

CONSTRUCTION TRAFFIC MANAGEMENT PLAN

Sydney Metro West – Western Tunnelling Package Unwin St –
Northern Diversion Construction

September 2024 – February 2025

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A	5 September 2024	For Stakeholders review
B	5 September 2024	For Stakeholders approval
C	29 November 2024	Revision for approval for updated/changed works schedule Chapters 2 and 3 details removed as works completed Chapter 5 changed as new addition Chapter 6 previous Chapter 5 (for chronological order) VMS number changes
D	13 December 2024	Address stakeholder comments Spelling and abbreviation errors corrected Section 4.4 new statement added Section 4.6 new information added – volume assessment Section 4.12 dates revised Section 5.4 new statement added Table 8 updated Design drawings updated

Document Authorisation

Action Type	Position	Name	Signature	Date Signed
Prepared by	Traffic Manager			13 December 2024
Reviewed by	Logistic Project Manager			13 December 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	Senior Project Manager			13 December 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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1. INTRODUCTION

1.1 Purpose

This document has been prepared to assist GLC with the implementation of a long-term lane closure via shuttle flow (stop/slow) and weekend closures of Unwin St between WTP Rosehill Gate 1 and WTP MSF Gate 9 for the Unwin St northern diversion construction.

These gates are located between Shirley St and Wentworth Ave. Work area location is shown below in figure 1. This closure is required to enable the northern tie in construction for the new Unwin St bridge diversion. The northern side of the section is proposed to be constructed first with the set-up then switching to the opposite side to allow the southern section to be constructed. A total of 10-14 weeks is expected to complete the works, with 5-7 weeks on each section. As part of the changes overs in each section it is also proposed to utilise a weekend 56-hour shutdown closure of Unwin Street.

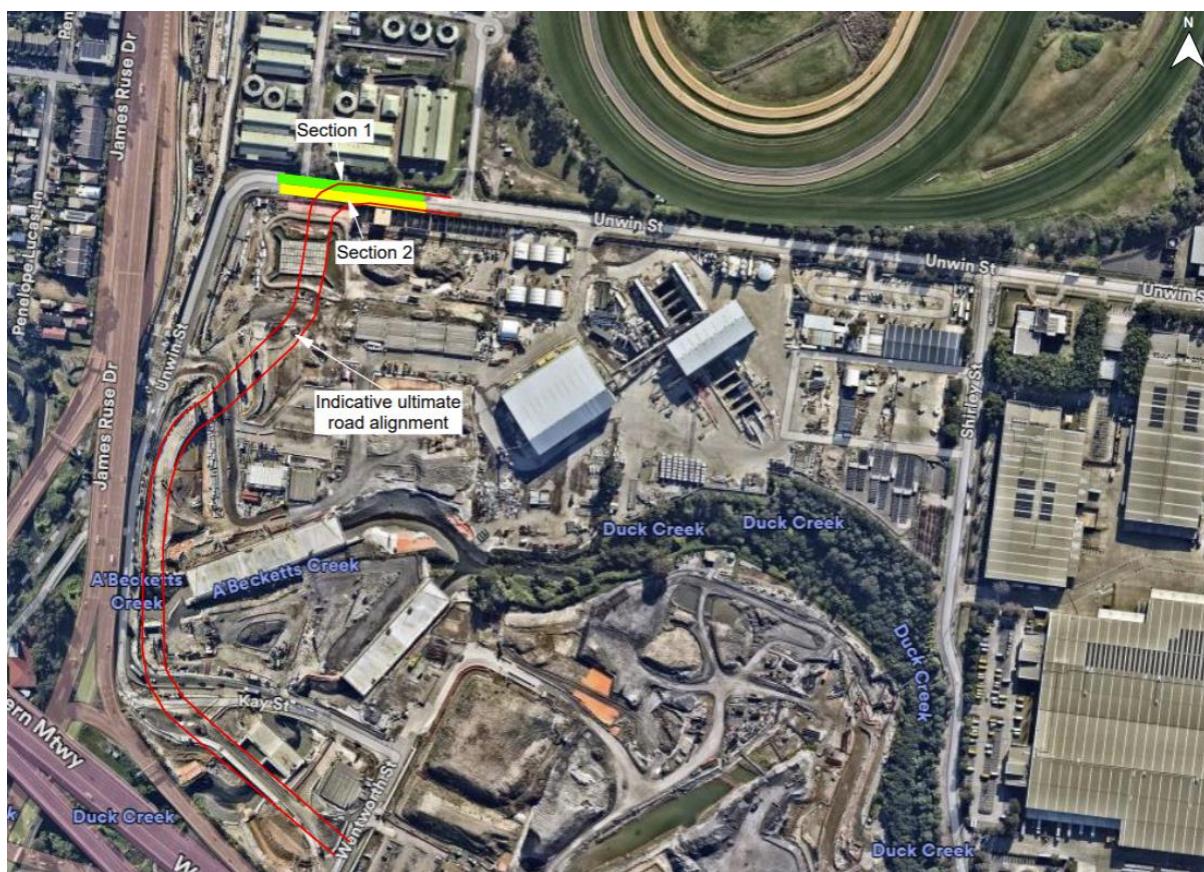


Figure 1 - Work Location Map

INTEGRATED MANAGEMENT SYSTEM
Site Specific Construction Traffic Management Plan – Unwin St – Northern Diversion Construction
Sydney Metro West – Western Tunnelling Package

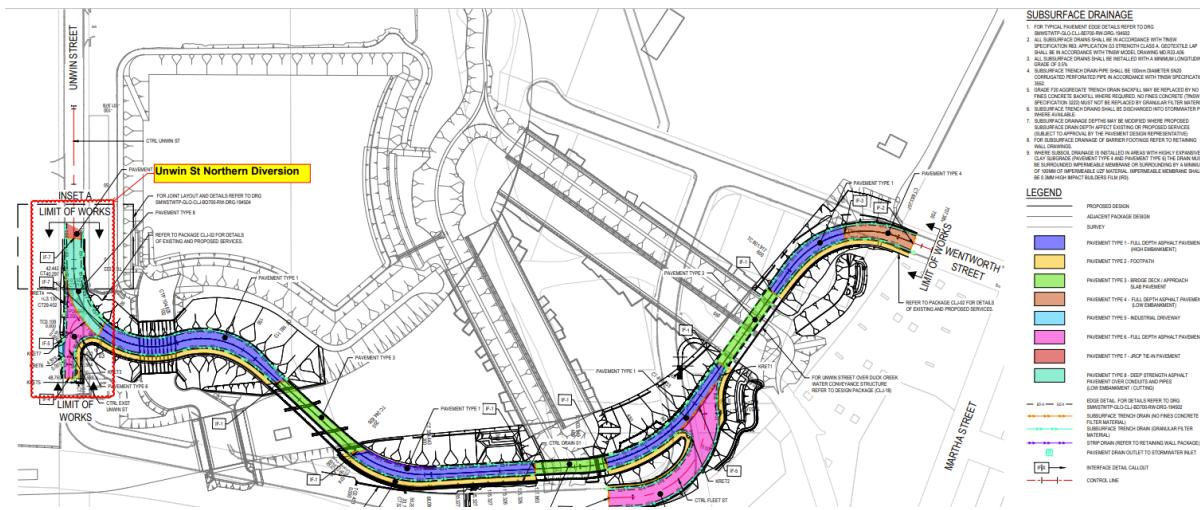


Figure 2 - Unwin Street Design

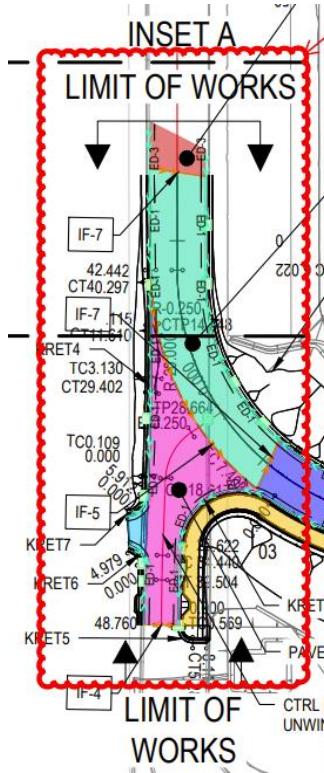


Figure 3 - Northern Diversion Works Design

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 lane closure works including but not limited to motorists, pedestrians, cyclists, public transport users, local residents, property owners, business owners and workers/ staff along Unwin Street and surrounding streets during the lane closure and traffic control measures.

1.2 Clyde/Rose Hill Construction Traffic Management Plans

Table 1 - Project CTMPs for Clyde/Rose Hill

Plan #	Plan name	Description	Status
SMWSTWTP-GLO-1NL-NL000-TF-PLN-00001	Project Wide CTMP	Overarching Traffic Management Plan	Approved
SMWSTWTP-GLO-CLJ-TF-PLN-000001	Clyde/Rosehill Site Establishment	For works to establish the Clyde/Rosehill sites	Approved
SMWSTWTP-GLO-CLJ-TF-PLN-000004	Clyde/Rosehill Site Operations	Site Operating Conditions at Clyde/Rosehill	Approved
SMWSTWTP-GLO-CLJ-TF-PLN-000005	Unwin ST and Kay St 56hr Closure	Stage 1A, Stage 1B, Stage 2, and Stage 3 road alignment and associated traffic switch	Approved
SMWSTWTP-GLO-RSH-TF-PLN-000001	James Ruse Drive Barriers	Concrete barriers placed along eastern verge of James Ruse Dr alongside Clyde Dive compound	Approved
SMWSTWTP-GLO-RSH-TF-PLN-000002	Unwin St Northern Diversion	Construction of northern diversion for new alignment of Unwin St	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			

1.3 Project Zone Location

The work area in regard to the overall project location is in the MSF West and Rosehill zones.



Figure 4 - Project Zone Map

1.4 Works and Timing

Works involves utility relocations and new installations, drainage and general pavement construction to various designs. The existing Unwin St pavement needs to be removed and the fill excavated approximately 1m below pavement level to build the new foundation for the new pavement. A new drainage system will also be installed which will connect to the existing stormwater system. The new pavement design consists of a combination of concrete and asphalt pavement. The intention is to construct the NB lane, switch traffic on the NB lane, then start construction on the SB lane.



Figure 5 - Indicative Diagram of Pavement Types

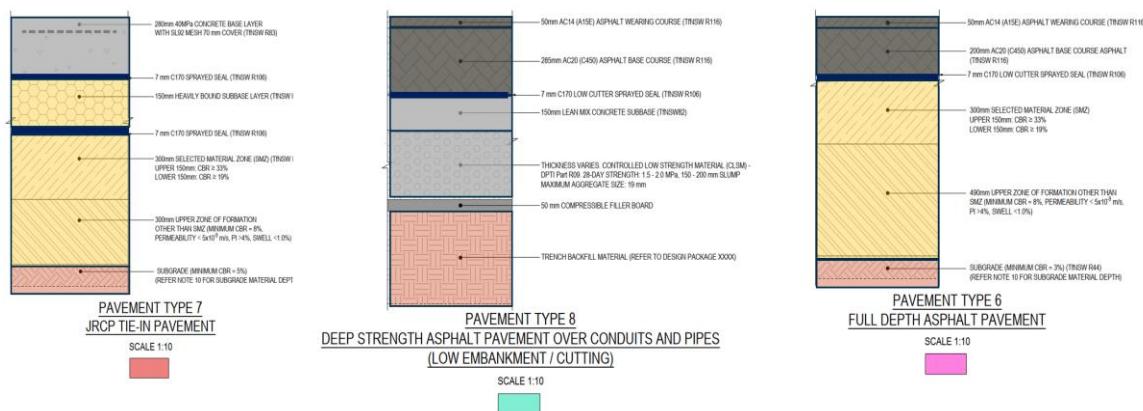


Figure 6 - Pavement Types

Works are proposed to be conducted from September 2024 – February 2025 pending all approvals. A total of approximately 16 weeks is expected for the entire section of work to be completed, with 7-8 weeks expected for each section. In conjunction with these works it is also proposed to implement 56-hour weekend closures of Unwin St from 10PM Friday nights to 5AM Monday mornings. Overview of works timings is as per below points:

- Section 1 – northern part of Unwin St – 16th September to 31st October 2024 (Chapter 2 of this CTMP) – This section has been completed and redacted from this version.
- Section 1 – Contingency – if significant works on the northern section are still to be completed a weekend shutdown closure of Unwin Street is proposed 25-28 October 2024 (Chapter 3 of this CTMP). This closure has been completed and redacted from this version.
- Section 2 – southern part of Unwin St – 31st October to 6th February 2025. (Chapter 5 of this CTMP)
- During the Christmas and New Year Closure period it is proposed to reinstate 2-way traffic between approx. 16th December 2024 to 6-8 February 2025. (Chapter 4 of this CTMP)
- Section 2 – finalization and opening – to complete and enable full tie-in to the Unwin Street diversion a weekend shutdown closure of Unwin Street is proposed 1st Feb – 3rd Feb 2025.. (Chapter 6 of this CTMP).

Standard construction hours will be utilized:

Monday – Friday 0700-1800

Saturday – 0800-1800

As required for any night shifts and weekend closure, Out of Hours Works will follow Project environmental and community protocols. A full program of the works is included in Appendix 2.

2. UNWIN ST NORTHERN LANE WORKS (SECTION 1)- COMPLETED

2.1 Proposed Conditions

The works were conducted and completed date 30th September to 31st October 2024.

A long-term lane closure is proposed on Unwin St which will require 24/7 traffic control under shuttle flow (stop/slow) for the duration of the works. Approved TfNSW safety barriers are also proposed to be implemented for the duration of the works. Work area will be in the north on the eastbound lane and traffic will be managed under shuttle flow through the southern side or westbound lane.

The remainder of this chapter has been redacted.

3. CONTINGENCY WEEKEND CLOSURE – UNWIN ST – UTILISED and COMPLETED

3.1 Proposed Conditions

If significant works are still to be completed in this section a 56hr weekend shutdown closure is proposed. The proposed dates/times are 2200 Friday 25th October to 0500 Monday 28th October 2024.

The weekend closure was utilised on dates mentioned above.

The remainder of this chapter has been redacted.

4. UNWIN ST SOUTHERN LANE WORKS

4.1 Proposed Conditions

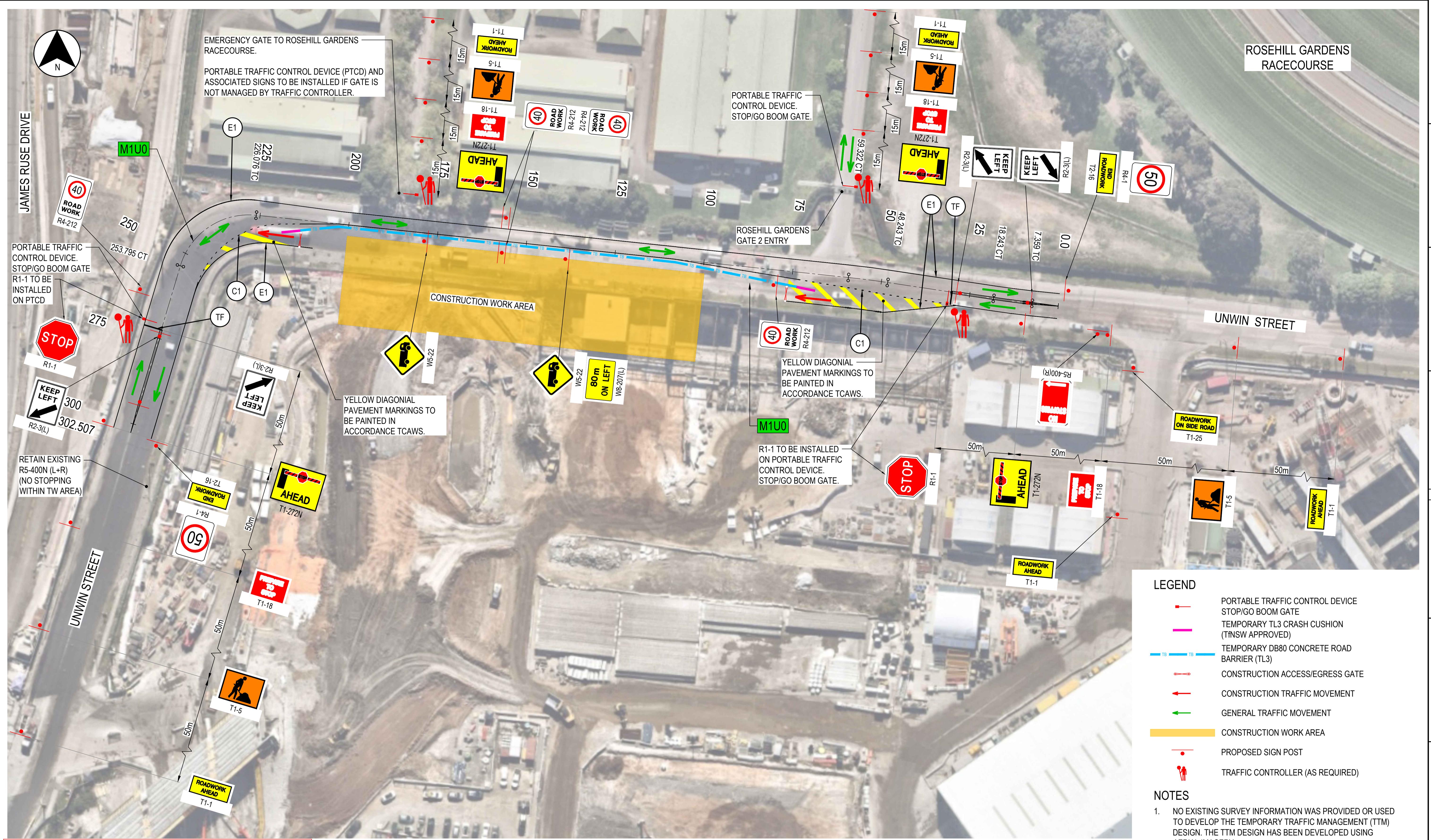
The proposed date is 31st October 2024 to 7th February 2025.

A long-term lane closure is proposed on Unwin St which will require 24/7 traffic control under shuttle flow (stop/slow) for the duration of the works. Approved TfNSW safety barriers are also proposed to be implemented for the duration of the works.

During the yearly shutdown period approximately between 16th December 2024 to 6th-8th January 2025 it is proposed to install 2-way traffic before returning to long term lane closure set-up until works is complete. The 2-way traffic set-up is discussed in Chapter 5.

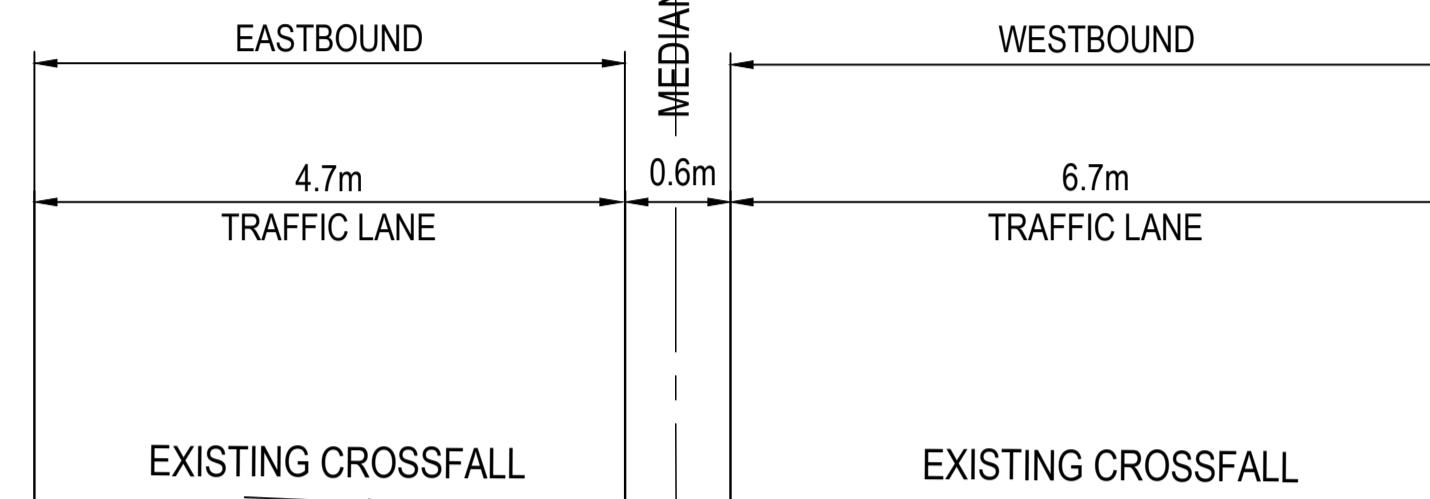
4.2 TGS/Stage Plan

Staging Plan P0153-DTAL-0000-RW-DRG-101002 will be in place for the duration of these works. This plan is shown over page in figure 7 along with cross sections (figure 8) and swept paths (figures 9-12). The single staging plan will remain the same throughout this section of works. Site stopping distance checks are included in Appendix 3.



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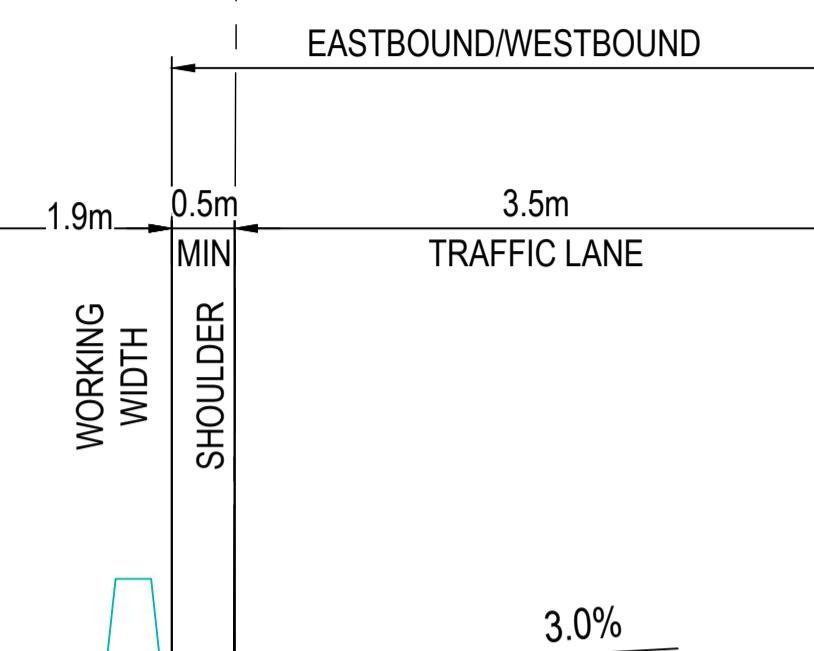
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CONTROL LINE
M1U0

UNWIN STREET NORTHERN DIVERSION PART 1 - CH 280 (M1U0)

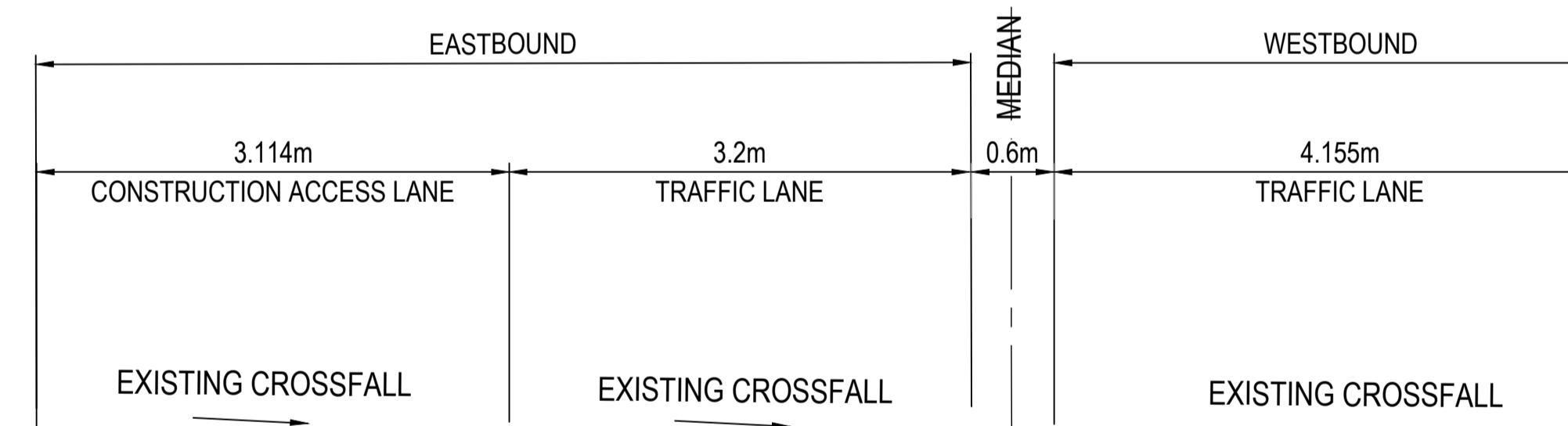
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CONSTRUCTION WORKING AREA

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UNWIN STREET NORTHERN DIVERSION PART 1 - CH 150

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CASE
CIVIL AND STRUCTURAL ENGINEERING

WESTERN HARBOUR TUNNEL
UNWIN STREET
ROAD ALIGNMENT AND DETAIL
TYPICAL SECTIONS
STAGE 1

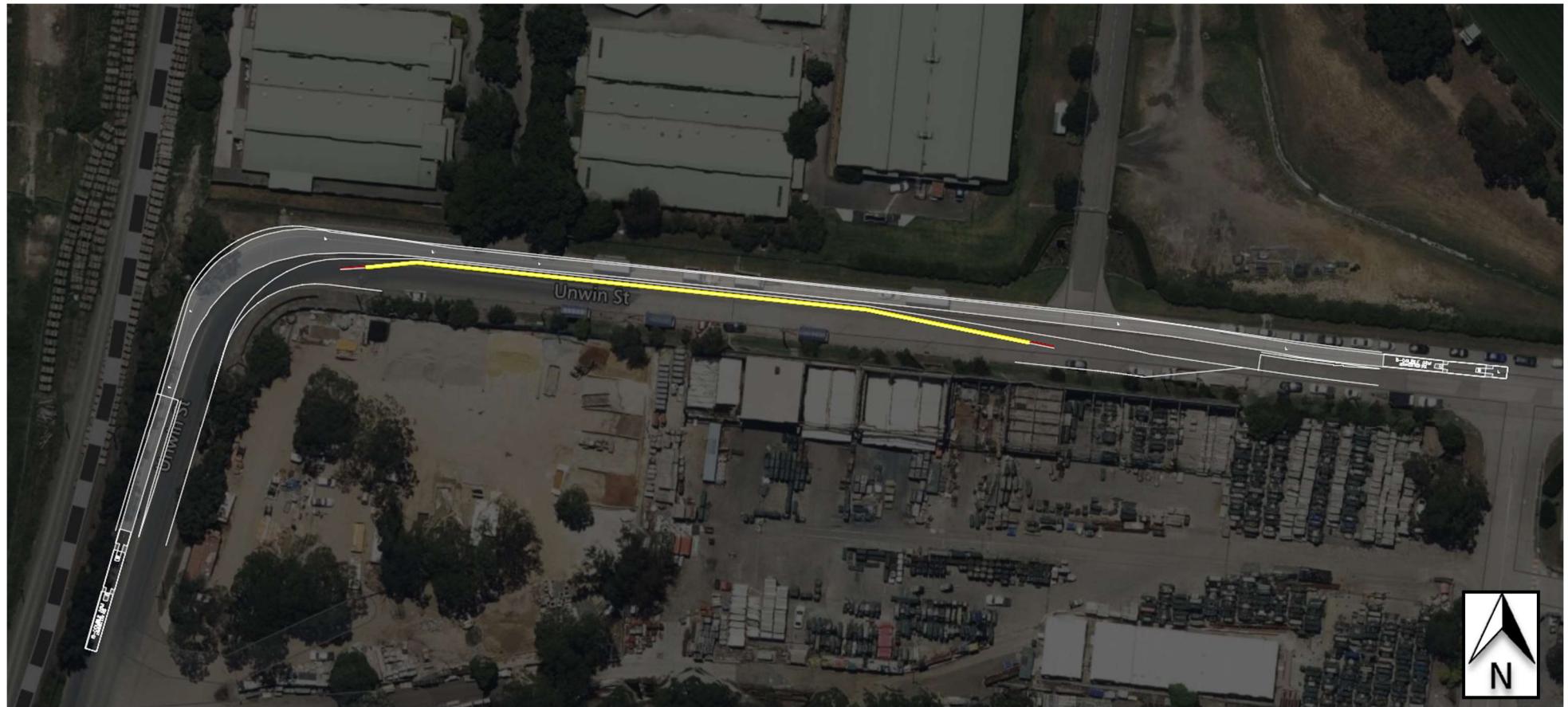
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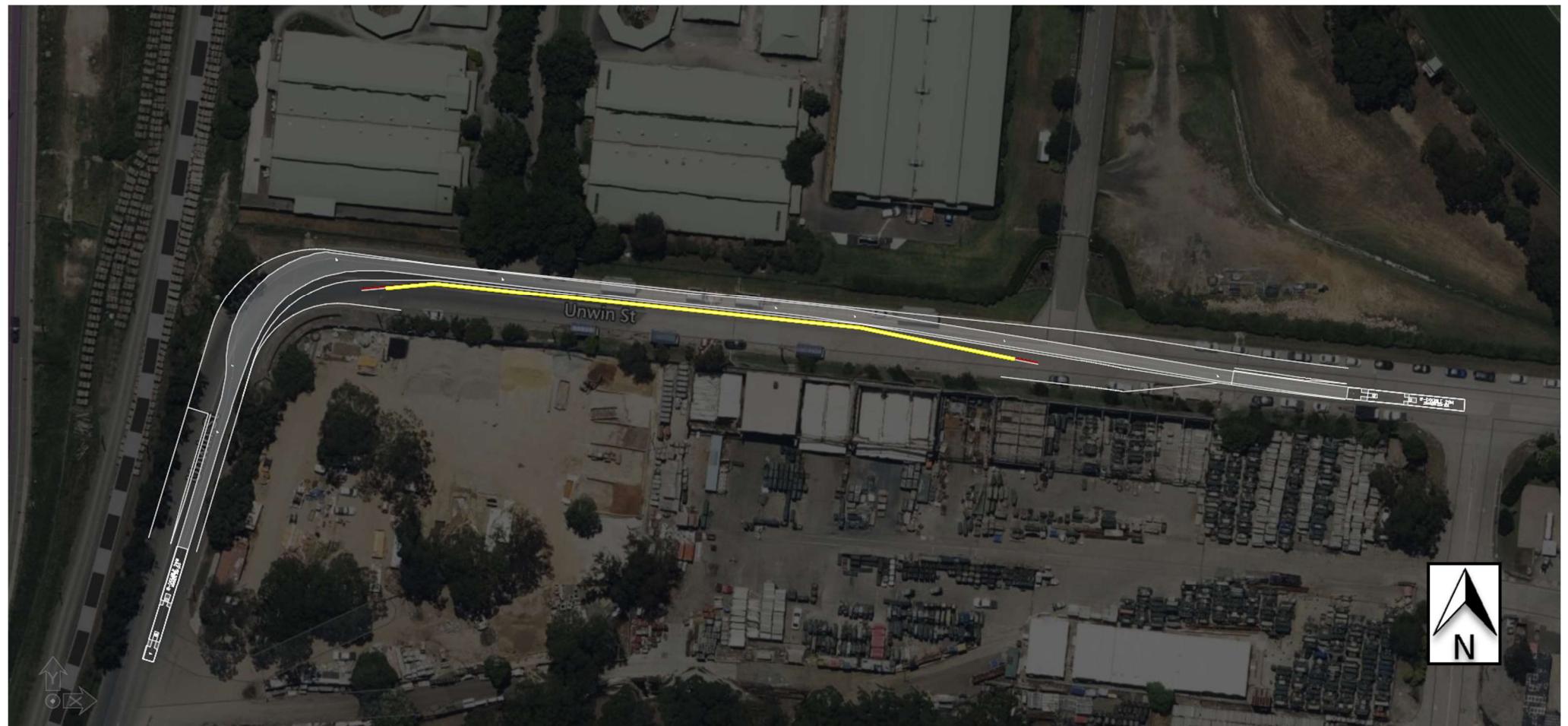
UNWIN ST EASTBOUND

Design Vehicle = 26m B-DOUBLE



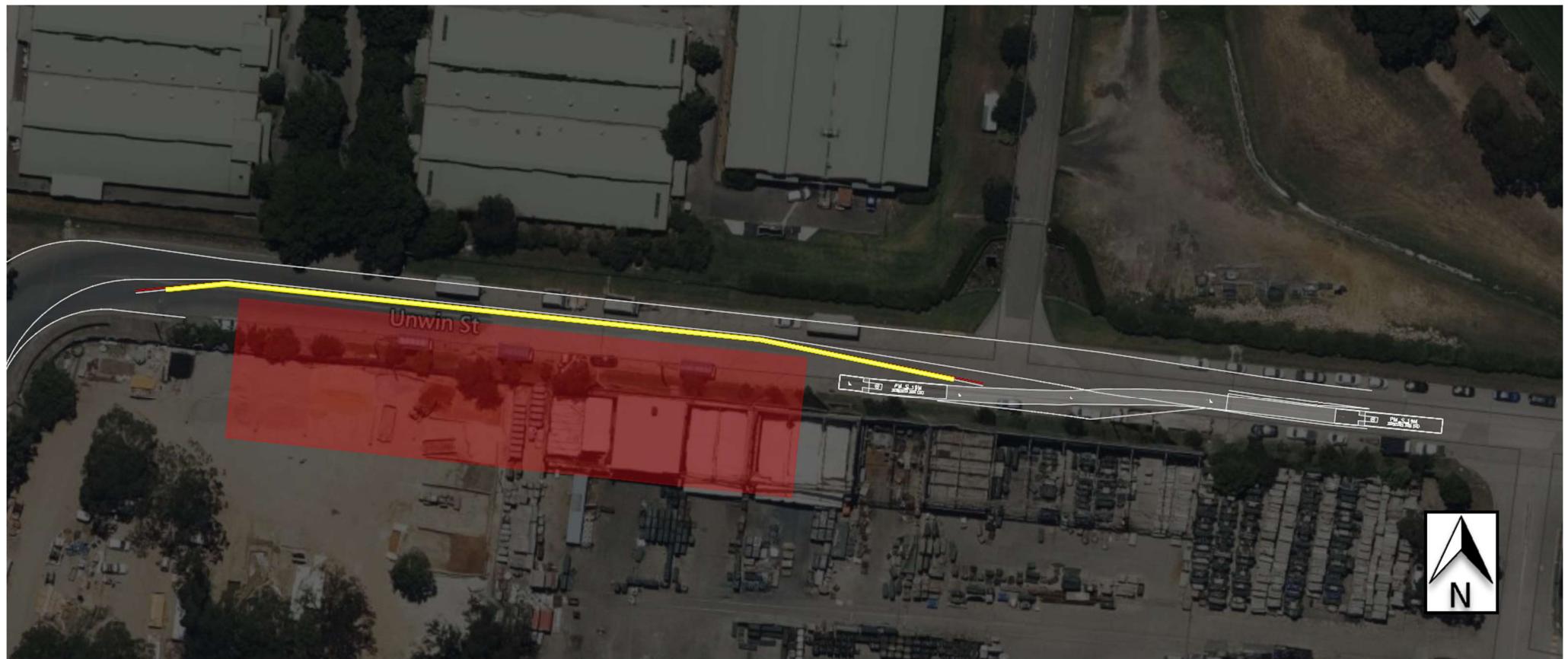
UNWIN ST WESTBOUND

Design Vehicle = 26m B-DOUBLE



UNWIN ST WESTBOUND ENTRY GATE

Construction Vehicle = 19m SEMI



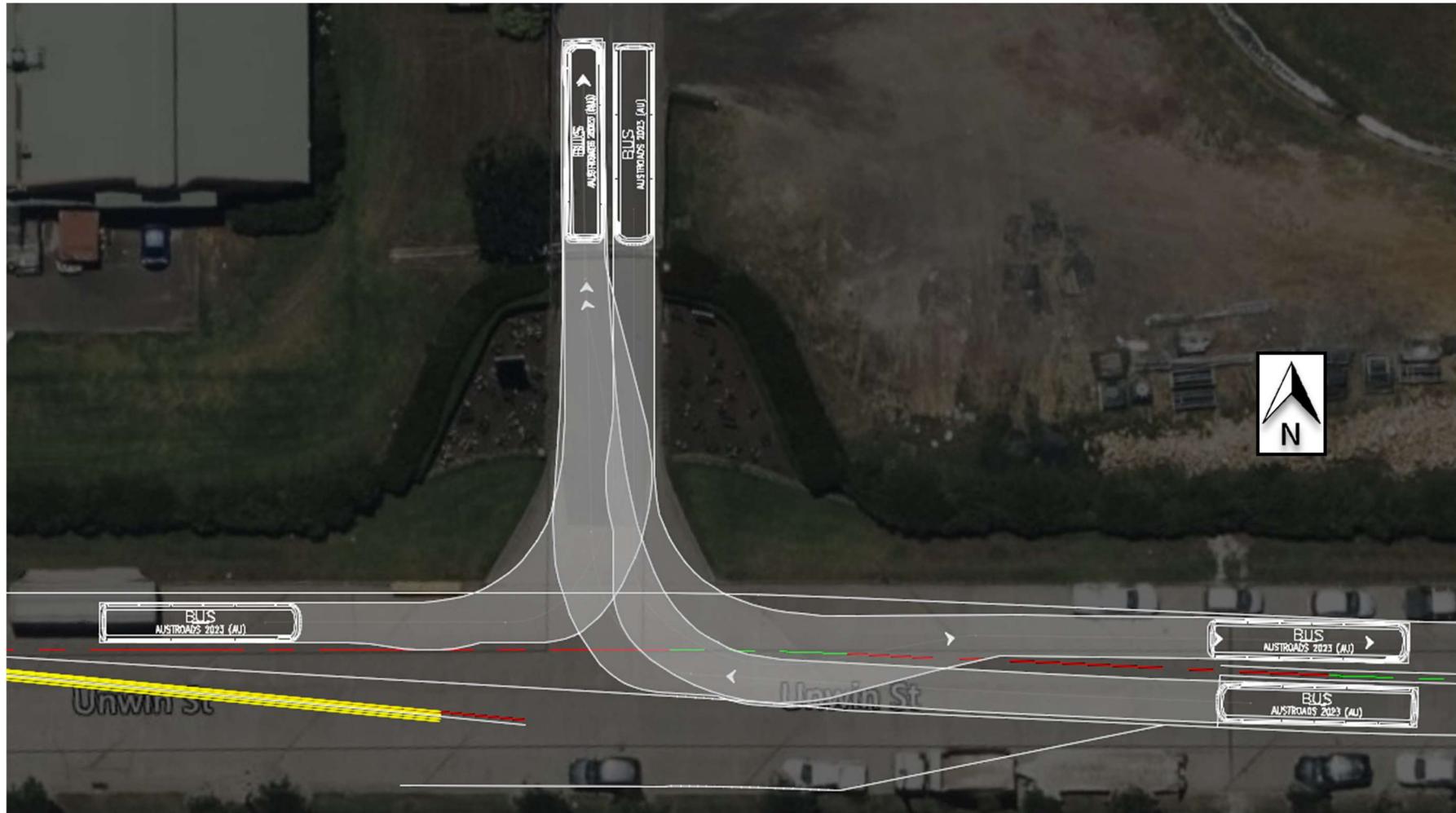
UNWIN ST WESTBOUND EXIT GATE

Construction Vehicle = 19m SEMI



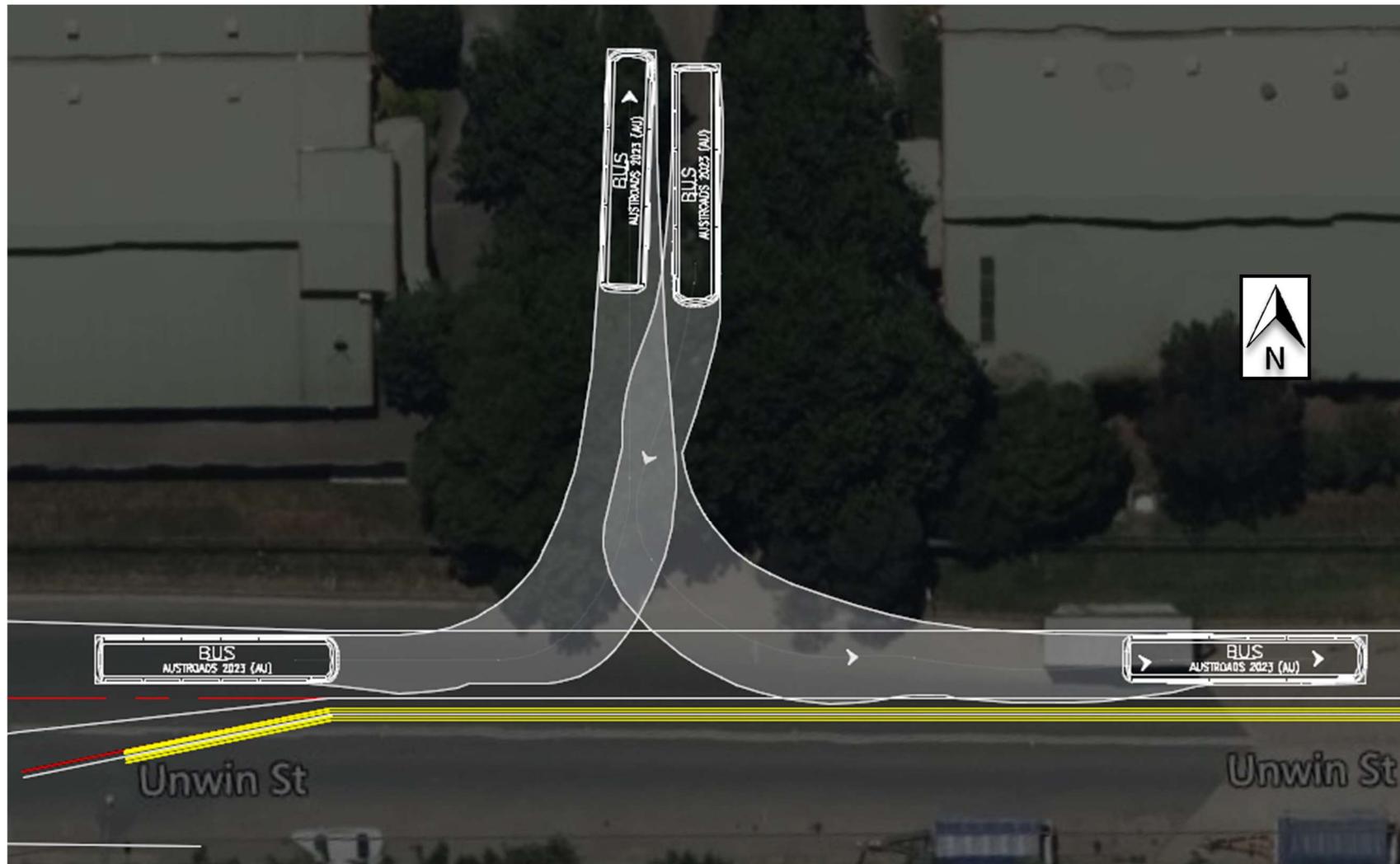
UNWIN ST ROSEHILL GARDENS GATE 2 (EAST)

Design Vehicle = 12.5m long BUS



UNWIN ST ROSEHILL GARDENS EMERGENCY GATE (WEST)

Design Vehicle = 12.5m long BUS



4.3 VMS

VMS locations and VMS messaging strategies are shown in Figure 13 and Table 2 below

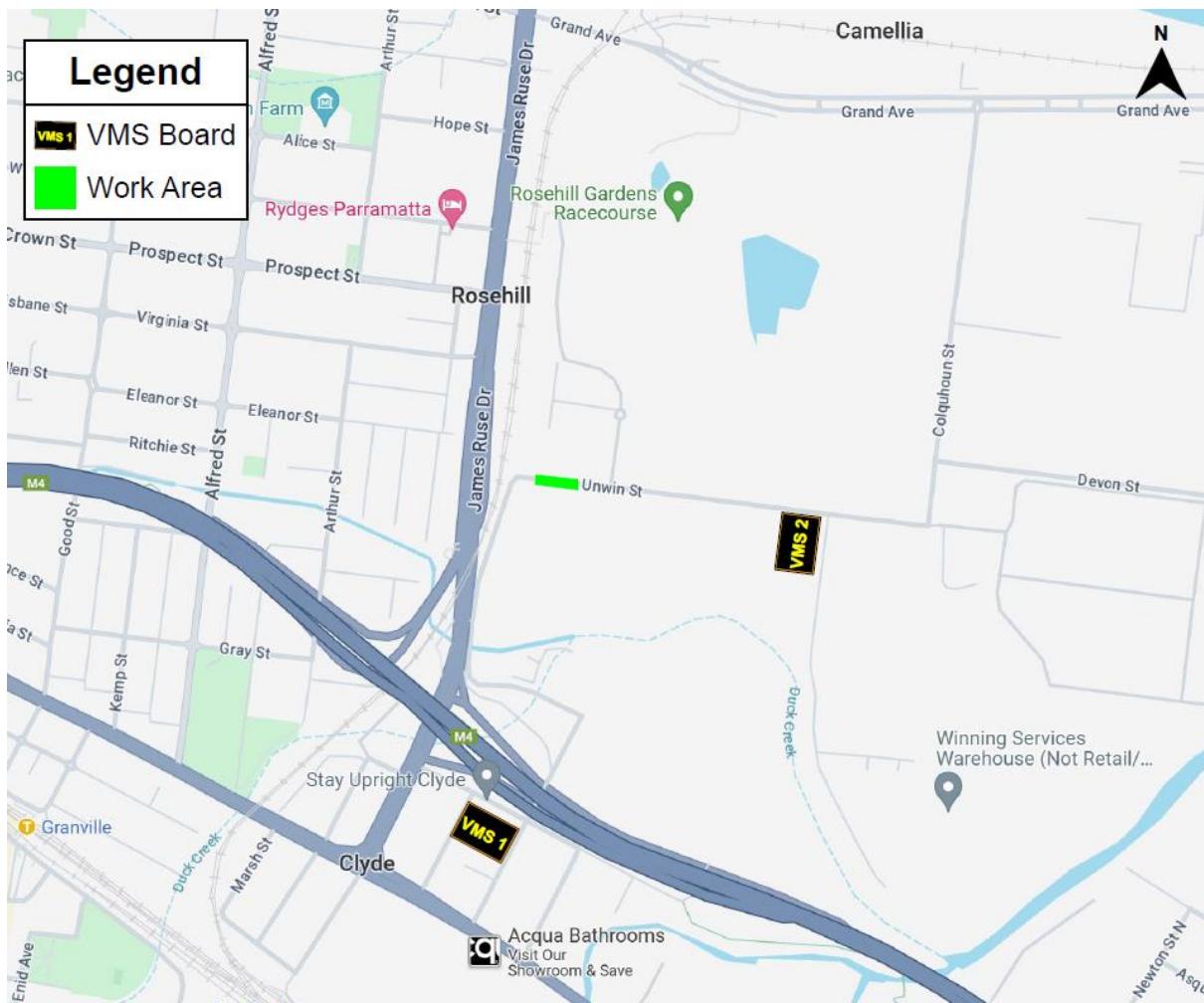
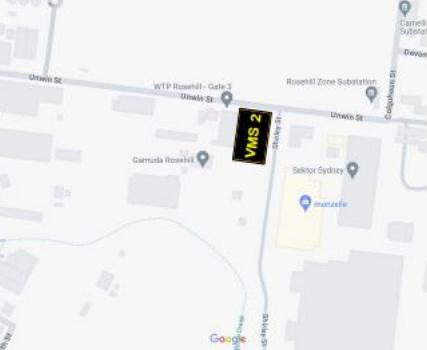


Figure 13 – VMS location map

INTEGRATED MANAGEMENT SYSTEM
 Site Specific Construction Traffic Management Plan – Unwin St – Northern Diversion Construction
 Sydney Metro West – Western Tunnelling Package

Table 2 - Unwin St Section 2 VMS Strategy

VMS Unit		Street location	Specific location	Aerial Location	Street View location	Preconstruction messaging	During construction messaging
						7 days prior	24/7
1		Wentworth St, Clyde	Wentworth St facing south approx. 20-30m south of Martha St			Screen 1	ROADWORK UNWIN ST FROM DD/MM
						Screen 2	EXPECT DELAYS
2		Unwin St, Rosehill	Unwin St facing east approx. 20m west of Shirley St			Screen 1	ROADWORK UNWIN ST FROM DD/MM
						Screen 2	EXPECT DELAYS

4.4 Construction Traffic Generation

Vehicles of various sizes are expected to attend the worksite each shift during these works.

To avoid conflicts construction vehicles can only enter and exit site when directed by traffic controllers.

Vehicles include but are not limited to light vehicles, semi-trailers (floats/deliveries), agi's, asphalt trucks, rollers. As long-term works are proposed only minimal light vehicles are expected in AM and PM peaks. All other vehicles will remain on site after initial delivery until works is completed and then removed from site.

Table 3 - Vehicle movements per shift

Vehicle Type	Estimated Movements Per Shift		
	In	Out	Total
Traffic Vehicles	2	2	4
Light Vehicles (work Utes/support vehicles)	3	3	6
Franna (barriers only – first shift, changeover shift and last shift only)	1	1	2
Semi-trailers (barriers/deliveries)	3	3	6
Excavator (remain on site)	1	1	2
Agi's (some shifts only)	5	5	10
Asphalt (some shifts only)	5	5	10
Total			40

4.5 Construction Haulage

Construction haulage routes are as per the EIS and HVLR report. The Roads utilised include:

- James Ruse Drive
- Grand Avenue
- Colquhoun Street
- Unwin Street
- Wentworth Street
- Parramatta Road

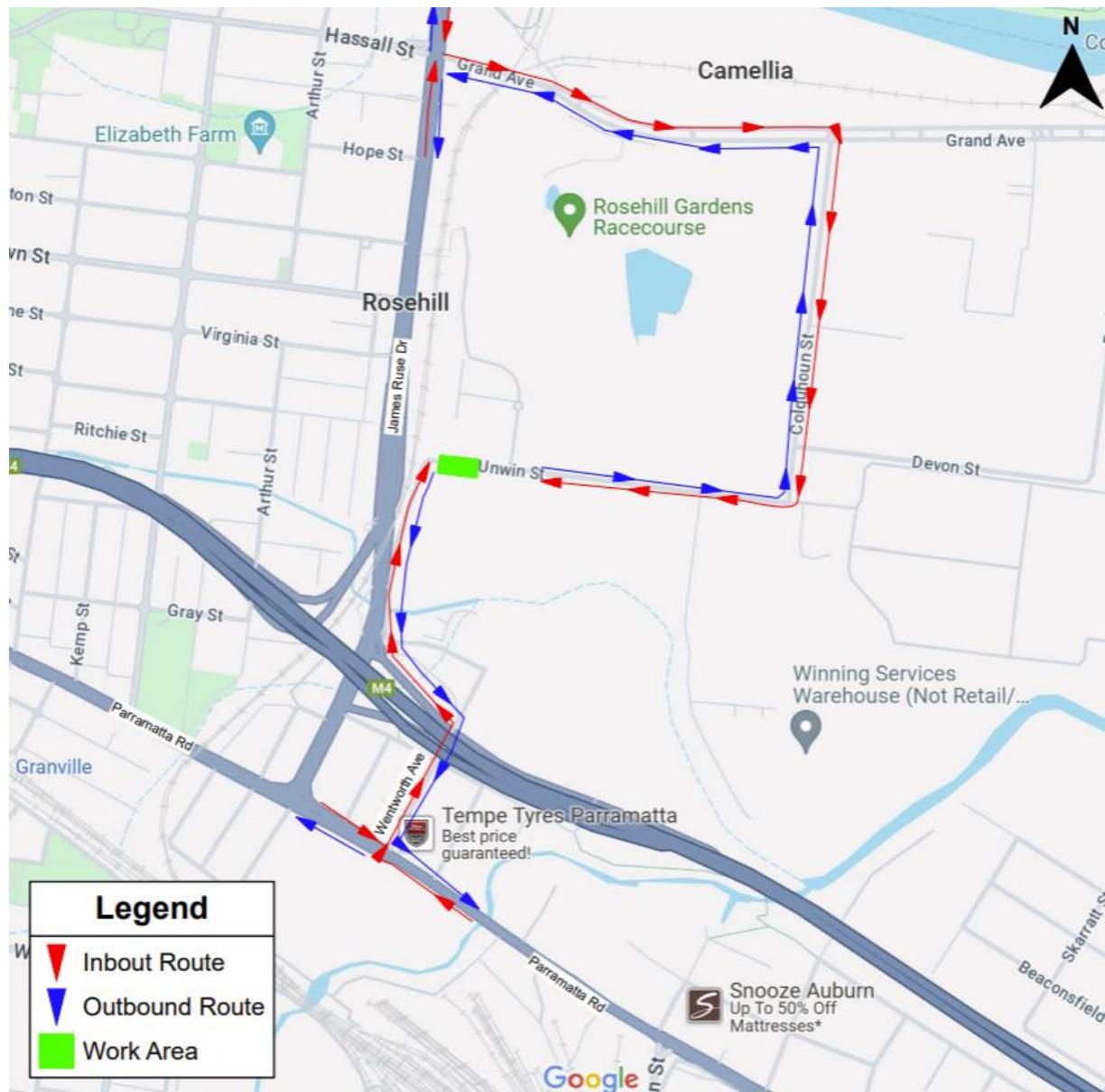


Figure 14 - Haulage Route

4.6 Impacts on Traffic Flow

Unwin Street is a local road which primarily serves to provide access to the surrounding/adjoining industrial land uses. Traffic volumes are low and hence minimal impact on traffic is expected under this set-up. Traffic Controllers will adjust to priority flow as required if any queues occur.

Table 10-16 below is from EIS which indicates 2019 traffic volumes around the Clyde Dive site which has indicated traffic volumes for Unwin St. Assessment has been conducted on either side of proposed work area and these volumes are highlighted in the red boxes below in table 10-16

Table 10-16: Clyde stabilising and maintenance facility construction site existing traffic volumes (2019)

Road	Direction	Morning peak hour (vehicles per hour)	Evening peak hour (vehicles per hour)
Unwin Street west of Colquhoun Street	Eastbound	220	190
	Westbound	280	130
Parramatta Road west of Wentworth Street	Eastbound	1,730	1,600
	Westbound	2,110	1,950
Kay Street west of Wentworth Street	Eastbound	150	170
	Westbound	270	90
James Ruse Drive north of Parramatta Road	Eastbound	1,300	1,280
	Westbound	1,500	1,110
Wentworth Street north of Parramatta Road	Eastbound	260	120
	Westbound	150	180

A maximum of 280 vehicles during peak hours along Unwin St is observed. Under a proposed alternate flow set-up this would equate to approximately 5 vehicles per minute. Under a standard maximum 2-minute stop period this would equate to approximately 10 vehicles. Given B-double route assuming 2 B-doubles this would equate to estimated maximum queue of up to 90m.

4.7 Impacts on Parking

There are no impacts on parking as part of this CTMP implementation.

4.8 Impacts on Properties and Utilities

Full access is still permitted along Unwin St and surrounding streets. Community notifications will advise of works and possible minor delays.

Rosehill Gardens has an emergency exit gate that opens onto the proposed work area. This gate will remain accessible as part of this stage of works.



Figure 15 - Rosehill Gardens gate to be accessible as part of this stage

4.9 Impacts on Pedestrians and Cyclists

Cyclists will be permitted to pass through work site under the traffic control conditions. Pedestrians will be diverted onto opposite footways during each section of works. Temporary ramps will be provided as required and the area checked regularly to ensure it is free of any hazards. Traffic Controllers will stop traffic to allow pedestrians to cross any traffic lanes until return to regular footway.

4.10 Impacts on Public Transport

Unwin Street is not a public transport route. There is no impact to Public Transport as part of this CTMP.

4.11 Impacts on Emergency Services

Emergency Services will always have priority under lights and sirens. On approach traffic controllers will stop all directions to allow Emergency vehicle to pass through work site.

4.12 Impacts on major Events

Rosehill Gardens has **2** expected race days during the proposed works period:

Saturday 18th January 2024

Saturday 1st February 2025

GLC will ensure all traffic control measures assist in bump-in and bump-out of event traffic in line with Rosehill Gardens/ATC preferences.

5. UNWIN ST SHUTDOWN WORKS

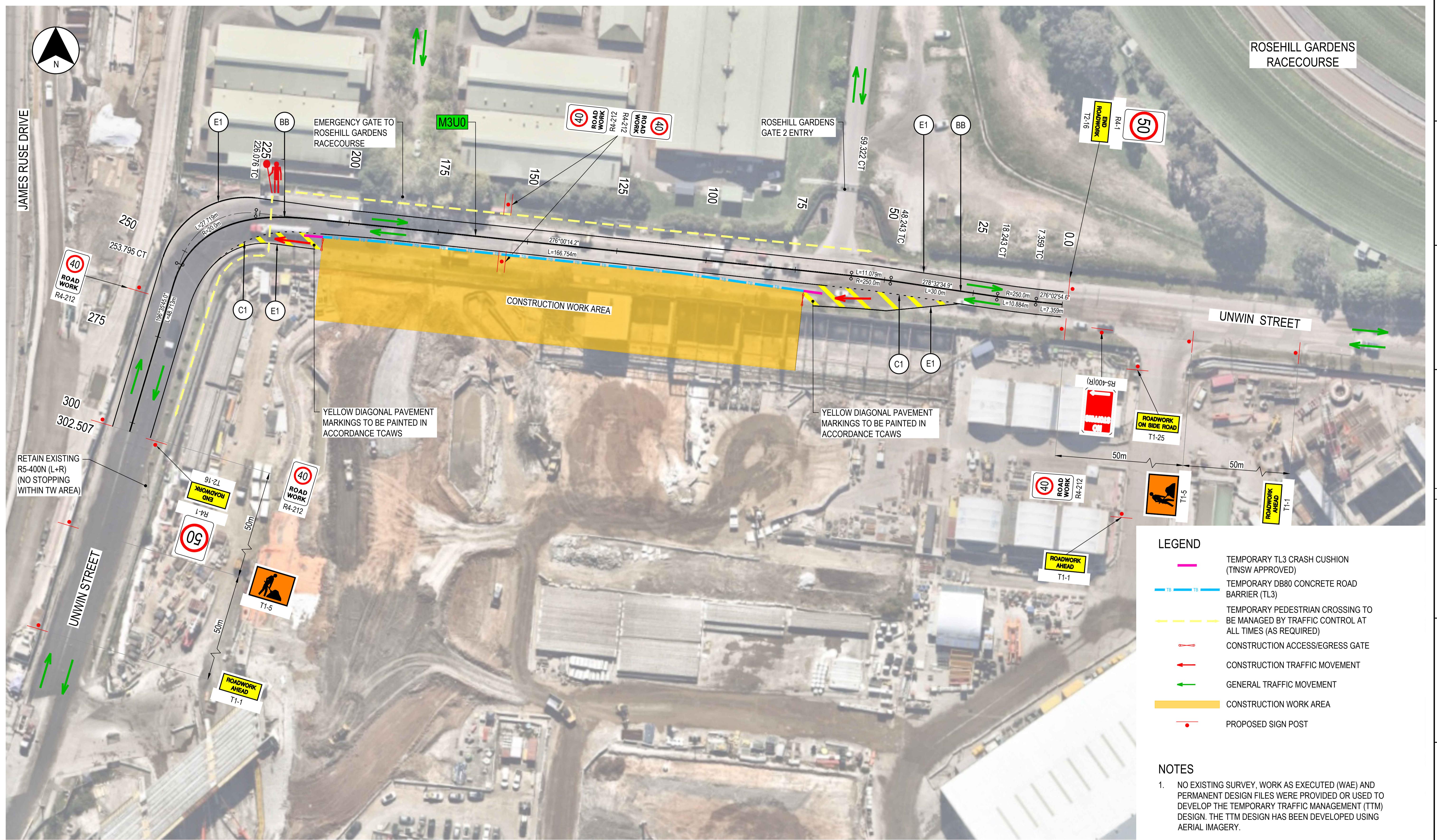
5.1 Proposed Conditions

The proposed dates are 16th December 2024 to 6th-8th January 2025.

During the Christmas and New Year project shutdown period it is proposed to reinstate a temporary 2-way traffic set-up. Lanes will be minimum 3.5m wide for each lane and will be able to move along the area without traffic controllers in place. Footpaths will be returned to normal where the southern footpath will be in use in its entirety.

5.2 TGS/Stage Plan

Staging Plan P0153-DTAL-0000-RW-DRG-101002 will be in place for the duration of these works. This plan is shown over page in figure 16 along with cross sections (figure 17) and swept paths (figures 18-19). The single staging plan will remain the same throughout this section of work. Site stopping distance checks are included in Appendix 3.



REFERENCES:	THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED.	SCALE: AS SHOWN	CLIENT: LAING O'Rourke	SYDNEY METRO WEST UNWIN STREET ROAD ALIGNMENT AND DETAIL PLAN STAGE 1
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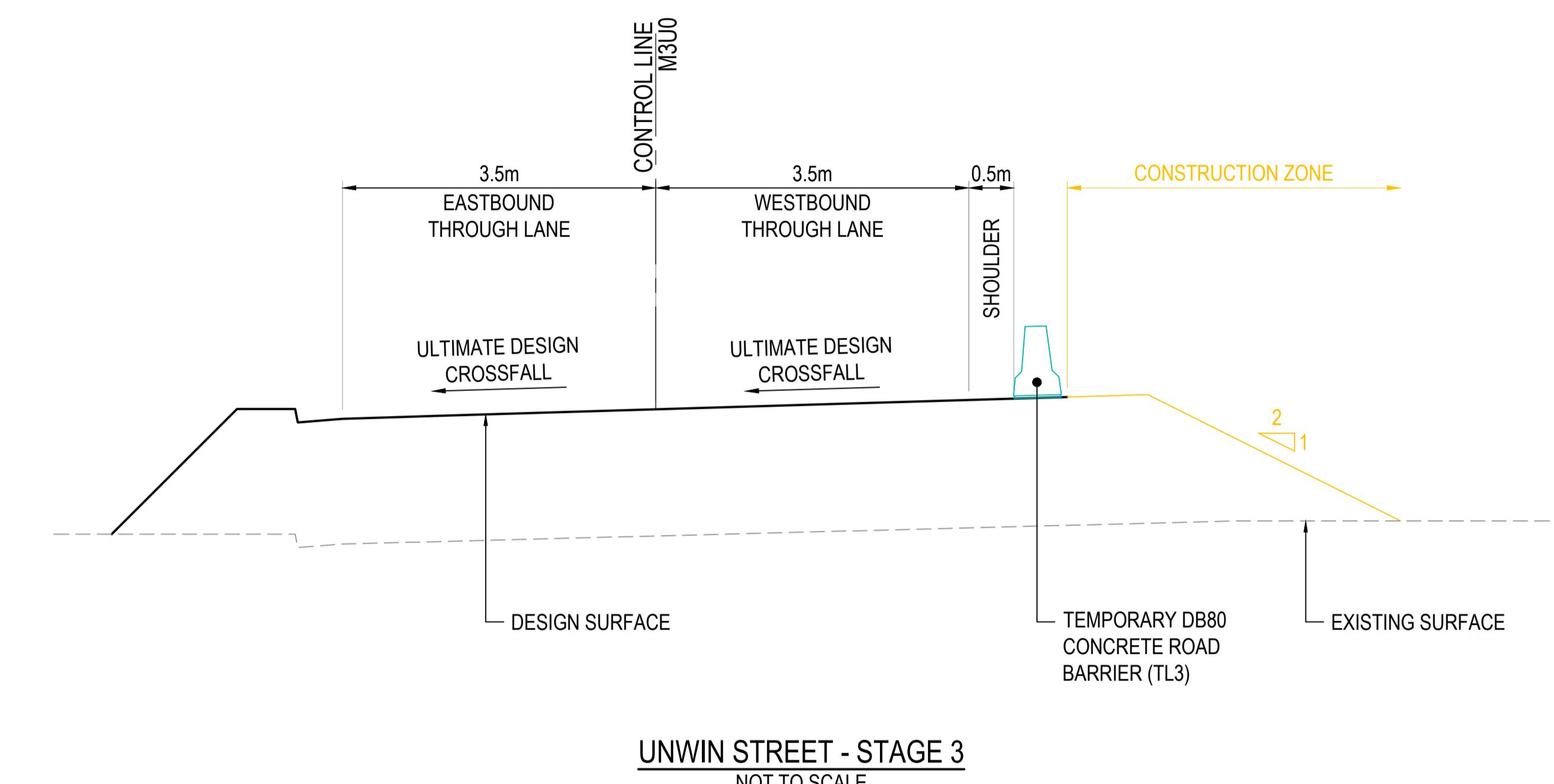
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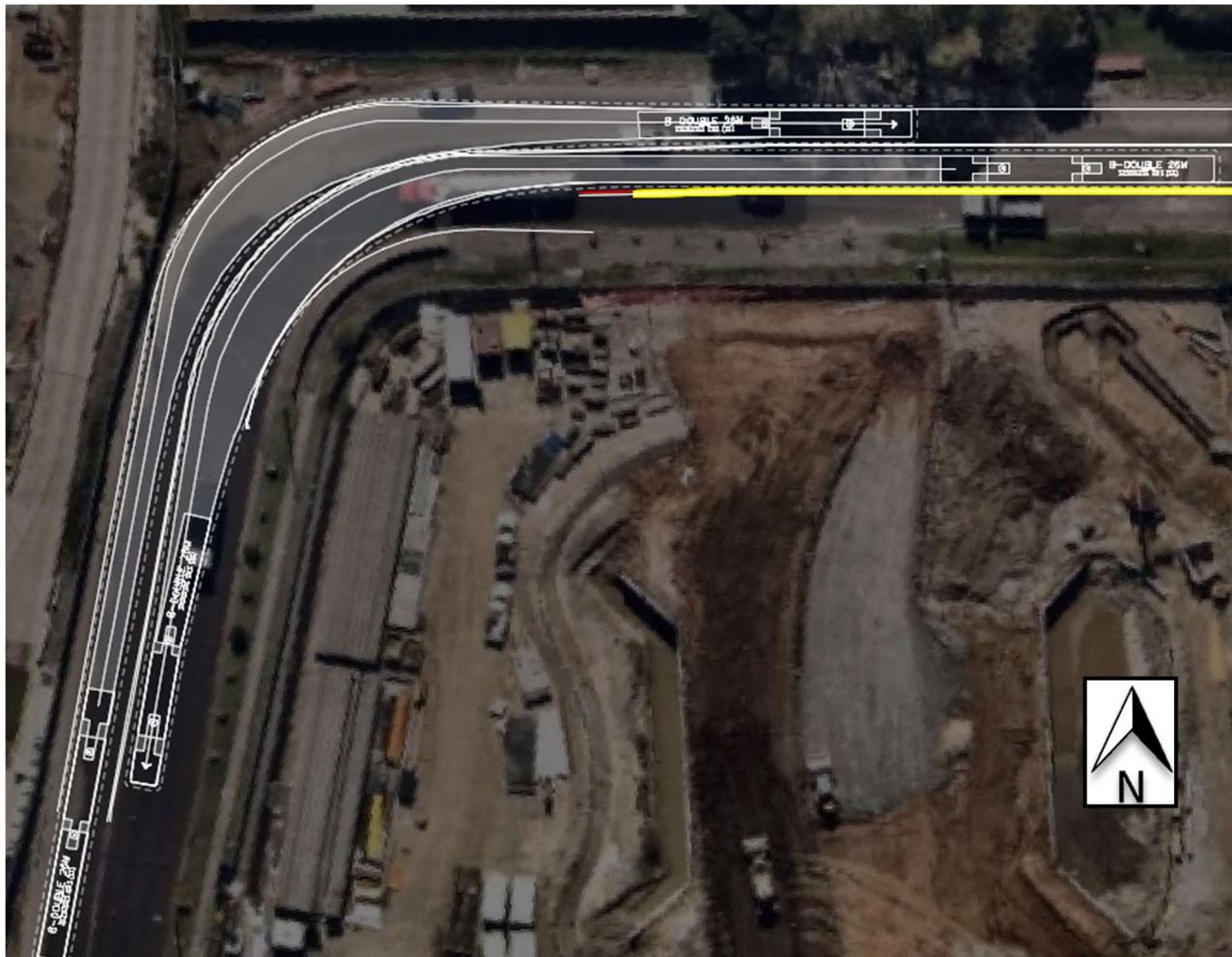
REFERENCES:	THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED.	SCALE: AS SHOWN	CLIENT: LAING O'Rourke	WESTERN HARBOUR TUNNEL UNWIN STREET ROAD ALIGNMENT AND DETAIL TYPICAL SECTIONS STAGE 3
			PREPARED FOR: D-TAL GAMUDA Australia CASE TRAFFIC & TRANSPORT	
A ISSUED FOR INFORMATION DT 29.11.24 DT 29.11.24 DT 29.11.24	REV DESCRIPTION DESIGNER INITIAL/DATE VERIFIED INITIAL/DATE APPROVED INITIAL/DATE		DRAWN 29.11.24 DESIGNED 29.11.24 DRG CHECK 29.11.24	
COORDINATE SYSTEM: GDA2020	HEIGHT DATUM: AHD	DESIGN LOT CODE:	DESIGN CHECK 29.11.24 PROJ/DESIGN MNGR 29.11.24 APPROVED 29.11.24	FILE No/DRAWING SET No: PART SHEET: 1 OF 1 A1 STATUS: FOR INFORMATION BRIDGE No: C DRG No: P0153-DTAL-0000-RW-DRG-203001 REV A EDMS No. AMD No.

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TURNPATH – P0153 UNWIN STREET NORTHERN DIVERSION PART 3

UNWIN ST EASTBOUND & WESTBOUND

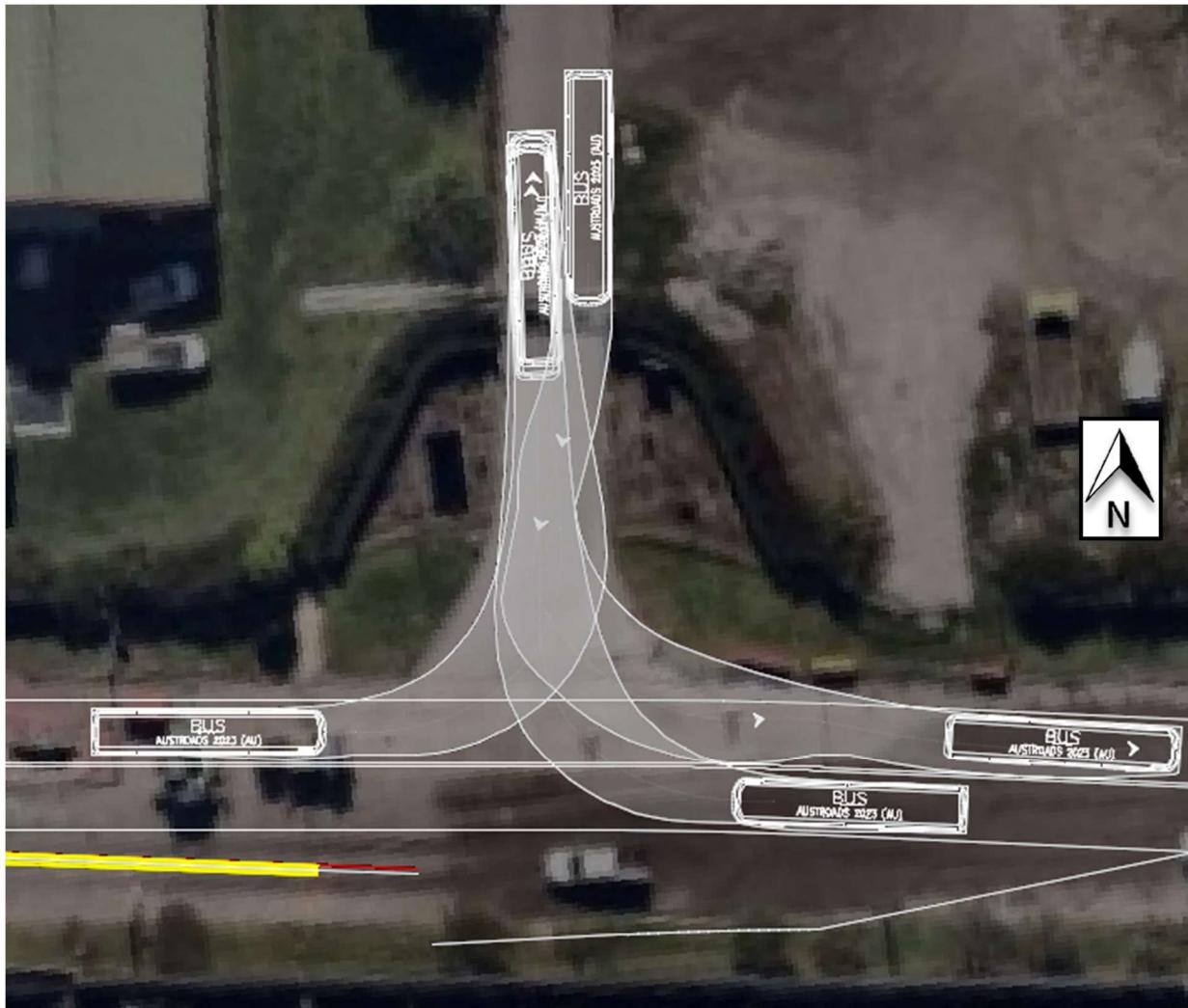
Design Vehicle = 26m B-DOUBLE



TURNPATH – P0153 UNWIN STREET NORTHERN DIVERSION PART 3

UNWIN ST ROSEHILL GARDENS GATE 2 (EAST)

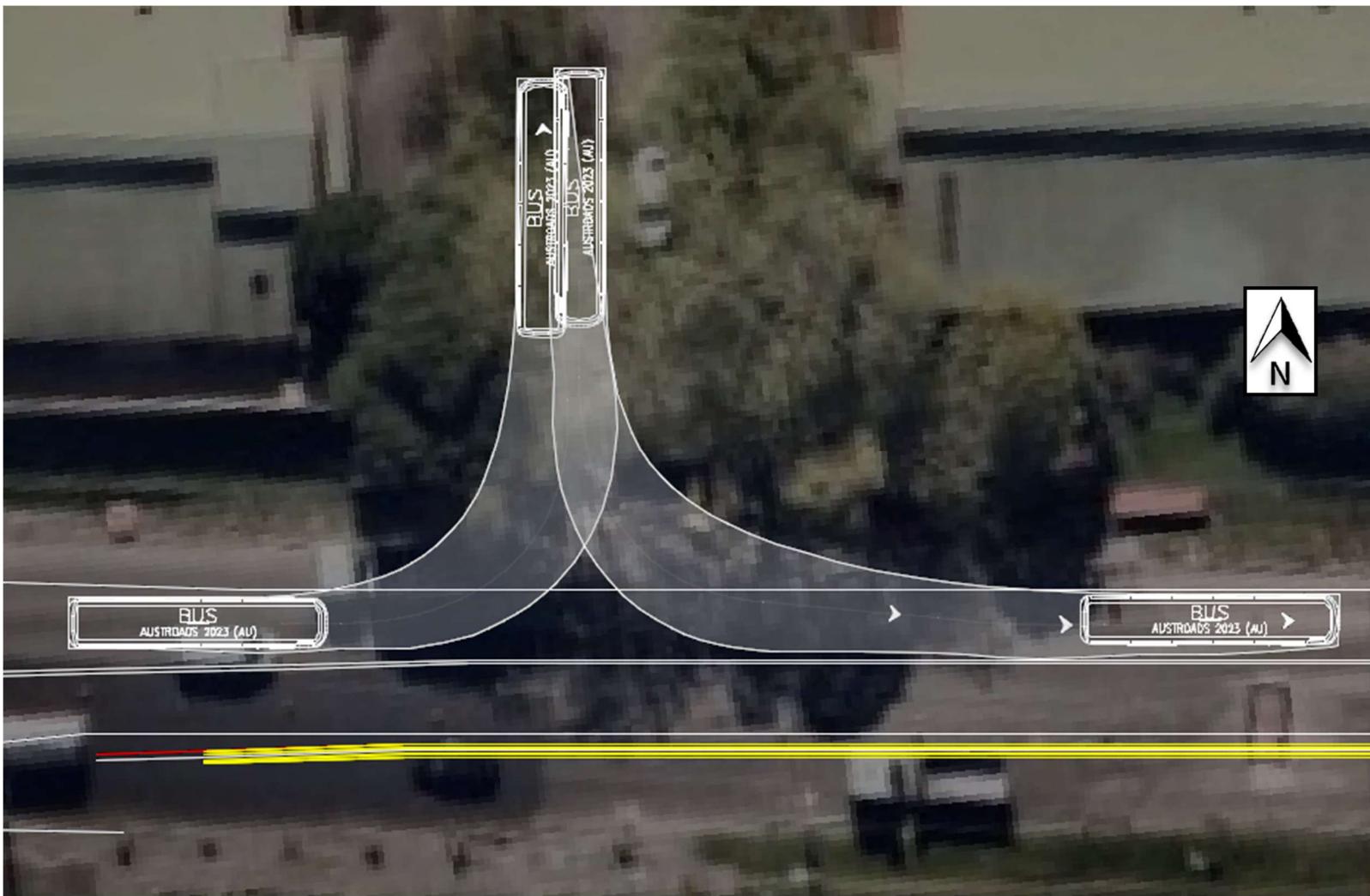
Design Vehicle = 12.5m long BUS



TURNPATH – P0153 UNWIN STREET NORTHERN DIVERSION PART 3

UNWIN ST ROSEHILL GARDENS EMERGENCY GATE (WEST)

Design Vehicle = 12.5m long BUS



TURNPATH – P0153 UNWIN STREET NORTHERN DIVERSION PART 3

UNWIN ST WESTBOUND ENTRY GATE

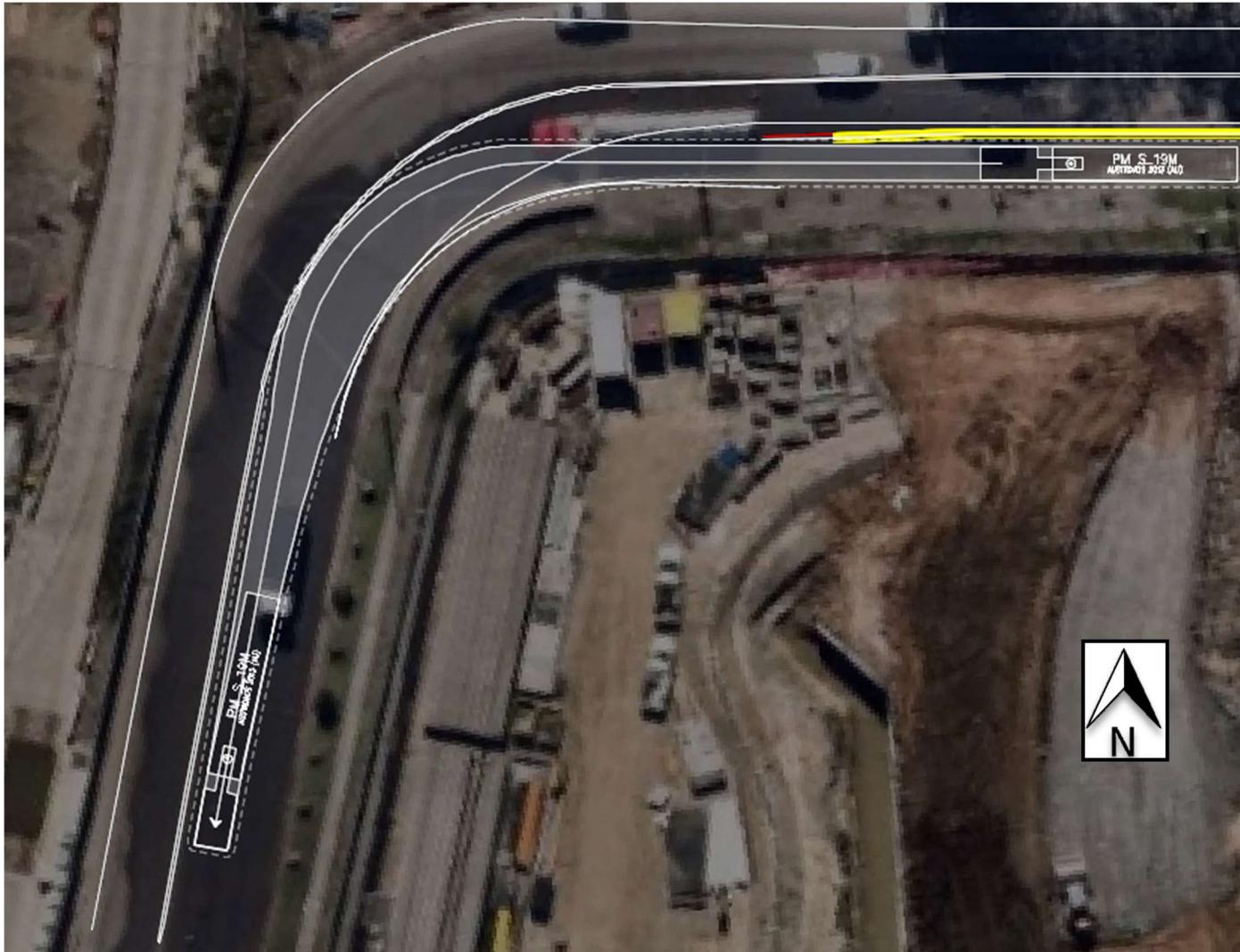
Construction Vehicle = 19m SEMI



TURNPATH – P0153 UNWIN STREET NORTHERN DIVERSION PART 3

UNWIN ST WESTBOUND EXIT GATE

Construction Vehicle = 19m SEMI



5.3 VMS

VMS locations and VMS messaging strategies are shown in Figure 20 and Table 4 below

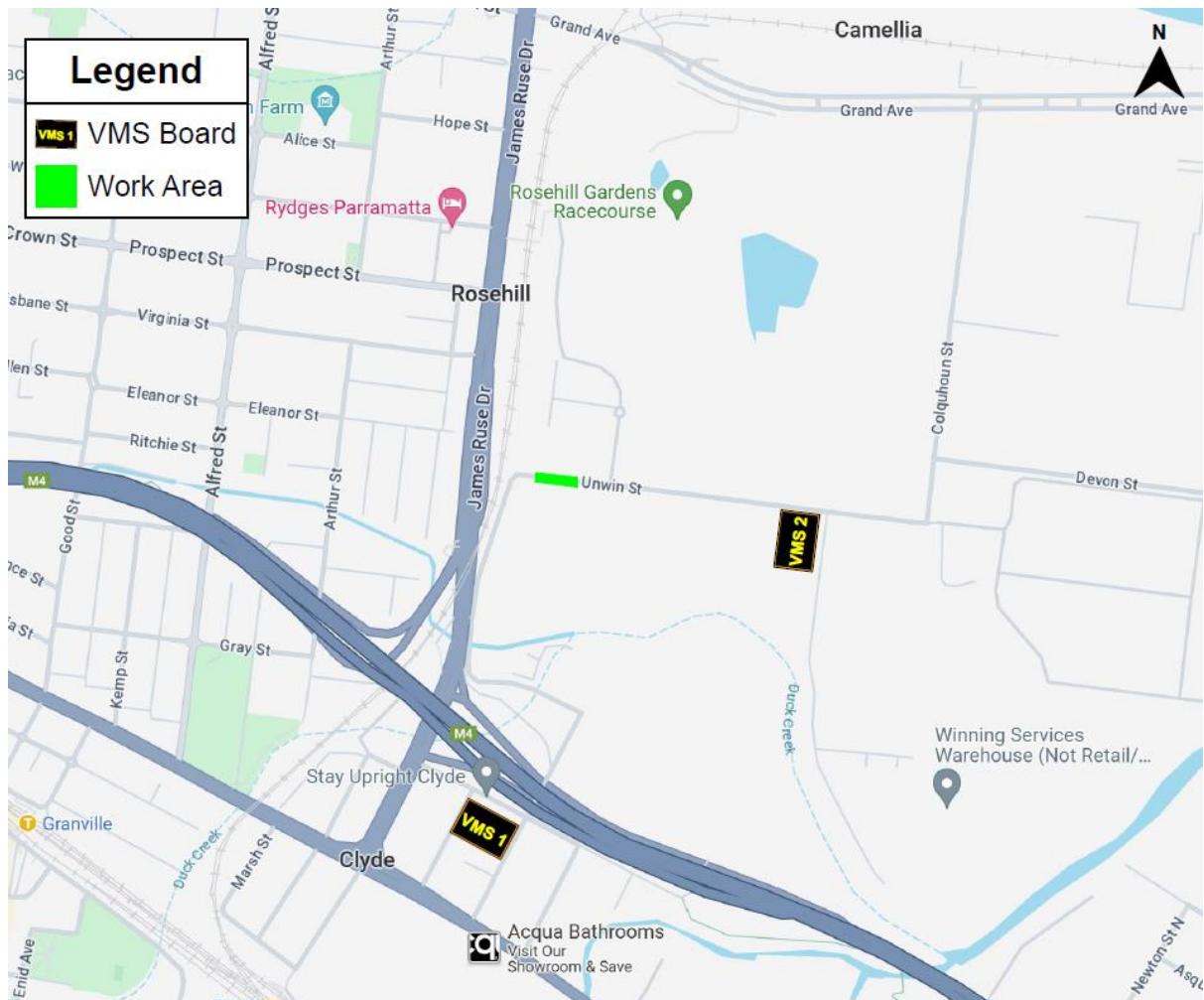
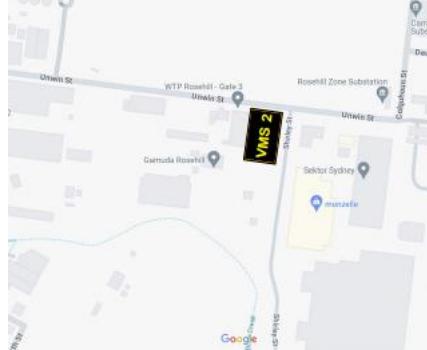


Figure 20 – VMS location map

INTEGRATED MANAGEMENT SYSTEM
 Site Specific Construction Traffic Management Plan – Unwin St – Northern Diversion Construction
 Sydney Metro West – Western Tunnelling Package

Table 4 - Unwin St Section 2 VMS Strategy

VMS Unit	Street location	Specific location	Aerial Location	Street View location	Preconstruction messaging	During construction messaging
					7 days prior	24/7
1	Wentworth St, Clyde	Wentworth St facing south approx. 20-30m south of Martha St			Screen 1	ROADWORK UNWIN ST FROM DD/MM
					Screen 2	PROCEED WITH CAUTION
2	Unwin St, Rosehill	Unwin St facing east approx. 20m west of Shirley St			Screen 1	ROADWORK UNWIN ST FROM DD/MM
					Screen 2	PROCEED WITH CAUTION

5.4 Construction Traffic Generation

Vehicles of various sizes are expected to attend the worksite each shift during these works.

To avoid conflicts construction vehicles can only enter and exit site when directed by traffic controllers.

Vehicles include but are not limited to light vehicles, semi-trailers (floats/deliveries), agi's, asphalt trucks, rollers. As long-term works are proposed only minimal light vehicles are expected in AM and PM peaks. All other vehicles will remain on site after initial delivery until works is completed and then removed from site.

Table 5 - Vehicle movements per shift

Vehicle Type	Estimated Movements Per Shift		
	In	Out	Total
Traffic Vehicles	2	2	4
Light Vehicles (work Utes/support vehicles)	3	3	6
Franna (barriers only – first shift, changeover shift and last shift only)	1	1	2
Semi-trailers (barriers/deliveries)	3	3	6
Excavator (remain on site)	1	1	2
Agi's (some shifts only)	5	5	10
Asphalt (some shifts only)	5	5	10
Total			40

5.5 Construction Haulage

Construction haulage routes are as per the EIS and HVLR report. The Roads utilised include:

- James Ruse Drive
- Grand Avenue
- Colquhoun Street
- Unwin Street
- Wentworth Street
- Parramatta Road

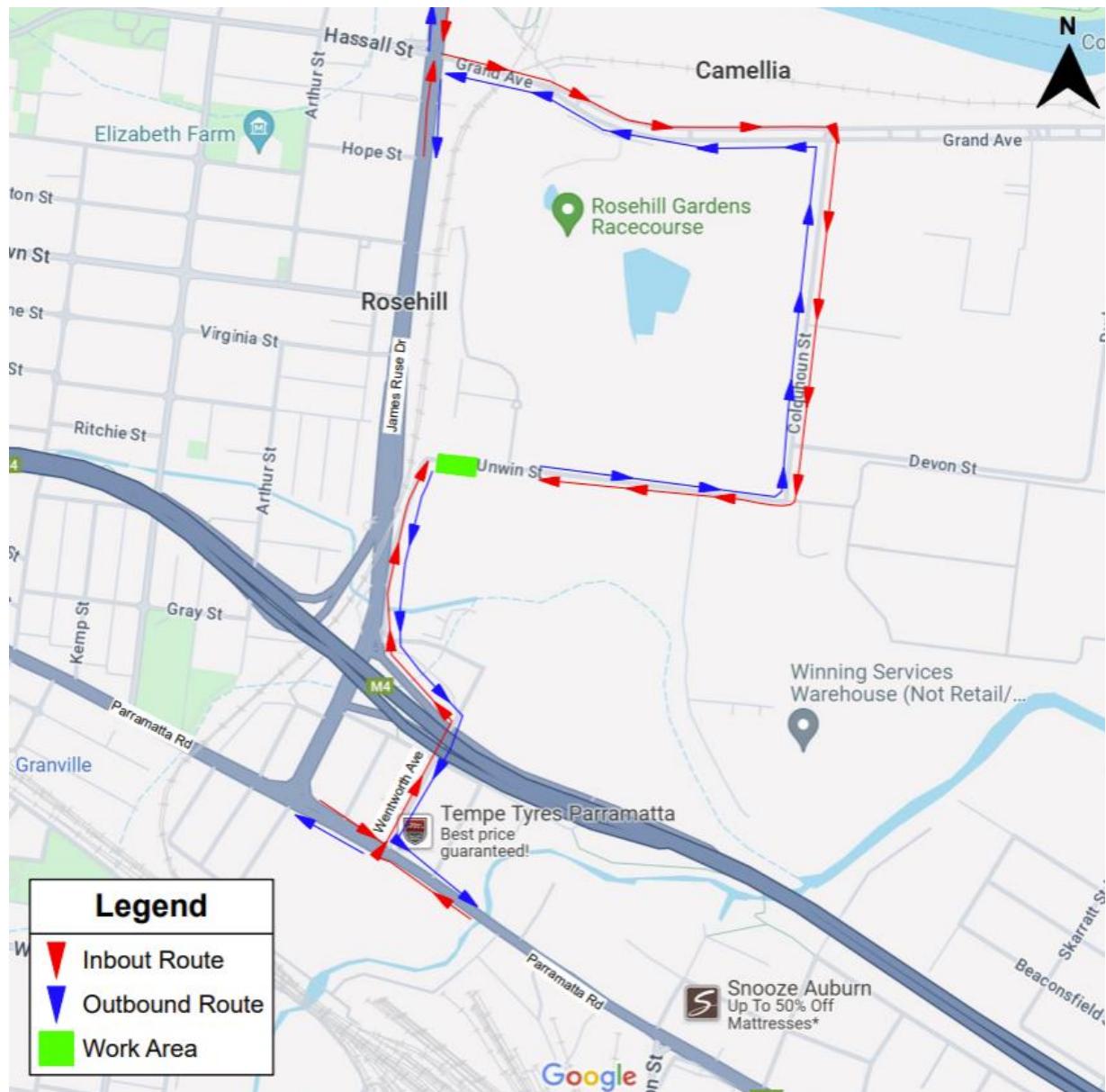


Figure 21 - Haulage Route

5.6 Impacts on Traffic Flow

Unwin Street is a local road which primarily serves to provide access to the surrounding/adjoining industrial land uses. Traffic volumes are low and hence minimal impact on traffic is expected under this set-up. Traffic Controllers will adjust to priority flow as required if any queues eventuate

5.7 Impacts on Parking

There are no impacts on parking as part of this CTMP implementation.

5.8 Impacts on Properties and Utilities

Full access is still permitted along Unwin St and surrounding streets. Community notifications will advise of works and possible minor delays.

Rosehill Gardens has an emergency exit gate that opens onto the proposed work area. This gate will remain accessible as part of this stage of works.



Figure 22 - Rosehill Gardens gate to be accessible as part of this stage

5.9 Impacts on Pedestrians and Cyclists

Cyclists will be permitted to pass through work site under the traffic control conditions.

Pedestrians will be diverted onto opposite footways during each section of works. Temporary ramps will be provided as required and the area checked regularly to ensure it is free of any

hazards. Traffic Controllers will stop traffic to allow pedestrians to cross any traffic lanes until return to their regular footway.

5.10 Impacts on Public Transport

Unwin Street is not a public transport route. There is no impact to Public Transport as part of this CTMP.

5.11 Impacts on Emergency Services

Emergency Services will always have priority under lights and sirens. On approach traffic controllers will stop all directions to allow Emergency vehicle to pass through work site.

5.12 Impacts on major Events

Rosehill Gardens has no expected race days during the proposed works period.

GLC will ensure all traffic control measures assist in bump-in and bump-out of any event traffic in line with Rosehill Gardens/ATC preferences.

6. WEEKEND CLOSURE – UNWIN ST

6.1 Proposed Conditions

In this section a weekend shutdown closure is proposed. The proposed dates/times are from 1900 (estimated) Saturday 1st February to 0500 Monday 3rd February 2025.

The Closure will close Unwin St at the Colquhoun St/Devon St intersection, Unwin St/Shirley St Intersection and at Wentworth St/Martha St intersection shown in Figure 25. Vehicle access to and from the construction site will be managed at each closure point by Traffic Control to maintain safe access and egress.

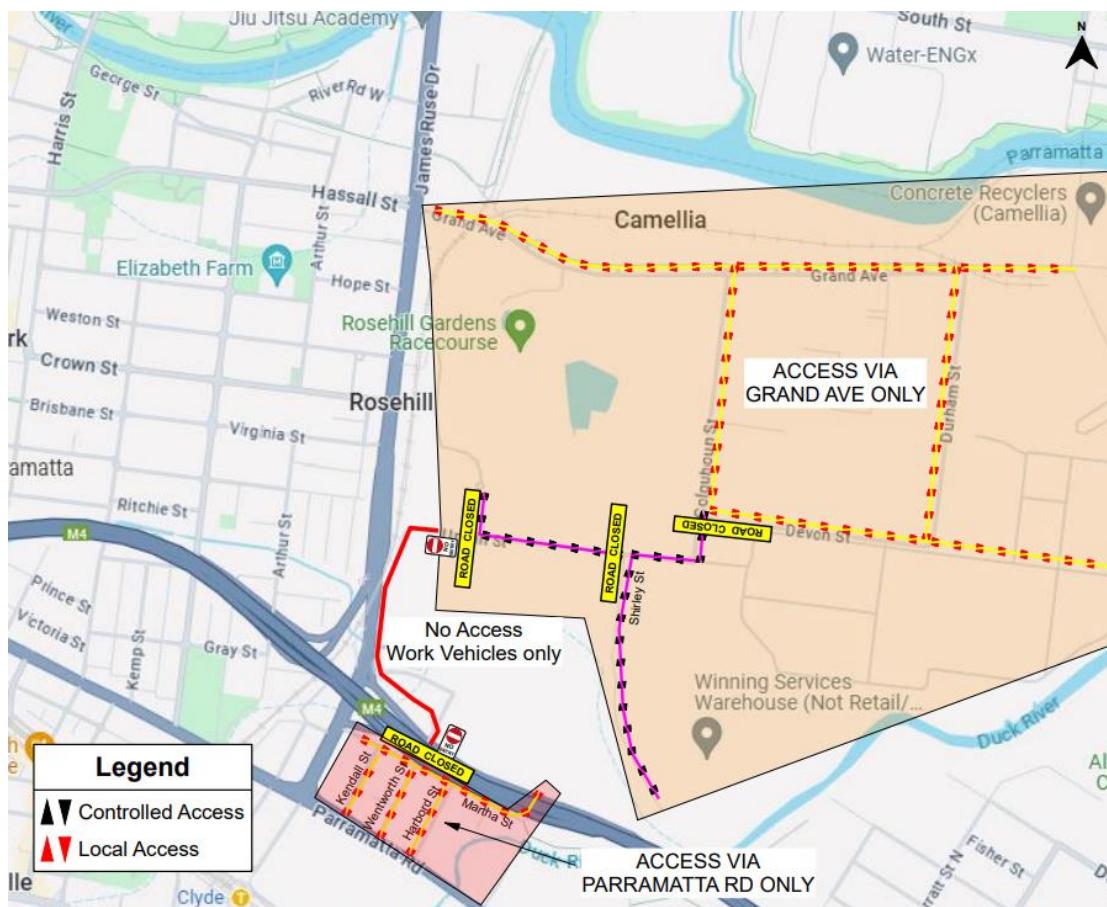
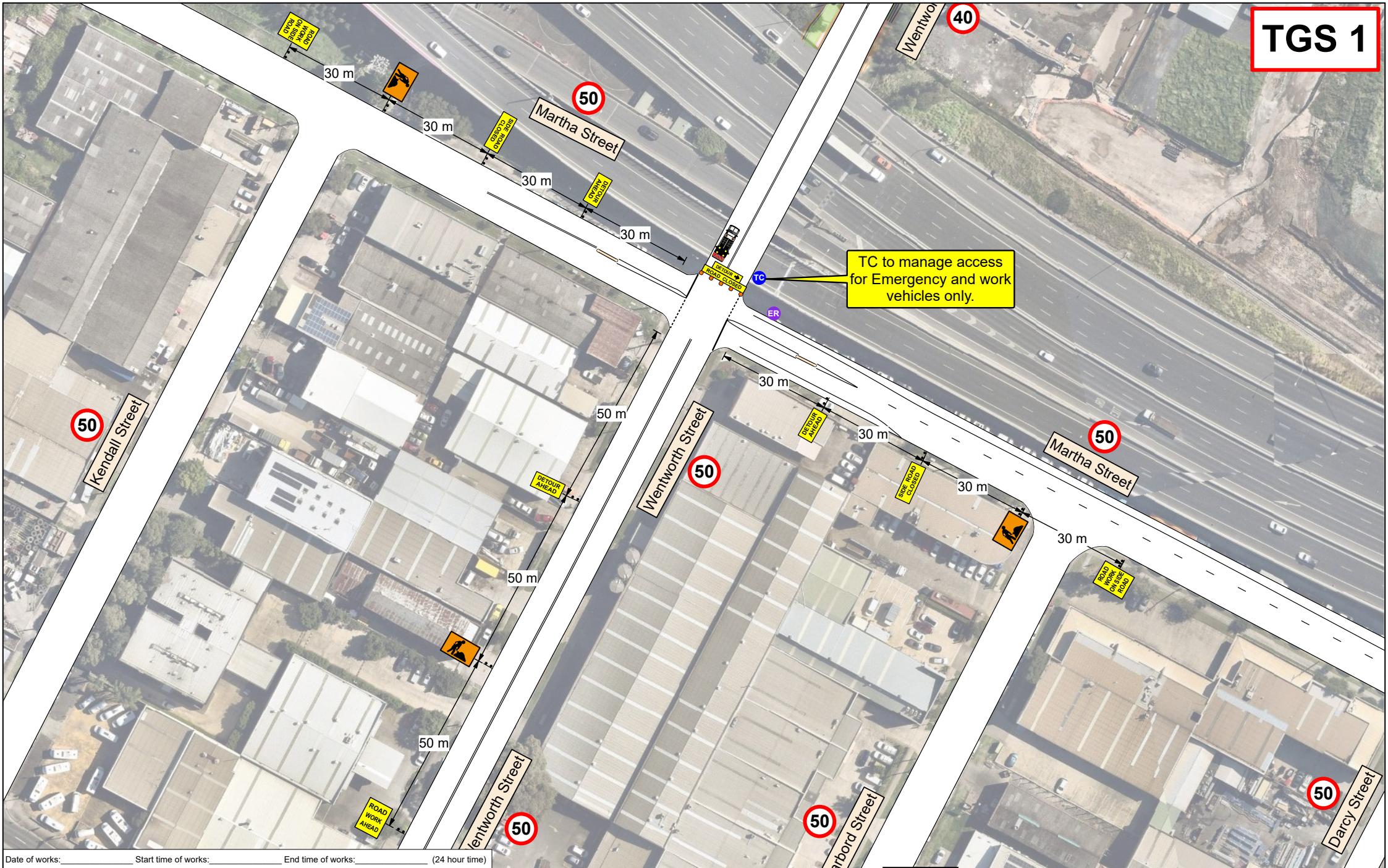


Figure 23 - Closure overview

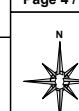
6.2 TGS

A single traffic guidance scheme will be in place for the duration of these works. TGS highlights closure points and is shown over page in figure 31. For note risk assessment has been removed from this TGS for clarity. Full TGS with risk assessment is included in Appendix 3.

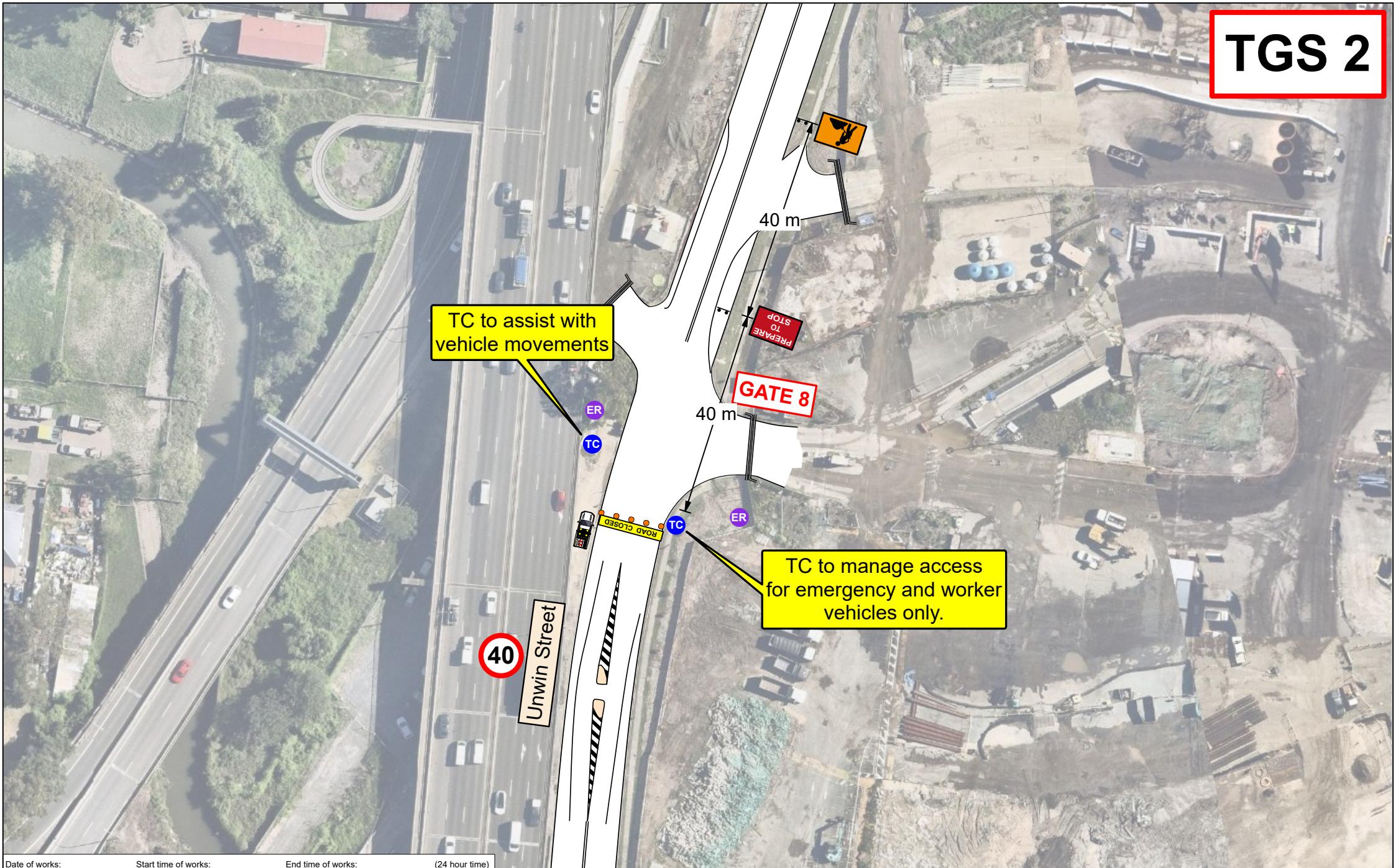


Date of works: _____ Start time of works: _____ End time of works: _____ (24 hour time)

Issue	Desg	Appd	Date & Time	Amendment Description	TGS Name & Number:	TGS Designed By:	PWZTMRP:	Exp: N/A	Signature:	Date of Approval:	Page 4 / 10
01	AC	PL	17/10/2023 22:30	Original Issue	LGP - 63822 - GLC 151 - Wentworth to Unwin St - Clyde - CS6 TS4 - Road	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	24/09/2024	[REDACTED]
02	AC	PL	07/11/2023 13:15	Amended as per comments	Works Location:	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
03	AC	PL	07/11/2023 16:30	Amended as per comments	Wentworth to Unwin Street - Clyde	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
04	AC	PL	13/11/2023 12:06	Amended detour	Project Name:	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
05	DK	KD	24/09/2024 15:15	Moved closure to Rosehill Race Gate	Project Description:	Sydney Metro Western Tunnelling	Construction Stage 6 - Traffic Switch 4	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]



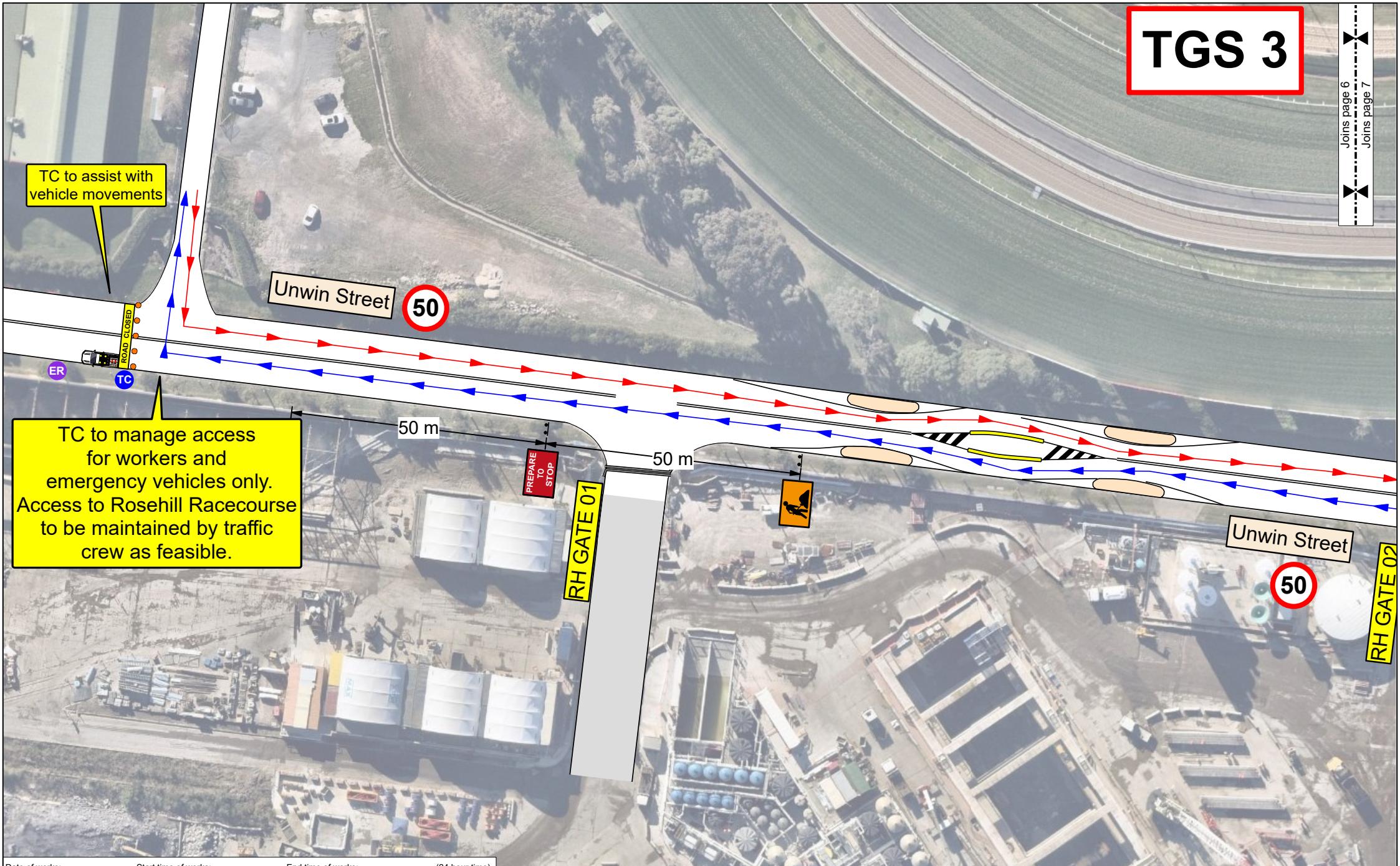
TGS 2



Date of workday Start time of workday End time of workday (24-hour time)

TGS 3

Joins page 6
Joins page 7



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

Issue	Desg	Appd	Date & Time	Amendment Description	TGS Name & Number:	TGS Designed By:	PWZTMRP: TCT1010645	Exp: N/A	Signature	Date of Approval:	Page 6 / 10
01	AC	PL	17/10/2023 22:30	Original Issue	LGP - 63822 - GLC 151 - Wentworth to Unwin St - Clyde - CS6 TS4 - Road	TGS Approved By:	PWZTMRP: TCT0058486	Exp: N/A	Signature	24/09/2024	N
02	AC	PL	07/11/2023 13:15	Amended as per comments	Works Location:	Client Company:	Gamuda Australia				
03	AC	PL	07/11/2023 16:30	Amended as per comments	Wentworth to Unwin Street - Clyde	Client Contact:					
04	AC	PL	13/11/2023 12:06	Amended detour	Project Name:	LAING O'Rourke					
05	DK	KD	24/09/2024 15:15	Moved closure to Rosehill Race Gate	Project Description:	GAMUDA	Australia				

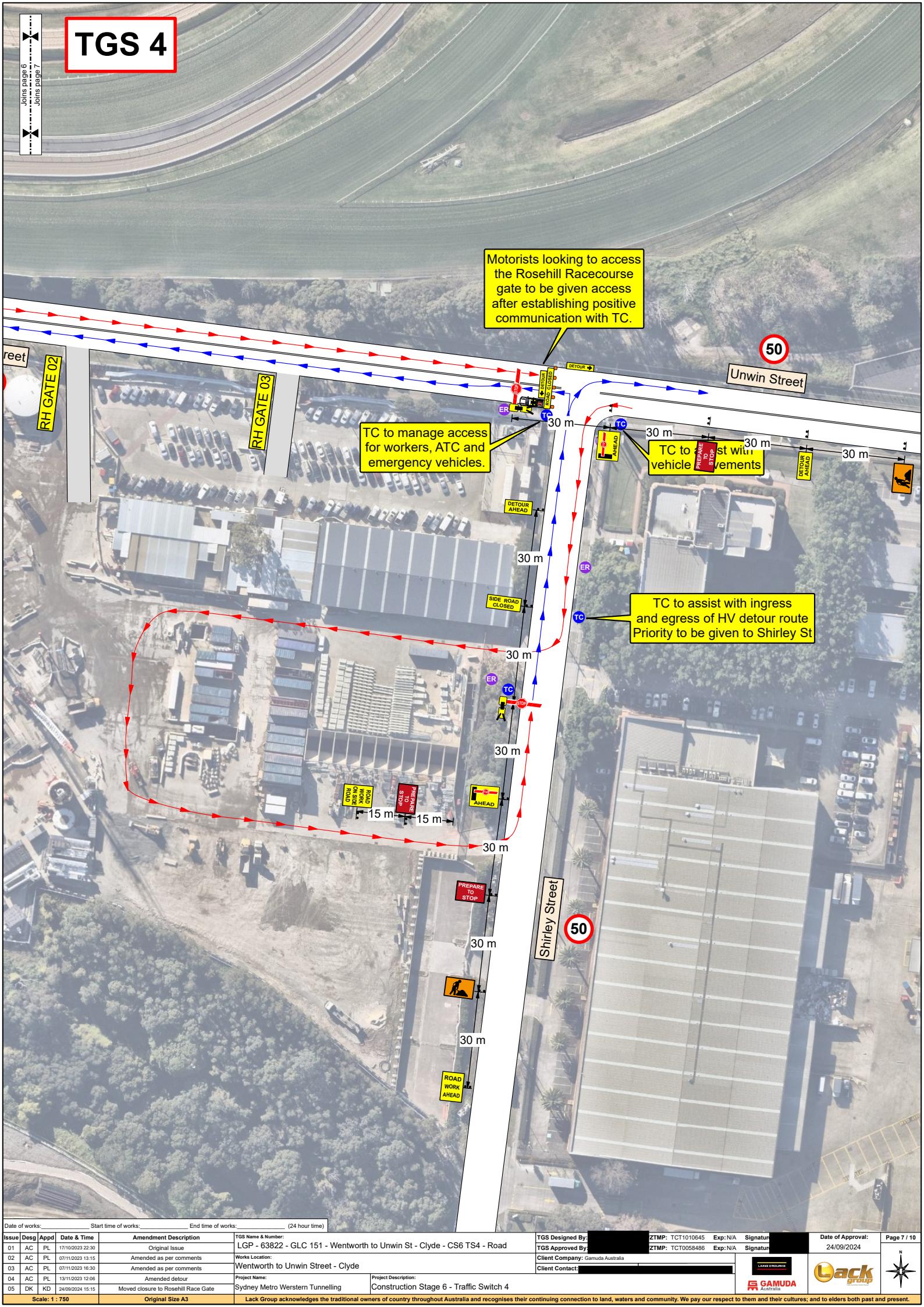
Scale: 1 : 750

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 4

Join page 6
Join page 7



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

Issue	Desg	Appd	Date & Time	Amendment Description	TGS Name & Number:	TGS Designed By:	ZTMP:	Exp:N/A	Signature	Date of Approval:	Page 7 / 10
01	AC	PL	17/10/2023 22:30	Original Issue	LGP - 63822 - GLC 151 - Wentworth to Unwin St - Clyde - CS6 TS4 - Road	TGS Approved By:	ZTMP: TCT1010645	Exp:N/A	Signature	24/09/2024	N
02	AC	PL	07/11/2023 13:15	Amended as per comments	Works Location:	TGS Approved By:	ZTMP: TCT0058486	Exp:N/A	Signature		
03	AC	PL	07/11/2023 16:30	Amended as per comments	Wentworth to Unwin Street - Clyde	Client Company:	Gamuda Australia				
04	AC	PL	13/11/2023 12:06	Amended detour	Project Name:	Client Contact:					
05	DK	KD	24/09/2023 15:15	Moved closure to Rosehill Race Gate	Construction Stage 6 - Traffic Switch 4	LAND ENGINEERS					
				Sydney Metro Western Tunnelling	GAMUDA	Lack group					

Scale: 1 : 750

Original Size A3

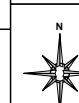
Lack Group acknowledges the traditional owners of country throughout Australia and recognises their continuing connection to land, waters and community. We pay our respect to them and their cultures; and to elders both past and present.

TGS 5

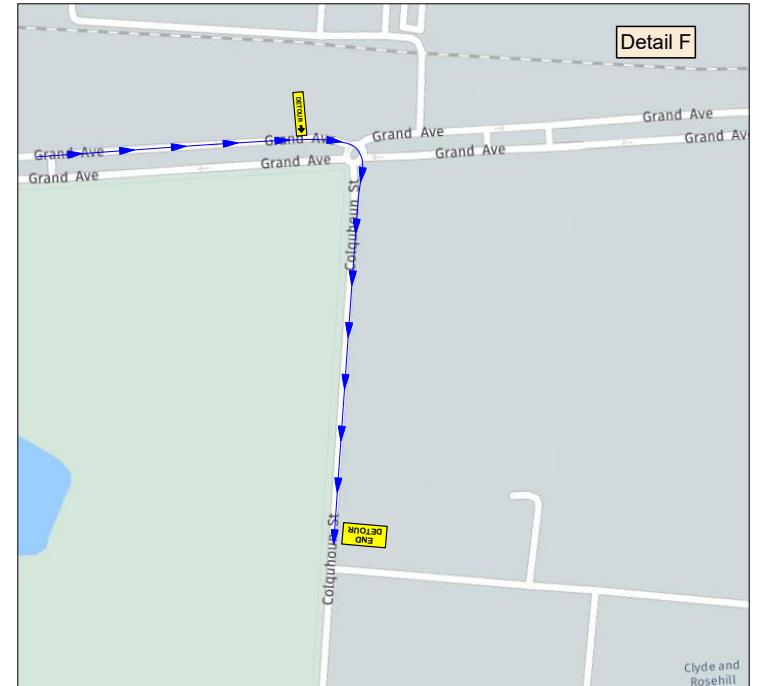
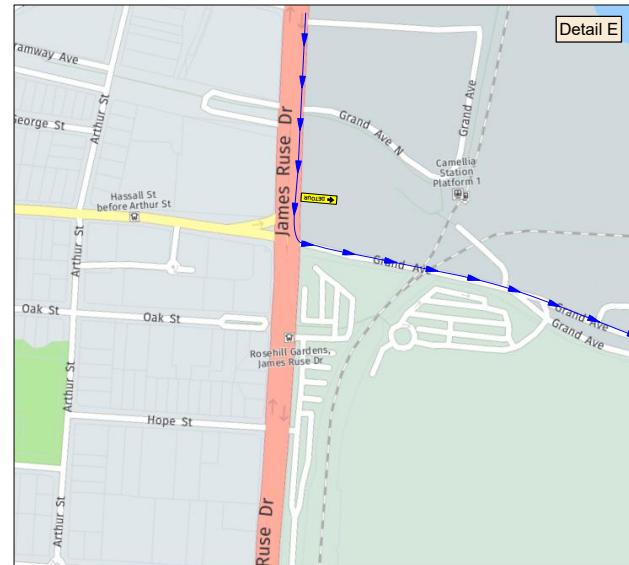
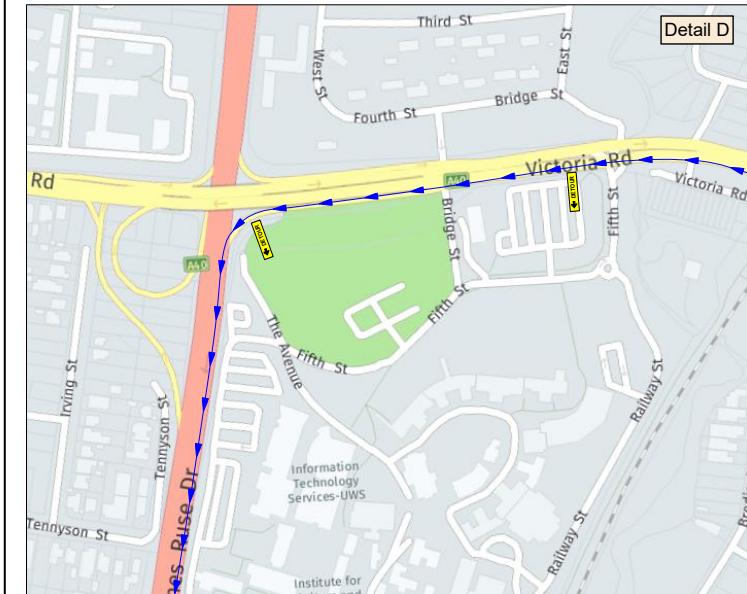
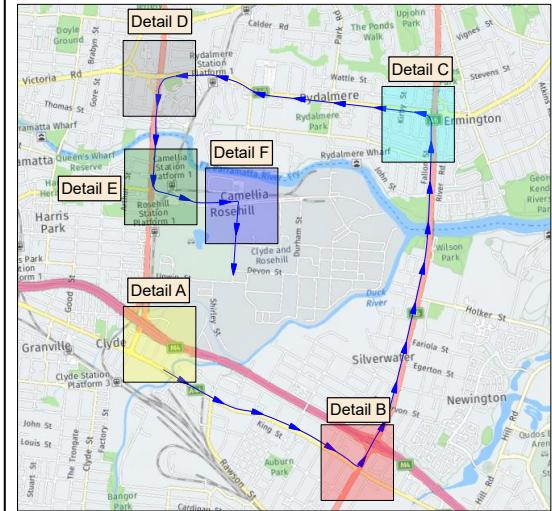
TC to manage access
for workers, ATC and
emergency vehicles only.

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

Issue	Desg	Appd	Date & Time	Amendment Description	TGS Name & Number	TGS Designed By:	PWZTMP: TCT1010645	Exp: N/A	Signature:	Date of Approval:	Page 8 / 10
01	AC	PL	17/10/2023 22:30	Original Issue	LGP - 63822 - GLC 151 - Wentworth to Unwin St - Clyde - CS6 TS4 - Road	TGS Approved By:	PWZTMP: TCT0058486	Exp: N/A	Signature:	24/09/2024	N
02	AC	PL	07/11/2023 13:15	Amended as per comments	Works Location: Wentworth to Unwin Street - Clyde	Client Company:	Gamuda Australia				
03	AC	PL	07/11/2023 16:30	Amended as per comments		Client Contact:					
04	AC	PL	13/11/2023 12:06	Amended detour	Project Name:						
05	DK	KD	24/09/2024 15:15	Moved closure to Rosehill Race Gate	Project Description:	Sydney Metro Western Tunnelling	Construction Stage 6 - Traffic Switch 4				
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.						



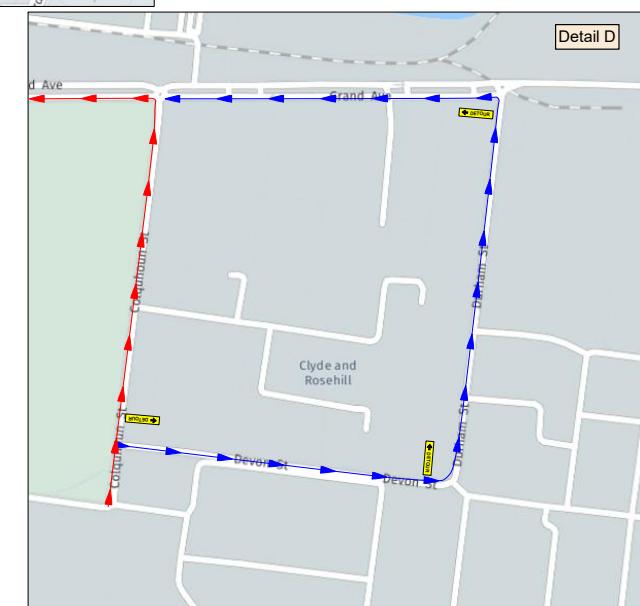
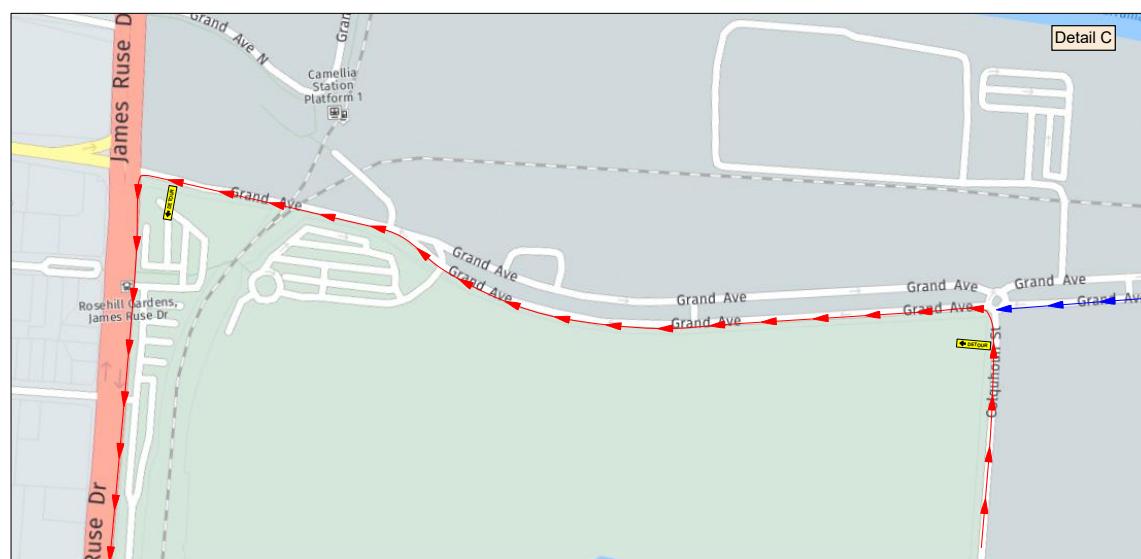
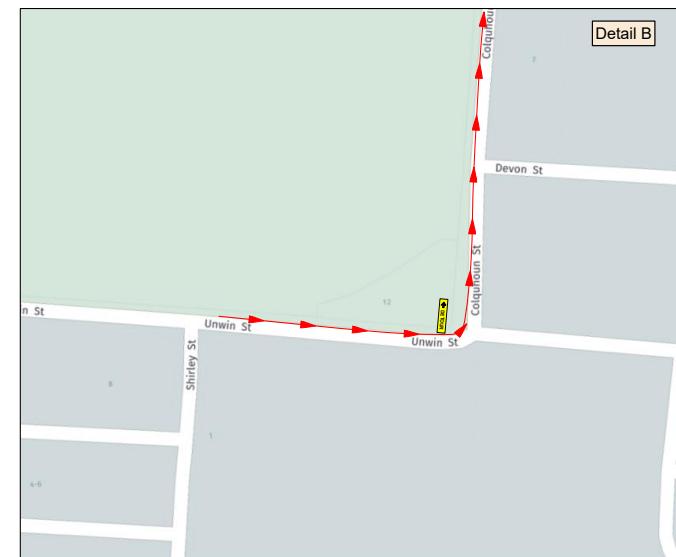
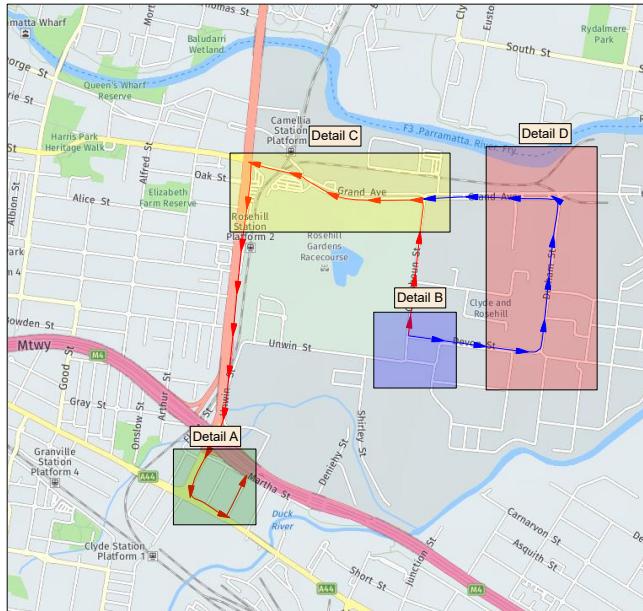
Wentworth Closure detour Route (From Wentworth To Unwin)



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

Issue	Desg	Appd	Date & Time	Amendment Description	TGS Name & Number:	TGS Designed By:	PWZTMRP: TCT1010645	Exp: N/A	Signature:	Date of Approval:	Page 9 / 10
01	AC	PL	17/10/2023 22:30	Original Issue	LGP - 63822 - GLC 151 - Wentworth to Unwin St - Clyde - CS6 TS4 - Road	TGS Approved By:	PWZTMRP: TCT0058486	Exp: N/A	Signature:	24/09/2024	N
02	AC	PL	07/11/2023 13:15	Amended as per comments	Works Location:	Client Company:	Gamuda Australia				
03	AC	PL	07/11/2023 16:30	Amended as per comments	Wentworth to Unwin Street - Clyde	Client Contact:					
04	AC	PL	13/11/2023 12:06	Amended detour	Project Name:	LAING O'Rourke					
05	DK	KD	24/09/2024 15:15	Moved closure to Rosehill Race Gate	Project Description:	GAMUDA	Australia				

Unwin St Closure detour Route (From Unwin To Wentworth)



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

Issue	Desg	Appd	Date & Time	Amendment Description	TGS Name & Number:	TGS Designed By:	PWZTMRP: TCT1010645	Exp:N/A	Signature:	Date of Approval:	Page 10 / 10
01	AC	PL	17/10/2023 22:30	Original Issue	LGP - 63822 - GLC 151 - Wentworth to Unwin St - Clyde - CS6 TS4 - Road	TGS Approved By:	PWZTMRP: TCT0058486	Exp:N/A	Signature:	24/09/2024	N
02	AC	PL	07/11/2023 13:15	Amended as per comments	Works Location:	Client Company:	Gamuda Australia				
03	AC	PL	07/11/2023 16:30	Amended as per comments	Wentworth to Unwin Street - Clyde	Client Contact:					
04	AC	PL	13/11/2023 12:06	Amended detour	Project Name:	LAING O'Rourke					
05	DK	KD	24/09/2024 15:15	Moved closure to Rosehill Race Gate	Project Description:	GAMUDA	Australia				

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.

6.3 VMS

VMS locations and VMS messaging strategies are shown in Figure 25 and Table 6 below

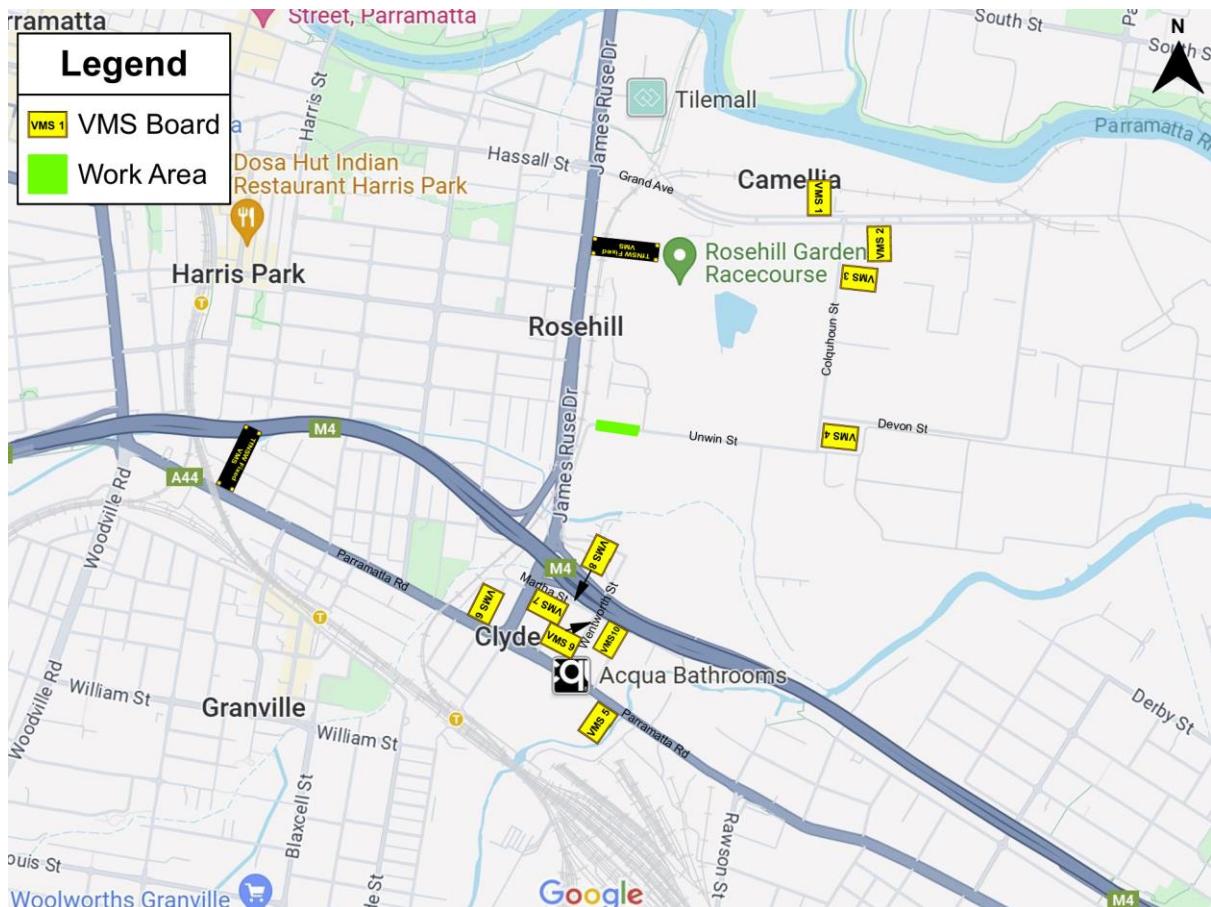


Figure 25 - Unwin St closure VMS location map

INTEGRATED MANAGEMENT SYSTEM
 Site Specific Construction Traffic Management Plan – Unwin St – Northern Diversion Construction
 Sydney Metro West – Western Tunnelling Package

Table 6 - Unwin St Closure VMS Strategy

VMS Unit	Street location	Specific location	Aerial Location	Street View location	Preconstruction messaging	During construction messaging
					7 days prior	24/7
1	Grand Ave, Rosehill	GRAND AVE, 100m WEST OF COLQUHOUN ST FACING EASTBOUND TRAFFIC			Screen 1	UNWIN ST CLOSURE 1-3 FEB
					Screen 2	LIVE TRAFFIC .COM FOLLOW DETOUR
2	Grand Ave, Rosehill	GRAND AVE, 130m EAST OF COLQUHOUN ST FACING WESTBOUND TRAFFIC			Screen 1	UNWIN ST CLOSURE 1-3 FEB
					Screen 2	LIVE TRAFFIC .COM FOLLOW DETOUR

INTEGRATED MANAGEMENT SYSTEM
 Site Specific Construction Traffic Management Plan – Unwin St – Northern Diversion Construction
 Sydney Metro West – Western Tunnelling Package

3	Colquhoun St, Rosehill	COLQUHOUN ST FACING NORTH APPROX. 30M SOUTH OF GRAND AVE	 	Screen 1	UNWIN ST CLOSURE 1-3 FEB	UNWIN ST CLOSED TIL 5AM MON
				LIVE TRAFFIC .COM	FOLLOW DETOUR	
4	Colquhoun St, Rosehill	COLQUHOUN ST APPROX. 30M SOUTH OF DEVON ST FACING SOUTHBOUND TRAFFIC	 	Screen 1	UNWIN ST CLOSURE 1-3 FEB	UNWIN ST CLOSED TIL 5AM MON
				LIVE TRAFFIC .COM	FOLLOW DETOUR	

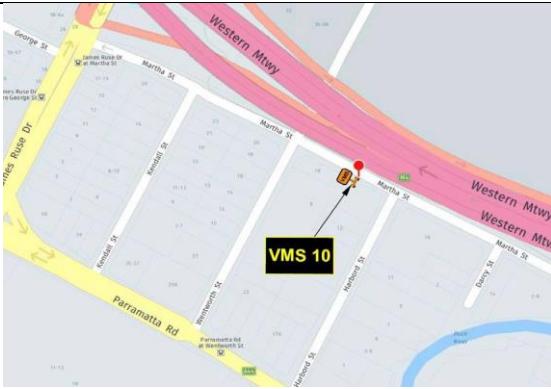
INTEGRATED MANAGEMENT SYSTEM
 Site Specific Construction Traffic Management Plan – Unwin St – Northern Diversion Construction
 Sydney Metro West – Western Tunnelling Package

5	Parramatta Rd, Clyde	PARRAMATTA RD ON GRASS AREA OUTSIDE 2B PARRAMATTA RD FACING WESTBOUND TRAFFIC	 <p>VMS 5</p>		Screen 1	UNWIN ST CLOSURE 1-3 FEB	UNWIN ST CLOSED TIL 5AM MON
					Screen 2	LIVE TRAFFIC .COM	FOLLOW DETOUR
6	James Ruse Dr, Clyde	JAMES RUSE DR ON GRASS AREA OUTSIDE 10 JRD FACING EASTBOUND TRAFFIC	 <p>VMS 6</p>		Screen 1	UNWIN ST CLOSURE 1-3 FEB	UNWIN ST CLOSED TIL 5AM MON
					Screen 2	LIVE TRAFFIC .COM	FOLLOW DETOUR

INTEGRATED MANAGEMENT SYSTEM
 Site Specific Construction Traffic Management Plan – Unwin St – Northern Diversion Construction
 Sydney Metro West – Western Tunnelling Package

7	James Ruse Dr, Clyde	JAMES RUSE DR, ON THE CORNER OF MARTHA ST AND JAMES RUSE DR	 	UNWIN ST CLOSURE 1-3 FEB	UNWIN ST CLOSED TIL 5AM MON
				Screen 1 LIVE TRAFFIC .COM	Screen 2 FOLLOW DETOUR
8	Martha St, Clyde	FACING EASTBOUND TRAFFIC ON MARTHA ST, 60m WEST OF WENTWORTH st	 	UNWIN ST CLOSURE 1-3 FEB	UNWIN ST CLOSED TIL 5AM MON
				Screen 1 LIVE TRAFFIC .COM	Screen 2 FOLLOW DETOUR

INTEGRATED MANAGEMENT SYSTEM
 Site Specific Construction Traffic Management Plan – Unwin St – Northern Diversion Construction
 Sydney Metro West – Western Tunnelling Package

9	Wentworth St, Clyde	FACING NORTHBOUND TRAFFIC ON WENTWORTH ST, 20m SOUTH OF MARTHA ST			Screen 1	UNWIN ST CLOSURE 1-3 FEB	UNWIN ST CLOSED TIL 5AM MON
					Screen 2	LIVE TRAFFIC .COM	FOLLOW DETOUR
10	Martha St, Clyde	FACING WESTBOUND TRAFFIC ON MARTHA ST, 50m EAST OF WENTWORTH ST			Screen 1	UNWIN ST CLOSURE 1-3 FEB	UNWIN ST CLOSED TIL 5AM MON
					Screen 2	LIVE TRAFFIC .COM	FOLLOW DETOUR

6.4 Construction Traffic Generation

Vehicles of various sizes are expected to attend the worksite each shift during these works. Vehicles include but are not limited to light vehicles, semi-trailers (floats/deliveries), agi's, asphalt trucks, rollers. As long-term works are proposed only minimal light vehicles are expected in AM and PM peaks. All other vehicles will remain on site after initial delivery until works is completed and then removed from site.

Table 7 - Vehicle movements per shift

Vehicle Type	Estimated Movements Per Shift		
	In	Out	Total
Traffic Vehicles	2	2	4
Light Vehicles (work utes/support vehicles)	3	3	6
Franna (barriers only – first shift, change over shift and last shift only)	1	1	2
Semi-trailers (barriers/deliveries)	3	3	6
Excavator (remain on site)	1	1	2
Agi's (some shifts only)	5	5	10
Asphalt (some shifts only)	5	5	10
Total			40

6.5 Construction Haulage

Construction haulage routes are as per the EIS and HCLR report. The Roads utilised include:

- James Ruse Drive
- Grand Avenue
- Colquhoun Street
- Unwin Street
- Wentworth Street
- Parramatta Road

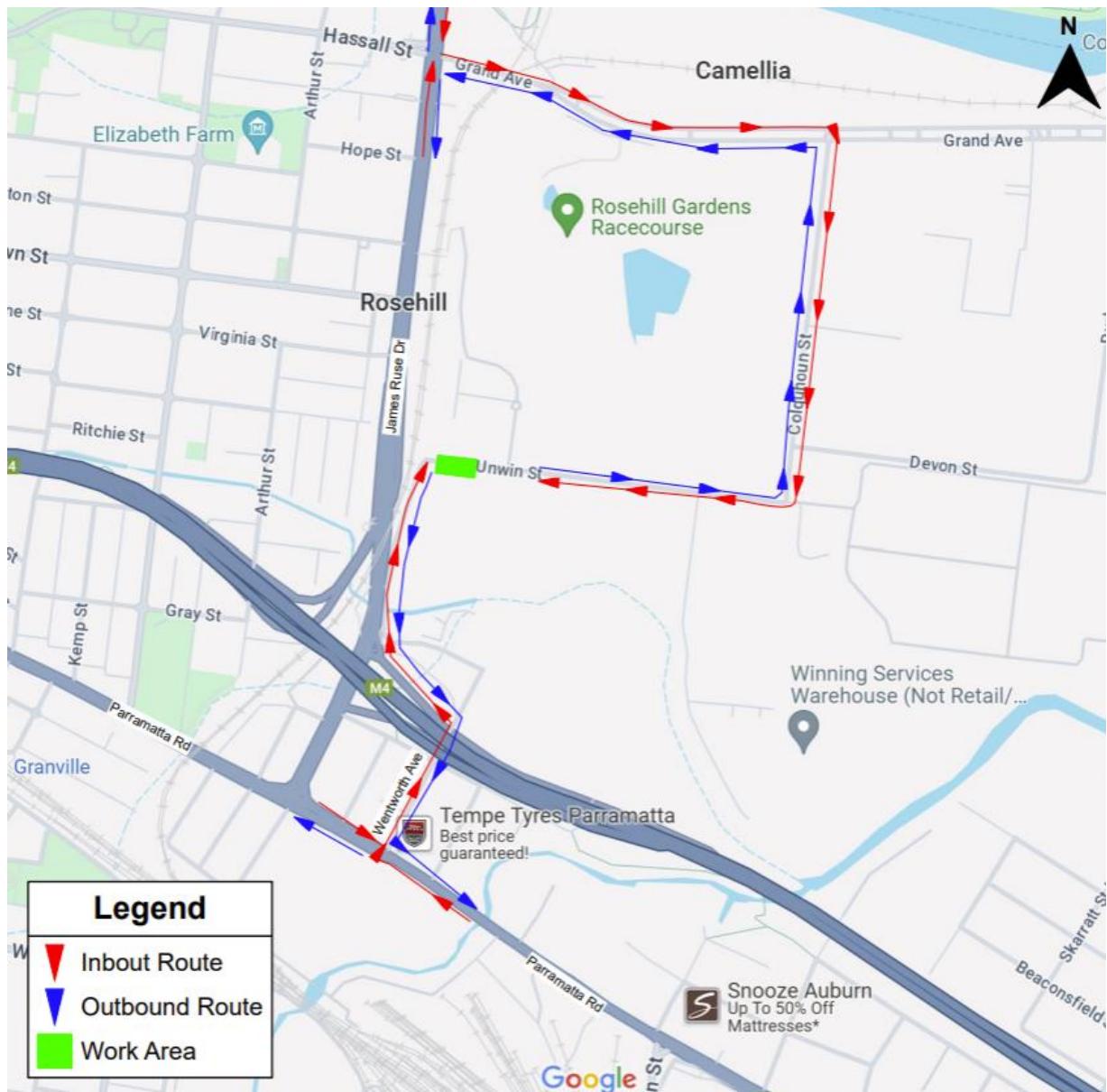


Figure 26 - Haulage Route

6.6 Impacts on Traffic Flow

Unwin Street is a local road which primarily serves to provide access to the surrounding/adjoining industrial land uses. Traffic volumes are low and hence a moderate impact on traffic is expected under this set-up. Traffic Controllers will adjust to priority flow as required if any queues eventuate

6.7 Impacts on Parking

There are no impacts on parking as part of this CTMP implementation.

6.8 Impacts on Properties and Utilities

Full access is still permitted along Unwin St and surrounding streets. Community notifications will advise of works and possible minor delays.

Rosehill Gardens has an emergency exit gate that opens onto the proposed work area. GLC is currently in discussion with ATC as to what treatments/options would be deemed suitable. At the time of writing this CTMP final outcome is not known. GLC will comply with any ATC directions regarding this property gate.



Figure 27 - Rosehill Gardens gate to be blocked as part of this stage

6.9 Impacts on Pedestrians and Cyclists

Cyclists will be required to follow normal road traffic detours or have the option to dismount and walk along designated footway under escort of traffic controllers.

Pedestrians will be escorted along designated footway by traffic controllers.

6.10 Impacts on Public Transport

Unwin Street is not a public transport route. There is no impact to Public Transport as part of this CTMP.

6.11 Impacts on Emergency Services

Access to properties for emergency vehicles will be provided at all times. Emergency Service vehicles will be permitted access through work area. Upon entering outer road closure point Traffic Controllers will be advised so clear path can be created through the area.

6.12 Impacts on major Events

There Rosehill Gardens has one race day during this proposed works period:

Saturday 1st February

GLC will ensure all traffic control measures assist in bump-in and bump-out of event traffic in line with ATC preferences.

7. TRAFFIC MANAGEMENT & DEVICES

7.1 Signage and Speed Limit Changes

During the 56-hour GLC will be installing new signage along Wentworth St, Kay St & Unwin St, which will be out for the long-term during construction, As part of the signage being installed a long-term speed reduction will be implemented, reducing the speed down to 40km/h RW through the area.

Refer to Figure 5 for Stage of works post closure / Shutdown as per design drawing
SMWSTWTP-GLO-CLJ-TD700-TW-DRG-512001 - 512122

7.2 Concrete Safety Barriers

Concrete safety barriers to be used will be the Deltabloc DB80 K150 by Jaybro. These barriers are approved as per TfNSW accepted devices with an issue date of 7 March 2024. Only approved end treatments will also be used.

Anti-gawk screens are proposed to be installed onto the barriers and reflectors will be installed along barriers for proper delineation.

7.3 Emergency Services

If Once all Approvals have been acquired by stakeholders, Relevant Emergency Services will be informed as part of GLC Stakeholder engagement, as per 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. This communication will be via emails and face-to-face discussions.

Access to properties for emergency vehicles will be provided at all times.

7.4 Variable Message Signs (VMS)

If The use of A, B and C Class trailer mounted VMS, and Overhead VMS shall be implemented during the construction period. The locations of the VMS and the messages displayed must be agreed with TfNSW. The VMS shall be located at prominent locations on

all approaches to Unwin St and Wentworth St. The primary function of the VMS is to inform road users of any changes to traffic conditions, changes to road conditions and any potential delays.

The placement locations of the VMS must be endorsed by TfNSW and approved by TfNSW. During the period of operation of the road occupancy, the VMS will be continuously operated to notify all road users of the closure and its effects. The VMS will have a remotely controlled twenty-four-hour message change facility to enable you to make immediate changes to the messages on the VMS. The VMS must be installed at a minimum of seven (7) days to the day of the implementation of the road occupancy, so as to provide advance notification to all road users of the future road occupancy.

VMS will be left once traffic switch has been completed during the 56hr closure for 2 weeks as to provide advance notification to all road users on changes of road.

Refer to VMS Strategy in Appendix E for VMS that will remain for the 2 weeks after

7.5 Pedestrian and Cyclist Impacts

During the closure / shut down footpaths will be closed from Wentworth St-Martha St intersection through to Unwin St-Shirley St intersection. Access through the area will be by exception under GLC escort.

Cyclist using the road network will be unimpacted once road is re-open, and cyclists under 16 years using the footpath will be required to follow the same detour as pedestrians.

7.6 Management of Cumulative Impacts

Endeavour Energy are expected to be completing electrical connection works during September. Works has the potential to overlap for the first 1-2 weeks of Section 1 set-up in September. Modified TGS may be required to be implemented during the cumulative impact period. There are no cumulative traffic impacts expected of this Endeavour Energy works and will only be from 0700-1800 Monday to Saturday with site being removed each day where GLC-WTP stage plane will be in place as described Chapter 2.

7.7 Signage and Speed Limit Changes

During the works GLC will be installing new signage along Unwin St, which will be out for the long-term during construction,

As part of the signage being installed a long-term speed reduction will be implemented, reducing the speed down to 40km/h RW through the area as shown in stage plans in figures 7 and 21.

7.8 Emergency and 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. These resources include:

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

GLC will report all traffic incidents to Sydney Metro, the Transport Management Centre (13 17 00) and Customer Journey Planning.

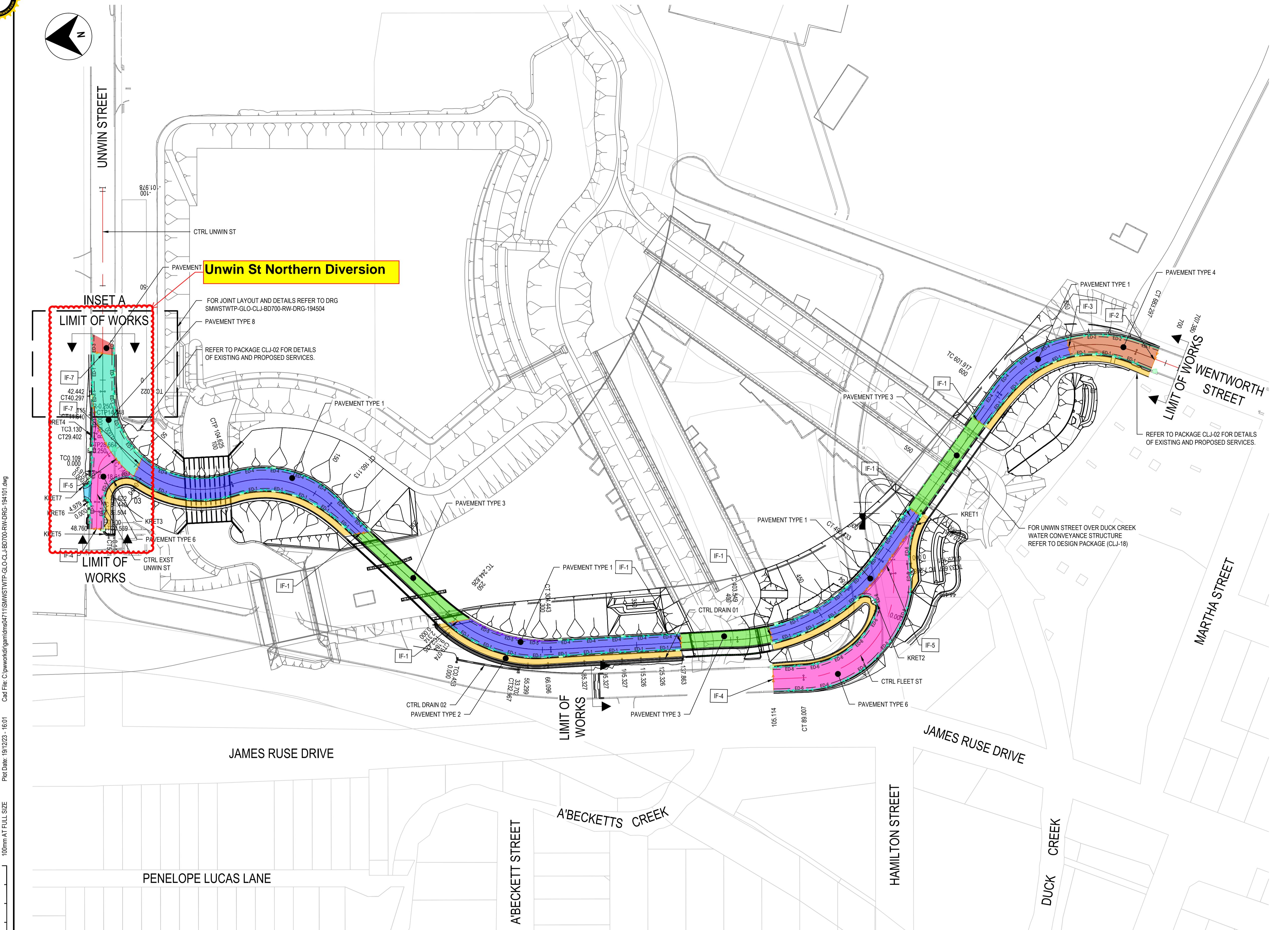
7.9 On-Site Contacts

Table 8 - Site contacts

Priority	Name	Position	Organisation	Contact #	Email
1 st		SPE	GLC		
2 nd		Project Manager	GLC		
3 rd		Superintendent	GLC		
4 th		Traffic Manager	GLC		
5 th		Logistics Manager	GLC		

8. Appendices

8.1 Appendix 1 – Design Drawings

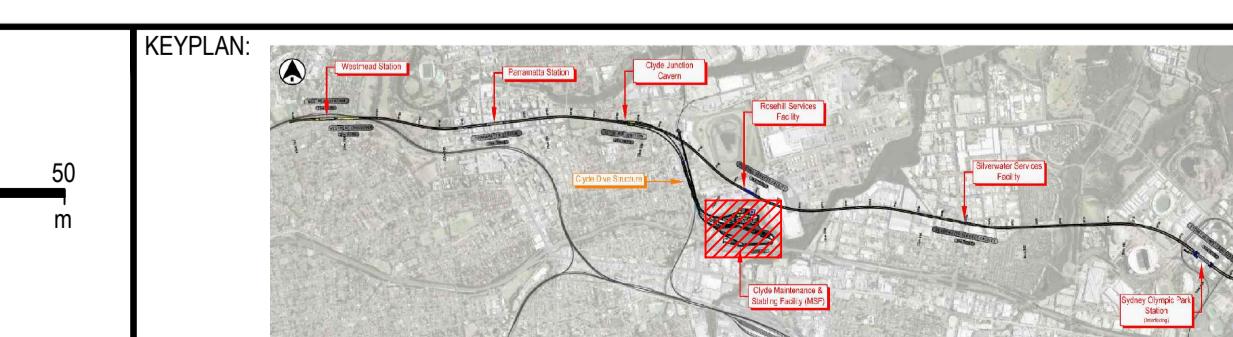
**LEGEND**

PROPOSED DESIGN
ADJACENT PACKAGE DESIGN
SURVEY
PAVEMENT TYPE 1 - FULL DEPTH ASPHALT PAVEMENT (HIGH EMBANKMENT)
PAVEMENT TYPE 2 - FOOTPATH
PAVEMENT TYPE 3 - BRIDGE DECK / APPROACH SLAB PAVEMENT
PAVEMENT TYPE 4 - FULL DEPTH ASPHALT PAVEMENT (LOW EMBANKMENT)
PAVEMENT TYPE 5 - INDUSTRIAL DRIVEWAY
PAVEMENT TYPE 6 - FULL DEPTH ASPHALT PAVEMENT
PAVEMENT TYPE 7 - JRCP TIE-IN PAVEMENT
PAVEMENT TYPE 8 - DEEP STRENGTH ASPHALT PAVEMENT OVER CONDUITS AND PIPES (LOW EMBANKMENT / CUTTING)
EDGE DETAIL. FOR DETAILS REFER TO DRG SMWSTWTP-GLO-CLJ-BD700-RW-DRG-194502
SUBSURFACE TRENCH DRAIN (NO FINES CONCRETE FILTER MATERIAL)
SUBSURFACE TRENCH DRAIN (GRANULAR FILTER MATERIAL)
STRIP DRAIN (REFER TO RETAINING WALL PACKAGE)
PAVEMENT DRAIN OUTLET TO STORMWATER INLET
INTERFACE DETAIL CALLOUT
CONTROL LINE

OFFICIAL FOR CONSTRUCTION

04	STAGE 3 APPROVED FOR CONSTRUCTION	M.N.	G.P.	C.F.	05.12.23
03	REISSUE FOR STAGE 3 DETAILED DESIGN PART B	K.W.	G.P.	C.F.	14.09.23
02	REISSUE FOR STAGE 3 DETAILED DESIGN PART B	K.W.	G.P.	C.F.	25.08.23
01	ISSUED FOR STAGE 3 DETAILED DESIGN PART B	K.W.	G.P.	C.F.	10.07.23
00	STAGE 3 APPROVED FOR CONSTRUCTION PART A	K.W.	G.P.	C.F.	23.06.23
D	REISSUE FOR STAGE 3 DETAILED DESIGN	M.V.	G.P.	C.F.	05.05.23
C	ISSUED FOR STAGE 3 DETAILED DESIGN	P.B.	G.P.	S.D.	24.02.23
No.	Amendment Description	Design by	Verified by	Approved by	Date

A1 Original Co-ordinate System: GDA20/MGA Zone 56 Height Datum: A.H.D. This sheet may be prepared using colour and may be incomplete if copied

PAVEMENT PLAN
SCALE 1:1000

CLIENT:
INTEGRATING DESIGN AEO:
SERVICE PROVIDERS:
SMEC | GHD DESIGN JOINT VENTURE

The information shown on this drawing is for the purposes of the Sydney Metro Project only. No warranty is given or implied as to its suitability for any other purpose. The Service Providers accept no liability arising from the use of this drawing and the information shown thereon for any purpose other than the Sydney Metro Project.
DRAWN _____ 05.12.2023
DESIGNED _____ 05.12.2023
DRG CHECK _____ 05.12.2023
DESIGN CHECK _____ 05.12.2023
APPROVED _____ 05.12.2023

SYDNEY METRO WEST
MAINTENANCE FACILITY - CLYDE
ROADWORKS
PAVEMENT PLAN
DOCUMENT No: SHEET: 1 OF 1 ©
STATUS: STAGE 3 DETAILED DESIGN (AFC) EDMS NO:
DRG No: SMWSTWTP-GLO-CLJ-BD700-RW-DRG-194101 REV 04 VER

NOTE: Do not scale from this drawing.

8.2 Appendix 2 – Works Program



Sydney Metro West - Western Tunnelling Package - Unwin St Structures 4WLA

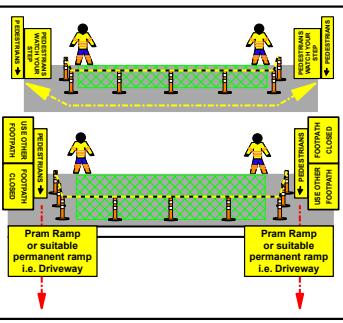
8.3 Appendix 3 – TGS Risk Assessments



Personnel Requirements	Asset Requirements
Traffic Controllers	13
UTE	5
CONE TRUCK	1
ESAS	0
TMA	0
ESTOP	0
BOOM GATE	4
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	
Tiger Tail	
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

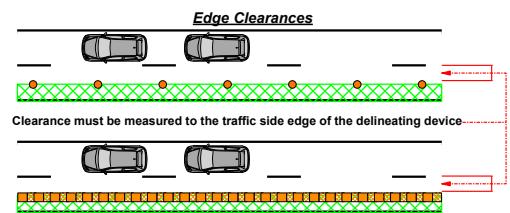
Pedestrian Management Options Analysis

Options Available	THROUGH	PAST	AROUND
Options Selected		Selected	

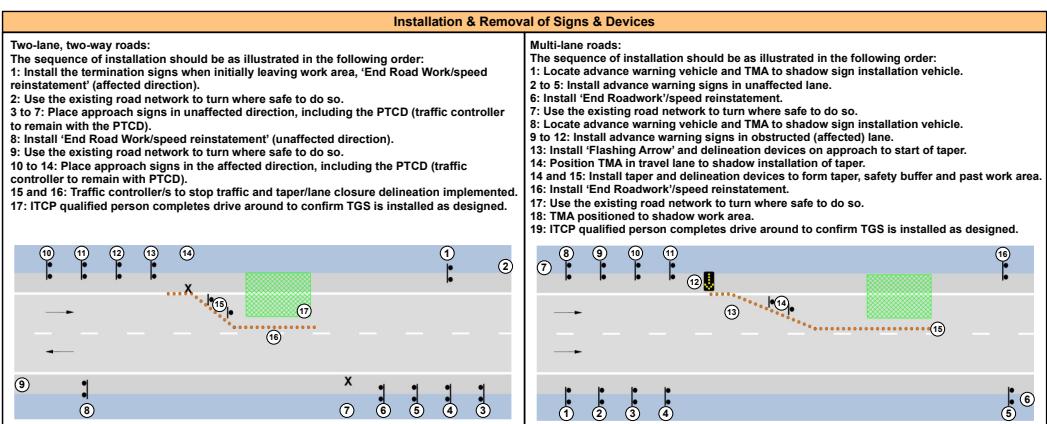
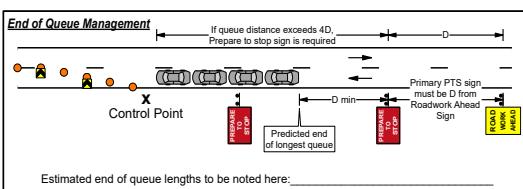
Cyclist Management Options Analysis

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	Selected
		Lateral Shift	
		Shoulder closure	
		Contraflow (2 way traffic maintained)	
PAST	Vehicles past delineated work zones	Single or Multi Lane Closure	
		Single Lane Shuttle Flow	
		Temporary Road Closure / Hold & Release / Local Traffic Access / Pilot Vehicle	Selected
THROUGH	Vehicles through work zone		



Edge of traffic lane to:	Edge Clearance
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



Dimension "D" (Main Roads)	50 metres
Dimension "D" (Minor Roads)	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

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 purposes	less than or equal to 55 26 to 75 greater than 76	4 12 16

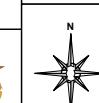
Number of signs	Approach Speed	
	less than 65 km/h	65 km/h or greater
One advanced sign	D	2D
Multiple advanced signs	D	D

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 ICAWS 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	TGS Name & Number	TGS Designed By	PWZTMP: TCT1010645	Exp: N/A	Signature:	Date of Approval:	Page 1 / 10	
01	AC	PL	17/10/2023 22:30	Original Issue	LGP - 63822 - GLC 151 - Wentworth to Unwin St - Clyde - CS6 TS4 - Road	TGS Approved By	PWZTMP: TCT0058486	Exp: N/A	Signature:	24/09/2024	N 	
02	AC	PL	07/11/2023 13:15	Amended as per comments	Works Location:	Client Company:	Gamuda Australia					
03	AC	PL	07/11/2023 16:30	Amended as per comments	Wentworth to Unwin Street - Clyde	Client Contact:						
04	AC	PL	13/11/2023 12:06	Amended detour	Project Name:							
05	DK	KD	24/09/2024 15:15	Moved closure to Rosehill Race Gate	Project Description:	Construction Stage 6 - Traffic Switch 4	LAING O'Rourke	GAMUDA Australia				

TGS Risk Assessment

Hierarchy of Controls				Step 1 - Consequence (Impact)					Item #	Worksite Component	Potential Hazard	Initial Risk			Present	Control Measures			Residual Risk																		
		C	P	R								C	P	R		C	P	R																			
1. Eliminate the hazard altogether. e.g. Road closures.				More Effective	Step 1 - Consequence (Impact)							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																
2. Substitute the hazard with a safer alternative. e.g. Using PTCDs instead of stop bats.					Step 1 - Consequence (Impact)																																
3. Isolate the hazard from anyone who could be harmed. e.g. Drop zones for clients works in elevated work zones.					Step 1 - Consequence (Impact)											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			4	2	14																
4. Use engineering controls to reduce the risk. e.g. The use of traffic control devices to protect work area.					Step 1 - Consequence (Impact)											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.																					
5. Use administrative controls to reduce the risk. e.g. Ensure personnel are trained in their field.					Step 1 - Consequence (Impact)											Always install advance warning signage for vehicles entering from side road in advance of the work site.																					
6. Use PPE. e.g. Wearing gloves while manual handling.					Step 1 - Consequence (Impact)											Always install advance warning signage for vehicles entering from side road in advance of the work site.																					
Step 2 Probability	Almost Certain (5)	The threat can be expected to occur 75% - 99%	Common / Frequent Occurrence	More than 1 event per month	Moderate (8)	High (16)	High (18)	High (21)	Extreme (25)																												
	Likely (4)	The threat will occur commonly (e.g. 50% - 75%)	Is known 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 (e.g. 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 (e.g. 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 (e.g. 1% - 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		Present	Control Measures			Residual Risk																										
	C	P	R	C				P	R																												
Acceptance																																					
1.0	TGS Drawn / implemented by unqualified person or organization	TGS Drawn / implemented by unqualified person or organization	5	3	23	Y	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																
Departures																Work Area																					
2.0	Stop bat used instead of PTCD	Traffic controller hit by vehicle	5	4	24	N										- 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.																					
Advanced Warning											- Consider use of shadow vehicles if practical, or other type of static hard coverable (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.						- 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.																				
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																										
3.1	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																										
3.2	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.																										
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 TCWS 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. - Ensure appropriate permission for any detours - Speed reduction installed to suit road conditions - Consider using VMS's																										
Issue	Desg	Appd	Date & Time	Amendment Description			TGS Name & Number: LGP - 63822 - GLC 151 - Wentworth to Unwin St - Clyde - CS6 TS4 - Road					TGS Designed By: [REDACTED]			PWZTMP: TCT1010645 Exp: N/A Signature: [REDACTED]			Date of Approval: 24/09/2024			Page 2 / 10																
01	AC	PL	17/10/2023 22:30	Original Issue			Works Location: Wentworth to Unwin Street - Clyde					TGS Approved By: [REDACTED]			PWZTMP: TCT0058486 Exp: N/A Signature: [REDACTED]			Client Company: Gamuda Australia																			
02	AC	PL	07/11/2023 13:15	Amended as per comments			Client Contact: [REDACTED]					LAING O'Rourke			GAMUDA Australia			Lack Group																			
03	AC	PL	07/11/2023 16:30	Amended as per comments			Project Name: Sydney Metro Western Tunnelling					Project Description: Construction Stage 6 - Traffic Switch 4					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			Present	Control Measures			Residual Risk				
			C	P	R		C	P	R	C	P	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 property access 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/barriers. - 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, 60 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				

Additional Control Control Measures

8.0	SKELETON CREW TO DO ROUTINE SIGN CHECKS TO ENSURE DETOUR IS CLEARLY POSTED.
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:

Issue	Desg	Appd	Date & Time	Amendment Description	TGS Name & Number: LGP - 63822 - GLC 151 - Wentworth to Unwin St - Clyde - CS6 TS4 - Road	TGS Designed By: TGS Approved By: PWZTMP: TCT010645 Exp: N/A Signature: [REDACTED]	PWZTMP: TCT0058486 Exp: N/A Signature: [REDACTED]	Date of Approval: 24/09/2024	Page 3 / 10
01	AC	PL	17/10/2023 22:30	Original Issue					
02	AC	PL	07/11/2023 13:15	Amended as per comments	Works Location: Wentworth to Unwin Street - Clyde				
03	AC	PL	07/11/2023 16:30	Amended as per comments		Client Company: Gamuda Australia			
04	AC	PL	13/11/2023 12:06	Amended detour	Project Name: Sydney Metro Western Tunnelling	Client Contact: [REDACTED]			
05	DK	KD	24/09/2024 15:15	Moved closure to Rosehill Race Gate	Project Description: Construction Stage 6 - Traffic Switch 4		LAING O'Rourke GAMUDA Australia	Lack Group	

STOPPING SIGHT DISTANCE (SSD) – P0153 – UNWIN STREET NORTHERN DIVERSION – PART 3

UNWIN ST EB

Design Speed = 40km/hr

Required SSD = 35.0m

Remarks = Achieved.



STOPPING SIGHT DISTANCE (SSD) – P0153 – UNWIN STREET NORTHERN DIVERSION – PART 3

UNWIN STREET

Design Speed = 40km/hr

Required SISD = 35.0m

Remarks = *Achieved.*



STOPPING SIGHT DISTANCE (SSD) – P0153 – UNWIN STREET NORTHERN DIVERSION – PART 3

UNWIN ST WB

Design Speed = 40km/hr

Required SISD = 35.0m

Remarks = *Achieved.*



STOPPING SIGHT DISTANCE (SSD) – P0153 – UNWIN STREET NORTHERN DIVERSION – PART 2

UNWIN ST EB

Design Speed = 40km/hr

Required SISD = 35.0m

Remarks = Achieved.



UNWIN ST WB

Design Speed = 40km/hr

Required SISD = 35.0m

Remarks = Achieved.



8.4 Appendix 4 – Removed – No longer Required

8.5 Appendix 5 – Road Safety Audit

ROADWORK

ROAD SAFETY AUDIT

GAMUDA AND LAING O'ROURKE CONSORTIUM
UNWIN STREET TRAFFIC CHANGES – STAGE 3 PRE-CONSTRUCTION



Civlink Consulting Pty Ltd
ABN 64 633 194 948
Telephone +61 432 544 458
Email alex@civlink-consulting.com.au
Website www.civlink-consulting.com.au

ROADWORKS – ROAD SAFETY AUDIT

GAMUDA AND LAING O'ROURKE CONSORTIUM

UNWIN STREET TRAFFIC CHANGES – STAGE 3 PRE-CONSTRUCTION



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ROADWORKS – ROAD SAFETY AUDIT

GAMUDA AND LAING O'ROURKE CONSORTIUM

UNWIN STREET TRAFFIC CHANGES – STAGE 3 PRE-CONSTRUCTION



Document Control

Title:	Description			
Ref No.:	GLC-WTP-RSA-0010 - 00			
Description:	Roadworks road safety audit on the changes in Rosehill Racecourse area along Unwin Street as part of the planned Stage 3 arrangement for Unwin Street.			
Role	Name	Position	Date	Signed
Author:	A [REDACTED]	Level 3 Road Safety Auditor	29.11.2024	[REDACTED]

Document Revisions

No.	Date	Issue / Description
00	29.11.2024	ORIGINAL ISSUE

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ROADWORKS – ROAD SAFETY AUDIT

GAMUDA AND LAING O'ROURKE CONSORTIUM

UNWIN STREET TRAFFIC CHANGES – STAGE 3 PRE-CONSTRUCTION



Executive Summary

Audited Project:	Sydney Metro – Western Tunnel Package
Audit for:	Gamuda Australia and Laing O'Rourke Consortium (Western Tunnel Package)
Email Address:	scott.mcmichael@glcwtp.com.au
Clients Contact:	[REDACTED]
Auditors:	[REDACTED] (Level 3 Road Safety Auditor – ID:0908), Director / Senior Civil Engineer – Civlink Consulting Pty Ltd [REDACTED] (Level 2 Road Safety Auditor). Traffic Manager – Civlink Consulting Pty Ltd [REDACTED] (Level 0 Road Safety Auditor) Traffic Engineer – Civlink Consulting Pty Ltd
Audit Type:	Roadworks - Road Safety Audit
Commencement Meeting:	Friday 29 th November 2024
Site Visit:	N/A Pre-construction audit (previous site audit 4 th November with site visit)
Completion Meeting:	To be advised
Previous Audit:	4 th of November 2024

ROADWORKS – ROAD SAFETY AUDIT

GAMUDA AND LAING O'ROURKE CONSORTIUM

UNWIN STREET TRAFFIC CHANGES – STAGE 3 PRE-CONSTRUCTION



1. Introduction

1.1 Purpose of Audit

This report presents findings of a roadworks road safety audit. The audit involved reviewing the site in accordance with the audit brief. The site is located adjacent Rosehill Racecourse as part of the Western Tunnel Package construction works for the Sydney Metro West projects.

The audit is conducted to verify the manifestation of the documentation and planning for works within road related areas, and within the specified area affected by the project works. The audit scrutinizes the 'safe system' approach to road design and the traffic management planning, targeting roadside hazards including (but not limited to) signage and pavement marking, pedestrian & cyclists' facilities, delineation, sight distances, intersection controls and safety barriers.

The site being audited covers the areas affected by changes, including the placement of temporary barriers along Unwin Street as well as various other temporary controls to manage traffic. The area that is the subject of this audit is the red area shown in Figure 1, below;



Figure 1: Road Safety Audit Scope [Google.com]

ROADWORKS – ROAD SAFETY AUDIT

GAMUDA AND LAING O'ROURKE CONSORTIUM

UNWIN STREET TRAFFIC CHANGES – STAGE 3 PRE-CONSTRUCTION



1.2 Audit Objectives

The objective of this road safety audit was to identify relevant road safety deficiencies in the site which, if addressed, would improve safety for road users.

The other objectives of this Roadworks Road Safety Audit were to:

- Check the compatibility between the traffic management's safety features and the functional classification of the roads.
- Identify any design feature's that can, either now or with time, create a traffic safety issue.
- identify additional design's features at the site that pose a safety hazard or risk to any of the road users
- Determine the extent of the deficiencies in the design, considering all road user groups.

1.3 Procedures and reference material

The procedures used are those in the Austroads Guide to Road Safety Part 6: Road Safety Audit (2022) and RTA Guidelines for Road Safety Audit Practices 2011.

Technical reference documents for Traffic Guidance Schemes is the Traffic Control at Worksites Manual (TCAWS) Version 6.1, 2021.

1.4 Audit Team

This Audit Team consisted of:

- a) [REDACTED] (Civlink Consulting Director / Traffic Manager / Senior Civil Engineer). Alex is a registered Road Safety Auditor with the Institute of Public Works Engineers Australia, NSW and Senior auditor in both VIC & QLD. Alex is a registered Level 3 Road Safety Auditor in NSW.
- b) [REDACTED] (Civlink Consulting / Traffic Manager.) Dustin has worked in the traffic management sector across Qld and NSW for 17 years with experience in civil design and temporary traffic management. Dustin is registered Level 2 road safety auditor in NSW
- c) [REDACTED] (Civlink Consulting / Traffic Engineer). John has 5 years construction and traffic experience on Australian major construction projects including the M4-M8 Link Tunnels and Warringah Freeway Upgrade. John has completed Road Safety Auditor training is working towards level one accreditation.

1.5 Statement of Independence

The audit team are independent from the design team and have not been involved in the development of the traffic strategies selected for implementation on this project and site. The audit has been carried out independently of the design team in accordance with Austroads Guide to Road Safety; Part 6 – Road Safety Audit and NSW Centre for Road Safety: Guidelines for Road Safety Audit Practices.

2. Road Safety Audit Program

2.1 Commencement Meeting

On Friday 29th November 2024 an email was received from [REDACTED] requesting an audit be conducted on the design drawings showing the Stage 3 design for Unwin Street within the Rosehill Racecourse area. The audit was to be conducted on the barrier installation along Unwin Street along with the other associated temporary controls in place. The works were part of the Western Tunnel Package construction works. The audit was to be conducted by [REDACTED], Lead Road Safety Auditor (Civlink Consulting) with the assistance of [REDACTED]

ROADWORKS – ROAD SAFETY AUDIT

GAMUDA AND LAING O'ROURKE CONSORTIUM

UNWIN STREET TRAFFIC CHANGES – STAGE 3 PRE-CONSTRUCTION



2.2 Completion meeting

Project representatives are to advise of the need for a Completion meeting.

2.3 Responding to the audit report

The responsibility for the design and implementation of this project rests with the client's project management team, not with the auditors. The project manager is under no obligation to accept the audit findings. Also, it is not the role of the auditor to agree or to approve the project manager's responses to the audit. Rather, the audit provides the opportunity to highlight potential road safety problems and have them formally considered by the project manager or design manager in conjunction with all other project considerations.

2.4 Corrective action response

The road safety audit is a formal process. The road safety audit report is by no means the end of the audit process. The audit report documents the audit teams' identified concerns made to improve the safety of the roads. This report must be responded to by the client with a written response to each audit finding.

2.5 Disclaimer

The findings and opinions in the report are based on the examination of the site and might not address all concerns existing at the time of the audit. The auditors have endeavoured to identify features of the site that could be modified or removed in order to improve safety, although it must be recognised that safety cannot be guaranteed.

The problems identified have been noted in this report and should be considered for improving road safety. Where corrective actions are not taken, this should be reported in writing, providing the reason for the decision. Readers are urged to seek specific advice on matters and not to rely solely on this report. While every effort has been made to ensure the accuracy of this report, it is made available strictly on the basis that everyone relying on it does so at their own risk without any liability to the Auditors.

ROADWORKS – ROAD SAFETY AUDIT

GAMUDA AND LAING O'ROURKE CONSORTIUM

UNWIN STREET TRAFFIC CHANGES – STAGE 3 PRE-CONSTRUCTION



3. Risk Assessment Approach

This audit identified and rated risks per the Austroads recommendation using the assessment process below. Potential safety hazards were identified and categorised based on the frequency of occurrence and severity (consequence of crash). A preliminary risk rating for each identified issue has been assigned in Section 4 which were determined via a subjective judgement by the Auditor guided by the Austroads "Guide to Road Safety, Part 6: Road Safety Audit".

Austroads' provides an indication of the level of risk and what response may be appropriate – refer to the tables below.

3.1 Likelihood

Description	
Almost Certain	Occurrence once per quarter
Likely	Occurrence once per quarter to once per year
Possible	Occurrence once per year to once every three years
Unlikely	Occurrence once every three years to once every seven years
Rare	Occurrence less than once every seven years

3.2 Severity

Description	
Insignificant	Property damage
Minor	Minor first aid
Moderate	Major first aid and/or presents to hospital (not admitted)
Serious	Admitted to hospital
Fatal	At scene or within 30 days of the crash

3.3 Risk Rating

		Severity				
		Insignificant	Minor	Moderate	Serious	Fatal
Likelihood	Almost Certain	Medium	High	High	Extreme	Extreme
	Likely	Medium	Medium	High	Extreme	Extreme
	Possible	Low	Medium	High	High	Extreme
	Unlikely	Negligible	Low	Medium	High	Extreme
	Rare	Negligible	Negligible	Low	Medium	High

3.4 Treatment

Risk	Suggested treatment approach
Negligible	No action required
Low	Should be corrected or the risk reduced if the treatment cost is low
Medium	Should be corrected or the risk significantly reduced, if the treatment cost is moderate but not high
High	Should be corrected or the risk significantly reduced, even if the treatment cost is high
Extreme	Must be corrected regardless of cost

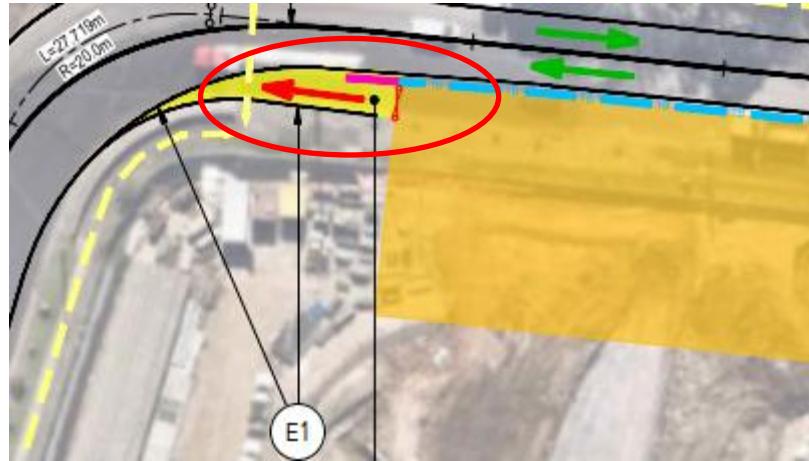
ROADWORKS – ROAD SAFETY AUDIT

GAMUDA AND LAING O'ROURKE CONSORTIUM

UNWIN STREET TRAFFIC CHANGES – STAGE 3 PRE-CONSTRUCTION



4. Audit Findings

No.	Location	Description of Deficiency / Observation	Risk level
1	Unwin Street, western end and at the limit of changed conditions.	<p>The construction egress point provides a limited acceleration lane for construction traffic to accelerate and merge. It is also at much lower angle that would normally be required for a high-angle driveway (typically 70 – 90 degree approach angle) which may result in difficulty for construction traffic to observe oncoming traffic.</p> <p>It is also unclear if there is any gawk screens intended to be installed on the blue barriers, which would further restrict the SISD visibility of construction traffic exiting.</p> <p>It is also unclear if mitigation measures may be in place for this arrangement that would alleviate the need for approach angle and SISD requirements. Poor visibility, and no further controls may increase the likelihood of a side-swipe or side impact incident with a member of public, although noting the low speed and tight turn would see the severity be relatively low</p> 	Likelihood – Possible Severity – Minor Risk Rating – Medium

ROADWORKS – ROAD SAFETY AUDIT

GAMUDA AND LAING O'ROURKE CONSORTIUM

UNWIN STREET TRAFFIC CHANGES – STAGE 3 PRE-CONSTRUCTION



2 Unwin Street, western end and at the limit of changed conditions.	<p>There is a pedestrian access line (assumed) shown in yellow. The sight distance requirements for pedestrians crossing the road at the site egress may not be achieved depending on gawk screens, or the positioning of any construction vehicles leaving the worksite.</p> <p>This may result in pedestrians being stuck with construction traffic exiting, and approaching public traffic resulting in hesitation, or attempting to cross with insufficient gaps available.</p> <p>This may result in a low speed impact between vehicle and pedestrian.</p>	<p>Likelihood – Unlikely Severity – Moderate Risk Rating – Medium</p>
3 Unwin Street, westbound adjacent the works area	<p>Based on the drawings it is unclear if the path for pedestrians on the northern side of the road will be suitable of accommodating DDA compliance, or if there will be trip hazards and challenges.</p> <p>It is noted that pedestrian volumes are very low in the area, or related typically to the construction traffic although some weekend events may attract additional pedestrian access requirements.</p> <p>Poor provision of pedestrian access may result in trips and fall incidents.</p>	<p>Likelihood – Unlikely Severity – Minor Risk Rating – Low</p>

ROADWORKS – ROAD SAFETY AUDIT

GAMUDA AND LAING O'ROURKE CONSORTIUM

UNWIN STREET TRAFFIC CHANGES – STAGE 3 PRE-CONSTRUCTION



4	Unwin Street – general note	It is unclear from the plans if delineators are proposed for barriers and end terminals. It is typically a requirement for NSW roads to provide delineation. Insufficient delineation may result in an increased likelihood of run-off road incidents involving road furniture. It is also unclear of the lighting arrangements on site for out of hours operation.	Note only
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ROADWORKS – ROAD SAFETY AUDIT

GAMUDA AND LAING O'ROURKE CONSORTIUM

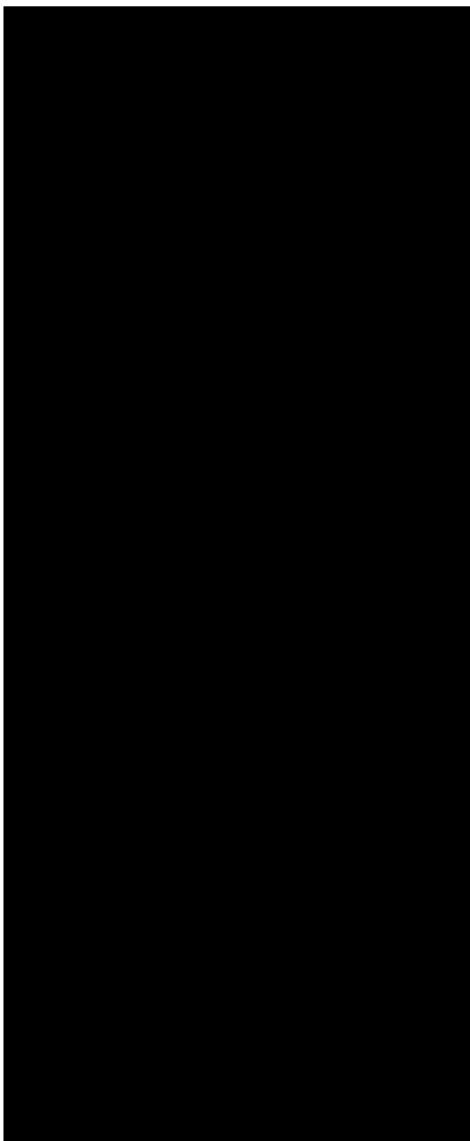
UNWIN STREET TRAFFIC CHANGES – STAGE 2 IMPLEMENTATION



5. Conclusion

The report outlines where potential deficiencies have been identified for consideration by the project manager, designer and/or engineer.

The findings and opinions in the report are based on the examination of the audit scope at Rosehill Racecourse as part of the Sydney Metro West construction project. The Auditors have endeavoured to identify features of the design that could be modified or removed to improve safety, although it must be recognised that safety cannot be guaranteed. While every effort has been made to ensure the accuracy of this report, it is made available strictly on the basis that anyone relying on it does so at their own risk without any liability to the Auditors.



Date: 29.11.2024

Date: 29.11.2024

Date: 29.11.2024

Item	Reference	Comment	Client's Response/Action for Resolution	Close out Date
1	Unwin Street, western end and at the limit of changed conditions.	The construction egress point provides a limited acceleration lane for construction traffic to accelerate and merge. It is also at much lower angle that would normally be required for a high angle driveway (typically 70 – 90 degree approach angle) which may result in difficulty for construction traffic to observe oncoming traffic. It is also unclear if there is any gawk screens intended to be installed on the blue barriers, which would further restrict the SISD visibility of construction traffic exiting. It is also unclear if mitigation measures may be in place for this arrangement that would alleviate the need for approach angle and SISD requirements. Poor visibility, and no further controls may increase the likelihood of a side-swipe or side impact incident with a member of public, although noting the low speed and tight turn would see the severity be relatively low	No construction vehicle movements are expected under this set-up. If construction vehicles operate full traffic control measures will be in place.	29/11/2024
2	Unwin Street, western end and at the limit of changed conditions.	There is a pedestrian access line (assumed) shown in yellow. The sight distance requirements for pedestrians crossing the road at the site egress may not be achieved depending on gawk screens, or the positioning of any construction vehicles leaving the worksite. This may result in pedestrians being stuck with construction traffic exiting, and approaching public traffic resulting in hesitation, or attempting to cross with insufficient gaps available. This may result in a low speed impact between vehicle and pedestrian.	Noted. Traffic controllers will be on hand to assist any pedestrians as required. As per item 1 if construction vehicles operate full traffic control measures will be in place.	29/11/2024
3	Unwin Street, westbound adjacent the works area	Based on the drawings it is unclear if the path for pedestrians on the northern side of the road will be suitable of accommodating DDA compliance, or if there will be trip hazards and challenges. It is noted that pedestrian volumes are very low in the area, or related typically to the construction traffic although some weekend events may attract additional pedestrian access requirements. Poor provision of pedestrian access may result in trips and fall incidents.	Noted. Traffic controllers will be on hand to assist any pedestrians as required.	29/11/2024
4	Unwin Street – general note	It is unclear from the plans if delineators are proposed for barriers and end terminals. It is typically a requirement for NSW roads to provide delineation. Insufficient delineation may result in an increased likelihood of run-off road incidents involving road furniture. It is also unclear of the lighting arrangements on site for out of hours operation.	Noted.	29/11/2024



Project:	Sydney Metro West – Western Tunnelling Package
Report Title:	Road Safety Audit Report - Detailed design stage Unwin Street northern diversion
Prepared for:	Gamuda & Laing O'Rourke Consortium (GLC)

Document Reference

Project Number	Document Type	Sequential Number	Revision Suffix
331225	RPT	01	A

Client Details

Client Organisation: Gamuda & Laing O'Rourke Consortium (GLC)

Client Representative: [REDACTED]

Position: Traffic Manager

Email: [REDACTED]

Mobile: [REDACTED]

Auditor Organisation Details

Auditor Organisation: Case Traffic Solutions Pty Ltd

Contact: [REDACTED]

Email: [REDACTED]

Mobile: [REDACTED]

Revision History

Revision	Date	Description	Prepared By	Issued By
A	05/09/2024	Road Safety Audit Report Detailed design stage Unwin Street northern diversion	Ben McLean	Ben McLean

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1 Introduction

1.1 Background

The Sydney Metro West – Western Tunnelling Package involves nine kilometres of twin metro rail tunnels between Westmead and Sydney Olympic Park, excavation for two new metro stations, a stabling and maintenance facility at Clyde and a precast facility at Eastern Creek.

1.2 Audit Scope

This report documents the findings of a detailed design stage Road Safety Audit. The audit involved reviewing the design documentation provided for the proposed Unwin Street northern diversion traffic arrangements (long term lane closure and shuttle flow operations) and associated long-term worksite located at Unwin Street, Rose Hill between Shirley Street and James Ruse Drive. This Road Safety Audit has been conducted following the general principles detailed in Austroads (2022) Guide to Road Safety Part 6: Road Safety Audit. An audit brief was received.

1.3 Location

Figure 1 provides a map of the audit site showing Unwin Street with James Ruse Drive to the west, Rosehill Racecourse to the north and Shirley Street to the east.



Figure 1 – Audit location

1.4 The Audit Team

The audit was undertaken by CaSE Traffic & Transport Solutions and the details of the audit team are provided below:

Auditor ref no.	Name	Role	Organisation
RSA-02-0693	[REDACTED]	Lead Auditor	TMS Pty Ltd
RSA-07-1659	[REDACTED]	Senior Auditor	Case Traffic Solutions

1.5 Commencement Meeting

On 02 September 2024 a commencement email and audit brief were received from GLC's Traffic Manager requesting a Detailed Design stage audit be conducted on the proposed Unwin Street northern diversion traffic arrangements.

1.6 Completion Meeting

A completion meeting will be scheduled upon request by the Project.

1.7 Documentation provided by the client

The documentation reviewed by the RSA team as part of the audit includes only the listed documentation below which was provided by the client. Any additional documentation not listed below has not been considered or reviewed as part of this road safety audit.

Document Number	Document Name	Revision	Date
P0153-DTAL-0000-RW-DRG-101001, P0153-DTAL-0000-RW-DRG-101002	Unwin Street road alignment and detail plan Stage 1 and 2	A	04/09/2024
P0153-DTAL-0000-RW-DRG-201001, P0153-DTAL-0000-RW-DRG-201002	Unwin Street road alignment and detail plan typical sections	A	04/09/2024
P0153_SSD-PART 1, P0153_SSD-PART 2	Unwin Street stopping sight distance checks Part 1 and 2	-	04/09/2024
P0153_TURNPATHS-PART 1, P0153_TURNPATHS-PART 2	Unwin Street turning path checks Part 1 and 2	-	04/09/2024
SMWSTWTP-GLO-RSH-TF-PLN-000002	Unwin Street Northern Diversion Construction Traffic Management Plan	A	02/09/2024

1.8 Site Inspections

The audit team also completed a desktop inspection on 04 and 05 September 2024 using information from Nearmap and SixMaps.

1.9 Previous RSA

Nil.

1.10 Background data

1.10.1 Crash History

No crash history data was provided or requested.

1.10.2 Traffic and Speed Data

No traffic and/or speed data was provided or requested.

1.10.3 Vulnerable Road User Data

No vulnerable road user data was provided or requested.

1.11 Exclusions / Not Assessed

Nil.

1.12 Appendices

Appendix A – Audit Findings

2 Methodology

The methodology generally follows the recommendations described in Austroads (2022), Guide to Road Safety Part 6: Road Safety Audit and TfNSW Guidelines for Road Safety Audit Practices 2011. It is a formal examination of the proposed or existing roads and road related areas from the perspective of all road users, with the intention of identifying road safety deficiencies and areas of risk that could lead to road crashes.

All the findings described in this report are considered by the audit team to require action to improve the road safety outcomes of the project and to minimise the risk of crash occurrence and reduce potential crash severity. The audit team has examined and reported only on the road safety implications as presented and has not examined or verified the compliance of the road layout to Austroads guides or Australian Standards specifications, or any other criteria.

2.1 The Safe System in Road Safety Audit

The aim of the Safe System findings is to focus the RSA process on considering safe speeds and by providing forgiving roads and roadsides. This audit has focused on the specific crash types that are known to result in higher severity outcomes at relatively lower speed environments to meet Safe System requirements of reducing the risk of fatal and serious injury crashes. The indicative speeds provided by the Safe System represent the 10% likelihood of a fatality (or 90% survivability) for the crash type. The likelihood of sustaining serious injuries is significantly higher than the likelihood of a fatality at these speeds. The exposure and likelihood of crash occurrence is considered for all findings, focusing on those that have the potential to exceed these threshold speeds.

2.2 Determining risk level of audit findings

The following risk matrix content extracted from Austroads Guide to Road Safety Part 6: Road Safety Audit (2022) has been adhered to determine the risk level of each audit finding:

The two risk parameters and their categories to be considered are likelihood and severity as follows:

Likelihood	Description
Almost certain	Occurrence once per quarter
Likely	Occurrence once per year
Possible	Occurrence once per year to once every three years
Unlikely	Occurrence once every three years to once every seven years
Rare	Occurrence less than once every seven years

Severity	Description
Insignificant	Property damage
Minor	Minor first aid
Moderate	Major first aid and/or presents to hospital (not admitted)
Serious	Admitted to hospital
Fatal	At scene or within 30 days of crash

Austroads RSA risk matrix

			Severity				
			Insignificant	Minor	Moderate	Serious	Fatal
Likelihood <i>(includes exposure)</i>	Almost certain	One per quarter	Medium	High	High	Extreme (FSI)	Extreme (FSI)
	Likely	Quarter to 1 year	Medium	Medium	High	Extreme (FSI)	Extreme (FSI)
	Possible	1 to 3 years	Low	Medium	High	High (FSI)	Extreme (FSI)
	Unlikely	3 to 7 years	Negligible	Low	Medium	High (FSI)	Extreme (FSI)
	Rare	7 years +	Negligible	Negligible	Low	Medium (FSI)	High (FSI)
							Safe System Crash outcome threshold

The corresponding priorities for mitigation are categorised as:

		Action
Negligible	No action required	
Low	Should be corrected or the risk reduced if the treatment cost is low	
Medium	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high	
High	Should be corrected or the risk significantly reduced, even if the treatment cost is high	
Extreme	Must be corrected regardless of cost	

No definitive guidance can be given as to the respective monetary values of the terms 'low', 'moderate' or 'high' regarding treatment costs, but it is expected that consideration against the total project cost would be an important factor when categorising mitigation of each risk.

The risk matrix above is aligned to Safe System principles and has been designed to be used with consideration of a severity guidance sheet which was developed by the PWG (Figure 10.3).

Figure 10.3: The severity guidance sheet – to be used with the risk matrix (Figure 10.2)

		Crash Speed (km/h)										
		< 10	10	20	30	40	50	60	70	80	90	100
Crash Type	Pedestrian (vs HV)	<p>The diagram shows a diagonal band of increasing injury severity. The band starts at the bottom left as 'Minor Injury' and slopes upwards and to the right through 'Moderate Injury' and 'Serious Injury' to 'Fatal' at the top right. The background is dark gray, and the band is lighter gray.</p> <th data-kind="ghost"></th>										
	Cyclist (vs HV)											
	Motorcyclists (vs HV)											
	Pedestrian (vs car)											
	Cyclist (vs car)											
	Pole/Tree Impact (car)											
	Motorcyclists (vs car)											
	Side Impact (HV vs car)											
	Side Impact (car vs car)											
	Head On (HV vs car)											
	Head On (car vs car)											

It is stressed that the information contained within the severity guidance sheet is a general indication only and that professional engineering judgement is required with its usage.

2.3 Road Safety Audit findings

Appendix A provides details of the road safety hazards and risks identified in this road safety audit, and the features that may increase the likelihood of a crash occurring and the features that may increase injury severity should a crash occur. No feature that may increase crash likelihood resides in isolation, potentially there are several features that, if occurring together, may change the risk profile of the road. The audit findings and recommendations are offered for the client to consider, prioritise, respond to and act upon.

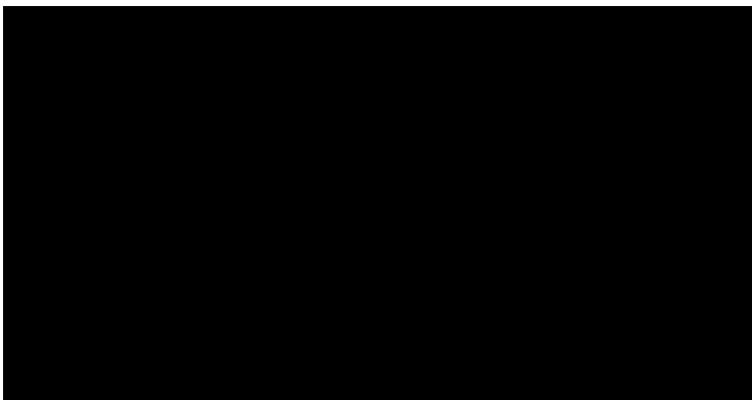
2.4 Disclaimer

This report contains findings and risk ratings based on the examination of the relevant documentation and/or site. The report is based on the conditions viewed on the day and time of each site inspection and as described in Section 1.2 Audit Scope. This report is relevant at the time of production, and the information and data contained within was prepared with due care by the audit team. Readers should not solely rely on the contents of this report and it is strongly recommended that users seek appropriate expert advice in relation to their own circumstances. Before relying on the information in this report, users should carefully evaluate the accuracy, completeness, and relevance of the data for their purposes. The audit team is not liable to any party for any losses, expenses, damages, liabilities or claims whatsoever, whether direct, indirect, or consequential, arising out of or referable to the use of this report, howsoever caused whether in contract, tort, statute or otherwise.

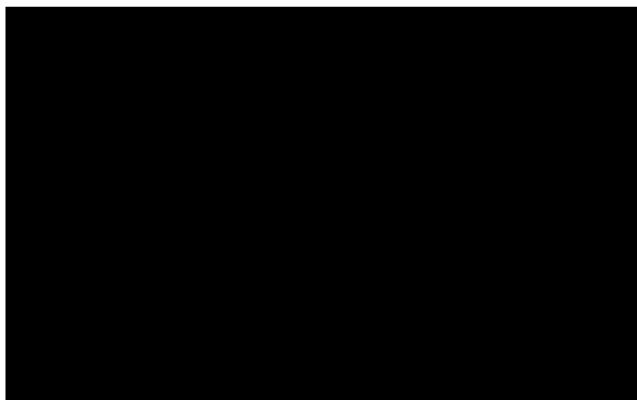
3 Audit Team Statement

This Road Safety Audit has been carried out independently of the client following the general principles detailed in Austroads (2022), Guide to Road Safety Part 6: Road Safety Audit and NSW RTA (2011) Guidelines for Road Safety Audit Practices where appropriate. The audit has been carried out for the sole purpose of identifying the foreseeable road safety risks and hazards and suggesting/recommending appropriate mitigation measures. The audit team has operated in a diligent, professional manner, within their competency, and complying with specified and recognised auditing process and practices to ensure that the specified requirements within the audit brief have been fulfilled.

Audit Team Leader



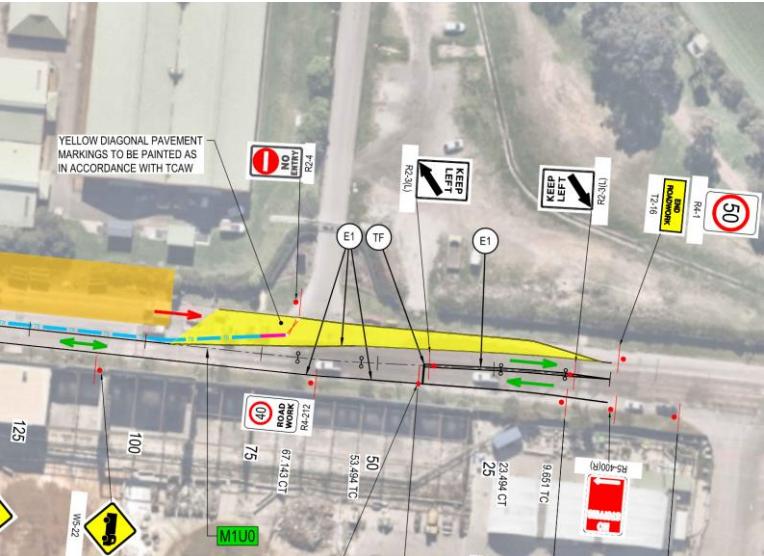
Auditor



Appendix A – Audit Findings

Audit Findings

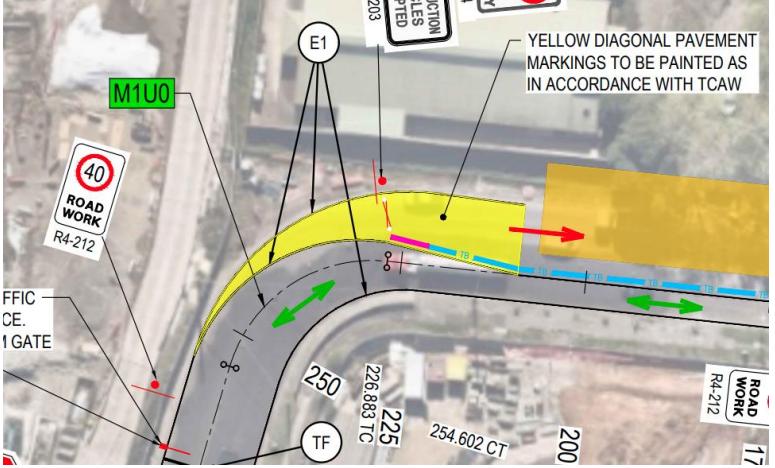
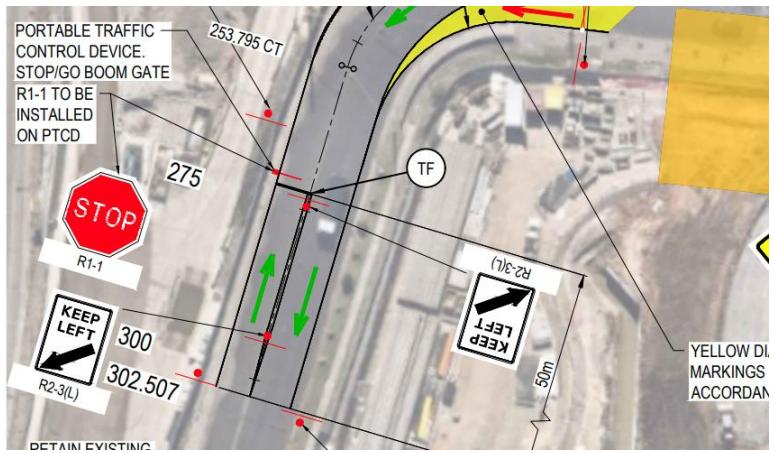
Item	Audit finding (risk/hazard, extent, crash type, location)	Treatment Recommendations	Likelihood & Severity	Road Safety Risk
1	<p>General – details of the proposed road safety barrier type and end terminal type are not provided. If the installations do not meet road agency specifications and standards, and/or dynamic deflection, working width and system conditions are not achieved this may result in greater vehicle occupant severity in the event of errant vehicle impact.</p> <p>LEGEND</p> <ul style="list-style-type: none"> — PORTABLE TRAFFIC CONTROL DEVICE STOP/GO BOOM GATE — TEMPORARY TL3 CRASH CUSHION — TB — TB — TEMPORARY TL3 CONCRETE BARRIER — CONSTRUCTION ACCESS/GATED GATE 	Consider specifying the product type and variants to be used.	Note only	-
2	The length of the proposed single-lane shuttle flow operation is approximately 220m. Details of traffic volume and composition have not been provided however based on adjacent land uses a relatively high percentage of heavy vehicles is expected and queue lengths may extend beyond the "Prepare to Stop" sign locations, increasing the risk of rear end crashes.	Review guidance and procedures within TCAWZ Section 4.6 for end of queue management and reducing end of queue collisions.	Likelihood: Possible Severity: Moderate	High
3	It is not clear what provisions have been made to maintain access to Rosehill Gardens Gate 02 during both stages of construction. If access is required to be maintained, there is no	Review and confirm requirements to maintain access to Rosehill Gardens Gate 02 during both stages of construction and consider implementing additional	Likelihood: Possible	High

	<p>intersection control and the potential for vehicles from this gate to enter the single lane shuttle flow operation in conflict with oncoming traffic, increasing the risk of head on crashes. If the access is to be closed, there is no advance warning or regulatory signage to inform road users which increases the risk of driver confusion and side impact or rear end crashes.</p> 	<p>controls and signposting to provide clear guidance to road users as appropriate.</p>	Severity: Serious	
4	<p>In Stage 1, the eastbound site exit is located within the single lane section of shuttle flow operation. It is not clear how construction vehicles exiting the worksite will be controlled to avoid conflict with turning movements at Rosehill Gardens Gate 02 or westbound traffic along Unwin Street increasing the risk of side impact and side swipe crashes.</p>	<p>Review site exit gate operations and consider how construction vehicle movements will be managed and coordinated with single lane shuttle flow operation.</p>	Likelihood: Possible Severity: Minor	Medium

				
5	In Stage 2, the westbound site exit is located within single lane section of shuttle flow operation. It is not clear how construction vehicles exiting the worksite will be controlled to avoid conflict with oncoming traffic from the south or approaching traffic from the east increasing the risk of head on and side impact crashes.	Review site exit gate operations and consider how construction vehicle movements will be managed and coordinated with single lane shuttle flow operation.	Likelihood: Possible Severity: Serious	High

			
6	<p>No advance warning signage is provided for traffic entering from the property accesses on southern side of Unwin Street to warn road users of the changed traffic conditions and the potential presence of queued vehicles increasing the risk of rear end crashes.</p>	<p>Consider providing advance warning signage for the property access to inform road users of the changed traffic conditions.</p>	<p>Likelihood: Unlikely</p> <p>Severity: Minor</p>

7	<p>Delineators are not shown for barrier end terminals and temporary road safety barriers should have adequate delineation installed to help guide road users past the work zone, particularly at night.</p>	<p>Consider showing the required type of chevron delineators to be fitted to barrier end terminals and specify the type of retro reflective delineators to be fitted to the barrier run to improve night time delineation.</p>	Likelihood: Unlikely Severity: Minor Low

			
8	<p>The use of PTCD's is proposed which requires the presence of a traffic controller. It appears that space is limited for traffic controllers to be located in safe locations with a clear escape route where they can also operate the PTCD and monitor traffic.</p>  <p>PORTABLE TRAFFIC CONTROL DEVICE. STOP/GO BOOM GATE R1-1 TO BE INSTALLED ON PTCD</p> <p>STOP R1-1</p> <p>KEEP LEFT R2-3(L)</p> <p>DETAIN EXISTING 302.507</p> <p>275 300</p> <p>253,795 CT</p> <p>TF</p> <p>YIELD</p> <p>KEEP LEFT R2-3(L)</p> <p>50m</p> <p>YELLOW DIAGONAL PAVEMENT MARKINGS TO BE PAINTED AS IN ACCORDANCE WITH TCAW</p>	<p>Ensure that a clear escape route is available for traffic controllers managing the PTCD (boom gate) and that the areas where they are stationed are well-lit at night.</p>	<p>Likelihood: Possible</p> <p>Severity: Moderate</p>

<p>Kerbside parking is currently permitted along Unwin Street and will need to be prevented on approaches to and throughout the single lane shuttle flow operation which increases the risk of side swipe crashes.</p> <p>9</p> 	<p>Consider installing No Stopping signposting and or line marking</p>	<p>Likelihood: Unlikely</p> <p>Severity: Minor</p>	<p>Low</p>
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Client: Gamuda Laing O'Rourke Consortium
Project: Sydney Metro West - Western Tunnelling Package (WTP)
Audit Stage: Detailed design stage
Date: 5/09/2024

Item	Audit Finding	Treatment Recommendation	Risk Rating	Clients Response		
				Accepted Yes / No	Proposed Corrective Action	Date Completed
1	General – details of the proposed road safety barrier type and end terminal type are not provided. If the installations do not meet road agency specifications and standards, and/or dynamic deflection, working width and system conditions are not achieved this may result in greater vehicle occupant severity in the event of errant vehicle impact.	Consider specifying the product type and variants to be used.	Note only	No	Barrier type DB80 K150 specified in section 6.2 with TfNSW acceptance and specifications included in Appendix 4.	5/09/2024
2	The length of the proposed single-lane shuttle flow operation is approximately 220m. Details of traffic volume and composition have not been provided however based on adjacent land uses a relatively high percentage of heavy vehicles is expected and queue lengths may extend beyond the "Prepare to Stop" sign locations, increasing the risk of rear end crashes.	Review guidance and procedures within TCAWZ Section 4.6 for end of queue management and reducing end of queue collisions.	High	Yes	Traffic queues will be constantly monitored and if required additional "Prepare to Stop" signage will be implemented as required.	5/09/2024
3	It is not clear what provisions have been made to maintain access to Rosehill Gardens Gate 02 during both stages of construction. If access is required to be maintained, there is no intersection control and the potential for vehicles from this gate to enter the single lane shuttle flow operation in conflict with oncoming traffic, increasing the risk of head on crashes. If the access is to be closed, there is no advance warning or regulatory signage to inform road users which increases the risk of driver confusion and side impact or rear end crashes.	Review and confirm requirements to maintain access to Rosehill Gardens Gate 02 during both stages of construction and consider implementing additional controls and signposting to provide clear guidance to road users as appropriate.	High	Yes	Access to gate required at various times as directed by Rosehill Gardens. When required traffic control with required advance warning signage will be implemented.	5/09/2024
4	In Stage 1, the eastbound site exit is located within the single lane section of shuttle flow operation. It is not clear how construction vehicles exiting the worksite will be controlled to avoid conflict with turning movements at Rosehill Gardens Gate 02 or westbound traffic along Unwin Street increasing the risk of side impact and side swipe crashes.	Review site exit gate operations and consider how construction vehicle movements will be managed and coordinated with single lane shuttle flow operation.	Medium	Yes	Exiting vehicles will depart at traffic change over to EB flow or tag on last vehicle under EB flow. As above when required Rosehill Gardens gate will be traffic controlled.	5/09/2024
5	In Stage 2, the westbound site exit is located within single lane section of shuttle flow operation. It is not clear how construction vehicles exiting the worksite will be controlled to avoid conflict with oncoming traffic from the south or approaching traffic from the east increasing the risk of head on and side impact crashes.	Review site exit gate operations and consider how construction vehicle movements will be managed and coordinated with single lane shuttle flow operation.	High	Yes	Exiting vehicles will depart at traffic change over to WB flow or tag on last vehicle under WB flow.	5/09/2024
6	No advance warning signage is provided for traffic entering from the property accesses on southern side of Unwin Street to warn road users of the changed traffic conditions and the potential presence of queued vehicles increasing the risk of rear end crashes.	Consider providing advance warning signage for the property access to inform road users of the changed traffic conditions.	Low	Yes	Signage to be implemented as required	5/09/2024
7	Delineators are not shown for barrier end terminals and temporary road safety barriers should have adequate delineation installed to help guide road users past the work zone, particularly at night.	Consider showing the required type of chevron delineators to be fitted to barrier end terminals and specify the type of retro reflective delineators to be fitted to the barrier run to improve night time delineation.	Low	Yes	Correct right or left chevron delineators will be installed on end terminals.	5/09/2024
8	The use of PTCD's is proposed which requires the presence of a traffic controller. It appears that space is limited for traffic controllers to be located in safe locations with a clear escape route where they can also operate the PTCD and monitor traffic.	Ensure that a clear escape route is available for traffic controllers managing the PTCD (boom gate) and that the areas where they are stationed are well-lit at night.	High	Yes	Traffic Controllers will have clear escape routes and be clear of traffic. Escape routes to be monitored at all times.	5/09/2024
9	Kerb-side parking is currently permitted along Unwin Street and will need to be prevented on approaches to and throughout the single lane shuttle flow operation which increases the risk of side swipe crashes.	Consider installing No Stopping signposting and or line marking,	Low	Yes	Noted	5/09/2024

8.6 Appendix 6 – Consultation

From: [REDACTED]
To: [REDACTED]
Subject: [REDACTED]
Date: [REDACTED]
Attachments:

RHG Emergency Plan V1_8.pdf
image004.png
image003.png
image007.png

[REDACTED]
the CJP comment for resubmission.

Hopefully this is enough to close-out

Regards,

[REDACTED]

From: [REDACTED]
Sent: Wednesday, 18 September 2024 9:13 AM
To: [REDACTED]
Subject: FW: WTP - GLC - ATC - Unwin Street Planned Division Works (August - January 2025)

Morning [REDACTED]

As per our conversations we sent the Unwin Street presentation in August with fortnightly meeting being held to discuss our upcoming scope and any concerns. With a verbal approval given with a caveat where ATC were still liaising internally due to some staff changes within the management of the stables.

Please see below my email requesting this no objection in writing. I will work through with ATC any concerns, changes and limitations. They are aware this work must occur as they will be getting a new driveway to their boundary and this area will be excavated and have limited access.

Kind Regards

[REDACTED]

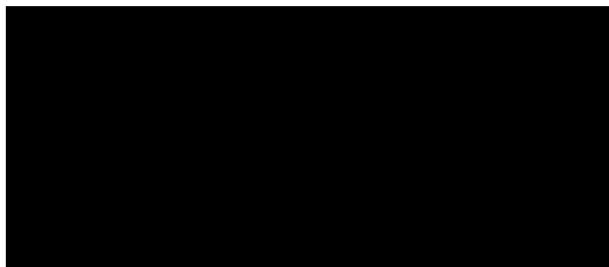
Subject: RE: WTP - GLC - ATC - Unwin Street Planned Division Works (August - January 2025)

Hi [REDACTED]

Can we please confirm that the closure of the ATC Unwin Street western access gate can be closed for a period of time from Oct - Nov to allow the new diversion works to be completed. There is a time where a new driveway and road will be built with limited access, but during the other times emergency access can be accommodated if needed. A blanket approach would be easier to manage. I will be completing fortnightly updates and in close communication with yourself so I feel this is the best option. I have an old copy of your emergency plan (attached) and don't see it as a key emergency access gate. Understanding you have an updated version.



Kind Regards



From: [REDACTED]
Sent: Thursday, 22 August 2024 6:07 PM

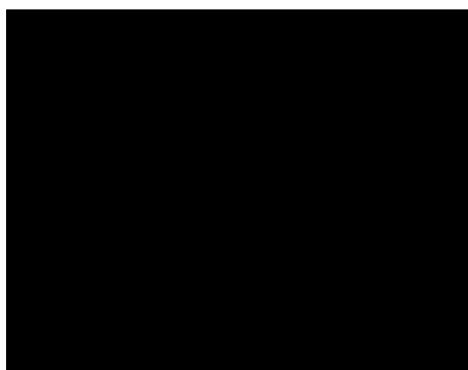
Subject: RE: WTP - GLC - ATC - Unwin Street Planned Division Works (August - January 2025)

Thanks [REDACTED]

Looping in [REDACTED] for visibility as well.

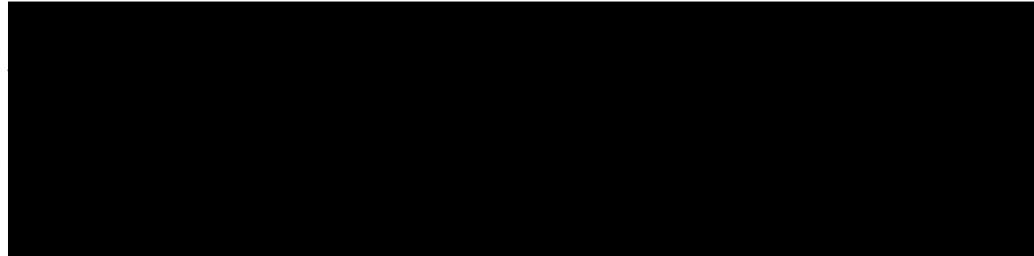
John let me know if you want to discuss.

Kind Regards,



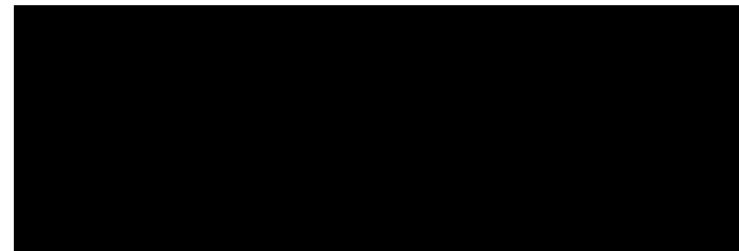
At MostynCopper, it is not expected that you will read, reply or action emails sent outside of your regular business hours. If you receive an email after normal office hours,

please do not feel the need to respond outside of your normal working hours.



YES, all ATC stakeholders will be given access, as per our past scheduled weekend shutdowns.

Kind Regards



Subject: Re: WTP - GLC - ATC - Unwin Street Planned Division Works (August - January 2025)

Thanks [REDACTED] confirming with the road closures ATC stakeholders will still be granted access? As you can see by the schedule we have a busy remainder of the year with racing and events.

With thanks

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Subject: WTP - GLC - ATC - Unwin Street Planned Division Works (August - January 2025)

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Morning Andrew,

As per our conversations and the fortnightly minutes please find attached the presentation for the upcoming ongoing works on Unwin Street. This includes weekend closures.

The team will limit any delays on Unwin Street but with all these works it might be worth consulting uses of the road and offer the alternate route of Grande Ave.

Also the Clyde Dive - HV protection slab scope has been put on hold (tbc) with a re design required due to the location of the Actual (High Voltage Cables). This is all noted in the upcoming minutes for Monday.

Kind Regards





Alison Road, Randwick, NSW 2031

australianturfclub.com.au

We have flexible working hours at the Australian Turf Club. If you receive an email from me outside of normal business hours, I'm not expecting you to read or reply until normal business hours.

CONTRACT NO.	DOCUMENT NO.	TITLE	VER	STATUS	NO.	DATE	COMPANY	RAISED BY	REVIEW DOC. NO.*	DOCUMENT REF*	DEED REF*	COMMENTS / RESPONSE	COMMENT CATEGORY*	LINKED ITEM NO	CLOSED OUT
WTP	SMWSTWTP-GLO-RSH-TF-PLN-000002	Sydney Metro West - WTP - Construction Traffic Management Plan - Unwin St - Northern Diversion Construction - September - December 2024	A.01	S3	01	10/09/2024	SCO	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Section 2.8, 3.8. 4.8 & 5.8	-	More detail is required in relation to how the emergency exit gate from Rosehill racecourse will operate during the closure in either direction.	Observation		N
					24/09/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Section 2.8, 3.8. 4.8 & 5.8	-	Sections 2.8 & 3.8 updated as works only impacts gate on these portions of works, Sections 4.8 & 5.8 updated to advise that gate will not be impacted during these portions of works. Email correspondance between Rosehill Gardens and GLC and Rosehill Gardens Emergency Management Plan included in Appendix 6	Observation		N	
				02	10/09/2024	SCO	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	2.9 & 4.9	-	All temporary ramps must comply with AS1428.1	Observation		N	
				03	10/09/2024	SCO	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	2.9 & 4.9	-	Noted. 2.9 and 4.9 amended to include statement to comply with AS1428.1	Observation		N	
				04	10/09/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	3.1 & 5.1	-	56hr closures will be supported, provided all ROL requirements are approved and there are no race meets or major events at Rosehill racecourse on those weekends.	Observation		N	
				05	18/09/2024	SKB	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	3.1 & 5.1	-	Noted. One race day conflicts with proposed closure 6-9 December. Section 5 amended to propose closure from 1900 Saturday 7th Decemeber (after event or as agreed with CJP) to Monday 0500 9 December	Observation		N	
				06	18/09/2024	SKB	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002.A.S3.A.01	3.2 & 5.2	-	TGS are for reference only.	Observation		N	
				07	18/09/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002.A.S3.A.01	Section 1.4, Section 2.1	-	Noted	Observation		N	
				08	18/09/2024	SKB	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002.A.S3.A.01	Section 1.4, Section 2.1	-	Section 1.4 and 2.1. Please update the proposed schedule.	Observation		N	
				09	24/09/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002.A.S3.A.01	P0153-DTAL-0000-RW-DRG-101001	SM-W-WTP-PS-2648	The requirement SM-W-WTP-PS-2648 states "The Tunnelling Contractor must ensure road works including geometry, pavement, barriers, cycle lanes, kerbs and gutters, footpaths, markings, signage and traffic controls, and layout design comply with the relevant Authorities standards, spec?cations and guidelines, including: Australian Standards (MSF car parks)" and has potentially not been met. Please ensure all traffic sign are upto standard AS1742.3 Traffic Control for Works on Roads	Potential Non-Compliance		N	
				10	24/09/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002.A.S3.A.01	P0153-DTAL-0000-RW-DRG-101001	SM-W-WTP-PS-2648	All signage is to TfNSW standards and are available as per the TfNSW sign register.	Potential Non-Compliance		N	
				11	18/09/2024	SKB	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002.A.S3.A.01	P0153-DTAL-0000-RW-DRG-101001	SM-W-WTP-GS-683	The requirement SM-W-WTP-GS-683 states "The Tunnelling Contractor must plan traf?c and transport management associated with the Tunnelling Contractor's Activities to avoid delays and detours that will inconvenience the Affected Public, including Road Users, and Vulnerable Road Users (as de?ned in the Construction Traf?c Management Framework (CTMF)), particularly during periods of heavy traf?c ?ows" and has potentially not been met. Please ensure there are no obstructions to any neighborhood access points, including, but not limited to, the Gate 2 entry of Rose Hill Gardens.	Minor Non-Compliance		N	
				12	24/09/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002.A.S3.A.01	P0153-DTAL-0000-RW-DRG-101001	SM-W-WTP-GS-683	Access to Rosehill Gardens Gate 2 is always accessible. Drawings updated to show full traffic control of gate.	Minor Non-Compliance		N	
				13	18/09/2024	SKB	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002.A.S3.A.01	P0153-DTAL-0000-RW-DRG-101001	SM-W-WTP-PS-2647	The requirement SM-W-WTP-PS-2647 states "The Tunnelling Contractor must ensure road works including geometry, pavement, barriers, cycle lanes, kerbs and gutters, footpaths, markings, signage and traffic controls, and layout design comply with the relevant Authorities standards, spec?cations and guidelines, including: Austroads (internal and external roads)" and has not been met. The traffic control for the adjacent local road near the Gate 2 entry of Rose Hill Gardens is missing.	Actual Non-Compliance		N	
				14	24/09/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002.A.S3.A.01	P0153-DTAL-0000-RW-DRG-101001	SM-W-WTP-PS-2647	Drawings updated to show full traffic control of gate. Signage added to other road which is construction entry/exit gate.	Actual Non-Compliance		N	

CONTRACT NO.	DOCUMENT NO.	TITLE	VER	STATUS	NO.	DATE	COMPANY	RAISED BY	REVIEW DOC. NO.*	DOCUMENT REF*	DEED REF*	COMMENTS / RESPONSE	COMMENT CATEGORY*	LINKED ITEM NO	CLOSED OUT
WTP	SMWSTWTP-GLO-RSH-TF-PLN-000002	Sydney Metro West - WTP - Construction Traffic Management Plan - Unwin St - Northern Diversion Construction - September 2024 - February 2025	C.02	S3	13	3/12/2024	SCO	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Missing Content.	-	The CTMP proposes a long term one lane alternate flow setup, however no assessment has been made of the impact of the proposal.	Observation		N
						16/12/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Missing Content.	-	Section 4.6 - Impacts on Traffic flow updated to include volume assessment based on EIS volumes.	Observation		N
					14	3/12/2024	SCO	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Clause 4.2 P0153-DTAL-0000-RW-DRG-101002	-	Show the location of the proposed traffic controllers on the drawing.	Observation		N
						16/12/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Clause 4.2 P0153-DTAL-0000-RW-DRG-101002	-	Drawing updated to show TC locations	Observation		N
					15	3/12/2024	SCO	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Clause 4.2 P0153-DTAL-0000-RW-DRG-101002	-	To avoid conflicts construction vehicles can only exit site when directed by traffic controllers.	Observation		N
						16/12/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Clause 4.2 P0153-DTAL-0000-RW-DRG-101002	-	Noted. Statement added Section 4.4 Construction Traffic Generation	Observation		N
					16	3/12/2024	SCO	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Clause 4.2 P0153-DTAL-0000-RW-DRG-101002	-	The yellow chevrons and C1 lines to be provided at the site entry and exit are to be shown on the drawings.	Observation		N
						16/12/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Clause 4.2 P0153-DTAL-0000-RW-DRG-101002	-	Drawing updated to include chevrons and C1 lines	Observation		N
					17	3/12/2024	SCO	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Clause 5.2 P0153-DTAL-0000-RW-DRG-101003	-	Show the location of the proposed traffic controllers on the drawing.	Observation		N
						16/12/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Clause 5.2 P0153-DTAL-0000-RW-DRG-101003	-	Drawing updated to show TC locations	Observation		N
					18	3/12/2024	SCO	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Clause 5.2 P0153-DTAL-0000-RW-DRG-101003	-	To avoid conflicts construction vehicles can only exit site when directed by traffic controllers.	Observation		N
						16/12/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Clause 5.2 P0153-DTAL-0000-RW-DRG-101003	-	Noted. Statement added Section 5.4 Construction Traffic Generation	Observation		N
					19	3/12/2024	SCO	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Clause 5.2 P0153-DTAL-0000-RW-DRG-101003	-	The yellow chevrons and C1 lines to be provided at the site entry and exit are to be shown on the drawings.	Observation		N
						16/12/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Clause 5.2 P0153-DTAL-0000-RW-DRG-101003	-	Drawing updated to include chevrons and C1 lines	Observation		N
					20	3/12/2024	SCO	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Clause 6.3 Table 6	-	Note the proposed message 'LIVE/TRAFFIC.COM' is too long. Instead use 'LIVE/TRAFFIC./COM' over 3 lines to maintain minimum letter height.	Observation		N
						16/12/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Clause 6.3 Table 6	-	Noted. Message changed as required.	Observation		N
					21	3/12/2024	SCO	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	8.4 Appendix 4	-	Barrier specifications are not to be included in CTMPs. All barriers to be utilised are to be approved for use in NSW.	Observation		N
						16/12/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	8.4 Appendix 4	-	Noted. Appendix removed	Observation		N
					22	3/12/2024	SCO	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	8.5 Appendix 5	-	All Road Safety Audits are to be undertaken by an independent party. RSAs conducted by the same company as the traffic manager can not be considered independent.	Observation		N
						16/12/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	8.5 Appendix 5	-	RSA guidelines state that auditors must be independent of the design team and project of which this audit team was. Noting that all future RSA's will be conducted by independent audit teams outside of said Companys.	Observation		N
					23	3/12/2024	SCO	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	8.6 Appendix 6	-	Rosehill Gardens Racecourse Emergency Management Plan should not be included in a CTMP.	Observation		N
						16/12/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	8.6 Appendix 6	-	Noted. Plan removed	Observation		N
					24	6/12/2024	SMD	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Section 1.4	N/A	Second last bullet point that discusses Christmas/new year closure period references Chapter 4. Should this be Chapter 5?	Observation		N
						16/12/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Section 1.4	N/A	Chapter reference corrected to chapter 5	Observation		N
					25	6/12/2024	SMD	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Section 4.8	N/A	The first sentence is repeated twice. Please correct this.	Observation		N
						16/12/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Section 4.8	N/A	Duplication deleted	Observation		N
					26	6/12/2024	SMD	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Section 4.12	N/A	The text states 5 race days during the works period, however only 4 dates are identified. Can this be checked and updated as required?	Observation		N
						16/12/2024	GLC	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	Section 4.12	N/A	Noted. Updated and revised to 2 dates in relation to current CTMP revision date	Observation		N
					27	9/12/2024	SMD	[REDACTED]	SMWSTWTP-GLO-RSH-TF-PLN-000002	7.9 On-Site Contacts	8.2	Mark Matkovic - Project Manager is listed as in Section 7.9 Table 8 "On-Site Contacts" (Page 46) Mark left the WTP Project prior to issue of this document on 29/11/2024 replaced by Jean Francois Kiel	Observation		N

