CONSTRUCTION TRAFFIC MANAGEMENT PLAN

Sydney Metro West – Western Tunnelling Package

Unwin St Southern Tie In

December – February 2025

Document Reference #:	SMWSTWTP-GLO-CLJ-TF-PLN-000007
Current Revision:	**Rev B**
Issue Date:	**19 December 2024**

Document Details

Document Title	**Unwin St Southern Tie In**
Project Name	**Sydney Metro West – Western Tunnelling Package**
Client	**Sydney Metro**
Document Reference No.	**SMWSTWTP-GLO-CLJ-TF-PLN-000007**
Revision Date	**19 December 2024**

Revision History

A	5 December 2024	Issued to Stakeholders
B	19 December 2024	Respond to stakeholder comments

Document Authorisation

Action Type	Position	Name	Signature	Date Signed
Prepared by	Traffic Manager			19 December 2024
Reviewed by	Logistic Project Manager			19 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			19 December 2024

NOTES: *Once <u>all</u> 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 the southern tie in of Unwin St to assist in finalizing the permanent 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 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 construction of the final tie in stages

1.2 CLYDE/ROSEHILL CONSTRUCTION TRAFFIC MANAGEMENT PLANS

Table 1 - CTMPS for Clyde/Rosehill

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-CLJ-TF-PLN-000006	Unwin St and Kay St 56hr Closure	Stage 4, Stage 5 and Stage 6 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	Revision C submitted
SMWSTWTP-GLO-CLJ-TF-PLN-000007	Unwin St Southern Tie in	Construction of southern tie in portion 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 WORK ACTIVITIES

During December (pending approvals) to early February 2025 construction works needs to continue on the southern area of Unwin St to enable the full tie into the ultimate alignment.

Area of works as required is shown below in figure 1.

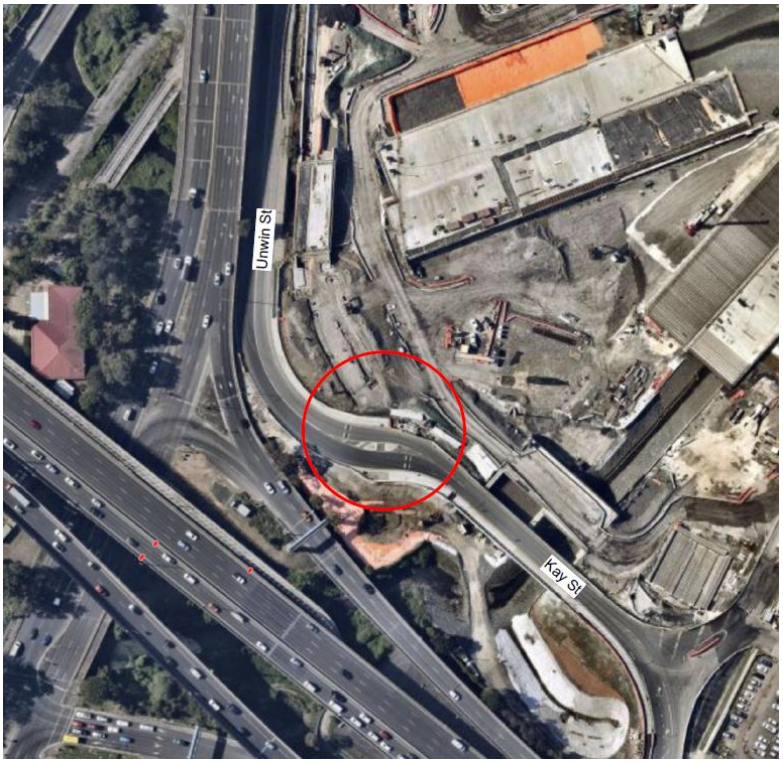


Figure 1 - aerial view of work area

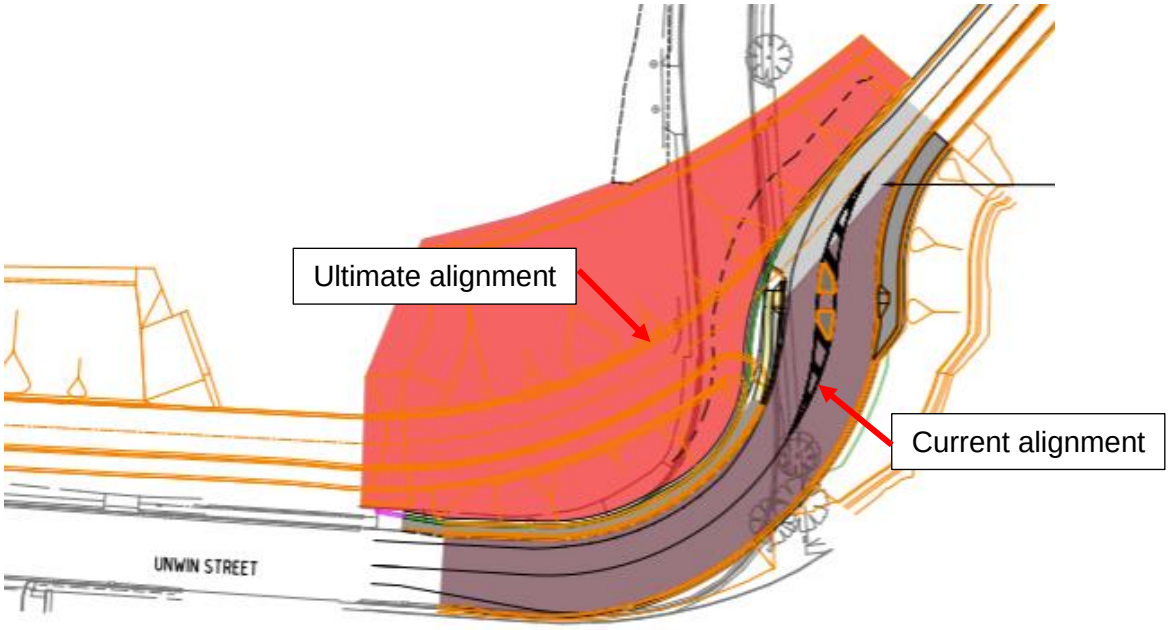


Figure 2 - Design showing current alignment with ultimate alignment

To finalize the works at the southern tie in the following works needs to be completed:

- Temporary barrier realignment
- Demolish footpath and islands
- Complete drainage tie-ins
- Complete footpath tie in
- Asphalt works including wearing course
- Line Marking and signage

2 SITE OPERATIONS

2.1 OPERATING CONDITIONS

The works on Unwin St will involve a lane closure managed under stop-slow/alternate shuttle flow

General traffic will be permitted under the traffic control measures.

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.

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 areas and these volumes are highlighted in the red boxes below in table 10-16

Table 10-16: Clyde stabling 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 x B-doubles this would equate to estimated maximum queue of up to 90m.

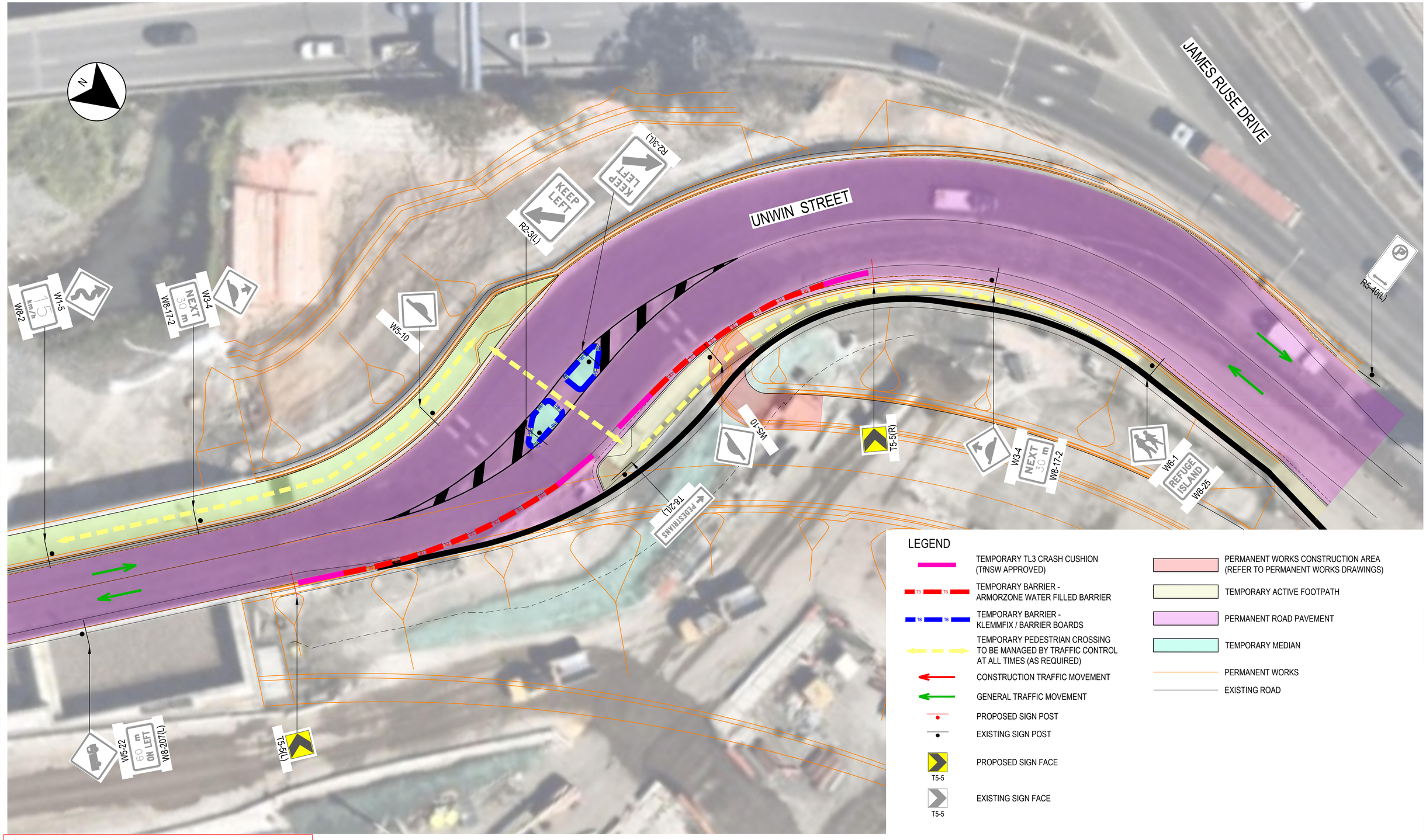
With works occurring on the northern portion of Unwin St as well the distance between traffic control stations is approximately 160m. Given estimated queue lengths these work areas should be able to operate simultaneously. If any queues develop and are unable to managed effectively then these works will be shifted to intra-peaks and nights. Any queues longer than 100m will be considered unacceptable.

During some nights a closure of Unwin St is also proposed. This would be short-term in that it would be set up at night and removed each morning as required under licensed ROLs.

From the 1st February – 3rd February it is proposed to close Unwin St over the weekend to allow remaining major works to be completed on the northern side of Unwin St. This has been conditionally approved under a separate CTMP - SMWSTWTP-GLO-RSH-TF-PLN-000002. Given Unwin St will be closed works will also be carried out on this southern section to assist in completing all works in preparation for an estimated opening of Unwin St on 7th February 2025.

2.2 PROPOSED STAGE PLAN

Staging Plan P0153-DTAL-0000-RW-DRG-101006 will be in place for the duration of these works. All existing signage will remain the same as in place already. This plan is shown over page which shows proposed new barrier alignment to protect work area outside of work shifts, with swept paths also included.



LEGEND

- TEMPORARY TL3 CRASH CUSHION (TfNSW APPROVED)
- TEMPORARY BARRIER - ARMORZONE WATER FILLED BARRIER
- TEMPORARY BARRIER - KLEMMFIX / BARRIER BOARDS
- TEMPORARY PEDESTRIAN CROSSING TO BE MANAGED BY TRAFFIC CONTROL AT ALL TIMES (AS REQUIRED)
- CONSTRUCTION TRAFFIC MOVEMENT
- GENERAL TRAFFIC MOVEMENT
- PROPOSED SIGN POST
- EXISTING SIGN POST
- PROPOSED SIGN FACE (T5-5)
- EXISTING SIGN FACE (T5-5)
- PERMANENT WORKS CONSTRUCTION AREA (REFER TO PERMANENT WORKS DRAWINGS)
- TEMPORARY ACTIVE FOOTPATH
- PERMANENT ROAD PAVEMENT
- TEMPORARY MEDIAN
- PERMANENT WORKS
- EXISTING ROAD

DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

NOT FOR CONSTRUCTION

FILE PATH: P0153-DTAL-0000-XRF-GE-000005-LEGEND-PART6.dwg

PLOT DATE & TIME: 12/5/2024 11:21:37 PM

REFERENCES:

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

REV	DESCRIPTION	DESIGNER INITIAL/DATE	VERIFIED INITIAL/DATE	APPROVED INITIAL/DATE
A	ISSUED FOR INFORMATION	DT 05.12.24	DT 05.12.24	DT 05.12.24

COORDINATE SYSTEM: GDA2020

HEIGHT DATUM: AHD

SCALE: AS SHOWN

1:250 @ A1 0 2.5 5 7.5 10 12.5 m

DESIGN LOT CODE:

CLIENT: LAING O'ROURKE

PREPARED FOR: GAMUDA Australia

D-TAL / CASE TRAFFIC & TRANSPORT

DRAWN	F.BATHAN	05.12.24
DESIGNED	D.TALEVSKI	05.12.24
DRG CHECK	F.BATHAN	05.12.24
DESIGN CHECK	D.TALEVSKI	05.12.24
PROJ/DESIGN MNGR	D.TALEVSKI	05.12.24
APPROVED	D.TALEVSKI	05.12.24

WESTERN HARBOUR TUNNEL

UNWIN STREET
ROAD ALIGNMENT AND DETAIL PLAN

UNWIN STREET SOUTH

FILE No/DRAWING SET No:	PART	SHEET: 1 OF 1	A1	
STATUS: FOR INFORMATION	BRIDGE No:			©
DRG No. P0153-DTAL-0000-RW-DRG-101006	REV A	VER	EDMS No.	AMD No.

Plotted by BATH

TURNPATH – P0153 UNWIN STREET NORTHERN DIVERSION PART 6

UNWIN ST EASTBOUND & WESTBOUND

Design Vehicle = 26m B-DOUBLE

2.3 PROPOSED TGS

GLC will be required to install various traffic management measures to be able to complete the works. Table below provides brief of TGS required for the Unwin St southern tie-in works.

All traffic guidance schemes are attached in Appendix 1.

Table 2 - TGS brief

TGS Title	Road	Between	Direction	Traffic Control	Timing	Traffic Impact
LGP-101667-GLC188 Rev 5	Unwin St	Martha St and Shirley St	All	Stop Slow Alternate flow	Day Night Day/Night	Moderate impact. Conducted under licensed ROLs only
LGP-63822-GLC151 Rev 5	Unwin St	Colquhuon St to Wentworth St	All	Road Closure	Nights only	Moderate impact. Conducted under licensed ROLs only
LGP-63822-GLC151 Rev 5	Unwin St	Colquhuon St to Wentworth St	All	Road Closure	Saturday night – Monday morning	Moderate impact. Conducted under licensed ROLs only
NOTE:	Weekend closure approved under Unwin St Northern Diversion CTMP. LGP-63822-GLC151 attached for reference only.					

2.4 VMS

For note VMS are already in position for works on Unwin St as part of the northern diversion. These VMS will remain in place and messaging also reflects works at the southern tie-in.

VMS details have been copied from CTMP for the Unwin St Northern Diversion and are shown below in figure 3 for reference.

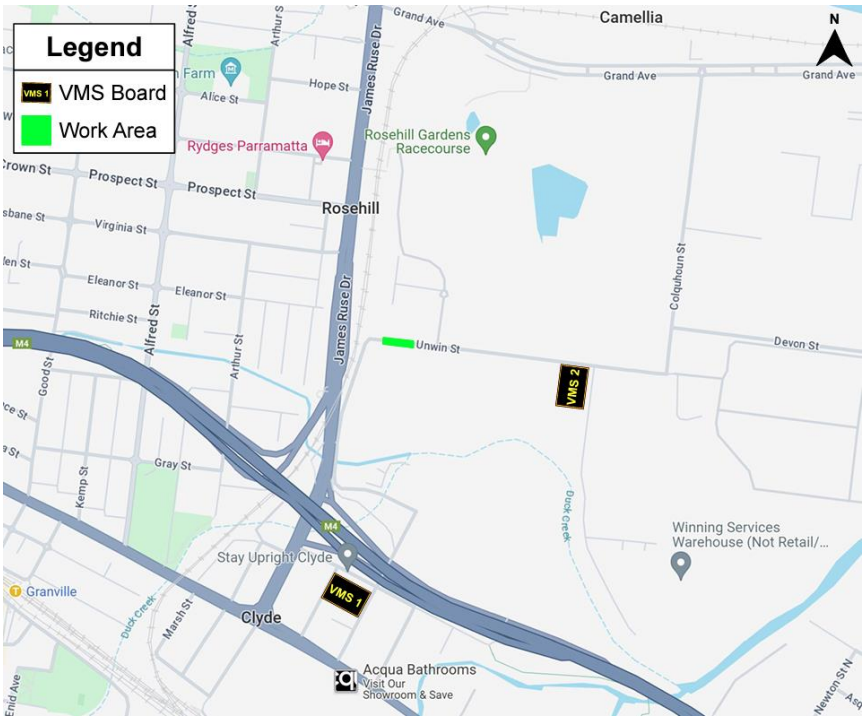
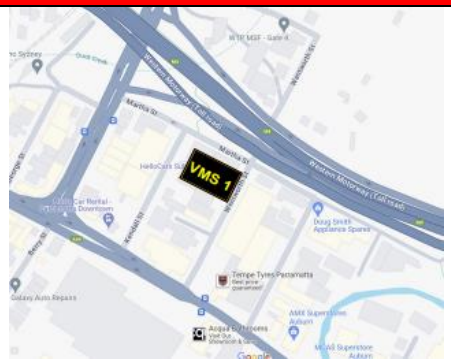
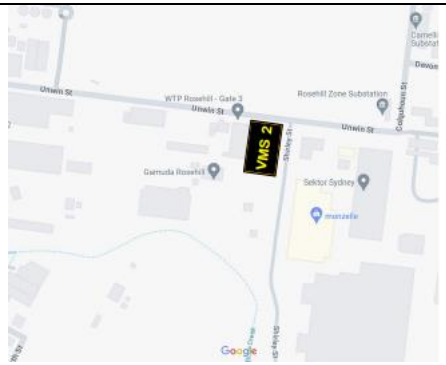


Figure 3 - VMS location map

For proposed closures of Unwin St full VMS schedule is attached in Appendix 2.

This is attached for reference only and has been extracted from approved Unwin St Northern Diversion CTMP - SMWSTWTP-GLO-RSH-TF-PLN-000002.

Table 3 - VMS schedule

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

2.5 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. 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 4 - Vehicle movements per shift

Vehicle Type	Estimated Movements Per Shift		
	In	Out	Total
Traffic Vehicles	2	2	4
Light Vehicles (work utes/support vehicles)	5	5	10
Excavator (remain on site)	1	1	2
Agi's (some shifts only)	5	5	10
Asphalt (some shifts only)	5	5	10
Total			**36**

2.6 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

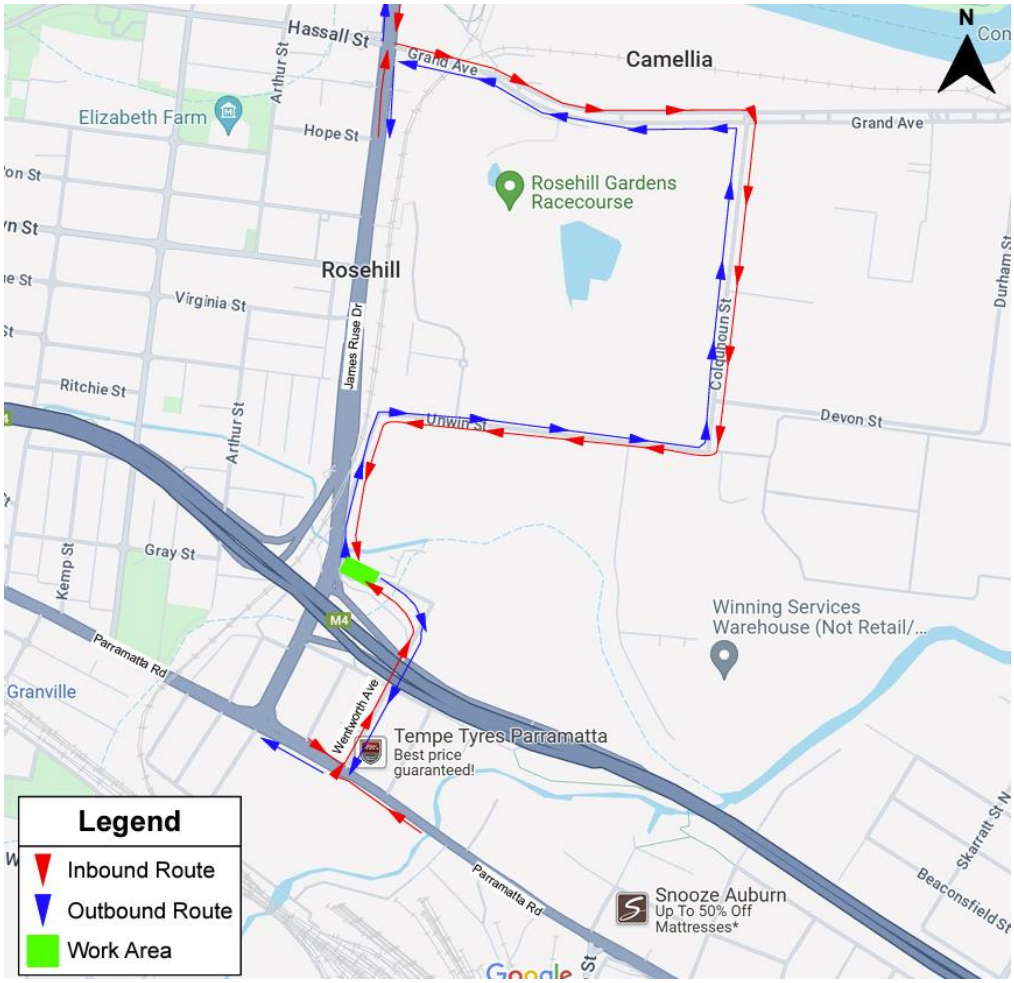


Figure 4 - Haulage Route

2.7 IMPACTS ON PARKING

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

2.8 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.

2.9 IMPACTS ON PEDESTRIANS AND CYCLISTS

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

Outside work shifts pedestrians will be able to follow the normal intended path as shown below in figure 5.

Figure 5 - Pedestrian path - no work shifts

During work shifts pedestrians will be managed by traffic controllers.

Traffic will be stopped and pedestrians permitted to cross under direction as shown below in figure 6.

Figure 6 - Pedestrian path - during work shifts

Pedestrians will be kept clear of work areas and any plant as required to

maintain safe crossing point.

2.10 IMPACTS ON PUBLIC TRANSPORT

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

2.11 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.

2.12 IMPACTS ON MAJOR EVENTS

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

Saturday 18th January
Saturday 1st February

There are also some minor functions at Rosehill Gardens during this period. GLC will ensure all traffic control measures assist in bump-in and bump-out of event traffic in line with Rosehill Gardens/ATC preferences.

3. TRAFFIC MANAGEMENT and DEVICES

3.1SIGNAGE AND SPEED LIMIT

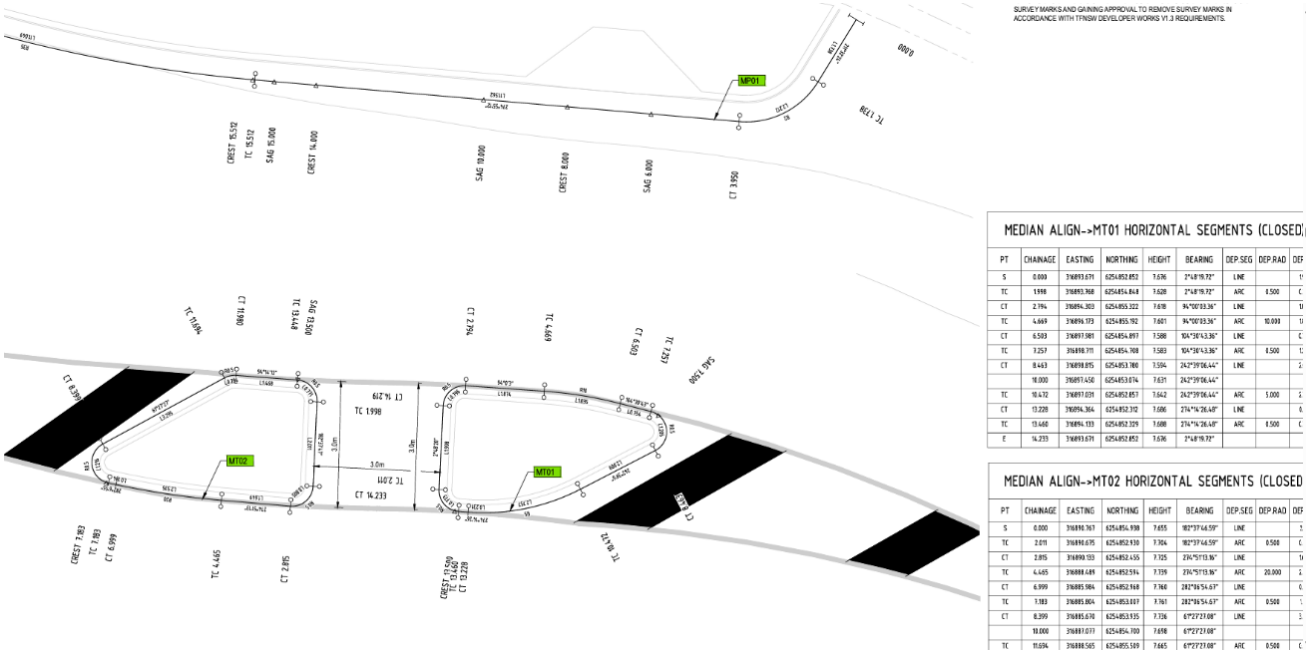
No permanent speed limit and signage changes are required. Posted speed limit through this area is 30km/h. This will be maintained. Temporary signage will be set-up and removed daily as required by relevant traffic guidance schemes.

3.2CONCRETE SAFETY BARRIERS

Concrete safety barriers will be rearranged from current configuration on the northern side only to allow for work area protection as per staging plan design. Barriers will be Accepted Road Safety Barriers Systems and Devices as per TfNSW Technical Information TS 00028:10.0

3.3TEMPORARY REFUGE ISLAND

When the refuge island is removed, it is proposed to use Klemmfix to form a temporary type island with like dimensions of the removed refuge. The original refuge design extracted from relevant CTMP is shown below in figure 7. An example of proposed set-up up is shown below in figure 8 with reference to the original design. These are only expected to be in for approximately 1-2 weeks during the tie-in works.



MEDIAN ALIGN-->MT01 HORIZONTAL SEGMENTS (CLOSED)

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	DEP.SEG	DEP.RAD	DEP
S	0.000	316893.671	6254852.852	7.676	2°48'19.72"	LINE		
TC	1.998	316893.768	6254854.848	7.628	2°48'19.72"	ARC	0.500	C
CT	2.194	316894.303	6254855.322	7.618	94°00'03.36"	LINE		
TC	4.669	316896.173	6254855.192	7.601	94°00'03.36"	ARC	10.000	
CT	6.503	316897.981	6254854.897	7.588	104°36'43.36"	LINE		C
TC	7.257	316898.711	6254854.708	7.583	104°36'43.36"	ARC	0.500	
CT	8.463	316898.875	6254853.780	7.594	242°39'06.44"	LINE		
	10.000	316897.450	6254853.074	7.631	242°39'06.44"			
TC	10.472	316897.039	6254852.857	7.642	242°39'06.44"	ARC	5.000	
CT	13.228	316894.364	6254852.312	7.686	274°14'26.68"	LINE		
TC	13.460	316894.133	6254852.329	7.688	274°14'26.68"	ARC	0.500	C
E	14.233	316893.671	6254852.852	7.696	2°48'19.72"			

MEDIAN ALIGN-->MT02 HORIZONTAL SEGMENTS (CLOSED

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	DEP.SEG	DEP.RAD	DEP
S	0.000	316894.767	6254854.938	7.655	182°37'44.59"	LINE		
TC	2.011	316894.635	6254852.930	7.704	182°37'44.59"	ARC	0.500	C
CT	2.895	316893.133	6254852.455	7.725	234°57'13.36"	LINE		
TC	4.465	316888.489	6254852.594	7.739	234°57'13.36"	ARC	20.000	
CT	6.999	316885.984	6254852.968	7.760	282°46'54.63"	LINE		C
TC	7.183	316885.804	6254853.007	7.761	282°46'54.63"	ARC	0.500	
CT	8.399	316885.670	6254853.935	7.726	67°27'23.08"	LINE		
	10.000	316887.077	6254854.700	7.698	67°27'23.08"			
TC	11.694	316888.565	6254855.589	7.665	67°27'23.08"	ARC	0.500	C

Figure 7 - Original Refuge Design

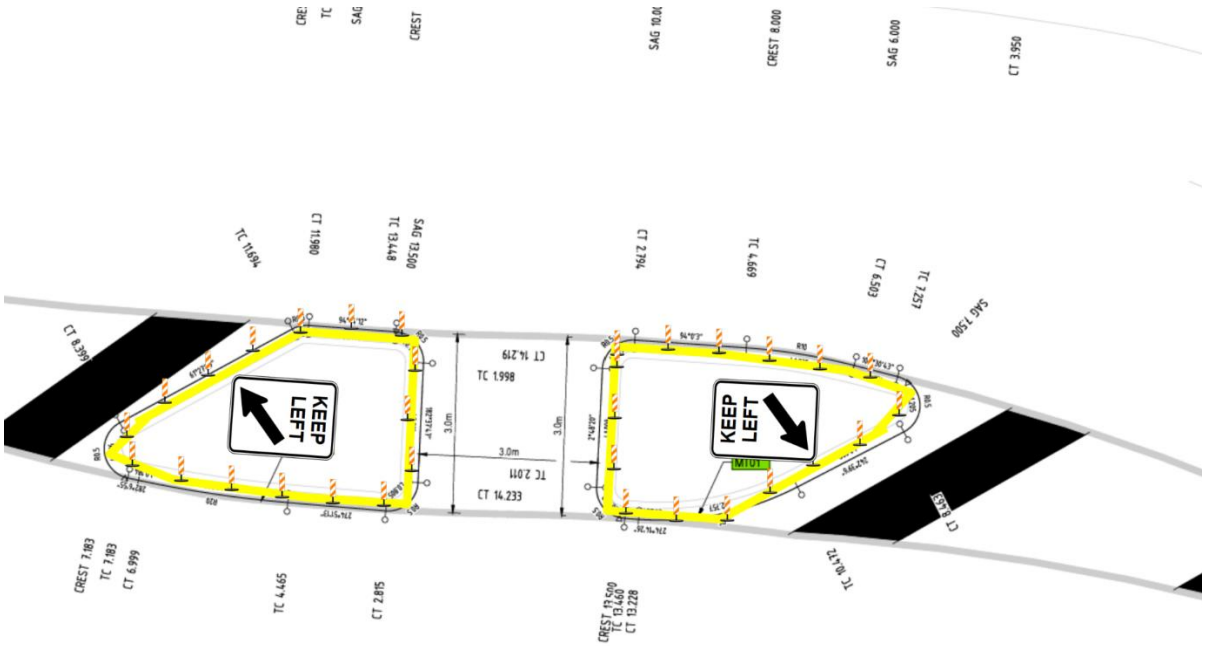


Figure 8 - Proposed temporary refuge island

3.4EMERGENCY 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.

3.5ON-SITE CONTACTS

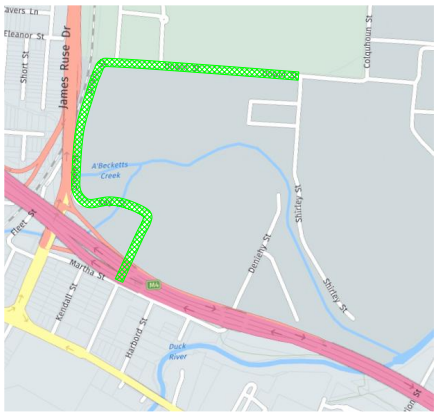
Table 5 - Site contacts

Priority	Name	Position	Organisation	Contact #	Email
1st	Jean-Francois Kielt	Project Manager	GLC	0412 666 301	jeanfrancois.kielt@glcwtp.com.au
2nd	George Silvino	SPE	GLC	0433 297 789	George.Silvino@glcwtp.com.au
3rd	Chad Richmond	Superintendent	GLC	0419 382 572	chad.richmond@glcwtp.com.au
4th	Robin Lopez	Logistic Manager	GLC	0461 372 455	robinlopez@glcwtp.com.au
5th	Scott McMichael	Traffic Manager	GLC	0412 051 652	scottmcmichael@glcwtp.com.au

4. APPENDICES

4.1 APPENDIX 1 – TRAFFIC GUIDANCE SCHEMES

Locality Map

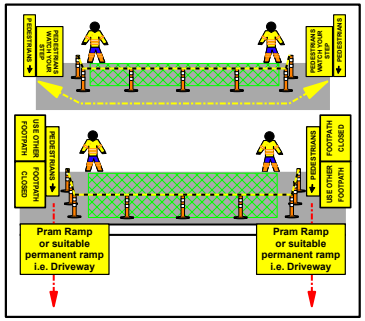


Personnel Requirements	Asset Requirements
Traffic Controllers	4
UTE	1
CONE TRUCK	0
ESAS	0
TMA	0
ESTOP	0
BOOM GATE	2
EXTRA REQUIREMENTS	0

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

Legend

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



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

Pedestrian Management Options Analysis

Options Available	THROUGH	PAST	AROUND
Options Selected		Selected	

Cyclist Management Options Analysis

Options Available	THROUGH	PAST	AROUND
Options Selected		Selected	

Traffic Management Options Analysis

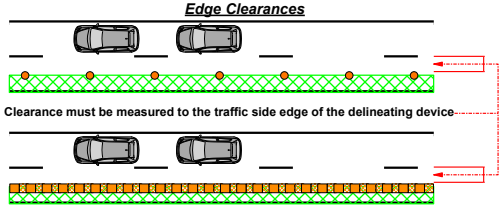
OPTION	DESCRIPTION	METHOD TYPE	TGS SELECTED
AROUND	Vehicles detoured via existing road network or sidetrack	Full road closure / One-way road closure / Detour	Selected
PAST	Vehicles past delineated work zones	Lateral Shift	
		Shoulder closure	
		Contraflow (2 way traffic maintained)	
		Single or Multi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

Dimension "D" (Main Roads)	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

Edge Clearances



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

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

Delineation Spacing

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

TGS Verification Checklist:

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

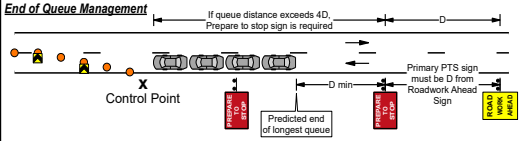
Traffic Guidance Scheme Modifications:

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

Traffic Guidance Scheme Installation:

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

End of Queue Management

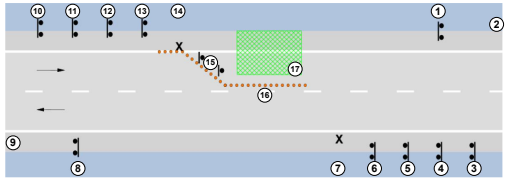


Estimated end of queue lengths to be noted here:_____

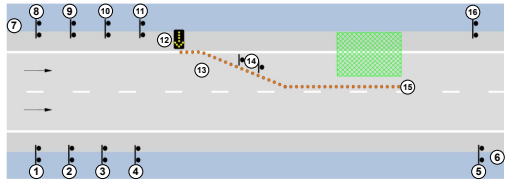
Edge of traffic lane to:	Edge Clearence
Line of traffic cones or bollards	- 0.5 m for traffic speeds less than 65 km/h - 1.0 m for traffic speeds greater than 65 km/h
Barrier boards, temporary guide posts or temporary hazard markers	- 1.0 m
Road safety barrier system	- 0.3 m for traffic speeds less than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

Installation & Removal of Signs & Devices

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



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



Sign spacing requirements

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

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

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

Issue	Desg	Appd	Date & Time	Amendment Description
01	PI	IS	30/04/2024 18:00	Original Issue
02	DK	PI	18/06/2024 15:00	Moved PTCD position as per client request
03	PI	DK	24/06/2024 14:00	Remove PTCD on Wentworth St
04	DK	IS	17/07/2024 15:45	Repositioned PTCDs
05				

TGS Name & Number: LGP - 101667 - GLC 188 - Unwin St - Clyde - POST TRAFFIC SWITCH

Works Location: Unwin St, Rosehill NSW 2142, Australia

Project Name: Sydney Metro Western Tunnelling

Project Description: Stop Slow for New Alignment

TGS Designed By: Peter Ingram **PWZTMP:** TCT0058356 **Exp:** N/A **Signature:**

TGS Approved By: Ismail Souaid **PWZTMP:** TCT0030174 **Exp:** N/A **Signature:**

Client Company: Gamuda Australia

Client Contact: Kelly Royter **Contact Number:** 0450 788 158

Client: LAING O'ROURKE / GAMUDA Australia

Date of Approval: 28/11/2024

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

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

TGS Risk Assessment

Hierarchy of Controls

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

More Effective ↑ ↓ Less Effective

Step 1 - Consequence (impact)

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

Step 2 - Probability

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

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

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

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TGS Designed By: Peter Ingram **PWZTMP:** TCT0058356 **Exp:** N/A **Signature:**

TGS Approved By: Ismail Souaid **PWZTMP:** TCT0030174 **Exp:** N/A **Signature:**

Client Company: Gamuda Australia

Client Contact: Kelly Royter **Contact Number:** 0450 788 158

Client: LAING O'ROURKE / GAMUDA Australia

Date of Approval: 28/11/2024

Scale: 1 : 750

Original Size A3

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

Item	Additional Control Control Measures
8.0	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:**

NOTES:

GENERAL NOTES

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

APPROVALS

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

TGS VERIFICATION

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

RISK ASSESSMENT

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

INSTALLATION AND REMOVAL OF SIGNS AND DEVICES

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

PLACEMENT OF SIGNS AND DEVICES

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

ORIENTATION OF SIGNS

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

TOLERANCES

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

MODIFYING TGS

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

TRAFFIC CONTROLLERS

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

ROAD USER MANAGEMENT

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

ACCESS MANAGEMENT

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

INCIDENT MANAGEMENT

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

INSPECTIONS

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

REVIEW OF TGS

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

RECORD KEEPING

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

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Works Location: Unwin St, Rosehill NSW 2142, Australia

Project Name: Sydney Metro Western Tunnelling

Project Description: Stop Slow for New Alignment

TGS Designed By: Peter Ingram **PWZTMP:** TCT0058356 **Exp:** N/A **Signature:**

TGS Approved By: Ismail Souaid **PWZTMP:** TCT0030174 **Exp:** N/A **Signature:**

Client Company: Gamuda Australia

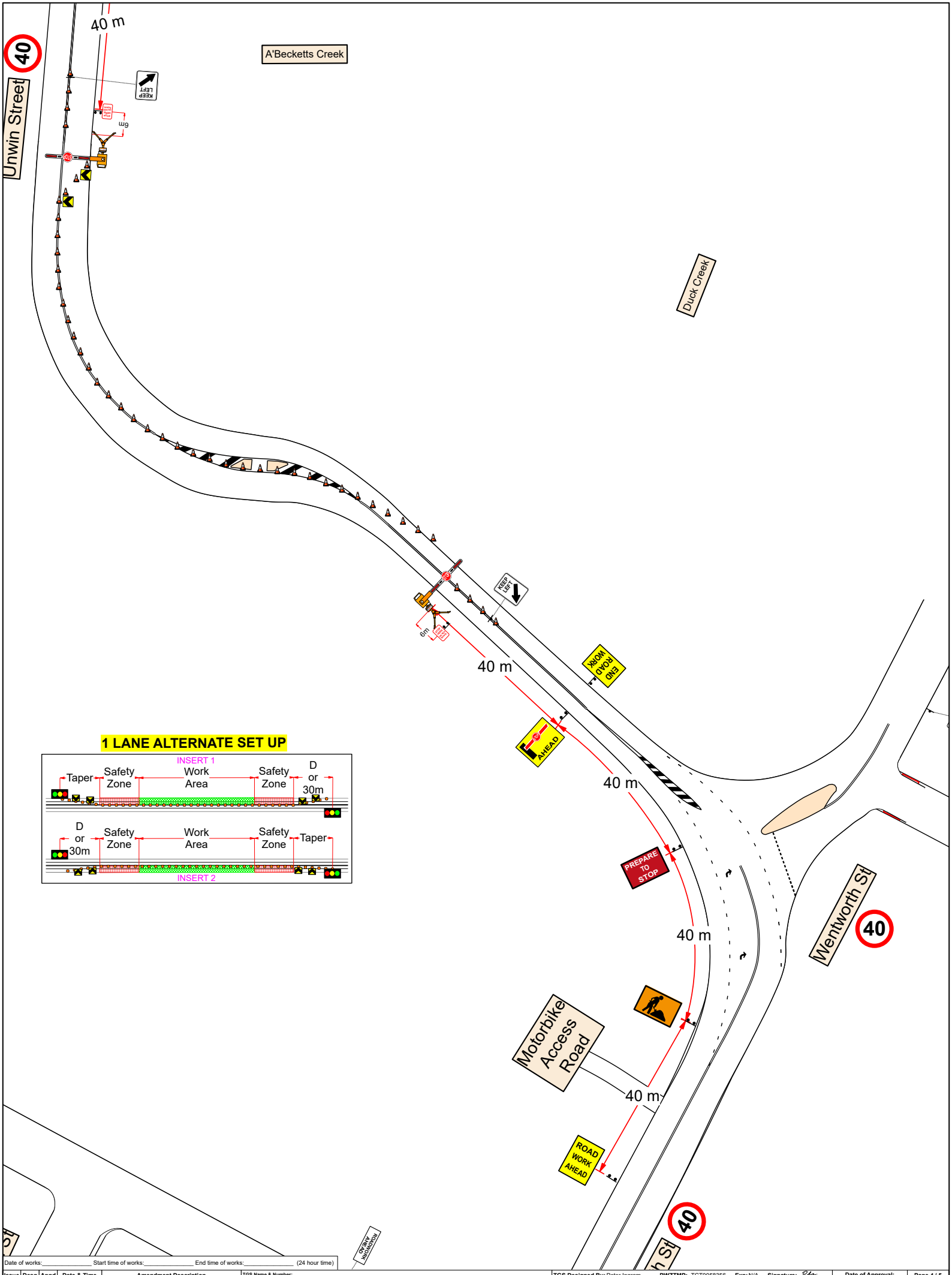
Client Contact: Kelly Royter **Contact Number:** 0450 788 158

Client: Laing O'Rourke / Gamuda Australia

Date of Approval: 28/11/2024

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.



1 LANE ALTERNATE SET UP

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

Issue	Desg	Appd	Date & Time	Amendment Description
01	PI	IS	30/04/2024 18:00	Original Issue
02	DK	PI	18/06/2024 15:00	Moved PTCD position as per client request
03	PI	DK	24/06/2024 14:00	Remove PTCD on Wentworth St
04	DK	IS	17/07/2024 15:45	Repositioned PTCDs
05				

Scale: 1 : 750 | Original Size A3

TGS Name & Number: LGP - 101667 - GLC 188 - Unwin St - Clyde - POST TRAFFIC SWITCH

Works Location: Unwin St, Rosehill NSW 2142, Australia

Project Name: Sydney Metro Western Tunnelling

Project Description: Stop Slow for New Alignment

TGS Designed By: Peter Ingram PWZTMP: TCT0058356 Exp: N/A Signature:

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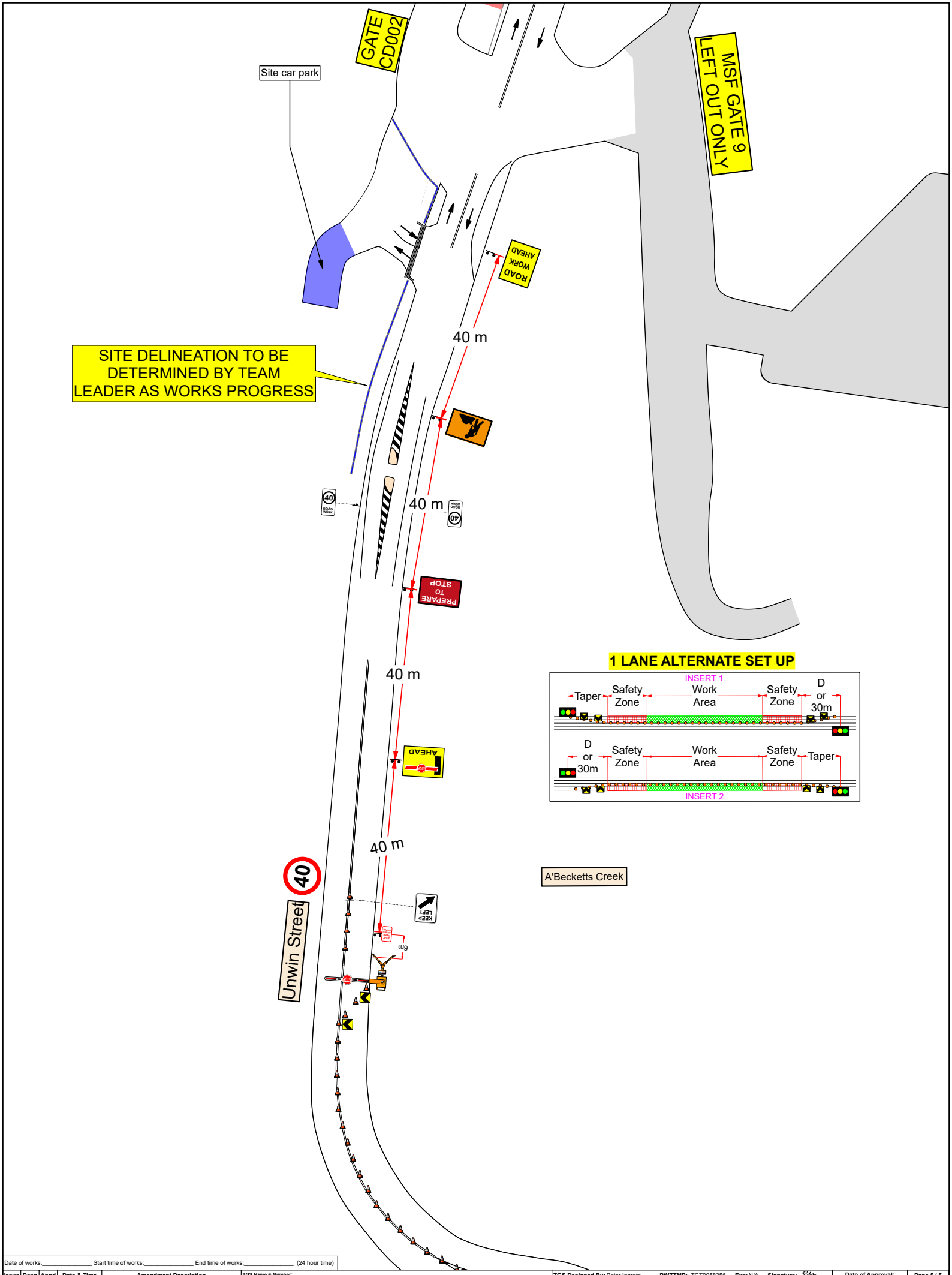

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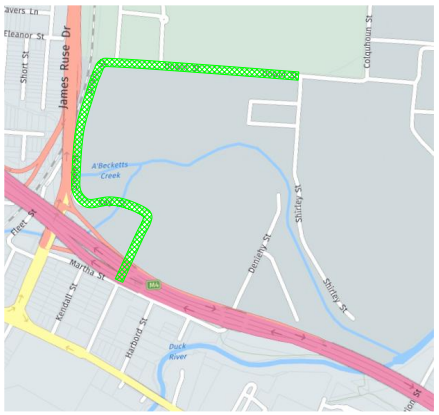
Locality Map

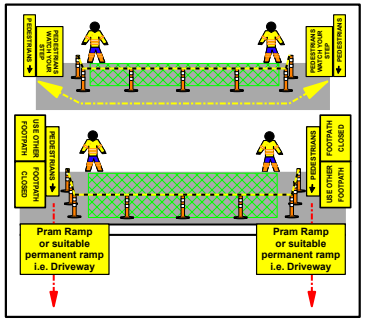


Personnel Requirements	Asset Requirements
Traffic Controllers	13
UTE	5
CONE TRUCK	1
ESAS	0
TMA	0
ESTOP	0
BOOM GATE	4
EXTRA REQUIREMENTS	0

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

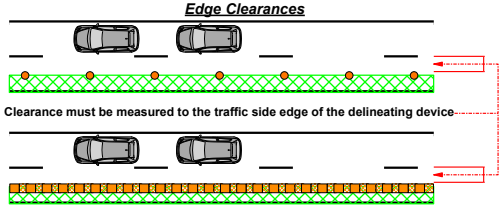
OPTION	DESCRIPTION	METHOD TYPE	TGS SELECTED
AROUND	Vehicles detoured via existing road network or sidetrack	Full road closure / One-way road closure / Detour	Selected
PAST	Vehicles past delineated work zones	Lateral Shift	
		Shoulder closure	
		Contraflow (2 way traffic maintained)	
		Single or Multi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

Dimension "D" (Main Roads)	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

Edge Clearances



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

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

Delineation Spacing

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

TGS Verification Checklist:

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

Traffic Guidance Scheme Modifications:

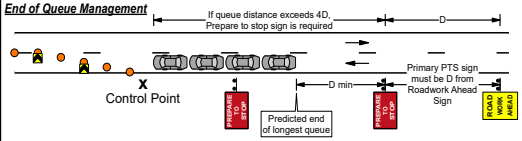
Modified By:	Qualification Number:	
Expiry / Issue Date:	Signature:	Date of Modification:

Modification Notes:

Traffic Guidance Scheme Installation:

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

End of Queue Management

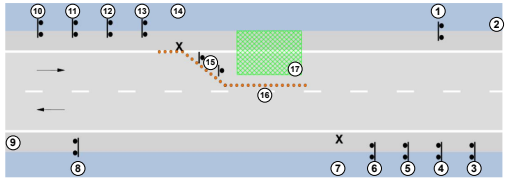


Estimated end of queue lengths to be noted here:_____

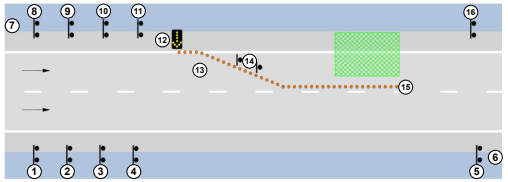
Edge of traffic lane to:	Edge Clearence
Line of traffic cones or bollards	- 0.5 m for traffic speeds less than 65 km/h - 1.0 m for traffic speeds greater than 65 km/h
Barrier boards, temporary guide posts or temporary hazard markers	- 1.0 m
Road safety barrier system	- 0.3 m for traffic speeds less than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

Installation & Removal of Signs & Devices

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



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



Sign spacing requirements

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

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

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

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TGS Name & Number: LGP - 63822 - GLC 151 - Wentworth to Unwin St - Clyde - CS6 TS4 - Road

Works Location: Wentworth to Unwin Street - Clyde

Project Name: Sydney Metro Werstern Tunnelling

Project Description: Construction Stage 6 - Traffic Switch 4

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

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

Client Company: Gamuda Australia

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

Date of Approval: 24/09/2024

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

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TGS Risk Assessment

Hierarchy of Controls

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

More Effective ↑ ↓ Less Effective

Step 1 - Consequence (impact)

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

Step 2 - Probability

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

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

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

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TGS Name & Number: LGP - 63822 - GLC 151 - Wentworth to Unwin St - Clyde - CS6 TS4 - Road

Works Location: Wentworth to Unwin Street - Clyde

Project Name: Sydney Metro Werstern Tunnelling

Project Description: Construction Stage 6 - Traffic Switch 4

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

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

Client Company: Gamuda Australia

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

LAING O'ROURKE | GAMUDA Australia

Date of Approval: 24/09/2024

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

Item	Additional Control Control Measures
8.0	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:**

NOTES:

GENERAL NOTES

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

APPROVALS

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

TGS VERIFICATION

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

RISK ASSESSMENT

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

INSTALLATION AND REMOVAL OF SIGNS AND DEVICES

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

PLACEMENT OF SIGNS AND DEVICES

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

ORIENTATION OF SIGNS

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

TOLERANCES

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

MODIFYING TGS

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

TRAFFIC CONTROLLERS

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

ROAD USER MANAGEMENT

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

ACCESS MANAGEMENT

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

INCIDENT MANAGEMENT

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

INSPECTIONS

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

REVIEW OF TGS

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

RECORD KEEPING

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

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03	AC	PL	07/11/2023 16:30	Amended as per comments
04	AC	PL	13/11/2023 12:06	Amended detour
05	DK	KD	24/09/2024 15:15	Moved closure to Rosehill Race Gate

TGS Name & Number: LGP - 63822 - GLC 151 - Wentworth to Unwin St - Clyde - CS6 TS4 - Road

Works Location: Wentworth to Unwin Street - Clyde

Project Name: Sydney Metro Werstern Tunnelling

Project Description: Construction Stage 6 - Traffic Switch 4

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

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

Client Company: Gamuda Australia

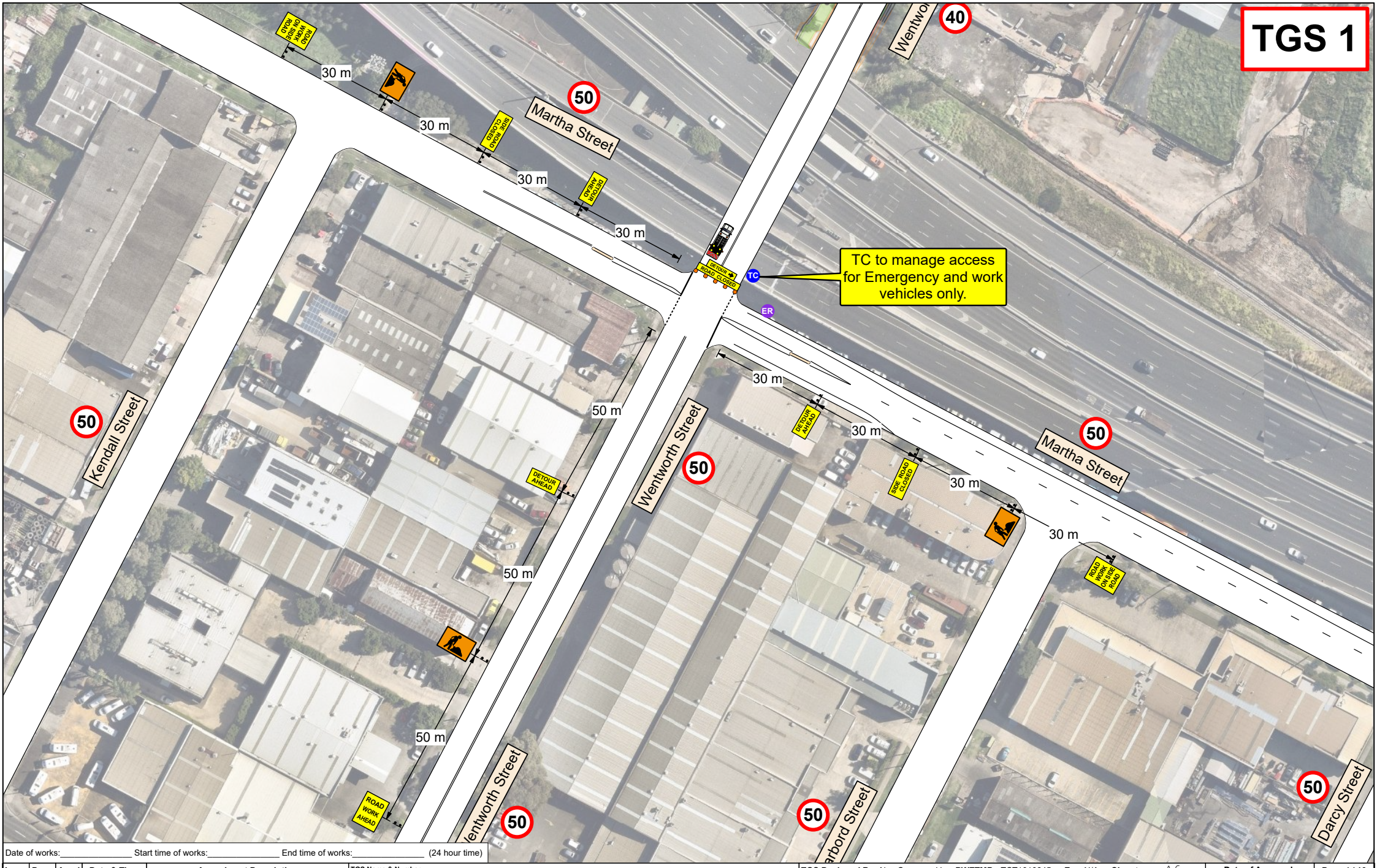
Client Contact: Daniel Kelly **Contact Number:** 0437 315 649

Date of Approval: 24/09/2024

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 1



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

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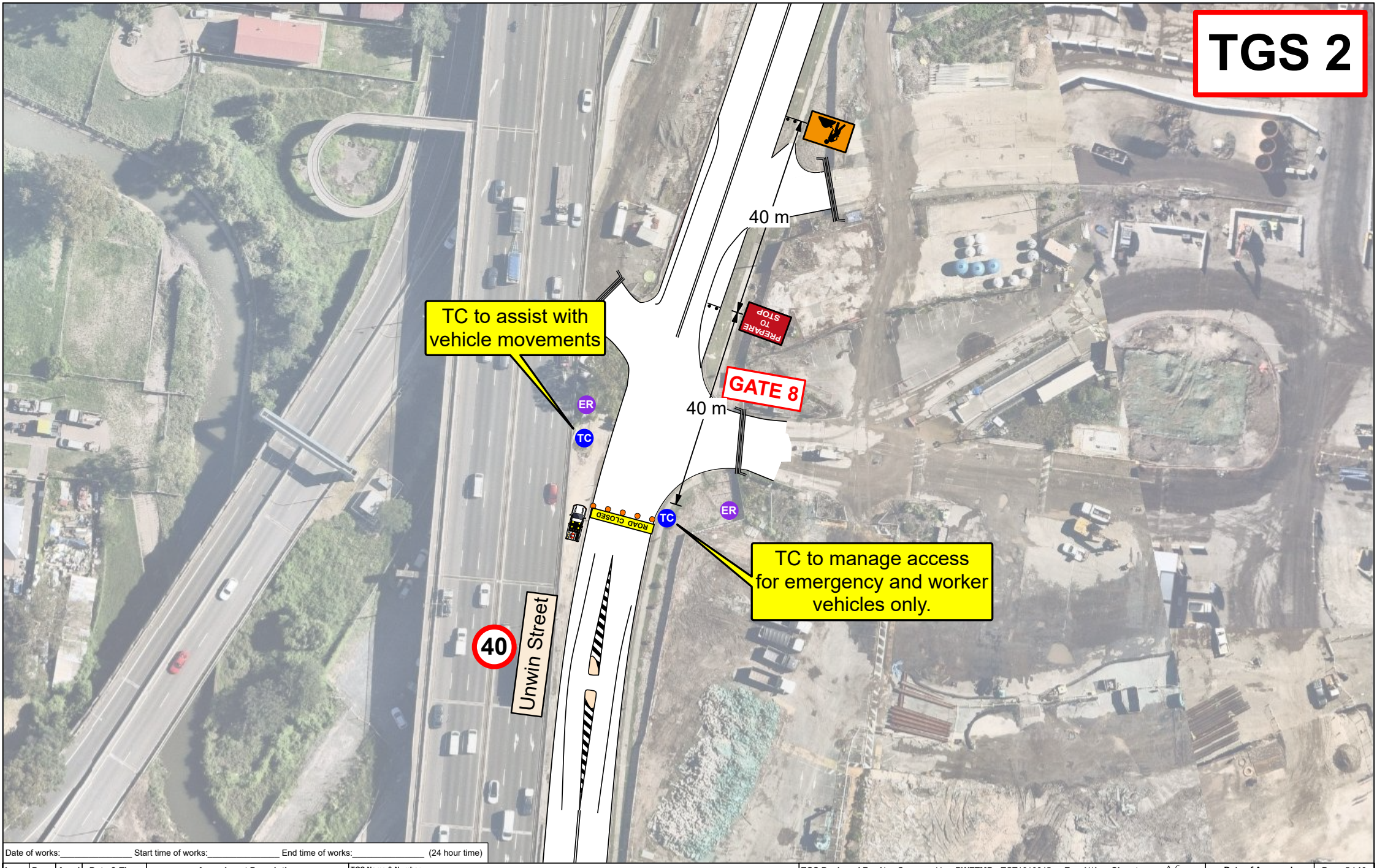
TGS 2



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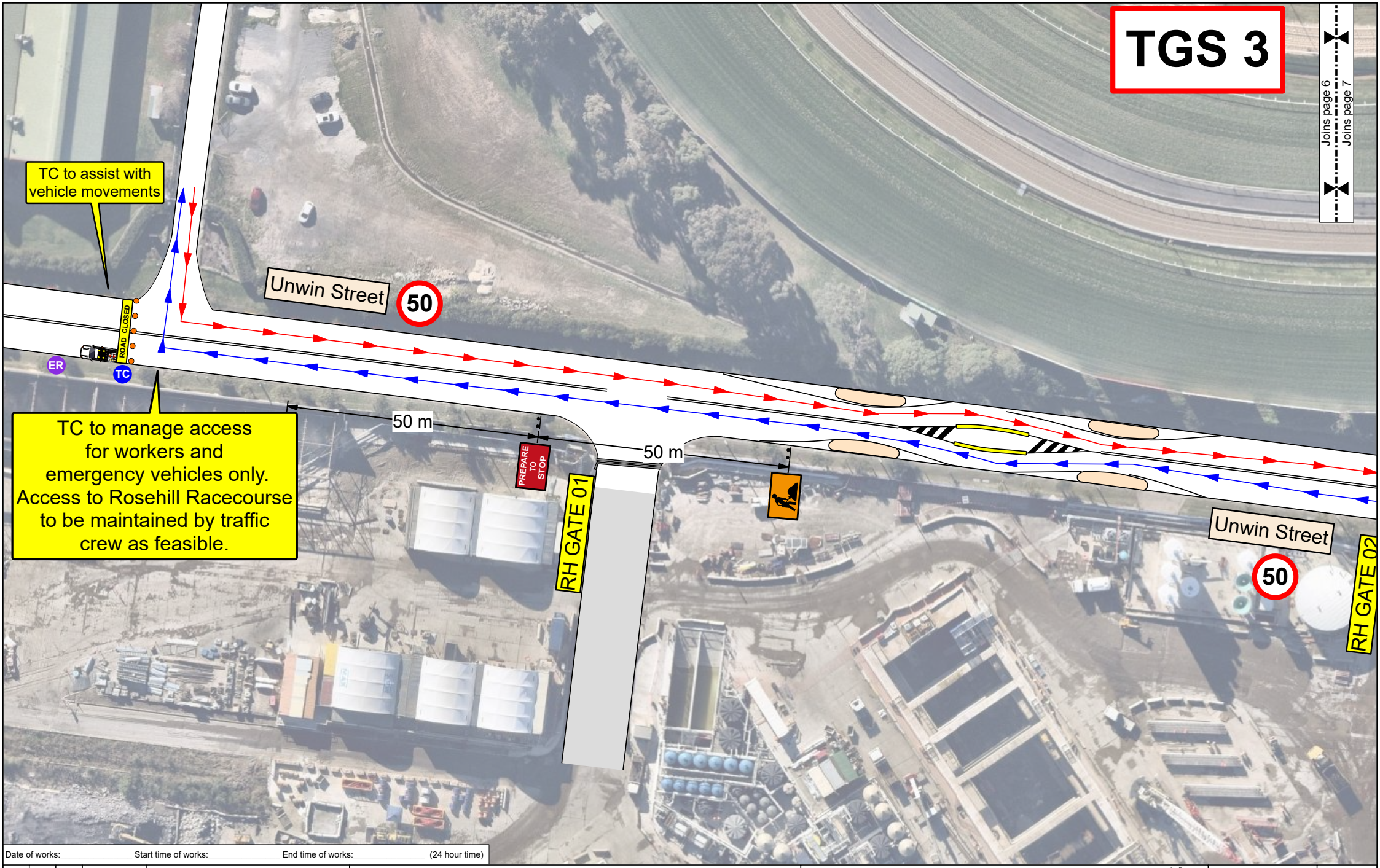
TGS 3



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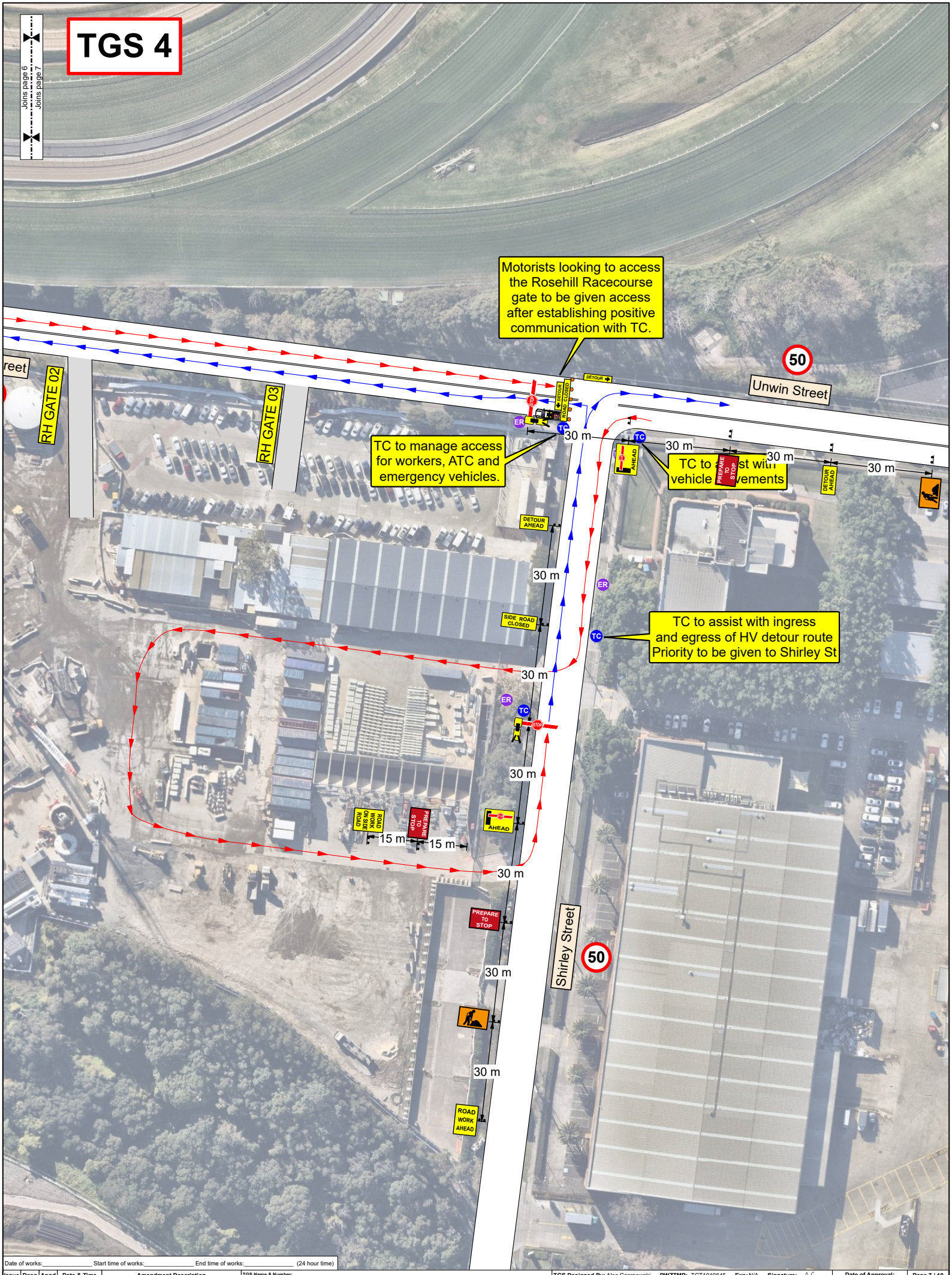

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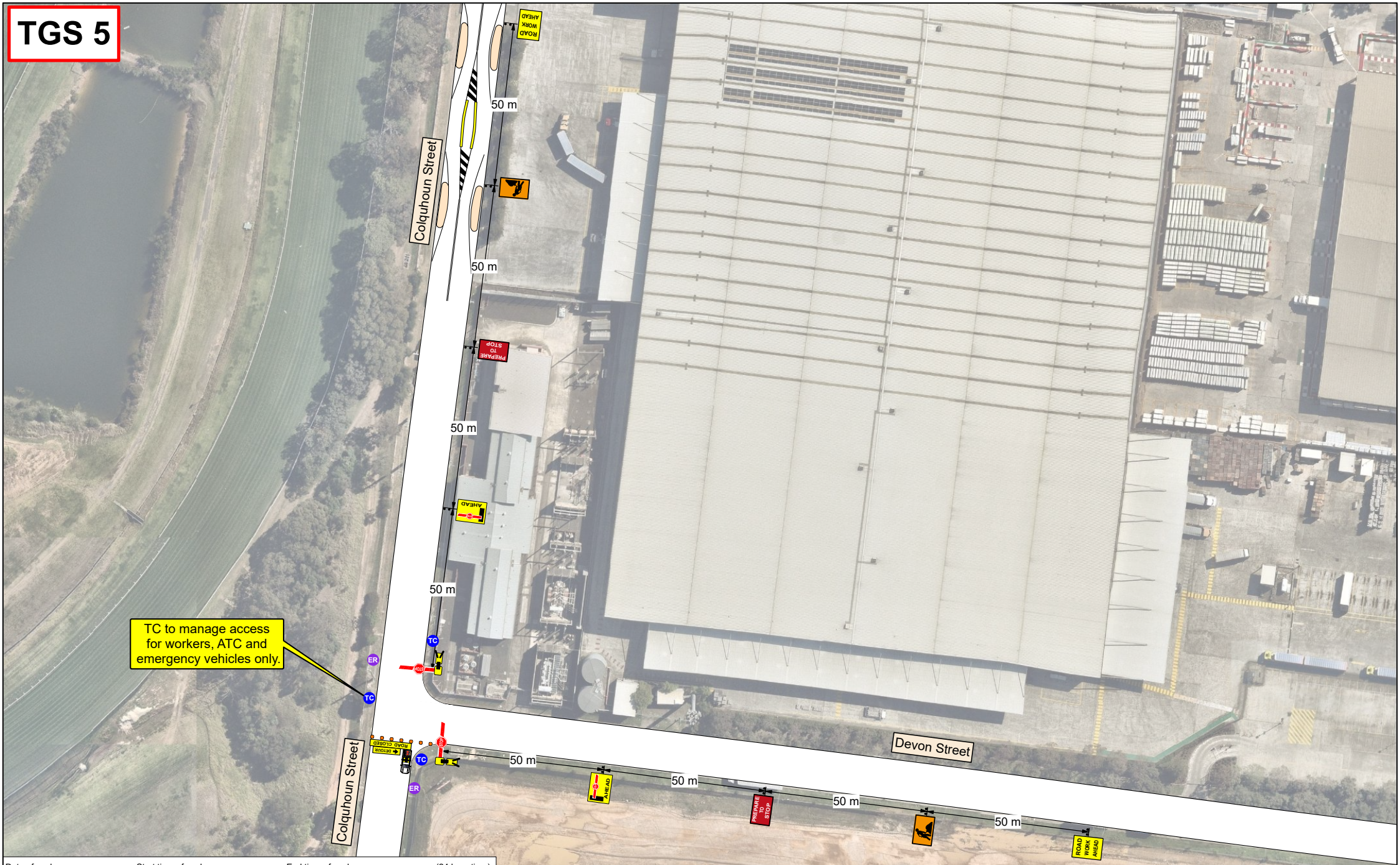
TGS 5



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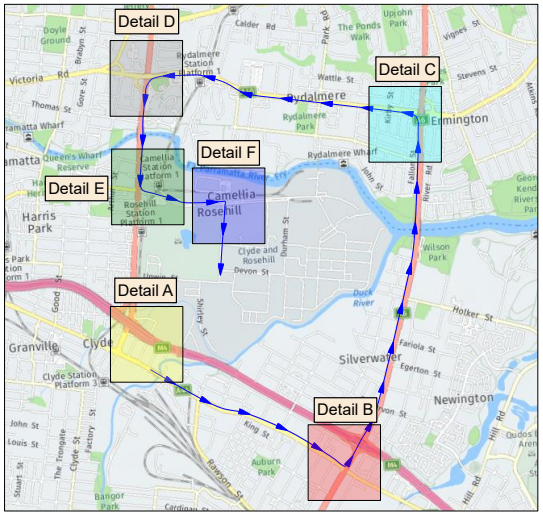
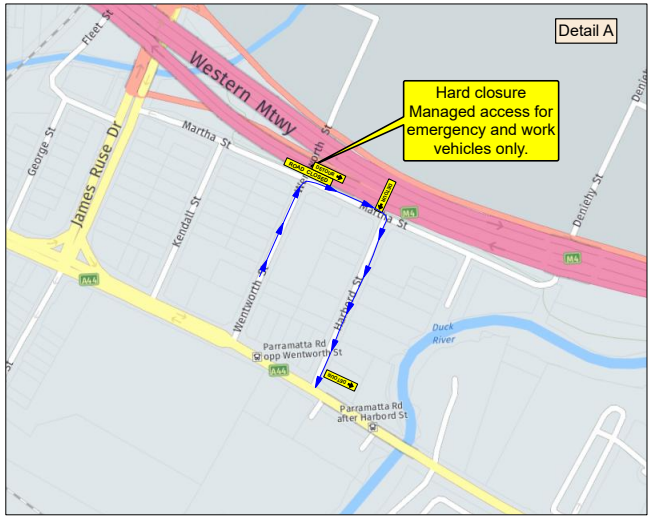
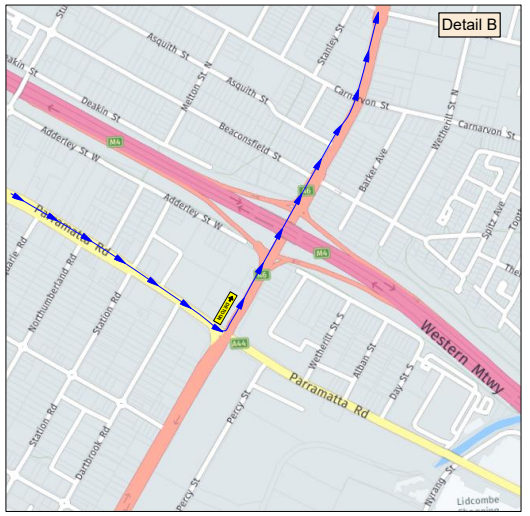
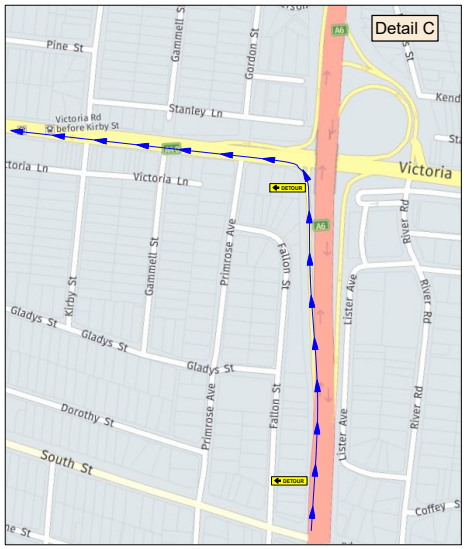
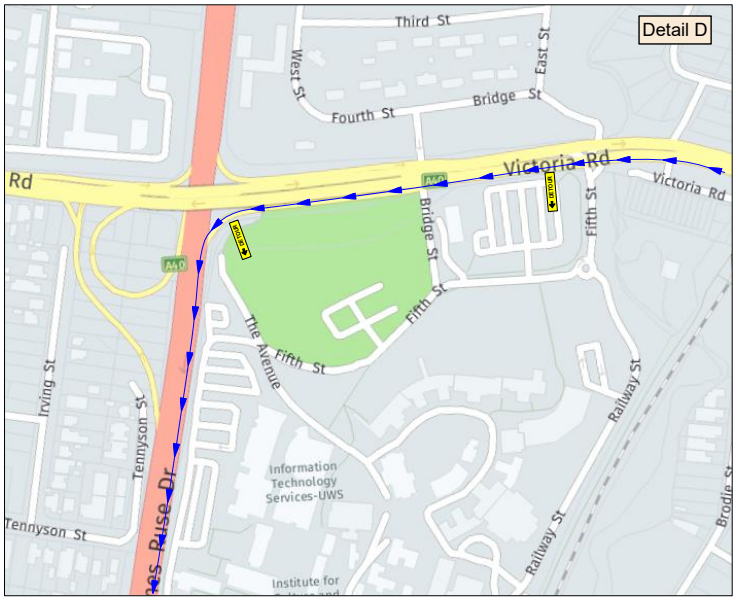
Wentworth Closure detour Route (From Wentworth To Unwin)

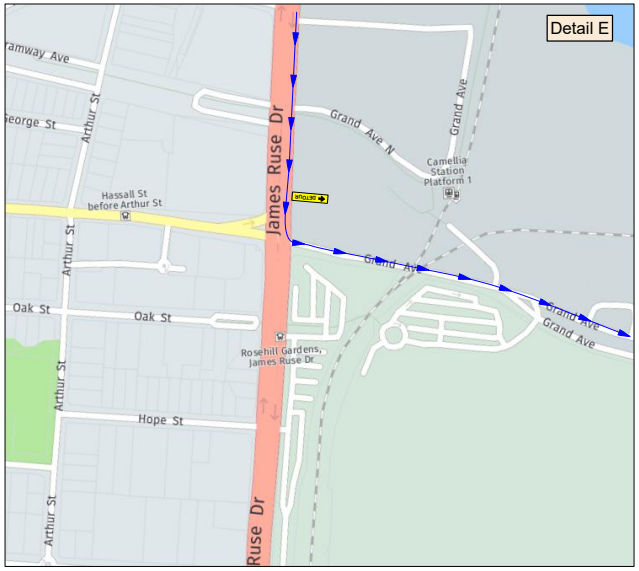












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LAING O'ROURKE GAMUDA Australia

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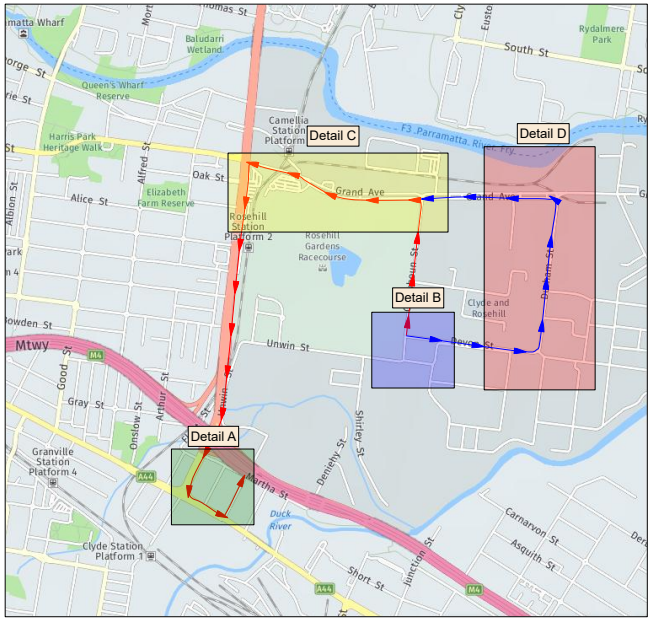
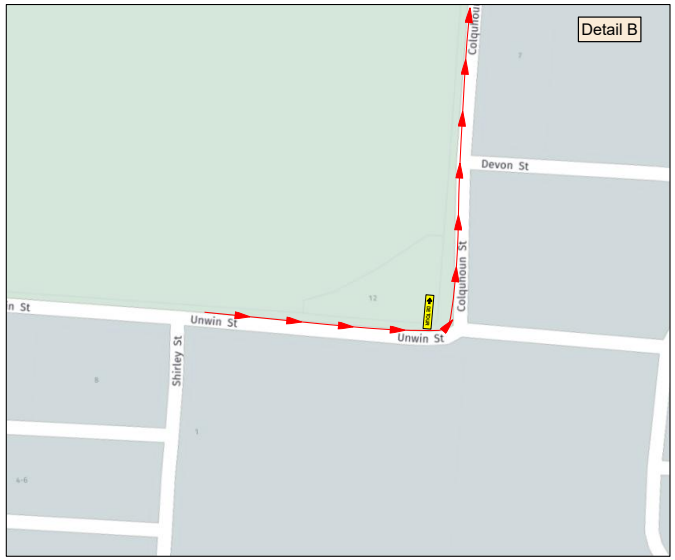
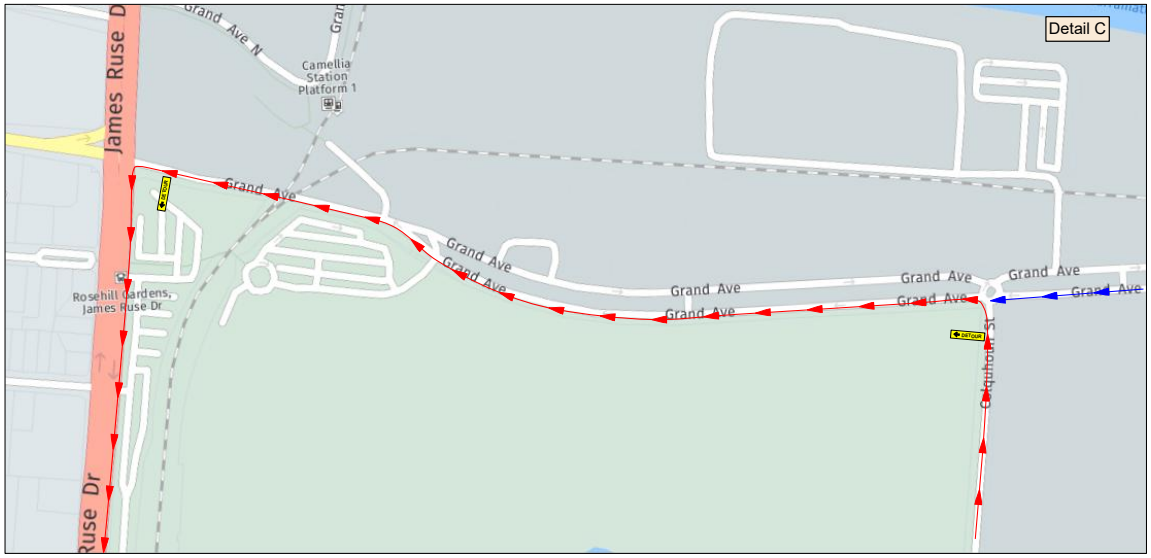
Unwin St Closure detour Route (From Unwin To Wentworth)







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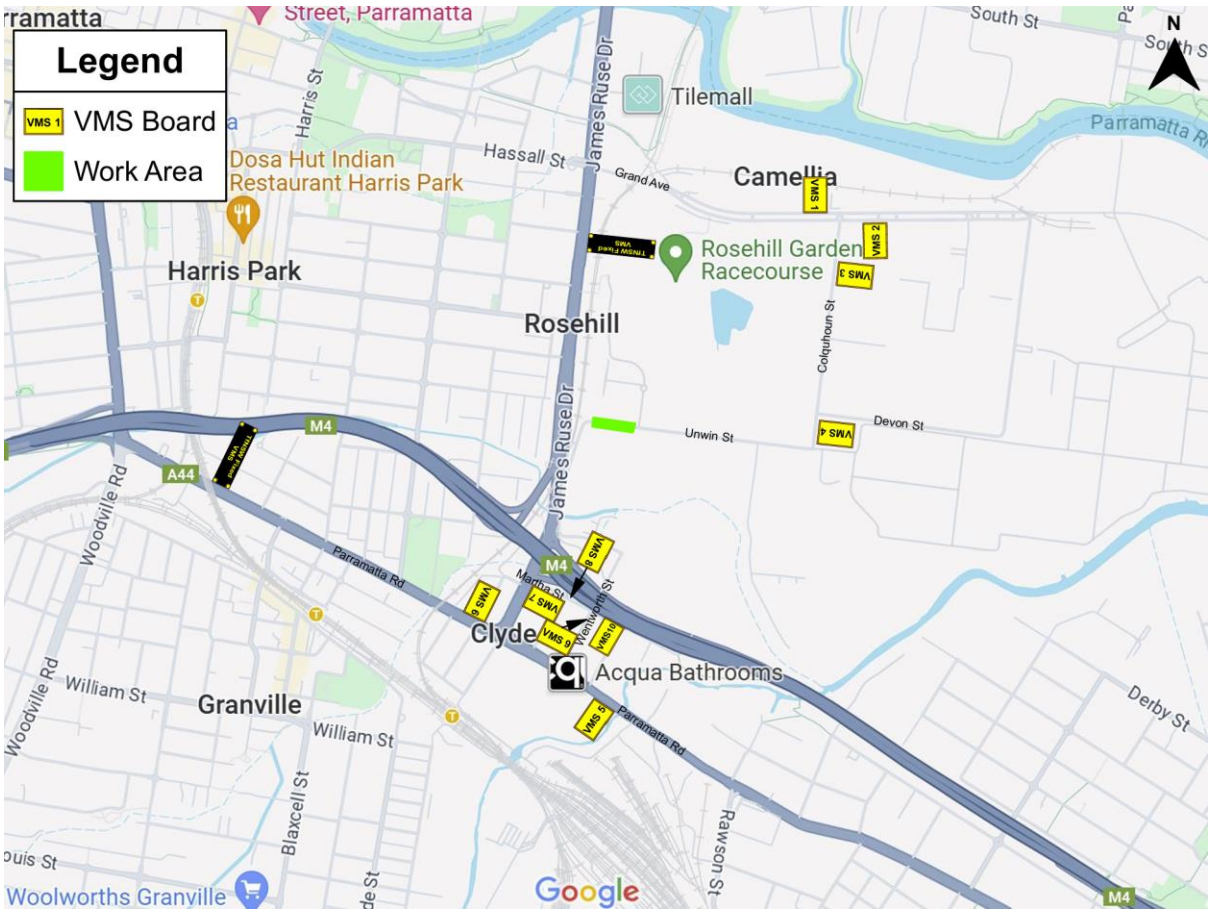
4.2 APPENDIX 2 – VMS SCHEDULE (FOR REFERENCE ONLY)

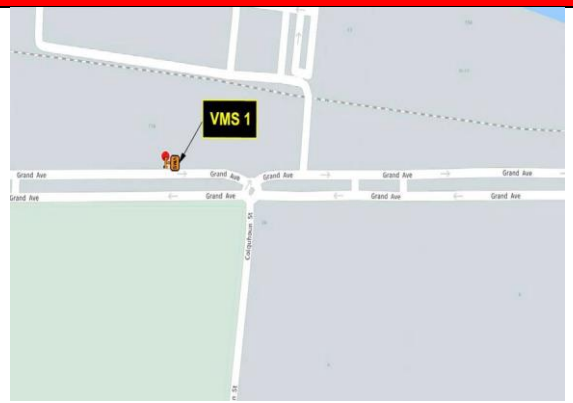
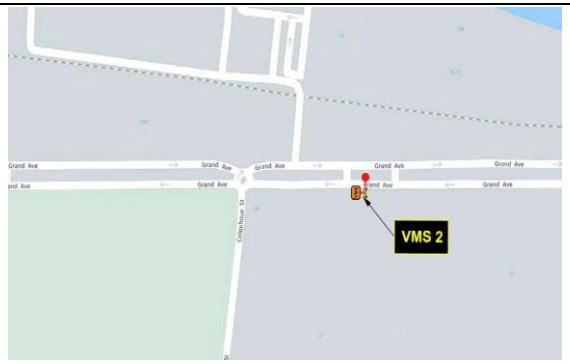
VMS

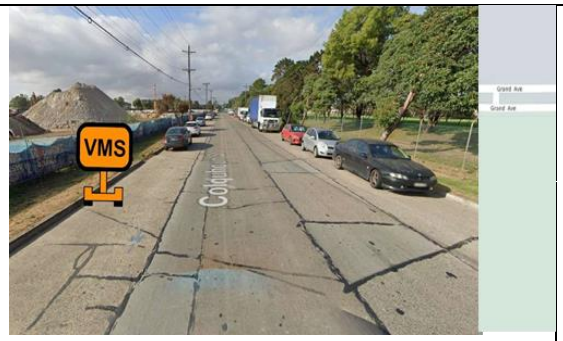
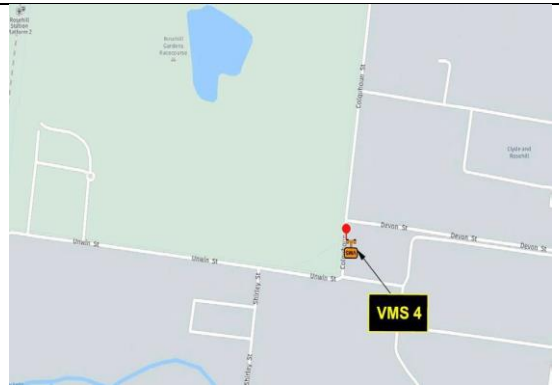
VMS locations and VMS messaging strategies



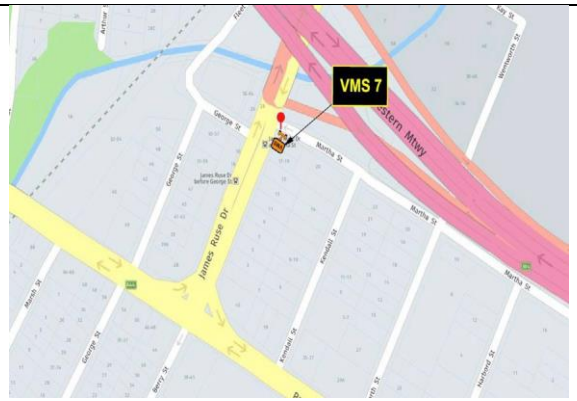
Unwin St closure VMS location map

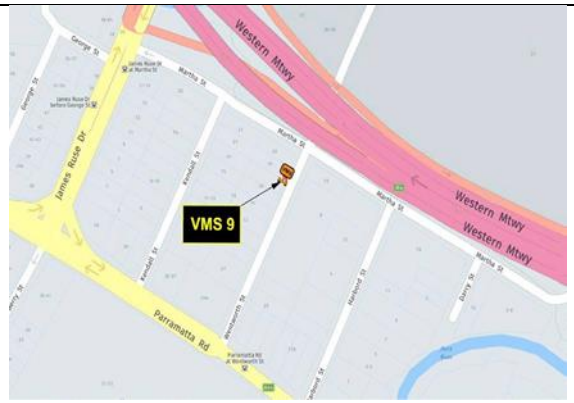
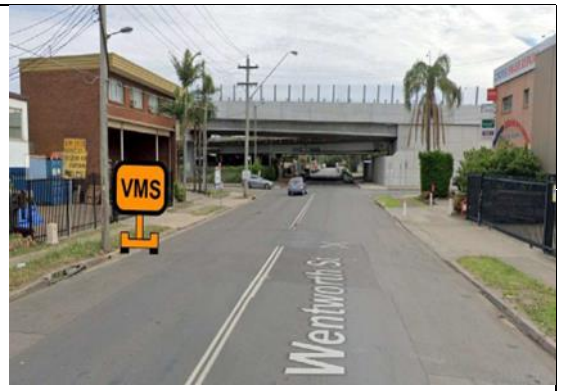
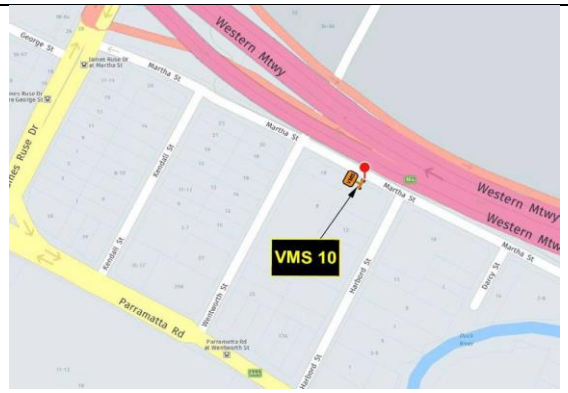
Table 6 - Unwin St Closure VMS Strategy

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 DD/MM	UNWIN ST CLOSED TIL 5AM MON
					Screen 2	LIVE TRAFFIC .COM	FOLLOW DETOUR
2	Grand Ave, Rosehill	GRAND AVE, 130m E A ST OF COLQUHOUN ST FACING WESTBOUND TRAFFIC			Screen 1	UNWIN ST CLOSURE DD/MM	UNWIN ST CLOSED TIL 5AM MON
					Screen 2	LIVE TRAFFIC .COM	FOLLOW DETOUR

3	Colquhoun St, Rosehill	COLQUHOUN ST FACING NORTH APPROX. 30M SOUTH OF GRAND AVE			Screen 1	UNWIN ST CLOSURE DD/MM	UNWIN ST CLOSED TIL 5AM MON
					Screen 2	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 DD/MM	UNWIN ST CLOSED TIL 5AM MON
					Screen 2	LIVE TRAFFIC .COM	FOLLOW DETOUR

5	Parramatta Rd, Clyde	PARRAMATTA RD ON GRASS AREA OUTSIDE 2B PARRAMATTA RD FACING WESTBOUND TRAFFIC			Screen 1	UNWIN ST CLOSURE 6-9 DEC	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			Screen 1	UNWIN ST CLOSURE DD/MM	UNWIN ST CLOSED TIL 5AM MON
					Screen 2	LIVE TRAFFIC .COM	FOLLOW DETOUR

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

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

4.3 APPENDIX 3 – ROAD SAFETY AUDIT

ROADWORK
ROAD SAFETY AUDIT

GAMUDA AND LAING O'ROURKE CONSORTIUM

UNWIN STREET TRAFFIC CHANGES – SOUTHERN TIE-IN – REFUGE WORKS

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CONTENTS

Document Control

Title:	Description
Ref No.:	GLC–WTP–RSA-0011 - 00
Description:	Roadworks road safety audit on the changes in Rosehill Racecourse area along Unwin Street as part of the southern tie-in works and pedestrian refuge adjustments.

Role	Name	Position	Date	Signed
Author:	Alex Gosper	Level 3 Road Safety Auditor	06.12.2024	

Document Revisions

No.	Date	Issue / Description
00	06.12.2024	ORIGINAL ISSUE

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:	Scott McMichael (Traffic Manager – 0412 025 652)
Auditors:	**Alex Gosper** (Level 3 Road Safety Auditor – ID:0908), Director / Senior Civil Engineer – Civlink Consulting Pty Ltd **Dustin Conley** (Level 2 Road Safety Auditor). Traffic Manager – Civlink Consulting Pty Ltd **John Yap** (Level 0 Road Safety Auditor) Traffic Engineer – Civlink Consulting Pty Ltd
Audit Type:	Roadworks - Road Safety Audit
Commencement Meeting:	Friday 6th December 2024
Site Visit:	N/A Pre-construction audit (previous site audit 4th November with site visit)
Completion Meeting:	To be advised
Previous Audit:	Friday 29th November 2024

1. Introduction

1.1 Purpose of Audit

This report presents findings of a roadworks road safety audit. The audit involved reveiewing 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]

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) **Alex Gosper** (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) **Dustin Conley** (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) **John Yap** (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 6th December 2024 an email was received from Scott McMichael 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 Alex Gosper, Lead Road Safety Auditor (Civlink Consulting) with the assistance of Dustin Conley and John Yap.

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.

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

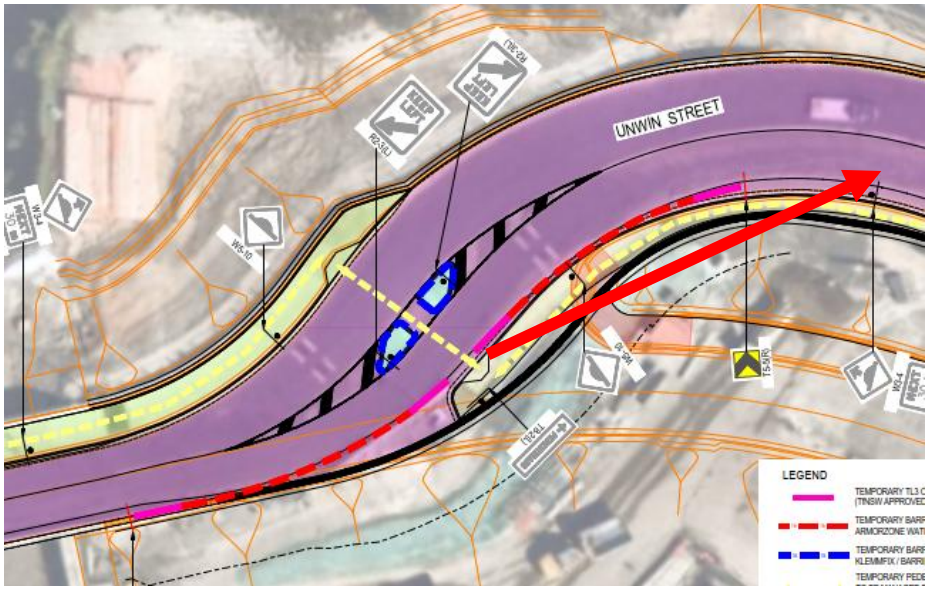
3.3 Risk Rating

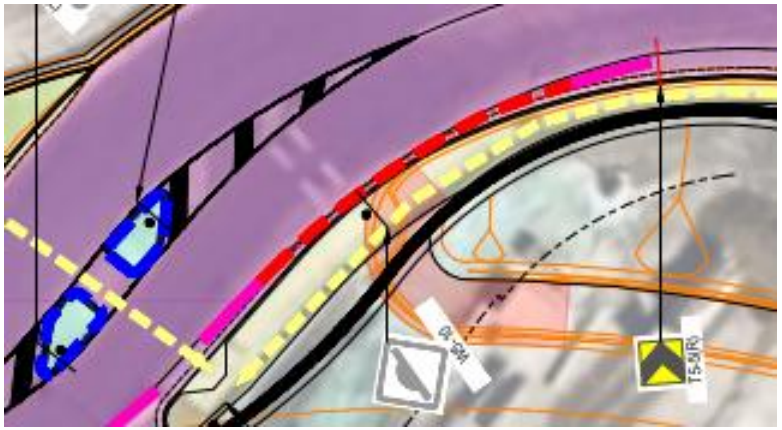
		Severity				
		Insignificant	**Minor**	**Moderate**	**Serious**	**Fatal**
Likelihood	**Almost Certain**	**Medium**	**High**	**High**	**Extreme**	**Extreme**
	Likely	**Medium**	**Medium**	**High**	**Extreme**	**Extreme**
	Possible	**Low**	**Medium**	**High**	**High**	**Extreme**
	Unlikely	**Negligible**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

4. Audit Findings

No.	Location	Description of Deficiency / Observation	Risk level
1	Unwin Street, suthern pedestrian refuge	The crossing point includes barriers, and a pedestrian path with permanent works. The arrangement suggests works will be udnertaken between the pedestrian ramp and the approaching traffic. It is unclear if pedestrians will be able to see oncoming traffic, to be able to pick an opportunity to safely cross the road. It is also unclear if any gawk or screening will be around the works, and obstructing visibility. Compromised visibility for pedestrians may result in an increased probability of a pedestrian and vehicle incident. It is noted that the volume of pedestrians at this site has been obvserved to be quite low, and operating speed is also quite low. This is reflected in the risk rating. 	**Likelihood – Rare** **Severity – Moderate** **Risk Rating – Low**

2	Unwin Street, suthern pedestrian refuge	There are barriers proposed around the bend, and adjacent the works area. These barriers are proposed to be waterfilled armorzone barriers. These barriers appear to be in very short lengths. These barriers do not achieve the minimum installation length for reliable deflection areas, nor do they provide suitable length of need for reliable deflection. Although it is understod some barriers may be used as delienation devices at times, this may provide a false sense of security to workers, and result in an increased liklihood of a run-off road incident impacting the barriers and works or workers. Should a clear area be intended behind the barriers, it is not clear how this is being delineated on site, or if the barriers are intended to protect any works or excavations. 	**Likelihood – Unlikely** **Severity – Moderate** **Risk Rating – Medium**
3	Unwin Street, suthern pedestrian refuge	Based on the barrier arrangements it appears that there is a TL-3 end terminal intended to be connected to the Armorzone barriers. It is not clear if this will result in a standard connection. Barriers not interconnected will result in an increased deflection if struck, or for elements to perform in a way that is not in line with testing.	**Note only**

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: 06.12.2024

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Date: 06.12.2024

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Gamuda Laing O'Rourke
Project: Western Tunnel Project (Sydney Metro) **- Unwin St Southern Tie-in and refuge works**
Issued Da 06.12.2024

Item	Reference	Comment	Client's Response/Action for Resolution	Close out Date
1	Unwin Street, southern pedestrian refuge	The crossing point includes barriers, and a pedestrian path with permanent works. The arrangement suggests works will be udnertaken between the pedestrian ramp and the approaching traffic. It is unclear if pedestrians will be able to see oncoming traffic, to be able to pick an opportunity to safely cross the road. It is also unclear if any gawk or screening will be around the works, and obstructing visibility. Compromised visibility for pedestrians may result in an increased probability of a pedestrian and vehicle incident. It is noted that the volume of pedestrians at this site has been obvserved to be quite low, and operating speed is also quite low. This is reflected in the risk rating.	When all works is occuring traffic controllers will be in place to assist and guide pedestrians. Traffic will be stopped and pedestrians escorted across road. No gawk screens will be implemented. Pedestrian activity and sight lines will be monitored and checked each shift	06.12.2024
2	Unwin Street, southern pedestrian refuge	There are barriers proposed around the bend, and adjacent the works area. These barriers are proposed to be waterfilled armorzone barriers. These barriers appear to be in very short lengths. These barriers do not achieve the minimum installation length for reliable deflection areas, nor do they provide suitable length of need for reliable deflection. Although it is understod some barriers may be used as delienation devices at times, this may provide a false sense of security to workers, and result in an increased liklihood of a run-off road incident impacting the barriers and works or workers. Should a clear area be intended behind the barriers, it is not clear how this is being delineated on site, or if the barriers are intended to protect any works or excavations.	All works will be conducted under lane closure. Barriers will be placed into position at end of each shift to protect work area only and to maintain existing pedestrian pathway. Any excavations will be outside of clearzone or be filled as required.	06.12.2024
3	Unwin Street, southern pedestrian refuge	Based on the barrier arrangements it appears that there is a TL-3 end terminal intended to be connected to the Armorzone barriers. It is not clear if this will result in a standard connection. Barriers not interconnected will result in an increased deflection if struck, or for elements to perform in a way that is not in line with testing.	Noted. Only approved end terminals will be used with appropriate barriers.	06.12.2024

4.4APPENDIX 4 – CONSULTATION AND COMMUNICATION

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-CLJ-TF-PLN-000007**	**Sydney Metro West - WTP - Construction Traffic Management Plan - Unwin Street Southern Tie-In - December-February 2025**	A.02	S3	01	10/12/2024	SMD	AHENDY	SMWSTCTP-AFJ-BWT-SN300-PP-DRG-200000	-	-	Section 2.8, first sentence - minor typo: refers to "surrounding sheets". Suggest changing to "surrounding streets".	Observation		N
						19.12.2024	GLC	SMc	SMWSTCTP-AFJ-BWT-SN300-PP-DRG-200000	-	-	Document amended	Observation		N
					02	10/12/2024	SMD	AHENDY	SMWSTCTP-AFJ-BWT-SN300-PP-DRG-200001	-	-	Section 2.12, last sentence refers to "Rosehill Gardens/AJC preferences". Suggest changing to "AJC" to "ATC".	Observation		N
						19.12.2024	GLC	SMc	SMWSTCTP-AFJ-BWT-SN300-PP-DRG-200001	-	-	Document amended	Observation		N
					03	12/12/2024	SMD	RBANZON	SMWSTWTP-GLO-CLJ-TF-PLN-000007	Section 2.1	N/A	The last paragraph on page 7 states "If any queues develop and are not able to managed effectively then these works will be shifted to intra-peaks and nights. Suggest GLC to state what is considered an unacceptable queue length, for example if queue lengths on Unwin Street reach XX metres, or if queue lengths extend past Martha Street, then the works will be shifted to interpeaks and nights.	Observation		N
						19.12.2024	GLC	SMc	SMWSTWTP-GLO-CLJ-TF-PLN-000007	Section 2.1	N/A	Document amended new statement added "Any queues longer than 100m will be considered unacceptable."	Observation		N
					04	12/12/2024	SMD	RBANZON	SMWSTWTP-GLO-CLJ-TF-PLN-000007	Section 2.6 Figure 4	N/A	The legend in Figure 4 states "Inbout Route" Suggest rewording to "Inbound Route"	Observation		N
						19.12.2024	GLC	SMc	SMWSTWTP-GLO-CLJ-TF-PLN-000007	Section 2.6 Figure 4	N/A	Figure amended	Observation		N
					05	12/12/2024	SMD	RBANZON	SMWSTWTP-GLO-CLJ-TF-PLN-000007	Appendix 3	N/A	GLC RSA response table states "suthern" in the Reference column and "acorss" in line item 1 client's response. Suggesting correcting to "southern" and "across"	Observation		N
						19.12.2024	GLC	SMc	SMWSTWTP-GLO-CLJ-TF-PLN-000007	Appendix 3	N/A	Document amened	Observation		N