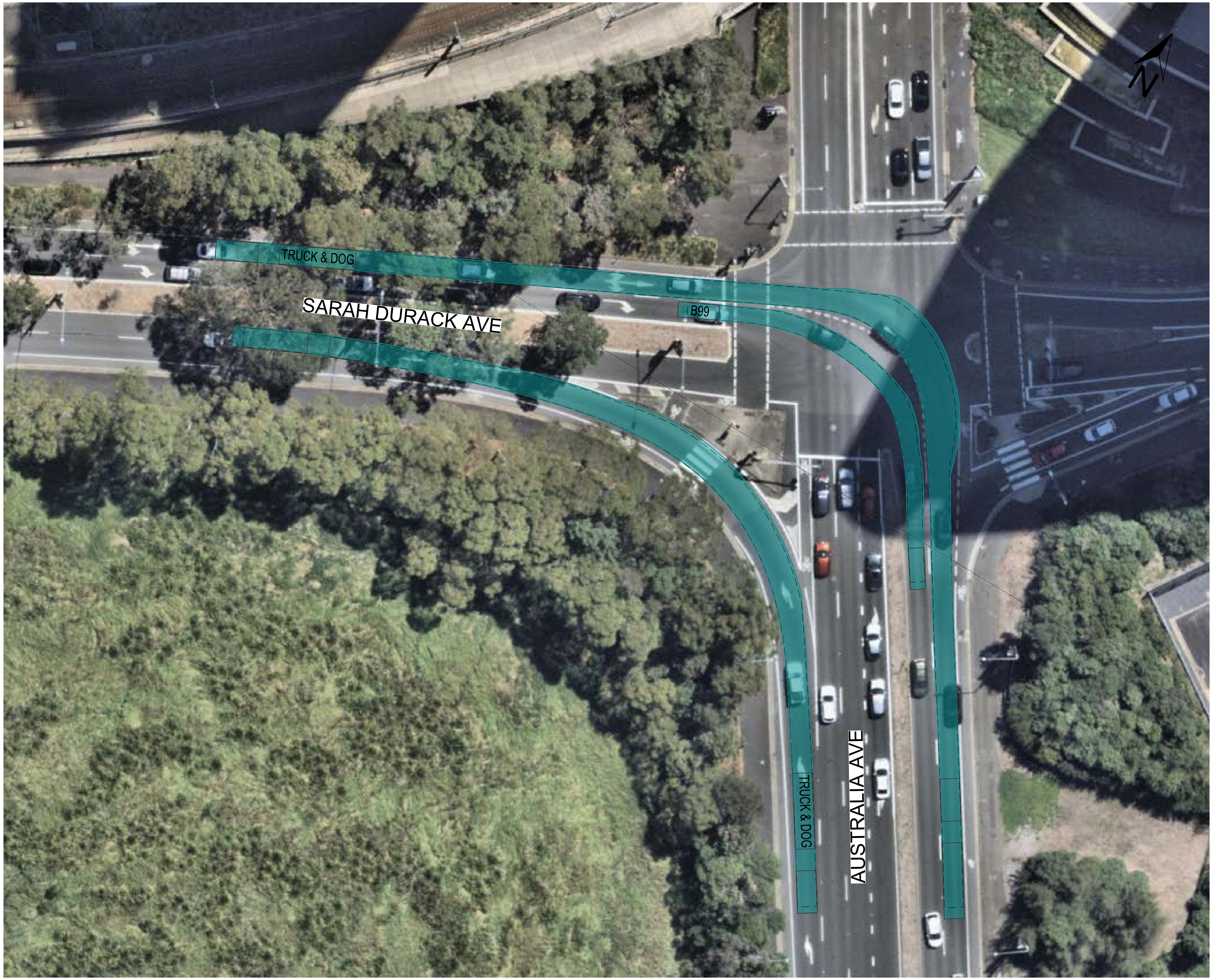
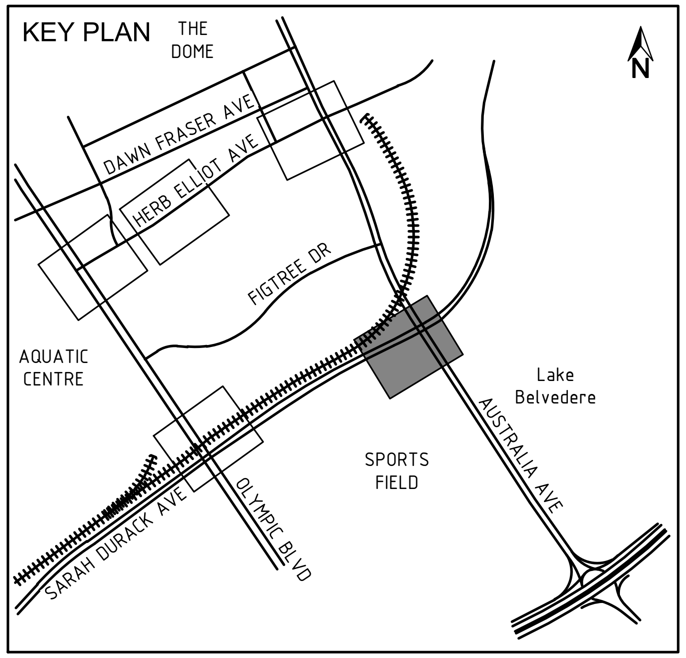


LEGEND

- VEHICLE SWEPT PATH ENVELOPE
- VEHICLE WHEEL PATH
- VEHICLE TYPE
- TRAFFIC CONTROLLERS TO BE USED TO FACILITATE VEHICLE MANOEUVRES, AS REQUIRED.

KEY PLAN



ACCEPTED FOR CONSTRUCTION

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						CO-ORDINATE SYSTEM: MGA ZONE 56 / HEIGHT DATUM: AHD	CONTRACTOR

PLOT DATE / TIME	PLOT BY	
02 Oct 2023 14:41:09	Mike	
TITLE	NAME	DATE
DRAWN	M.POMPLUN	03.10.23
DRG CHECK	L.NEL	03.10.23
DESIGN	L.NEL	03.10.23
DESIGN CHECK	J.COX	03.10.23
DESIGN MNGR		
PROJECT MNGR		

CLIENT: sydney METRO

PREPARED FOR

CITY OF PARRAMATTA COUNCIL
SOPA SITE - SWEPT PATHS
TRUCK AND DOG
INGRESS / EGRESS ROUTE

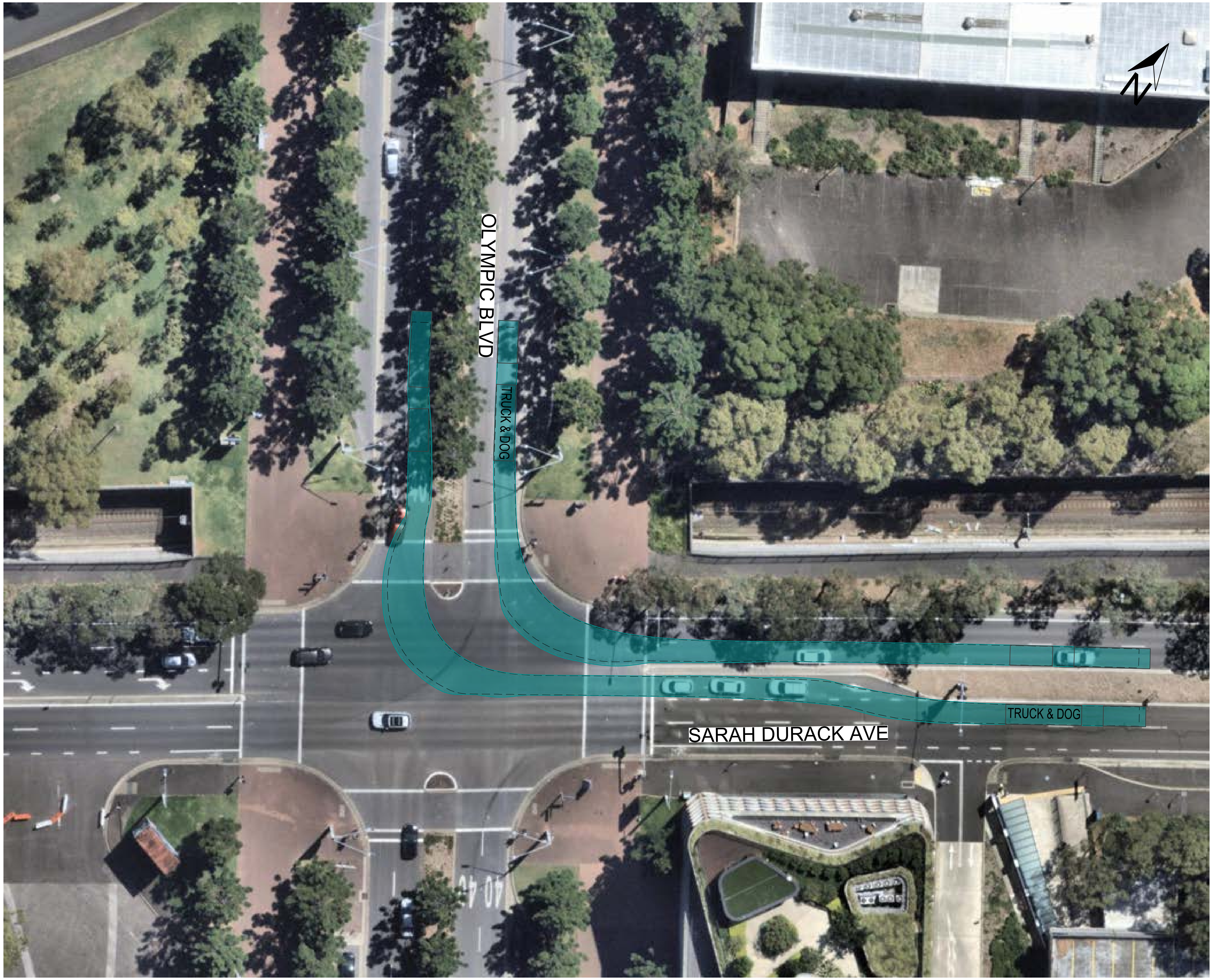
A3

SWEPT PATHS SHEET 8 OF 14

RMS REGISTRATION No.

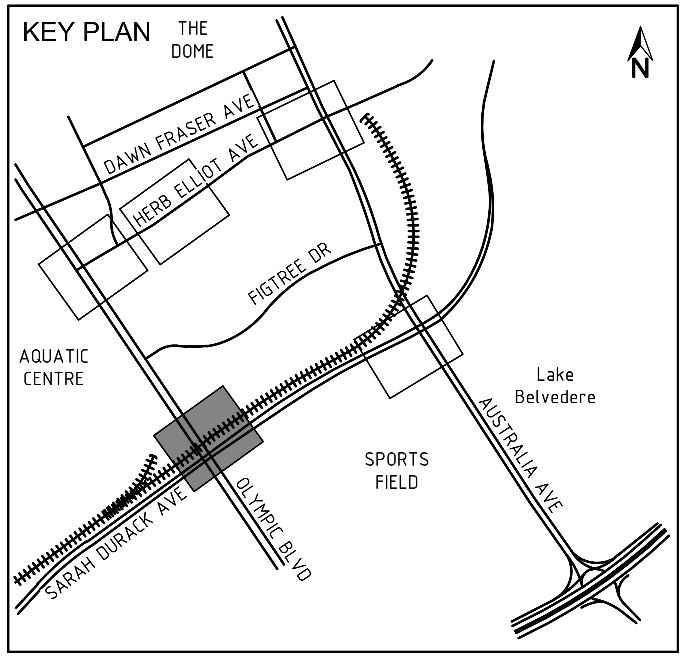
PART

ISSUE STATUS	EDMS No.	SHEET No.	ISSUE
FOR CONSTRUCTION		TS-02-1108	A



LEGEND

- VEHICLE SWEPT PATH ENVELOPE
- VEHICLE WHEEL PATH
- VEHICLE TYPE
- TRAFFIC CONTROLLERS TO BE USED TO FACILITATE VEHICLE MANOEUVRES, AS REQUIRED.



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SCALES ON A3 SIZE DRAWING: SCALE 5 0 5 10 1:500

CO-ORDINATE SYSTEM: MGA ZONE 56

HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY: CADDMANDU / ECLIPSE CONSULTANTS PTY LTD

CONTRACTOR:

PLOT DATE / TIME: 02 Oct 2023 14:41:43 — PLOT BY: Mike

TITLE	NAME	DATE
DRAWN	M.POMPLUN	03.10.23
DRG CHECK	L.NEL	03.10.23
DESIGN	L.NEL	03.10.23
DESIGN CHECK	J.COX	03.10.23
DESIGN MNGR		
PROJECT MNGR		

CLIENT: sydney METRO

PREPARED FOR:

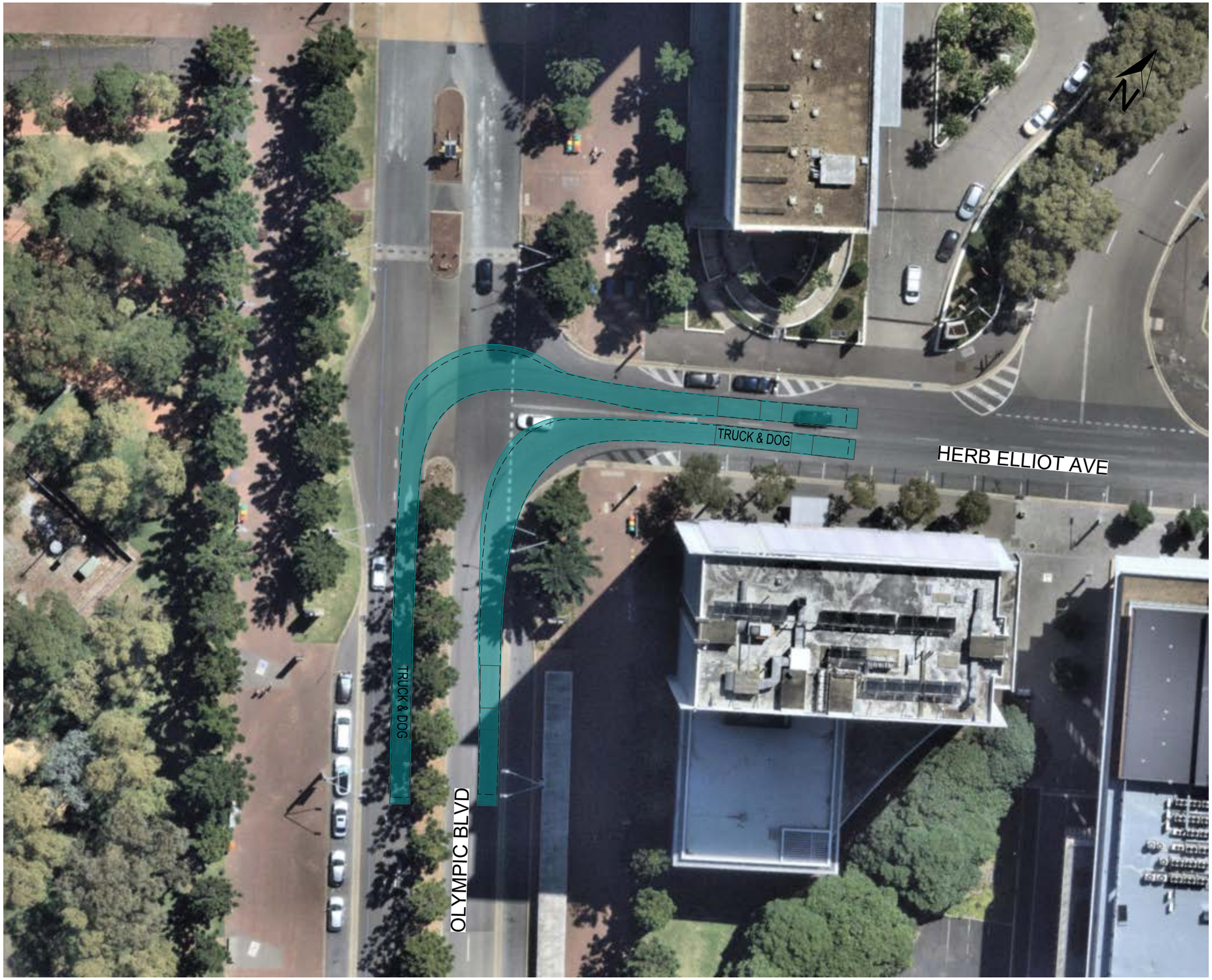
CITY OF PARRAMATTA COUNCIL
SOPA SITE - SWEPT PATHS
TRUCK AND DOG
INGRESS / EGRESS ROUTE

A3

SWEPT PATHS — SHEET 9 OF 14

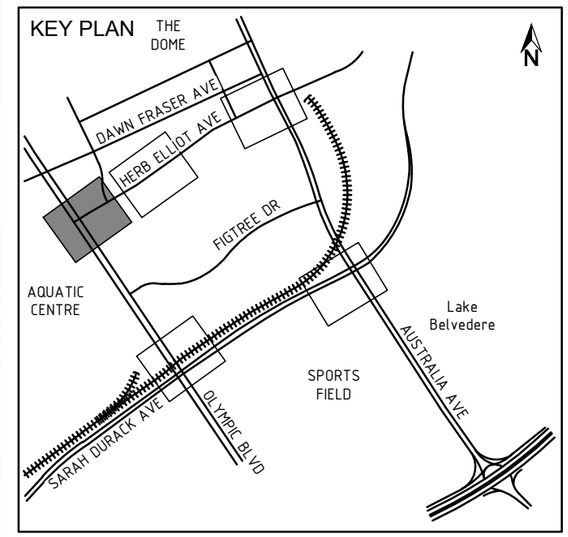
RMS REGISTRATION No. — PART

ISSUE STATUS: FOR CONSTRUCTION — EDMS No. — SHEET No. TS-02-1109 — ISSUE A



LEGEND

- VEHICLE SWEPT PATH ENVELOPE
- VEHICLE WHEEL PATH
- VEHICLE TYPE
- TRAFFIC CONTROLLERS TO BE USED TO FACILITATE VEHICLE MANOEUVRES, AS REQUIRED.



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DRAWING FILE LOCATION / NAME
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DESIGN LOT CODE

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING

PLOT DATE / TIME: 02 Oct 2023 14:42:16 — PLOT BY: Mike

CLIENT: sydney METRO

CITY OF PARRAMATTA COUNCIL
SOPA SITE - SWEPT PATHS
TRUCK AND DOG
INGRESS / EGRESS ROUTE
SWEPT PATHS — SHEET 10 OF 14

A3

EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
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SCALES ON A3 SIZE DRAWING: SCALE 5 0 5 10 1:500

DRAWINGS / DESIGN PREPARED BY: CADMANDU; ECLIPSE CONSULTANTS PTY LTD

CONTRACTOR

CO-ORDINATE SYSTEM	HEIGHT DATUM
MGA ZONE 56	AHD

TITLE	NAME	DATE
DRAWN	M.POMPLUN	03.10.23
DRG CHECK	L.NEL	03.10.23
DESIGN	L.NEL	03.10.23
DESIGN CHECK	J.COX	03.10.23
DESIGN MNGR		
PROJECT MNGR		

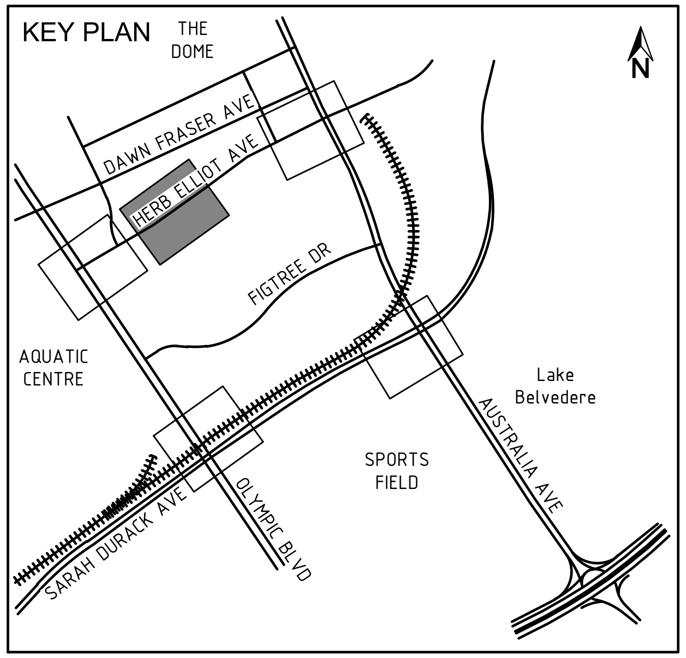
PREPARED FOR

RMS REGISTRATION No. — PART

ISSUE STATUS	EDMS No.	SHEET No.	ISSUE
FOR CONSTRUCTION		TS-02-1110	A

LEGEND

- VEHICLE SWEPT PATH ENVELOPE
- VEHICLE WHEEL PATH
- VEHICLE TYPE
- TRAFFIC CONTROLLERS TO BE USED TO FACILITATE VEHICLE MANOEUVRES, AS REQUIRED.



ACCEPTED FOR CONSTRUCTION

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50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME	E:\Mike\Eclipse Consultants Dropbox\ECFP01\Projects\D0089 Wentworth St and Unwin St\AutoCAD\Drawings\TS Traffic Staging\D0089-DRG-TS-02-1111_[A].dwg
DESIGN LOT CODE	
DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	
PLOT DATE / TIME	02 Oct 2023 14:42:48
PLOT BY	Mike
CLIENT	Sydney Metro

EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
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SCALES ON A3 SIZE DRAWING: SCALE 5 0 5 10 1:500

DRAWINGS / DESIGN PREPARED BY: CADDMANDU / ECLIPSE CONSULTANTS PTY LTD

CONTRACTOR:

CO-ORDINATE SYSTEM: MGA ZONE 56

HEIGHT DATUM: AHD

TITLE	NAME	DATE
DRAWN	M.POMPLUN	03.10.23
DRG CHECK	L.NEL	03.10.23
DESIGN	L.NEL	03.10.23
DESIGN CHECK	J.COX	03.10.23
DESIGN MNGR		
PROJECT MNGR		

PREPARED FOR

CITY OF PARRAMATTA COUNCIL
SOPA SITE - SWEPT PATHS
TRUCK AND DOG
INGRESS / EGRESS ROUTE

A3

SWEPT PATHS

SHEET 11 OF 14

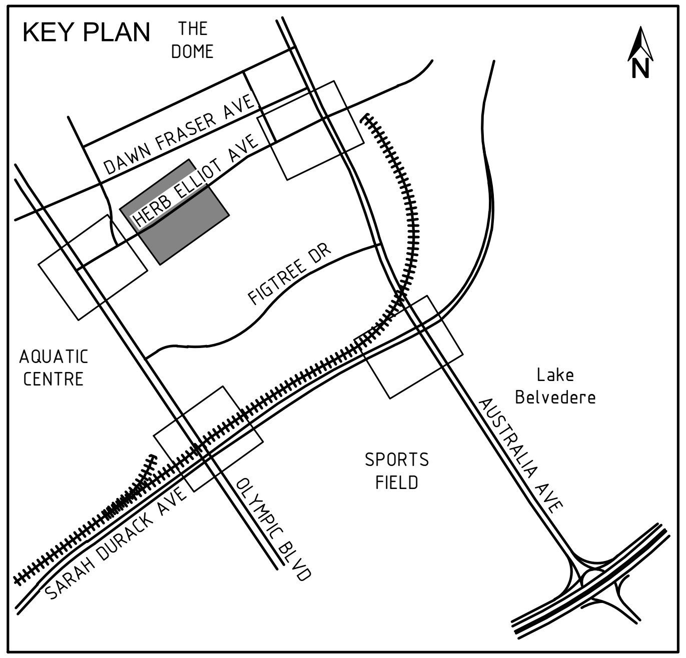
RMS REGISTRATION No.

PART

ISSUE STATUS	EDMS No.	SHEET No.	ISSUE
FOR CONSTRUCTION		TS-02-1111	A

LEGEND

- VEHICLE SWEPT PATH ENVELOPE
- VEHICLE WHEEL PATH
- VEHICLE TYPE
- TRAFFIC CONTROLLERS TO BE USED TO FACILITATE VEHICLE MANOEUVRES, AS REQUIRED.



ACCEPTED FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

50mm ON A3 SIZE ORIGINAL

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REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.10.23	ISSUED FOR CONSTRUCTION		

SCALES ON A3 SIZE DRAWING: SCALE 5 0 5 10 1:500

CO-ORDINATE SYSTEM: MGA ZONE 56

HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY: CADDMANDU, ECLIPSE CONSULTANTS PTY LTD

CONTRACTOR

PLOT DATE / TIME: 02 Oct 2023 14:43:20 — PLOT BY: Mike

TITLE	NAME	DATE
DRAWN	M.POMPLUN	03.10.23
DRG CHECK	L.NEL	03.10.23
DESIGN	L.NEL	03.10.23
DESIGN CHECK	J.COX	03.10.23
DESIGN MNGR		
PROJECT MNGR		

CLIENT: sydney METRO

PREPARED FOR

CITY OF PARRAMATTA COUNCIL
SOPA SITE - SWEPT PATHS

TRUCK AND DOG EVENT DAY ROUTE

SWEPT PATHS — SHEET 12 OF 14

A3

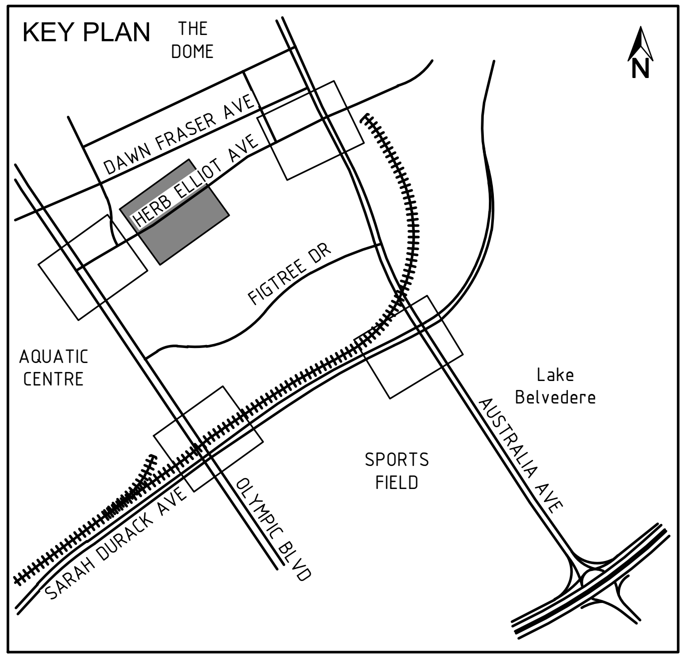
RMS REGISTRATION No. — PART

ISSUE STATUS	EDMS No.	SHEET No.	ISSUE
FOR CONSTRUCTION		TS-02-1112	A

LEGEND

- VEHICLE SWEPT PATH ENVELOPE
- VEHICLE WHEEL PATH
- VEHICLE TYPE
- TRAFFIC CONTROLLERS TO BE USED TO FACILITATE VEHICLE MANOEUVRES, AS REQUIRED.

KEY PLAN



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50mm ON A3 SIZE ORIGINAL

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DESIGN LOT CODE

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING

EXTERNAL REFERENCE FILES

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.10.23	ISSUED FOR CONSTRUCTION		

SCALES ON A3 SIZE DRAWING
SCALE 1:500

DRAWINGS / DESIGN PREPARED BY
CADDMANDU
ECLIPSE CONSULTANTS PTY LTD

CONTRACTOR

CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

PLOT DATE / TIME: 02 Oct 2023 14:43:55
PLOT BY: Mike

TITLE	NAME	DATE
DRAWN	M.POMPLUN	03.10.23
DRG CHECK	L.NEL	03.10.23
DESIGN	L.NEL	03.10.23
DESIGN CHECK	J.COX	03.10.23
DESIGN MNGR		
PROJECT MNGR		

CLIENT
sydney METRO

PREPARED FOR

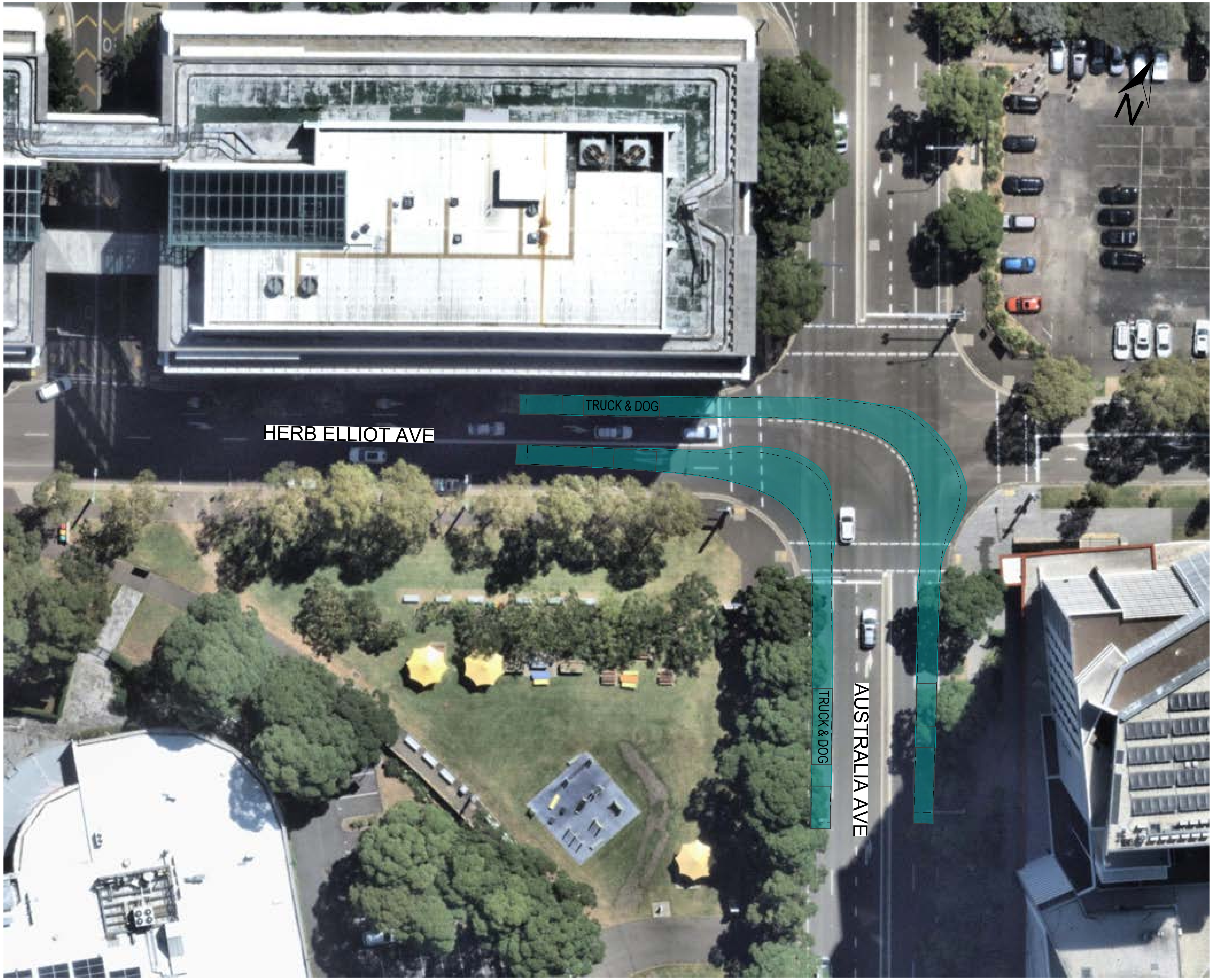
CITY OF PARRAMATTA COUNCIL
SOPA SITE - SWEPT PATHS
TRUCK AND DOG
EVENT DAY ROUTE

A3

SWEPT PATHS
SHEET 13 OF 14

RMS REGISTRATION No.
PART

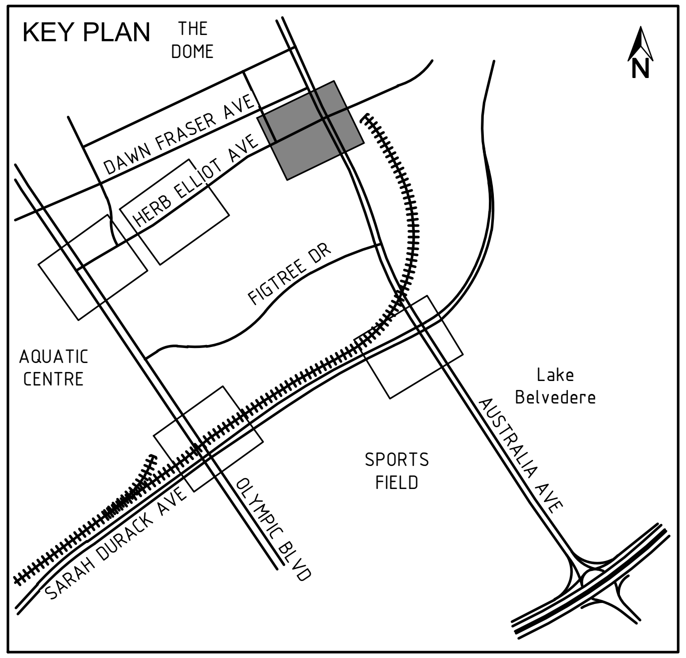
ISSUE STATUS: FOR CONSTRUCTION
EDMS No.
SHEET No.: TS-02-1113
ISSUE: A



LEGEND

- VEHICLE SWEPT PATH ENVELOPE
- VEHICLE WHEEL PATH
- VEHICLE TYPE
- TRAFFIC CONTROLLERS TO BE USED TO FACILITATE VEHICLE MANOEUVRES, AS REQUIRED.

KEY PLAN



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50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME	DESIGN LOT CODE	DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING
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EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
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SCALES ON A3 SIZE DRAWING: SCALE 5 0 5 10 1:500

CO-ORDINATE SYSTEM: MGA ZONE 56

HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY: CADDMANDU, ECLIPSE CONSULTANTS PTY LTD

CONTRACTOR

PLOT DATE / TIME: 02 Oct 2023 14:44:23

PLOT BY: Mike

TITLE	NAME	DATE
DRAWN	M.POMPLUN	03.10.23
DRG CHECK	L.NEL	03.10.23
DESIGN	L.NEL	03.10.23
DESIGN CHECK	J.COX	03.10.23
DESIGN MNGR		
PROJECT MNGR		

CLIENT: sydney METRO

PREPARED FOR

CITY OF PARRAMATTA COUNCIL
SOPA SITE - SWEPT PATHS
TRUCK AND DOG
EVENT DAY ROUTE

A3

SWEPT PATHS

SHEET 14 OF 14

RMS REGISTRATION No.

PART

ISSUE STATUS: FOR CONSTRUCTION

EDMS No.

SHEET No.: TS-02-1114

ISSUE: A

APPENDIX E – STAKEHOLDER ENGAGEMENT PLAN

Communications Action Plan – GLC Truck Movements – Herb Elliot Avenue, Sydney Olympic Park

Once GLC commences truck movements at Sydney Olympic Park Sydney Metro site, the key stakeholders requiring consultation includes businesses adjacent to and along the site's heavy vehicles route on Herb Elliot Avenue.

Communications Plan

Project phase/specific activity	Timing (indicative)	Proposed communications activity and purpose	Stakeholders identified	Tools	Status
Monthly construction update	1 November 2023	Construction update on construction activities, introduction of GLC's scope of work and work area, traffic changes, hours of work and project contact details.	200m around the work area including businesses and hotels on Herb Elliot Avenue Residential Towers on Australia Ave (via Building Managers) Retailers on Australia Ave Bicycle NSW and any other known local cycling groups RAS NSW	Notification	Ongoing

Doorknock to introduce GLC and consult on truck movements	w/c 30 October or w/c 6 November	Carry out door knock to surrounding businesses for consultation regarding truck movements. AFJV to join in on doorknock for GLC introductions.	Pullman Hotel Ibis Hotel and Novotel 10 Herb Elliot (The Avenue) Abattoir Heritage Precinct (SOPA owned) 6 Herb Elliot	'Sorry we missed you' (SWMY) cards Project information cards	To-do
Doorknock to distribute December monthly construction update	w/c 27 November	Carry out door knock to surrounding businesses as a reminder about GLC commencing on site and distribute notification detailing December work activities. AFJV to join in on doorknock.	Pullman Hotel Ibis Hotel and Novotel 10 Herb Elliot (The Avenue) Abattoir Heritage Precinct (SOPA owned) 6 Herb Elliot Notification will go out to stakeholders 200m around the work area.	Notification	To-do
SOPA Weekly Community Notice	Every Thursday by 12pm	Construction update on construction activities, traffic changes, hours of work and project contact details	4500 subscribers	Notification	Ongoing

Feedback

Local businesses and stakeholders can reach out to the project via the information line: 1800 612 173, email: metrotunnelsGLC@transport.nsw.gov.au or via the mailing address: Sydney Metro West, PO BOX K659, Haymarket, NSW 1240. All these contact details are listed on the notifications and project information cards.