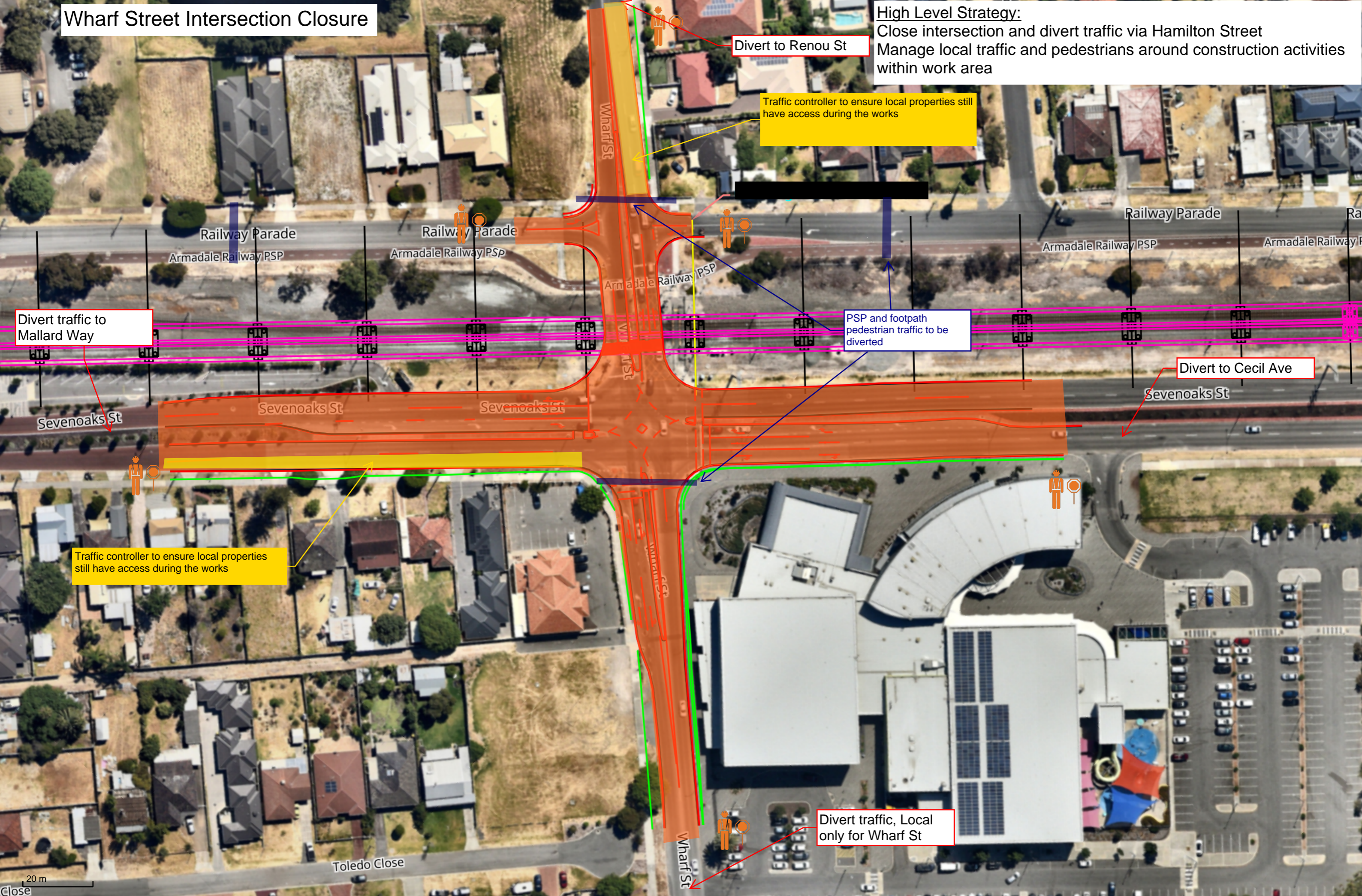


# Wharf Street Intersection Closure

**High Level Strategy:**  
Close intersection and divert traffic via Hamilton Street  
Manage local traffic and pedestrians around construction activities within work area



Divert to Renou St

Traffic controller to ensure local properties still have access during the works

Divert traffic to Mallard Way

PSP and footpath pedestrian traffic to be diverted

Divert to Cecil Ave

Traffic controller to ensure local properties still have access during the works

Divert traffic, Local only for Wharf St

20 m  
Close

## Wharf Street Level Crossing Removal



## Appendix B – Traffic Management Plan including Heavy Haulage Strategy

ALUA-TMP-001\_ Early Works






# WORKS ON ROADS TRAFFIC MANAGEMENT PLAN

## ARMADALE LINE UPGRADE WORKS VICTORIA PARK STATION TO BECKENHAM STATION PROJECT EARLY WORKS REF: ALUA-TMP-001

### DECLARATION:

I, Daniel Schmidt (AWTM Cert No. STAP-AWTM-20-02303-02), declare that I have designed this Traffic Management Plan following information from a site inspection on 28/03/2022. The Traffic Management Plan prepared is in accordance with the Main Roads Code of Practice and AGTTM3.

Signature:  Date: 04/04/2021

	Name / Company	Accreditation	Date	Signature
<b>TMP designed by</b>	Daniel Schmidt Strada Consultants	STAP-AWTM-20-02303-02	04/04/2022	
<b>Revision by</b>	Timo Schwarz Strada Consultants	KTS-AWTM-20-48578-02	12/09/2022	
<b>RTM Reviewed &amp; Endorsed by</b>	Travis Green Strada Consultants	RTM 037	12/09/2022	
<b>Road Authority Review by</b>	N/A For Stage 1 works			
<b>Road Authority Authorisation</b>	Road authority authorisation of the implementation of traffic signs and devices is given for Traffic Management Plan No. C-SA-TMP-001			
	Signed	Authorised Officer		Date
	(Print Name)	Position		

## REVISION REGISTER

Revision	Date	Revision Description	Issued By
A	04/04/2021	Issued For Stakeholder Review	Daniel Schmidt
0	15/07/2022	Added TGS for further service locating works (TGS-006) and generic PSP/path TGS (098 & 099) for works on paths >6m off road edge. Minor updates throughout the document to include relevant items for new TGSs	Timo Schwarz
1	2/08/2022	Added new TGS for additional service locating works along verges and median and car parks/bus areas of stations.	Timo Schwarz
2	12/09/2022	Added new TGS 013 to 028 for additional service locating works near Level Crossings of Mint/Archer Street and Oats Street and verges of Bank Street	Timo Schwarz



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## GLOSSARY

Term	Definition
AWTM	Advanced Worksite Traffic Management
AGTTM	Australian Guide to Temporary Traffic Management
BWTM	Basic Worksite Traffic Management
CAH	Controlled Access Highway
CAR	Corrective Action Report
CIC	Customer Information Centre
COP	Code of Practice
FWY	Freeway
HVO	Heavy Vehicle Operations
HVS	Heavy Vehicle Services
HWY	Highway
IFC	Issued For Construction
LGA	Local Government Authority
MRWA	Main Roads Western Australia
OS&H	Occupational Safety and Health
OSH MR	Occupational Safety and Health Main Roads Representative
RNOC	Road Network Operations Centre
RSA	Road Safety Audit(or)
RTM	Roadworks Traffic Manager
SCATS	Sydney Co-ordinated Adaptive Traffic System
SIDRA	Signalised and un-signalised Intersection Design and Research Aid
SWTC	Scope of Work and Technical Criteria
TGS	Traffic Guidance Scheme
TMA	Truck/Trailer Mounted Attenuator
TRD	Temporary Road Design
TTM	Temporary Traffic Management
VMS	Variable Message Sign
WTM	Worksite Traffic Management



## 1 INTRODUCTION

### 1.1 Purpose and Scope

This Traffic Management Plan (TMP) outlines the traffic control and traffic management procedures to be implemented by the ALUA Project Manager (and duly accredited personnel assigned by the Project Manager) to manage potential hazards associated with the traffic environment during the project.

The scope of works documented in this TMP addresses the early works components to support design and later construction activities.

Works will include (but not be limited to) sign installation, feature surveying, pavement testing, pot holing, geotechnical testing, service locating, and clearing. The work locations have been assessed and site specific or generic controls have been developed for works in close proximity to traffic. In order to undertake these works, traffic control devices will need to be established on the affected roads to provide advance warning to motorists.

Traffic Management will enable the Contractor to establish a safe working environment for workers, plant and equipment while undertaking the works, without conflicting with traffic on the roads. The purpose of the Traffic Management Plan is to safely guide / direct road users past the work site.

### 1.2 Objectives and Strategies

The objectives of the Traffic Management Plan are to ensure:

- The safety of the road workers.
- All road users, including vulnerable road users, are safely guided around, through or past the work site.
- The performance of the road network is not unduly impacted and the disruption and inconvenience to all road users are minimised for the duration of the works.
- Impacts on users of the road reserve and adjacent properties and facilities are minimised.

In an effort to meet these objectives the Traffic Management Plan will incorporate the following strategies:

- Providing a sufficient number of traffic lanes to accommodate vehicle volumes.
- Ensuring delays are minimised by only implementing lane closures in accordance with AGTTM3 and MRWA Code of Practice requirements.
- Ensuring all road users are managed including motorists, pedestrians, cyclists, people with disabilities and people using public transport.

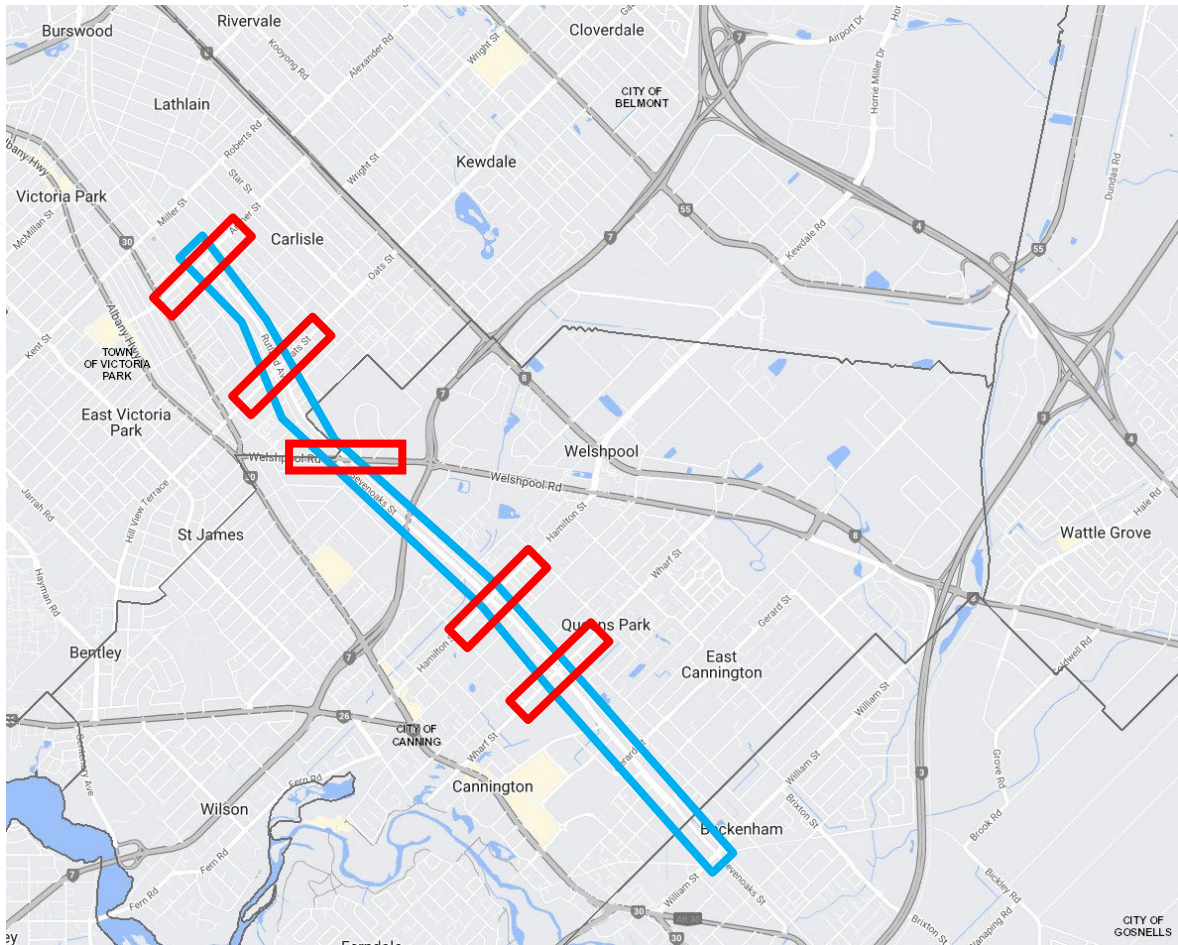
## Traffic Management Plan

- Ensuring property access is maintained and changed conditions communicated to appropriate stakeholders.
- Ensuring work activities are carried out sequentially to minimise adverse impacts.
- Provision will be made for works personnel to enter the work area in a safe manner in accordance with safety procedures.
- All entry and exit movements to and from traffic streams shall be in accordance with the requirements of safe working practices.
- Affected roads are included in HVO RAV Network 2-4. Traffic management will not impact on the movements of affected vehicle classes.



## 2 PROJECT OVERVIEW

### 2.1 Project Location



*Figure 1 – Site Location*

The works outlined in this TMP are highlighted in the area shown in Figure 1. The work area is primarily defined by the Armadale Line rail corridor, commencing at the Miller St grade separation in Carlisle, continuing to south to William Street in Beckenham.

General work areas are shown in BLUE, level crossing areas in RED above. The following roads are within the work area

#### **West of Rail corridor:**

- Sevenoaks Street
- Bank Street

#### **East of Rail corridor:**

- Railway Parade
- Rutland Avenue

#### **Level Crossings:**

- Mint Street
- Oats Street
- Welshpool Road
- Hamilton Street
- Wharf Street

The works fall within the LGA boundaries of:

Town of Victoria Park.

City of Canning.

City of Gosnells.

## 2.2 Project Details, Site Assessment and Site Constraints/Impacts

ITEM	DESCRIPTION
<b>Project</b>	Armadale Line Upgrade Project
<b>Location</b>	<ul style="list-style-type: none"> <li>• Armadale Rail Line, from Victoria Park Station to north of Beckenham Station.</li> <li>• All stations and carparks within the above section.</li> <li>• Adjacent Public Roads (Not impacted in phase 1 of early works – planning will be developed in a later stage and issued as a later revision of this TMP).</li> </ul>
<b>Road Classification, Existing Speed Limit</b>	N/A for current works stage, all works isolated within PTA Carparks
<b>Road Authority</b>	PTA (parking facilities only impacted)
<b>Local Government</b>	N/A
<b>Client</b>	ALUA
<b>Prime Contractor</b>	ALUA
<b>Sub-Contractor</b>	Altus Traffic Management
<b>Scope of Works</b>	<p>The following early site exploration activities will occur (typically, but not limited to):</p> <ul style="list-style-type: none"> <li>• Service locating of existing assets and services.</li> <li>• Complete service transfers and ensuring checks conducted so that no services are missed.</li> <li>• Geotechnical and Pavement Testing.</li> <li>• Complete asphalt, paving, kerbing and other reinstatement as necessary.</li> <li>• Service Locating Equipment: <ul style="list-style-type: none"> <li>○ Vacuum Potholing Truck or Trailer</li> <li>○ CPT Rig</li> <li>○ Light Vehicles (Utes)</li> <li>○ Electronic Locating Equipment including GPR.</li> </ul> </li> </ul>
<b>Staging of Work / Temporary Traffic Management</b>	<p>Early Works-</p> <ul style="list-style-type: none"> <li>• Stage 1: limited to closure of parking bays within PTA station parking facilities along the project section length.</li> <li>• Stage 2: Verge Works along Sevenoaks Street, Railway Parade and Bank Street, works on PSP and paths</li> <li>• Additional specific verge and median works on Sevenoaks Street near Cecil Avenue and Hamilton Street for service locating required or design</li> </ul>
<b>Project Date</b>	
<b>Hours / Days of Work</b>	<p>See TGS's for site specific implementation hours or required restrictions.</p> <p>Typically 0700 hours through 1900 hours.</p> <p>Night works in the Queens Park Station car park and Oats Street bus depot/stop are carried out at night time, pending PTA and LGA</p>

ITEM	DESCRIPTION
	approvals for out of hours work. All works are off the road and restricted to parking and bus stop locations.
<b>Duration of Work</b>	Typically, 8-12 hours per shift <b>Scope will evolve and will be detailed in on-going revisions of this TMP</b>
<b>Other Constraints</b>	The following site constraints / impacts have been taken into consideration in the design of the traffic guidance schemes: <ul style="list-style-type: none"> <li>• PTA parking access and parking bay management needs.</li> <li>• Bus facility management</li> <li>• School zones and crossings</li> <li>• PSP/shared path users</li> <li>• Traffic volumes at signalised intersections</li> <li>• Signalised intersections at level crossings</li> </ul>
<b>Concurrent/adjacent Works or Projects</b>	BMD is carrying out works on Cecil Avenue. ALUA has access to a copy of the approved TMP <b>CECIL AVENUE EAST UPGRADE WORKS - STAGES 1A AND 1B WORKS</b> EDGE2022_PR1116 TMP_FINAL Version 1.04 26.05.2022 Necessary signs deployed for these plans are shown on the respective TGSs Works by the Leach Welshpool Alliance are carried out north of the works shown on TGS 007. Signs and locations were obtained during a site inspection on 2 <sup>nd</sup> August 2022.

## 2.3 Existing Traffic and Road Environment

ITEM	DESCRIPTION
<b>Traffic Volume and Composition</b>	No on road works in Stage 1 scope (PTA Parking facilities only) Refer to section 4.1.1 and Appendix D
<b>Existing Road Configuration</b>	Sevenoaks Street – various lane and carriageway configuration, single lane each way, two lanes each way, dual carriageway with one or two lanes, median separated. Signalised intersections and T-junctions as well as unsignalised T-junctions with minor local roads. School Zones and Crossings as well as pedestrian crossings. Entrances to PTA car park facilities and bus interchanges at stations. Railway Parade – single lane each way with school zones and crossings at various locations. Signalised and unsignalized intersections as well as T-junctions with minor local roads. Entrances to PTA car park facilities and bus interchanges at stations. Mint Street/Archer Street - single lane each way, school zones and crossings Oats Street – single lane each way, school zones and crossings Welshpool Road – dual lane each way, some section median divided dual carriageway Rutland Avenue – single lane each way



ITEM	DESCRIPTION
	Bank Street – single lane each way, no through road at southern end Hamilton Street – single lane each way Wharf Street – single lane each way
Existing Pedestrian / Cyclist Facilities	Shared path along Armadale line at various distances offset to the road. In Station areas, PSP/shared path turns into a “Shared Zone” as required. Typically 3m wide. Sevenoaks Street has pedestrian facilities mostly on the western verge and on the eastern verge when near rail stations. Railway Parade has access to the PSP/Shared Path that runs east of the Armadale Rail line as well as a pedestrian path on the eastern verge On road cycle facilities on Oats Street, either side of the level crossing

## 2.4 Overview of Proposed TTM

ITEM	DESCRIPTION
Temporary Traffic Management Descriptions	Refer to section 2.2 Project Details - ‘Staging of Work / Temporary Traffic Management.’ The traffic management outlined in this TMP will consist of advance warning signs, localised work zone closures only ( <b>STAGE 1</b> ). Works in Stage 2 include verge and median work areas that require speed reductions, lane closures and possible stop/slow operation carried out by Traffic Controllers. Localised lane/road closures are required for some service locating works. Appropriate detours will be provided.
Speed Zone dates and times	As all works for Stage 1 are located within parking facilities application of speed zones would be potentially unsafe. Stage 2 requires temporary speed zones of 40km/h where workers are within 1.2m of the road edge
Lane Closures dates and times	N/A for Stage 1 Additional areas in Stage 2 required lane closures. Times for these lane closures are based on traffic volume and will provide adequate number of lanes available.
Road Closures dates and times	Some works require localised road closures (in one or both directions). The dates will be advised by ALUA via the notification of roadworks process. The closures are of localised and short duration with minor detours and therefore do not require further advance advertising, unless noted on the relevant TGS.
Signal modifications description	N/A
Proposed lane widths	Minimum of 3.2m, where possible 3.5m
Road Safety Barrier	N/A

The temporary speed limit and length of work zone has been determined based on work requirements and compliance with AGTTM Part 3 Table 5.5 (see below).

Temporary speed limit (km/h)	Length of zone (m)	Conditions
≤ 40	100 – 200	<ul style="list-style-type: none"> <li>high level of hazard for workers on foot.</li> </ul>
40	100 (minimum) – 500 (maximum)	<ul style="list-style-type: none"> <li>workers on foot within 1.2 m of traffic with no physical barrier</li> <li>structural danger to bridges.</li> </ul>
60	150 (minimum)	<ul style="list-style-type: none"> <li>workers on foot or small plant within 3 m of traffic with no physical barrier (i.e. road safety barrier)</li> <li>on approach to the traffic controller or PTCO</li> <li>reduced visibility (e.g. dust or smoke)</li> <li>reduced standard alignment</li> <li>degraded pavement surface</li> <li>newly laid bituminous seal.</li> </ul>
80	500 (minimum)	<ul style="list-style-type: none"> <li>workers on foot or plant within 3 – 6 m of traffic with no physical barrier</li> <li>disturbance to alignment or pavement surface.</li> </ul>
80 (buffer)	300 (minimum)	<ul style="list-style-type: none"> <li>for advance warning of a 40 or 60 km/h when speed is 100 km/h or more.</li> </ul>

For any works involving excavations, the delineation and additional protection (if required) has been determined based on AGTTM Part 3 Table 6.1 (see below). For the purpose of temporary works, a non-frangible above ground hazard is treated as an excavation >500mm deep.

Speed (km/h)	Traffic volume (vpd)*	Clearance to excavation (m)	Protection required		
			Depth of excavation (mm)		
			50 to 250	251 to 500	>500
≤ 65	Any	< 2.5	Option 1	Option 2	Option 3
		2.5 - 5	Option 1	Option 1	Option 2
		> 5	Option 1	Option 1	Option 1
≥ 70	≤ 1500	≤ 5	Option 1	Option 2	Option 3
		> 5	Option 1	Option 1	Option 1
	> 1500	≤ 6	Option 1	Option 2	Option 3
		> 6	Option 1	Option 1	Option 1

\* For multilane roads use volume in one direction. For two-lane, two-way roads use the sum of both directions. Any variations to the recommendations in this table need to be supported by a risk assessment.

\*\* For Options 1 and 2, cones or bollards are to be placed at the top of the excavation.

The protection options are:

- Option 1 – Use traffic cones or bollards at standard spacing.
- Option 2 – Use traffic cones or bollards at maximum 4m spacing.
- Option 3 – Use a suitable road safety barrier system.

## 2.5 Project Representatives

Position	Name	Contact Details
<b>Road Authority Representatives</b>		
<b>Contact</b>		
<b>Road Authority Representatives</b>		
<b>Contact</b>		
<b>Rail Authority Representatives</b>		
<b>Contact</b>		
<b>Prime Contractor</b>		
<b>Project Manager</b>		
<b>Site Supervisor/ Manager</b>		
<b>TMP Design</b>		
<b>TMP Implementation</b>		
<b>Traffic Management Supervisor</b>		

ALUA have engaged Strada Consultants Pty Ltd to prepare this Traffic Management Plan and associated controls for the works.

## 3 RISK MANAGEMENT

The following details the preliminary assessment of site hazards likely to be encountered, the level of risk associated with each, and the control proposed. Note that the risk level is the level of assessed risk *without* the controls in place. The controls listed have been determined as being appropriate in reducing the risk to a level that is acceptable.

The hierarchy of control has been utilised to ensure that the highest practicable level of protection and safety is selected:

- Elimination
- Substitution
- Isolation
- Engineering
- Administration
- Personal Protection Equipment

In evaluating the options, a key consideration is whether the option takes traffic around, through or past the worksite.



## 3.1 Risk Classification Tables

### QUALITATIVE MEASURES OF CONSEQUENCE OR IMPACT

Level	Consequence	Description
1	Insignificant	Mid-block hourly traffic flow per lane is equal to or less than the allowable lane capacity detailed in AS1742.3. No impact to the performance of the network. Affected intersection leg operates at a Level of Service (LoS) of A or B. No property damages.
2	Minor	Mid-block hourly traffic flow per lane is greater than the allowable road capacity and less than 110% of the allowable road capacity as detailed in AS1742.3. Minor impact to the performance of the network. Intersection performance operates at a Level of Service (LoS) of C. Minor property damage.
3	Moderate	Midblock hourly traffic flow per lane is equal to and greater than 110% and less than 135% of allowable road capacity as detailed in AS1742.3. Moderate impact to the performance of the network. Intersection performance operates at a Level of Service (LoS) of D. Moderate property damage.
4	Major	Midblock hourly traffic flow per lane is equal to and greater than 135% and less than 170% of allowable road capacity as detailed in AS1742.3. Major impact to the performance of the network. Intersection performance operates at a Level of Service (LoS) of E. Major property damage.
5	Catastrophic	Midblock hourly traffic flow per lane is equal to and greater than 170% of allowable road capacity as detailed in AS1742.3. Unacceptable impact to the performance of the network. Intersection performance operates at a Level of Service (LoS) of F. Total property damage.

## OSH QUALITATIVE MEASURES OF CONSEQUENCE OR IMPACT

Level	Consequence	Description
1	Insignificant	No treatment required
2	Minor	First aid treatment required.
3	Moderate	Medical treatment required or Lost Time Injury
4	Major	Single fatality or major injuries or severe permanent disablement
5	Catastrophic	Multiple fatalities.

## QUALITATIVE MEASURES OF LIKELIHOOD

Level	Likelihood	Description
A	Almost certain	The event or hazard: is expected to occur in most circumstances, will probably occur with a frequency in excess of 10 times per year.
B	Likely	The event or hazard: Will probably occur in most circumstances, will probably occur with a frequency of between 1 and 10 times per year.
C	Possible	The event or hazard: might occur at some time, will probably occur with a frequency of 0.1 to 1 time per year (i.e. once in 1 to 10 years).
D	Unlikely	The event or hazard: could occur at some time, will probably occur with a frequency of 0.02 to 0.1 times per year (i.e. once in 10 to 50 years).
E	Rare	The event or hazard: may occur only in exceptional circumstances, will probably occur with a frequency of less than 0.02 times per year (i.e. less than once in 50 years).

**IMPORTANT NOTE:** The likelihood of an event or hazard occurring shall first be assessed over the duration of the activity (i.e. “period of exposure”). For risk assessment purposes the assessed likelihood shall then be proportioned for a “period of exposure” of one year.

Example: An activity has a duration of 6 weeks (i.e. “period of exposure” = 6 weeks). The event or hazard being considered is assessed as likely to occur once every 20 times the activity occurs (i.e. likelihood or frequency = 1 event/20 times activity occurs = 0.05 times per activity). Assessed annual likelihood or frequency = 0.05 times per activity x 52 weeks/6 weeks = 0.4 times per year. Assessed likelihood = Possible.

## QUALITATIVE RISK ANALYSIS MATRIX – RISK RATING

	CONSEQUENCE				
Likelihood	Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
Almost certain (A)	Low 5	High 10	High 15	Very High 20	Very High 25
Likely (B)	Low 4	Medium 8	High 12	Very High 16	Very High 20
Possible (C)	Low 3	Low 6	Medium 9	High 12	High 15
Unlikely (D)	Low 2	Low 4	Low 6	Medium 8	High 10
Rare (E)	Low 1	Low 2	Low 3	Low 4	Medium 7

## MANAGEMENT APPROACH FOR RESIDUAL RISK RATING

Residual Risk Rating	Required Treatment
Very High	Unacceptable risk. <b>HOLD POINT</b> . Work cannot proceed until risk has been reduced.
High	High priority, OSH MR and Roadworks Traffic Manager (RTM) must review the risk assessment and approve the treatment and endorse the TGS prior to its implementation.
Medium	Medium Risk, standard traffic control and work practices subject to review by accredited AWTM personnel prior to implementation.
Low	Managed in accordance with the approved management procedures and traffic control practices.

## 3.2 Risk Register

Item	RISK EVENT	CONSEQUENCE	PRE – TREATMENT RISK			TREATMENT	RESIDUAL RISK		
			L	C	RR		L	C	RR
1.	Traffic speed may create a risk of collision with other vehicles on the road, construction vehicles and construction personnel.	Potential injury to road users.	C	3	M 9	Temporary 40km/h speed zones (for works within 1.2m of live traffic) and temporary 60km/h speed zones (for works within 1.2m-3.0m of live traffic) will be applied. Work area to be separated from passing traffic with delineation and lane closures.	E	3	L 3
2.	Incorrectly designed and / or installed traffic control may result in inadequate protection of the worksite with a subsequent increased potential for crashes and injury.	Potential injury to road users.	B	3	H 12	Qualified and experienced personnel have been employed in the preparation of the TMP and associated TGS'S and experienced personnel will be used to implement and maintain the traffic control onsite.	D	3	L 6
3.	Traffic Controller may be hit by passing traffic while setting up traffic control devices	Potential injury to road users and personnel.	B	4	VH 16	Implementation shall be in line with requirements of AGTTM and setup and pack up shall follow sequences as outlined. Risk assessments (JHA/SWMS) ahead of shift start shall be documented as per Project requirements Shadow vehicles and TMAs (TL2) shall be used as required. Traffic Controllers shall work in teams to provide assistance and spotting for TCs implementing devices	D	4	M 8
4	Inclement weather may result in a decreased readability of the traffic control delineation and signage and may increase the potential for crashes.	Injury to road users.	B	3	H 12	The TMP requires that the Contractor undertakes a daily inspection of the traffic control and make adjustments as are necessary to ensure effectiveness is maintained. Experienced personnel specialising in the erection and maintenance of traffic control will be used. All signage shall be Class 1 retro-reflective.	D	3	L 6
5.	The interaction of work personnel with traffic may result in increased potential for conflict and serious injury.	Injury to work personnel.	B	4	VH 16	The TMP provides for temporary traffic controls to be installed around the work site which will reduce likelihood of conflict. Traffic Control and site containment is to be installed and maintained by appropriately qualified and experienced personnel. The TMP provides where necessary for the implementation of a closure of traffic lanes to direct traffic around the work site which will eliminate conflict.	E	4	L 4



Item	RISK EVENT	CONSEQUENCE	PRE – TREATMENT RISK			TREATMENT	RESIDUAL RISK		
			L	C	RR		L	C	RR
6.	The interaction of non-motorised road users with through traffic and work plant may result in increased potential for conflict and serious injury.	Injury to pedestrians, cyclists, and other non-motorised road users.	B	3	H 12	Pedestrian Watch Your Step signs will be erected at locations where works are being completed in close vicinity to footpaths. Traffic Controllers may provide assistance where necessary around the works.	D	3	L 6
7.	A road user may misread the required alignment vehicles are to reaction take on account of modification required to accommodate road works. This could result in through vehicles colliding with work personnel or work vehicles. The restrictions placed on the road environment by the works result in property access restrictions to local residents, property owners and tenants	Injury to road users and work personnel. Adverse public	CB	43	H 12H 12	Traffic planning requires traffic controls to be installed to direct traffic around the work site and a reduction in the speed zone of the carriageways approaching and passing the works. The TMP and TGS's detail the temporary controls and advance warning and directional signage to be used in accordance with the requirements of AGTMM3. Local access to be maintained to properties on all affected roads. Traffic control personnel to provide assistance to local drivers when accessing driveways. Local residents, property owners and tenants to be notified of the temporary restrictions if these become necessary and communicated with directly if the works will obstruct direct access to properties, driveways or parking areas.	ED	43	L 4L 6
8.	Workers exiting vehicles on the side of the live traffic lane at high speeds leads to the vehicle door or vehicle occupant being struck by a passing motorist. Restrictions and delays associated with the traffic control may cause unacceptable delays to emergency services.	Injury to road users and work personnel. Delay may result in failure to respond to emergency in time resulting in a fatality.	BC	33	H 12M 9	Workers are to exit vehicles from the side of the vehicle away from the live traffic lane unless they are further than 1.2m from the live traffic lane in a temporary 60km/h zone. The TMP details the consultation and communication mechanisms undertaken with Emergency services and how these will be managed. It also requires that all works personnel respond to emergency traffic to facilitate safe and unhindered passage where possible.	DE	33	L 6L 3
9.	The restrictions placed on the traffic lanes by the works could result in roadway capacity being decreased to the point where unacceptable delays and congestion occur.	Unacceptable delays. Adverse public reaction.	D	3	L 6	Traffic volumes analysed to determine permitted working times, ensuring that capacity is not exceeded. Low traffic volumes at all locations will permit single lane operation to comfortably take place at times prescribed on individual TGS's. On site monitoring of traffic flows will occur.	E	3	L 3

Item	RISK EVENT	CONSEQUENCE	PRE – TREATMENT RISK			TREATMENT	RESIDUAL RISK		
			L	C	RR		L	C	RR
10.	A road user may misread the required alignment vehicles are to take on account of modifications required to accommodate road works. This could result in through vehicles colliding with work personnel or work vehicles.	Injury to road users and work personnel.	C	4	H 12	Traffic planning requires traffic controls to be installed to direct traffic around the work site and a reduction in the speed zone of the carriageways approaching and passing the works. The TMP and TGS's detail the temporary controls and advance warning and directional signage to be used in accordance with the requirements of AGTTM3.	E	4	L 4
11.	Workers exiting vehicles on the side of the live traffic lane at high speeds leads to the vehicle door or vehicle occupant being struck by a passing motorist.	Injury to road users and work personnel.	B	3	H 12	Workers are to exit vehicles from the side of the vehicle away from the live traffic lane unless they are further than 1.2m from the live traffic lane in a temporary 60km/h zone.	D	3	L 6
12.	Excavations near paths (pedestrians/cyclists)	Injury to path user	B	4	VH 16	Pedestrian containment fencing shall be installed around all open excavations to prevent access from active path facilities. Sections of the PSP affected by the works are closed temporarily (long term) to eliminate conflict	E	4	L 4
13.	The interaction of path users (pedestrians, cyclists, etc.) with workers and plant while works are carried out on or near the path may lead to injuries	Injury to path user	B	3	H 12	Appropriate advance warning signs are to be displayed while works on/near the PSP/path are carried out. Workers and plant shall be always off the path. If that is not possible, appropriate delineation with at least 1.5m unobstructed path width or assistance by Traffic Controllers including stop/slow setups shall be utilised. Where setups have to be left unattended in aftercare, paths shall be reinstated to original conditions or appropriate advance warning signs shall be displayed to warn path users of uneven ground conditions.	E	3	L 3
14.	Congestion occurs as a result of the single lane operation	Significant congestion and damage to ALUA, PTA and LGA	C	3	M 9	Traffic Controllers shall observe lane closures and queuing. Where delays occur as part of the lane closure activities, the lane closures shall be removed to resolve any congestion.	D	3	L 6

Item	RISK EVENT	CONSEQUENCE	PRE – TREATMENT RISK			TREATMENT	RESIDUAL RISK		
			L	C	RR		L	C	RR
15.	Property driveways present within the work zone are blocked by Traffic Management devices prevent access and egress to properties.	Adverse public reaction	C	3	M 9	Traffic Controllers on site are to assist motorists wishing to access or egress driveways as necessary. Where signs are blocking line of sight in and out of driveways, Traffic Controllers shall adjust sign spacing in line with AGTTM requirements	D	3	L 6
16	Uncontrolled shuttle flow operation may lead to collisions	Injury to road users and property damage	B 12	3	H	Uncontrolled shuttle flow operation is restricted to 60m in total length and shall only be deployed when visibility is not impacted (vegetation or parked vehicles). Setup is restricted to areas indicated on TGS and shall not be used near intersections or where parked vehicles (on verge) prohibit traffic to pass.	D	3	L 6
17	Closure of left turn lane in combination with provision to turn left from right lane puts cyclists in conflict with other road users (TGS 020).	Injury to road users	B 12	3	H	Cycle lane near closed left turn pocket shall remain accessible. Additional warning signs for cyclists in lane are installed ahead of intersection	D	3	L 6

## 4 TRAFFIC MANAGEMENT PLANNING AND ASSESSMENT

### 4.1 Traffic Assessment and Analysis

#### 4.1.1 Traffic and Speed Data

Refer to Appendix D for traffic volumes and other data.

#### 4.1.2 Traffic Flow Analysis

Traffic flow will be maintained by means of the prescribed traffic control arrangements outlined in this TMP. Traffic volumes and movements will be analysed against the requirements detailed in the AGTTM3 and MRWA risk tables (see section 6) to ensure levels of service are acceptable to the Road Authority, so that lane closures when utilising single lane operation can be implemented at times when the affected roads do not exceed capacity.

Average Daily Totals on the affected roads, summarized in Appendix D of this TMP, indicate that no congestion will be experienced during the proposed hours of the works.

Where Roads are closed as part of the works in the vicinity of PTA stations, the closures are outside peak hour times to avoid unnecessary impact on commuters.

#### 4.1.3 Temporary Speed Zones

Temporary speed zones 40km/h will be implemented on roads where workers are likely to be within 1.2m from road edge as required by the works. Existing traffic speed zones will be reinstated at the end of each work shift.

#### 4.1.4 Existing Traffic Signals

Various traffic signals are present along Sevenoaks Street and may be impacted by the early works. These impacts are mostly limited to lane closures through, ahead or after traffic signals. Approval from MRWA RNOC shall be obtained 10 business days ahead of such works. The relevant LM number will be noted on the TGS.

The signals along Sevenoaks Street that may be impacted are:

- LM 0934 Welshpool Road
- LM 0640 Hamilton Street
- LM 0682 Wharf Steet
- LM 0542 Cecil Avenue

All these signals are also linked to the respective level crossing at the location. It is the intent to not impact on the signal phasing as such that level crossing performance or safety is impacted. In this TMP the impacts will be reduced to the north south movements along Sevenoaks Street and implementation times will be selected to be outside peak hours in the morning and afternoon to minimise any impact on the performance of the signals.

#### 4.1.5 Impact to Adjoining Network

No impact on the surrounding network is expected.



## 4.1.6 End of Queue Treatment

N/A

## 4.1.7 Temporary Traffic Signals

N/A

## 4.2 Road Users

### 4.2.1 Pedestrians

See section 2.3 for pedestrian facility locations near the proposed work sites.

Pedestrian Watch Your Step signs will be erected at locations where works are being completed in close vicinity to footpaths.

When required, traffic controllers will be present to monitor pedestrian movements and render assistance around or through the work site as required.

Where works are undertaken on or near the PSP/path appropriate advance warning signs shall be displayed. Traffic Controllers may be required to stop path users while works progress and pose a risk for path users. Where required, aftercare signs shall warn PSP/path users of potential trip hazards or uneven surface that cannot be removed/reinstated at the end of the shift. All excavations shall be barricaded off to prevent unintended access by PSP/path users.

### 4.2.2 Cyclists

Where works are undertaken on or near the PSP/path appropriate advance warning signs shall be displayed. Traffic Controllers may be required to stop path users while works progress and pose a risk for path users. Where required, aftercare signs shall warn PSP/path users of potential trip hazards or uneven surface that cannot be removed/reinstated at the end of the shift. All excavations shall be barricaded off to prevent unintended access by PSP/path users.

In cases where surface conditions are such that cyclists cannot traverse the work area safely, as a last resort the cyclists dismount sign shall be displayed for short durations only.

### 4.2.3 Public Transport

Works in Stage 1 impacting PTA services are limited to PTA parking facilities: As such PTA approval of the closure of parking bays to undertake works will be required.

Sevenoaks Street has, multiple bus routes operating along it. Works do not impact these routes or bus stops.

Works on Oats Street require the temporary closure of Bank Street (southbound direction only). The closure will still provide access for busses along Bank Street. Traffic Controllers will assist busses leaving Oats Street Station. PTA shall be notified ahead of the works to notify bus operators accordingly about these works.

### 4.2.4 Heavy and Oversized Vehicles

# Traffic Management Plan

## 4.2.5 Existing Parking Facilities

Stage 1 project early works are limited to PTA parking facilities: As such PTA approval of the closure of parking bays to undertake works will be required.

ALUA team to liaise with PTA to determine notification requirements and approvals.

Parking facilities along the road may be impacted by works or signs being placed along the road. These impacts are minimal.

## 4.2.6 Access to Adjoining Properties / Business

Access to adjoining properties and businesses shall be maintained at all times and Traffic Controllers shall ensure that signs do not block line of sight in and out of driveways to properties.

## 4.2.7 Rail Crossings

Works for Stage 1 will not occur in the vicinity of rail crossings.

Works for service locating may occur in the vicinity of rail crossings. Where works extend through signals linked to rail crossings, only the north south leg of Sevenoaks Street will have lane closures in place to not impact on the service of the level crossing itself.

In general, no works shall impact on performance of rail crossings and no stop/slow operation is carried out in the vicinity of rail crossings (with exception of PSPs), inclusive of uncontrolled shuttle operation.

## 4.2.8 School Crossings

School crossings are present on Mint Street, along Sevenoaks Street. The controls used for the early works do not impact on the performance of these. Additional locations with school crossings will be added as revision necessitate.

## 4.2.9 Special Events and Other Works

N/A

## 4.2.10 Emergency Vehicle Access

The proposed works will be clearly signed. Emergency Vehicles will be given priority access at all times to the extent possible.

## 4.3 Night Work Provisions

The works in the PTA Queens Park Station car park and bus depot at Oats Street Station are carried out during night time to allow works to not interfere with normal station operation. The works are off the roadway. All signs used shall comply with necessary night time provisions. Where existing lighting in the car park and the bus stop/depot is insufficient, additional work lights shall be provided. TCs assisting pedestrians shall be equipped for night time work (high vis retro-reflective and wands)

## 4.4 Road Safety Barriers

N/A

## 4.5 Consultation and Communication / Notification

### 4.5.1 Other Agencies

N/A

### 4.5.2 Public

PTA to be consulted to determine public notification requirements for works within parking facilities.

Service locating works impacts are minor and require no further notification.

Road closures are one directional closures only with minor detours and require no further notification.

## 5 SITE ASSESSMENT

### 5.1 Provision to Address Environmental Conditions

#### 5.1.1 Adverse Weather

Weather is not expected to adversely impact on the effectiveness of the traffic control detailed on the TGS's. Notwithstanding this, should adverse weather conditions be encountered during the works, the following contingency plans should be activated. Note: any adjustments to the plan shall be risk assessed and approved by someone holding a WTM or AWTM accreditation.

##### 5.1.1.1 Rain

In the event of rain, an on-site assessment shall be made and sign spacing and tapers may be extended by 25% to account for increased stopping distances. "Slippery When Wet" signs may be placed as required and all changes shall be recorded in the daily diary.

If rain occurs, Traffic Management Personnel shall inspect the site and where signage and / or devices are not clearly visible, signage may need to be adjusted to improve visibility or if necessary, provide additional signage and delineation. Where stopping distances are adversely affected by wet surfaces, spacing between signs may need to be adjusted to provide increased reaction time for drivers. In cases where it is determined that the rain is deemed too heavy that the risk is considered unacceptable, all work shall cease until rain has cleared. All changes shall be noted in the daily diary.

##### 5.1.1.2 Floods

Should works be affected by flooding to the extent that the worksite becomes impassable or risk is considered unacceptable, all work shall cease immediately and Traffic Controllers (or other personnel if necessary) shall be deployed immediately to close the site and direct traffic around the flooded area (under the direction of the project manager or traffic manager). Emergency services and the Road Authority shall be notified immediately and Traffic Controllers shall remain onsite until emergency services and the Road Authority personnel arrive and take control of the site.

##### 5.1.1.3 Other adverse weather (strong winds, thunderstorms, etc.)

Prior to the commencement of works, the traffic supervisor is to check daily weather forecast and monitor for severe weather conditions. So as not to expose traffic controllers or road users to unnecessary hazardous conditions, if severe weather is forecast the project team shall consider postponing the installation of traffic management. If the decision is made to proceed with works during a window of clear weather preceding a severe weather front, the project team is to monitor the weather forecast and make every attempt to ensure that traffic management can be safely packed up before being impacted.

In the event that short term traffic arrangements are in place during an adverse weather event:

- Weighted devices will be installed on signs
- Traffic cones will be double stacked

To reduce the impact of adverse weather events on long term traffic arrangements:

- Signs may be post mounted where practicable
- Delineation may be fixed to the road surface (e.g. bolt down bollards) where practicable

In the event that the above controls are deemed to be insufficient and the maintenance and readability of devices is significantly compromised, the arrangement will be assessed and removed where/when safe to do so.

### 5.1.2 Sun Glare

Where sun glare is identified as adversely affecting a driver's ability to sight signage and / or traffic control devices, sign locations may need to be adjusted and additional delineation and/or traffic control devices provided to address the risk from glare. Additionally in the event that traffic control is adversely affected by glare at sunset and sunrise, traffic controllers may need to assist in maintaining low traffic speeds.

Any changes required are to be noted in the daily diary.

### 5.1.3 Fog/Dust/Smoke

Where fog, dust or smoke is identified as adversely affecting a driver's ability to sight signage and / or traffic control devices, sign locations may need to be adjusted and additional delineation and/or traffic control devices provided to address the risk. All changes are to be noted in the daily diary.

Should works be affected by fog, dust or smoke to the extent that risk is considered unacceptable, all work shall cease immediately and Traffic Controllers (and other personnel if necessary) shall be deployed immediately to close the site. Emergency services and the Road Authority shall be notified immediately and Traffic Controllers shall remain onsite until emergency services and the Road Authority personnel arrive and take control of the site.

### 5.1.4 Road Geometry, Terrain, Vegetation and Structures

Prior to the commencement of works, the supervisor shall ensure sight distance to the work area is adequate and adheres to the requirements set out in the TMP. Road geometry and terrain, including crests, have been taken into account in the design and layout of all traffic guidance schemes, allowing for adequate site distance and stopping times.

Verge trees are present at most locations. Where applicable traffic controllers are to place signage in locations that are clearly visible and easy to see. Where necessary, distance between signs can be extended by 25% to allow a clear line of sight. Signs shall be erected on both sides of the roadway (where possible) to ensure that the control measures are noticed. Locations where this is not possible are detailed on the site specific TGS's.



There are no structures preventing line of sight to traffic control signs and devices.

## 5.2 Existing Traffic and Advertising Signage

Temporary traffic signage from works by others shall be maintained. In case signs can be removed (noted on the respective TGS), signs shall be reinstated once works conclude.

## 6 SAFETY PLAN

### 6.1 Occupational Safety and Health

All persons and organisations undertaking these works or using the roadwork site have a duty of care under statute and common law to themselves, their employees and all site users, lawfully using the site, to take all reasonable measures to prevent accident or injury.

This TMP forms part of the overall project Safety Management Plan and provides details on how all road users considered likely to pass through, past, or around the worksite will be safely and efficiently managed for the full duration of the site occupancy and works.

### 6.2 Roles and Responsibilities

#### 6.2.1 Responsibilities

The Project Manager has the ultimate responsibility to ensure the TMP is implemented for the prevention of injury and property damage to employees, contractors, sub-contractors, road users and all members of the public.

The Project Manager will ensure all site personnel are fully aware of their responsibilities, and that traffic controllers are appropriately trained and accredited and that sufficient controllers are available to ensure appropriate breaks are taken.

All personnel engaged in the field activities will follow the correct work practices as required by the CoP, AGTTM and AS1742.3.

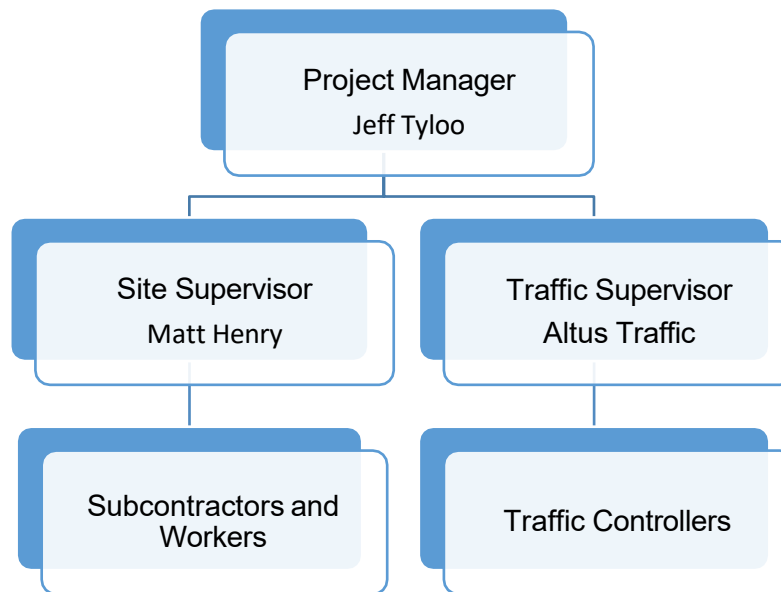
All personnel will not commence or continue work until all signs, devices and barricades are in place and operational in accordance with the requirements of the TMP.

All personnel responsible for traffic control shall ensure that the number, type and location of signs, devices and barricades are to a standard not less than Appendix F of this plan, CoP, AGTTM and AS1742.3. Should a situation arise that is not covered by this TMP, CoP, AGTTM or AS1742.3, the Road Authority Representative shall be notified.

The Road Authority Representative may direct erection, relocation or removal of signs or devices, which, in the opinion of the Road Authority Representative, are not in accordance with the TMP and do not provide sufficient safety for road users. If such directions are not complied with, the Road Authority Representative may arrange for erection, relocation or removal by others at the cost of the Contractor.

## 6.2.2 Roles

The following diagram outlines the responsibility hierarchy of this contract.



### 6.2.2.1 Project Manager

The Project Manager shall:

- Ensure all traffic control measures of this TMP are placed and maintained in accordance with this plan and the relevant Acts, Codes, Standards and Guidelines
- Ensure suitable communication and consultation with the affected stakeholders is maintained at all times.
- Ensure inspections of the Traffic Controls are undertaken in accordance with the TMP, and results recorded. Any variations shall be detailed together with reasons.
- Review feedback from field inspections, worksite personnel and members of the public, and take action to amend the traffic control measures as appropriate following approval from the Road Authority's Representative.
- Arrange and/or undertake any necessary audits and incident investigations.

### 6.2.2.2 Site Supervisor

The Site Supervisor is responsible for overseeing the day-to-day activities, and is therefore responsible for the practical application of the TMP, and shall:

- Instruct workers on the relevant safety standards, including the correct wearing of high visibility safety vests.
- Ensure traffic control measures are implemented and maintained in accordance with the TMP.
- Undertake and submit the required inspection and evaluation reports to management.

- Render assistance to road users and stakeholders when incidences arising out of the works affect the network performance or the safety of road users and workers.
- Take appropriate action to correct unsafe conditions, including any necessary modifications to the TMP.

### 6.2.2.3 Traffic Management Personnel

- At least one person on site shall be accredited in Basic Worksite Traffic Management and shall have the responsibility of ensuring the traffic management devices are set out in accordance with the TMP.
- At least one person accredited in Advanced Worksite Traffic Management (Strada Consultants Pty Ltd) shall be available to attend the site at short notice (or be available by phone on short notice at all times) to manage variations, contingencies and emergencies, and to take overall responsibility for traffic management.

### 6.2.2.4 Traffic Controllers

Traffic Controllers shall be used to control road users to avoid conflict with plant, workers, traffic and pedestrians, and to stop and direct traffic in emergency situations.

Traffic Controllers shall:

- Operate in accordance with AGTTM Part 7: Traffic Controllers
- Be accredited in Basic Worksite Traffic Management
- Hold a current Traffic Controller's accreditation
- Be relieved from their duty after not more than 2 hours for a period of rest or "other duties" of at least 15 minutes as required by AGTTM and/or OS&H Regulations.

### 6.2.2.5 Workers and Subcontractors

Workers and Subcontractors shall

- Correctly wear high visibility vests, in addition to other protective equipment required (e.g. footwear, eye protection, helmet sun protection etc.), at all times whilst on the worksite
- Comply with the requirements of the TMP and ensure no activity is undertaken that will endanger the safety of other workers or the general public.
- Enter and leave the site by approved routes and in accordance with safe work practices.

## 6.3 Personal Protective Equipment

All personnel entering the work site shall correctly wear high visibility vests to AS/NZS 4602, in addition to other protective equipment required on a site-by-site basis (e.g. protective footwear, eye protection, helmet, sun protection, respiratory devices etc.) at all times whilst on the worksite.

## 6.4 Plant and Equipment

All plant and equipment at the workplace shall meet statutory requirements and have the required registration, licenses or certification where required. All mobile equipment shall be fitted with suitable reversing alarms. All mobile plant and vehicles shall be fitted with a pair of rotating flashing amber lamps in accordance with AS1742.3 clause 4.14.1. All workers will be made aware of the safe work practice at the time of the site induction.

## 6.5 Trip Hazards

The worksite and its immediate surroundings shall be suitably protected and free of hazards, which could result in tripping by non-motorised road users. Hazards, which cannot be removed, shall be suitably protected to prevent injury to road users, including those with sight impairment. Where level differences are significant, suitable barriers, which preclude pedestrian access shall be used.

Where works extend beyond daylight hours and adjacent lighting is insufficient to illuminate hazards to non-motorised road users, appropriate temporary lighting shall be installed.

The worksite shall be kept tidy to reduce the risk to workers. Where pedestrians are required to pass through the works, Pedestrians Watch Your Step signs will be installed on each approach and Traffic Controllers will be present to assist where necessary.

## 7 IMPLEMENTATION

### 7.1 Traffic Guidance Schemes

The Traffic Guidance Schemes (TGS's) outlined in Appendix F and listed below have been provided for the following stages to demonstrate the type of controls that will be implemented throughout the term of the contract. All sign and device requirements are shown on each TGS. Should the use of additional (not shown on the TGS or listing of devices) or reduced number of devices be required due to unforeseen needs, they shall be recorded within the Daily Diary as a variation to the TMP, following prior approval.

Early Works Activities	TGS Number	Rev	Details
	ALUA-TGS-01-001	A	Typical PTA Station car park works – Carlisle Station
	ALUA- TGS -01-002	A	Typical PTA Station car park works –Oats Street Station
	ALUA- TGS -01-003	A	Typical PTA Station car park works – Welshpool Station
	ALUA- TGS -01-004	A	Typical PTA Station car park works – Queens Park Station
	ALUA- TGS -01-005		Typical PTA Station car park works – Cannington Station
	ALUA- TGS -01-006	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING - VERGE WORKS SEVENOAKS ST NEAR QUEENS PARK STATION SPEED REDUCTION TO 40km/h
	ALUA- TGS -01-007	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING - MP GAS LINE SEVENOAKS STREET LANE CLOSURE AND SPEED REDUCTION TO 40km/h
	ALUA- TGS -01-008	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING - CANNINGTON TRUNK MAIN SEVENOAKS STREET - CECIL AVE DOUBLE LANE CLOSURES AND SPEED REDUCTION TO 40km/h SHEET 1 FO 2
	ALUA- TGS -01-009	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING - CANNINGTON TRUNK MAIN SEVENOAKS STREET - CECIL AVE DOUBLE LANE CLOSURES AND SPEED REDUCTION TO 40km/h SHEET 2 OF 2
	ALUA- TGS -01-010	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING - CANNINGTON TRUNK MAIN SEVENOAKS STREET - CECIL AVE SINGLE LANE



Early Works Activities	TGS Number	Rev	Details
			CLOSURE (SB) & SPEED REDUCTION TO 40km/h
	ALUA- TGS -01-011	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING - QUEENS PARK STATION CAR PARK CLOSURE
	ALUA- TGS -01-012	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING - OATS STREET STATION BUS PORT CLOSURE
	ALUA-TGS-01-013	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING - BANK STREET BETWEEN OATS ST AND WELSHPOOL RD - SPEED REDUCTION TO 40KM/H AND OPTIONAL CONTROLLED SHUTTLE FLOW
	ALUA-TGS-01-014	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING - BANK STREET BETWEEN OATS ST AND WELSHPOOL RD - SPEED REDUCTION TO 40KM/H AND OPTIONAL SHUTTLE FLOW
	ALUA-TGS-01-015	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING - BANK STREET BETWEEN OATS ST AND WELSHPOOL RD - SPEED REDUCTION TO 40KM/H
	ALUA-TGS-01-016	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING WORKS MEDIAN WORKS MINT ST & ARCHER ST
	ALUA-TGS-01-017	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING WORKS VERGE WORKS & ROAD CLOSURE MINT ST & ARCHER ST
	ALUA-TGS-01-018	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING WORKS VERGE WORKS & ROAD CLOSURE MINT ST & ARCHER ST
	ALUA-TGS-01-019	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING WORKS VERGE WORKS & ROAD CLOSURE MINT ST & ARCHER ST
	ALUA-TGS-01-020	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING WORKS VERGE WORKS & ROAD CLOSURE OATS ST & BANK ST
	ALUA-TGS-01-021	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING WORKS VERGE WORKS & ROAD CLOSURE OATS ST & BANK ST

Early Works Activities	TGS Number	Rev	Details
	ALUA-TGS-01-022	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING WORKS VERGE WORKS & ROAD CLOSURE OATS ST & BANK ST
	ALUA-TGS-01-023	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING WORKS VERGE WORKS & PSP WORKS OATS ST & BANK ST
	ALUA-TGS-01-024	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING WORKS MEDIAN WORKS AND ROAD CLOSURE OATS ST & RAILWAY PARADE
	ALUA-TGS-01-025	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING WORKS MEDIAN WORKS AND ROAD CLOSURE OATS ST & RAILWAY PARADE
	ALUA-TGS-01-026	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING WORKS MEDIAN WORKS AND ROAD CLOSURE OATS ST & RAILWAY PARADE
	ALUA-TGS-01-027	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING WORKS LOCAL ROAD CLOSURE AND WORKS IN MEDIAN OATS ST & BANK ST
	ALUA-TGS-01-028	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS SERVICE LOCATING WORKS LOCAL ROAD CLOSURE AND WORKS IN MEDIAN OATS ST & BANK ST
	ALUA-TMP-01-098	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS TYPICAL PSP WORKS - TRAFFIC CONTROLLER (STOP SLOW ) AND VERGE WORKS PSP >6m FROM ROAD EDGE
	ALUA-TMP-01-099	0	ARMADALE LINE UPGRADE ALLIANCE - EARLY WORKS TYPICAL PSP WORKS- AFTERCARE AND WORKS ON VERGE WITH REDUCED WIDTH PSP >6m FROM ROAD EDGE
Long Term Site Access	TGS Number	Rev	Details
Construction Stages	TGS Number	Rev	Details
Static Generics			

## 7.2 Sequence and Staging

The sequence of temporary traffic management installation, work activities and temporary traffic management removal are shown in the table below. All activities relating to installation, staging and removal of signage, lane closures and work activities shall be recorded in the Daily Diary detailing that the time at which they occur.

Step	Details
Set out	Advance warning signs shall be set out and installed first, followed by delineation and associated controls around the work site. Any detour signs where applicable should be erected prior to the activation of a road closure
Pack up	The removal of signs from site at the completion of a shift shall be performed in the reverse order of that noted above, with controls and devices in the immediate vicinity of the works to be removed from the road first in order to activate normal traffic flow as soon as possible, followed by the removal of advance warning signs.

Before work commences, signs and devices at approaches to the work area shall be erected in accordance with the adopted TGS, in the following order:

- Advance warning signs.
- All intermediate advance warning and regulatory signs and devices required in advance of the taper or start of the work area.
- All delineating devices required to form a taper including flashing arrow signs or temporary hazard markers where required.
- Delineation past the work area
- Other warning signs or regulatory signs.

Delineation devices such as cones and bollards should be placed in the same sequence, i.e. those furthest in advance of the work placed first.

Signs and devices that are erected before they are required shall be covered by a suitable material. The cover shall be removed immediately prior to the commencement of work.

Removal of traffic control signs and devices should be undertaken in the reverse order of erection, progressing from the work area out toward the approaches.

## 7.3 Traffic Control Devices

### 7.3.1 Sign Requirements

All signs used shall conform to the designs and dimensions as shown in AGTTM3 and the CoP.

Prior to installation, all signs and devices shall be checked by the Site Supervisor or a suitably qualified person to ensure that they are in good condition and meet the following requirements:

- Mechanical condition - Items that are bent, broken or have surface damage shall not be used.
- Cleanliness - Items should be free from accumulated dirt, road grime or other contamination.
- Colour of fluorescent signs - Fluorescent signs whose colour has faded to a point where they have lost their daylight impact shall be replaced.
- Retro reflectivity. - Signs for night-time use whose retro reflectivity is degraded either from long use or surface damage and does not meet the requirements of AS 1906 shall be replaced.
- Battery operated devices - shall be checked for lamp operation and battery condition.

Where signs do not conform either to the requirements of AGTTM3 or would fail to pass any of the above checks, they shall be replaced on notice.

Signs and devices shall be positioned and erected in accordance with the locations and spacing's shown on the drawings. All signs shall be positioned and erected such that:

- They are properly displayed and securely mounted;
- They are within the driver's line of sight;
- They cannot be obscured from view;
- They do not obscure other devices from the driver's line of sight;
- They do not become a possible hazard to workers or vehicles; and
- They do not deflect traffic into an undesirable path.

Signs and devices that are erected before they are required shall be covered by a suitable opaque material. The cover shall be removed immediately prior to the commencement of work.

Where there is a potential for conflict of information between existing signage and temporary signage erected for the purpose of traffic control, the existing signs shall be covered. The material covering the sign shall ensure that the sign cannot be seen under all conditions i.e. day, night and wet weather. Care will be taken to ensure existing signs are not damaged by the covering material or by adhesive tape.

### 7.3.2 Tolerances on positioning of signs and devices

Where a specific distance for the longitudinal positioning of signs or devices with respect to other items or features is stated, for the spacing of delineating devices or for the length of tapers or markings, the following tolerances may be applied:

(a) Positioning of signs, length of tapers or markings:

- i. Minimum, 10% less than the distances or lengths given.
- ii. Maximum, 25% more than the distances or lengths given.

(b) Spacing of delineating devices:

- i. Maximum, 10% more than the spacing shown.
- ii. No minimum.

These tolerances shall not apply where a distance, length or spacing is already stated as a maximum, a minimum or a range.

### 7.3.3 Flashing Arrow Signs

Where flashing arrow signs are required to better delineate lane tapers, these signs will comprise a matrix of lamps or light emitting elements in the form of an arrow that is flashed in a cyclical manner to provide advance warning. The sign shall have a minimum dimension of 2400 mm. x 1200 mm. and conform to the requirements of AS/NZS 4192. The Project Site Supervisor shall ensure that all equipment used meets the Australian Standard.

### 7.3.4 Delineation

Cones shall be used for delineation unless other treatment is specified in the Traffic Management Plan or on the Traffic Guidance Schemes. All cones shall be at least 700 millimetres in height and constructed from fluorescent orange or red material that is resilient to impact and will not damage vehicles when hit at low speed. Cones will be fitted with suitable white retro-reflective tape placed in accordance with AS1742.3, CoP and AGTTM.

Cones shall be designed to be stable under reasonably expected wind conditions and air turbulence from passing traffic.

The base of the cones will be secured so that they are not dislodged by traffic. Cones will be inspected at intervals necessary to ensure any misalignment or displacement is identified and corrected prior to this causing disruption to traffic.

Where specified, temporary frangible or otherwise non-hazardous delineator posts or bollards may be used for edge protection and taper delineation. Posts or bollards shall have a maximum dimension of 60 millimetres when measured along the longest side of a square or rectangular section or across the diameter of a circular section. Base design shall permit easy fixing to either sealed or unsealed surfaces and not intrude into traffic lanes greater than 50 millimetres from the face of the post or bollard.

All posts or bollards shall be erected in accordance with the Traffic Guidance Schemes. Posts and bollards shall be a minimum of 1000 mm. high, capable of being fixed to the road pavement by a suitable road adhesive or by fastening bolts or spikes. Fixing shall be in accordance with manufacturer's recommendations.

Posts and bollards shall be fitted with suitable white retro-reflective tape placed in accordance with AS1742.3, CoP and AGTTM.

All posts or bollards will be inspected daily and where displaced or missing made good immediately. All delineator posts are to be completely removed at the completion of all stages of construction and prior to the placement of asphalt surfacing. If adhesive is used to affix the posts this shall be completely removed from the road surface so that a flush surface is obtained.

Delineation spacing - Cones or bollards will be used to delineate the work area and travel path of vehicles. They shall be spaced according to the table on each TGS applicable to the speed of traffic and works being performed – as per the requirements outlined in AGTTM Part 3 – Section 5.4.1 and in Table 5.3.

## 7.4 Site Access for Work Vehicles

Construction and/or traffic management vehicles entering and exiting the traffic stream shall be mindful of the conditions that may affect the safety of these movements.

Access points shall be noted on the TGS and traffic controllers, work personnel and suppliers notified. Traffic Controllers may assist work vehicles enter and exit the work area.

All entry and exit movements will be in accordance with the Road Traffic Code and shall be undertaken in the following manner:

Vehicles shall:

- Decelerate slowly and signal their intention by indicator to leave the traffic stream.
- Activate the vehicle's rotating yellow lamp, where fitted, once a speed of 20 km/h. has been reached and at least 50m prior to the exit location.
- Switch on the vehicle hazard lights once the vehicle is stationary.
- Where risks associated with unassisted exit or entry to or from the traffic stream are high, Traffic Controllers should be used to assist entry and exit movements.

Vehicles fitted with rotating amber lamps shall have the vehicle's rotating lamp activated prior to entering the traffic stream and shall undertake the following.

- Switch off the vehicle hazard lights.
- Indicate intention to enter the traffic stream using direction indicators.
- Ensure there is a suitable gap from oncoming traffic to allow for a safe entry maneuver; and,
- Turn off the rotating yellow lamp(s) once a speed of 40 km/h is reached.

Entry and exit maneuvers shall be avoided in close proximity to intersections. Work personnel shall not cross traffic streams on foot unless absolutely necessary.



Construction or traffic management vehicles shall only be parked where indicated on the Traffic Guidance Scheme. Vehicles shall not obstruct paths and be parked an adequate distance from intersections or driveways to ensure clear sight lines remain for all road users.

## 7.5 Communicating TMP Requirements

TMP requirements shall be communicated to all relevant work personnel prior to the commencement of works, generally at the pre-start meeting.

## 8 EMERGENCY ARRANGEMENTS AND CONTINGENCIES

### 8.1 Traffic Incident Procedures

In the event of an incident or accident, whether or not involving traffic or road users, all work shall cease, and traffic shall be stopped as necessary to avoid further deterioration of the situation. First Aid shall be administered as necessary, and medical assistance shall be called for if required.

Road plant within the work area that may impact on any services requiring access to a crash site will be cleared from the area quickly as necessary.

#### 8.1.1 Serious Injury or Fatality

In the case of serious injury or fatality occurring within the traffic management site all work shall cease immediately, machinery and vehicles turned off and the area cleared of personnel as soon as possible. Traffic Controllers (and other personnel if necessary) shall be deployed immediately to ensure no traffic or other road users approach the area.

An Ambulance and Police shall be called on telephone number 000 where life threatening injuries are apparent.

All road workers and traffic management personnel shall preserve the scene leaving everything in situ, until direction is given by Police or WorkSafe.

A site-specific detour route and/or road closure point will be determined, signed and controlled by traffic management personnel and advised to Police, who will take charge of the site upon arrival (see last paragraph).

Detour routes will be determined so as to cater for all types of vehicles required to use them (see last paragraph). An example of how to manage an emergency can be found in AGTTM Part 10 – Section 5.

All site personnel shall be briefed on control procedures covering incidents and crashes that result in serious injury or fatalities.

#### 8.1.2 Minor Incident or Vehicle Break Down within Site

Broken down vehicles and vehicles involved in minor non-injury crashes shall be temporarily moved to the verge as soon as possible after details of the crash locations have been gathered and noted. Where necessary to maintain traffic flow, vehicles shall be temporarily moved into the closed section of the work area behind the cones, providing there is no risk to vehicles and their occupants or workers. Suitable recovery systems shall be used to facilitate prompt removal of broken down or crashed vehicles. Assistance shall be rendered to ensure the impact of the incident on the network is minimised.

Any traffic crash resulting in non-life-threatening injury shall be reported to the WA Police Service on 131 444.

Details of all incidents and accidents shall be reported to the Site Supervisor and Project Manager using the incident report form at Appendix “C” (or similar).

## 8.2 Emergency Services

Emergency services shall be notified of the proposed works nature, location, date and times as well as contact details for the site supervisor.

On-site traffic controllers will be equipped with mobile communications to advise and/or liaise with emergency services to ensure a prompt response should the need arise.

## 8.3 Dangerous Goods

Should any incident arise involving vehicles transporting dangerous goods, all work shall cease immediately, machinery and vehicles turned off and the area cleared of personnel as soon as possible. Traffic Controllers (and other personnel if necessary) shall be deployed immediately to ensure no traffic or other road users approach the area.

Emergency services shall be notified of the proposed works nature, location, date and times as well as contact details for the site supervisor. All site personnel shall be briefed on evacuation and control procedures.

## 8.4 Damage to Services

In the event that gas services are damaged, all work shall cease immediately, machinery and vehicles turned off and the area cleared of personnel as soon as possible. Traffic Controllers (and other personnel if necessary) shall be deployed immediately to ensure no traffic or other road users approach the area. The Police Service and relevant supply authority shall be called immediately. Damage to any other services shall be treated in a similar manner except machinery may remain operational and access may be maintained where it is safe to do so.

All site personnel shall be briefed on evacuation and control procedures.

## 8.5 Failure of Services

### 8.5.1 Failure of Traffic Signals

In the event of failure of traffic signals, the Police should be contacted immediately and Traffic Controllers (and other personnel if necessary) shall be deployed immediately to secure the site and assist vehicle movements until the Police arrive. RNOC (Road Network Operation Centre) are to be notified of the failed traffic signals to try rectifying the situation.

### 8.5.2 Failure of Street lighting

In the event that street lighting is damaged and fails to operate or operates incorrectly, Traffic Controllers (and other personnel if necessary, with appropriate temporary lighting) shall be deployed immediately if the lighting failure adversely affects road user safety to control traffic movements as required. Western Power shall be notified immediately.

## 8.5.3 Failure of Power

In the event that power infrastructure is damaged and poses a risk through live current, Traffic Controllers (and other personnel if necessary) shall be deployed immediately to secure the site and prevent entry to the area affected by live power. Western Power shall be notified immediately (phone 13 13 51).

## 8.6 Emergency Contacts

In the event of an emergency the following relevant authorities must be contacted and advised of nature of works, location, type of emergency and contact details for the site supervisor.

Emergency Service	E-mail/Website	Phone (Emergency)
WA Police Service	<a href="mailto:State.Traffic.Intelligence.Planning.&amp;.Co-ordination.Unit@police.wa.gov.au">State.Traffic.Intelligence.Planning.&amp;.Co-ordination.Unit@police.wa.gov.au</a>	000
St. John Ambulance	<a href="mailto:ambulanceoperations@stjohnambulance.com.au">ambulanceoperations@stjohnambulance.com.au</a>	000
DFES	<a href="http://www.dfes.wa.gov.au/contactus/pages/dfesoffices.aspx">www.dfes.wa.gov.au/contactus/pages/dfesoffices.aspx</a>	000
Power	<a href="http://www.westernpower.com.au/customerservice/contactus/">http://www.westernpower.com.au/customerservice/contactus/</a>	13 13 51
Gas	<a href="mailto:enquiries@atcogas.com.au">enquiries@atcogas.com.au</a>	13 13 52
Water	<a href="https://www.watercorporation.com.au/about-us/contact-us">https://www.watercorporation.com.au/about-us/contact-us</a>	13 13 75

## 9 MONITORING AND MEASUREMENT

### 9.1 Daily Inspections

Prior to works commencing the Site Supervisor shall undertake to communicate the Traffic Management Plan to all key stakeholders and affected parties.

On completion of setting out the traffic control measures, the site is to be monitored for a suitable period of time. If traffic speeds on the approaches to the work site are assessed as being above the temporary posted speed zone for the work site, the Site Supervisor is to initiate action to modify the approach signage and tapers in accordance with the requirements of AGTTM / CoP. All such actions are to be recorded in the Daily Diary. Should road users be observed to continue to travel in excess of the posted speed limit, the police may be requested to attend the site to enforce the temporary posted speed limit.

The Advanced Worksite Traffic Management accredited supervisory person at the worksite may conditionally approve changes made to a complex traffic management plan subject to review and endorsement of the change by an RTM as soon as practicably possible.

The Traffic Management Contractor shall ensure that all temporary signs, devices and controls are maintained at all times. To achieve this, procedures in line with the requirements outlined in AGTTM Part 6 will be instituted. The monitoring program shall incorporate inspections:

- Before the start of work activities on site,
- During the hours of work,
- Closing down at the end of the shift period, and
- After hours.

A daily record of the inspections shall be kept indicating:

- When traffic controls were erected,
- When changes to controls occurred and why the changes were undertaken,
- Any significant incidents or observations associated with the traffic controls and their impacts on road users or adjacent properties.

The Traffic Management Contractor shall ensure that personnel are assigned to monitor the traffic control scheme. Inspections shall at least satisfy the following requirements.

#### 9.1.1 Before works start

- Confirm TMP and TGS are suitable for the day's activities;
- Inspect all signs and devices to ensure they are undamaged, clean and comply with the requirements depicted on the TGS;
- All lamps should be checked and cleaned as necessary;

- After any adjustments have been made to the signs and devices, conduct a drive through inspection to confirm effectiveness.

## 9.1.2 During work hours

- Designate and ensure that appropriate work personnel drive through the site periodically to inspect all signs and devices and ensure they are undamaged and comply with the requirements depicted on the Traffic Guidance Schemes;
- Attend to minor problems as they occur;
- Conduct on the spot maintenance/repairs as required;
- When traffic controllers are on the job, ensure they remain in place at all times. Relieve controllers as necessary to ensure attentiveness is retained;
- During breaks or changes in work activities remove or cover any signs that do not apply (e.g. PREPARE TO STOP, Workers symbolic);
- Re-position signs and devices as required by work processes throughout the day and keep records of any changes.

## 9.1.3 Closing down each day

- Conduct a pre-close down inspection, allowing time for any appropriate maintenance works;
- Remove any unnecessary signage (e.g. Prepare to Stop, Symbolic Workers);
- Replace any unnecessary signage with appropriate delineation;
- Install barriers and lights where required;
- Drive through site and confirm all signs and devices are operating correctly with no misleading visual cues;
- Record details of inspection and any changes made to layout.

## 9.1.4 After hours

- Appoint personnel to conduct after dark checks. Replace any signs / devices not working, missing or damaged and record in diary.
- Appoint personnel to conduct checks on non-work days (e.g. weekends). Replace any signs / devices not working, missing or damaged and record in diary.
- The frequency of inspections needs to align with the amount of traffic management on site, weather conditions, vehicle types and volumes, road user behaviour and site specific risks.



## 9.2 TMP Audits and Inspections

One compliance audit (using the 'Compliance Audit Checklist for Traffic Management for Works on Roads' – found on the MRWA website) should be conducted following setting up of the traffic management and prior to commencement of the works.

Audit findings, recommendations and actions taken shall be documented and copies forwarded to the Project Manager and the Road Authority's Representative.

## 9.3 Records

A daily diary recording all inspections including variations to the approved TMP shall be kept using the Daily Diary.

The Traffic Supervisor is to record all inspections made on a daily basis and at those times prescribed by the Traffic Management Implementation Standards. Upon completion of each day the Traffic Supervisor shall provide copies of the daily diary record to the Project Manager.

The Traffic Supervisor is to record all variations made to the approved Traffic Management Plan on a daily basis and clearly indicate the nature of the variations and the reason for the variations. Upon completion of each day the Traffic Supervisor shall provide copies of the variation record to the Project Manager.

## 9.4 Public Feedback

Any feedback received from the public will be directed back to the Project management team for action and follow up as required.

## 10 MANAGEMENT REVIEW AND APPROVALS

### 10.1 TMP Review and Improvement

The traffic management team shall assess all results from measurement and evaluations and ensure that all CARs, NCRs, incidents and feedback are properly addressed and responded to timely and appropriately.

### 10.2 Variations

If applicable see Appendix B.

### 10.3 Approvals

Before works commence it is necessary to seek approval from the following:

- PTA

## APPENDIX A - NOTIFICATION OF ROAD WORKS

***N/A for Stage 1 early exploration works, Notification will be updated and issued as required for evolving works scope that will be detailed in later iterations of this TMP.***

### NOTE:

The Notification of Roadworks form shall be filled out and distributed if the works associated with this TMP meet any of the requirements outlined in MRWA Code of Practice section 5.4:

- Works involving the complete closure of any road.
- Works on primary and district distributor roads of more than four (4) hours duration where it is expected that major traffic delays and congestion will occur.
- Works on any road where speed restrictions and lane closures will be in place more than five (5) days, but major traffic delays are not expected.
- Traffic management activities involving the establishment of a contra-flow.
- Traffic management activities resulting in any direct or indirect changes to traffic flows and/or traffic composition on bridges, including situations where such changes are a result of lane closures or traffic detours.
- Works on any primary or district distributor road where construction activities will make it difficult or impossible for the passage of general access or oversize vehicles, and traffic control devices cannot be easily shifted on a temporary basis to allow the vehicle to pass.
- Works between hold-lines on signalised intersections where work will last longer than one (1) hour, or a lesser time if significant delay and congestion will occur.
- Works impacting on the operation of any Crossing Attended Warden controlled children's crossing.

## APPENDIX B - VARIATION TO STANDARDS

### APPLICATION FOR APPROVAL TO VARY REQUIREMENTS OF AGGTM3, OR MRWA TRAFFIC MANAGEMENT CODES OF PRACTICE

#### Form Instruction

- Section A** – Identify the Principal Agency / person commissioning the activity. (Does not include contractors, subcontractors or traffic management company/traffic planners etc).
- Section B** – Identify activity location, start / finish date and time, type of traffic management, description location of activity.
- Section C** – Identify the person that has prepared the Traffic Management Plan, this person shall have AWTM accreditation.
- Section D** – For Works undertaken on a State road or on behalf of Main Roads Western Australia the details of the risk assessment process identified in this application form must be documented and endorsed<sup>1</sup> by an accredited Roadworks Traffic Manager.

All applications to be addressed to the applicable Main Roads Regional office. For contact information please refer to the online Application kits and guidelines to undertake works. ([www.mainroads.wa.gov.au](http://www.mainroads.wa.gov.au) >Our Roads > Conducting Works on Roads).

For all other applications the details of the risk assessment process identified in this application form must be documented and endorsed<sup>1</sup> by the person responsible for approving the traffic management plan.

Contact with the appropriate road authority should be made prior to lodgment of this application to determine its suitability and for any additional requirements.

- Section E** - Risk implication, identification and assessment process must be undertaken in accordance with Risk Management – Principles and Guidelines AS/NZS ISO 31000. The likelihood and consequences should be rated after the application of any additional counter measures taken utilising Tables from Annexure's 202B and 203B, Main Roads WA - Specification 202 and 203 respectively.

**Incomplete or applications not signed** by the RTM<sup>1</sup> will not be processed.

<b>A</b>	Applicant (Principal for the Works)					
	Postal address					
	Suburb		State		Postcode	
	Project Manager				Telephone	
	Email				Facsimile	

<b>B</b>	Anticipated start date			Anticipated finish date		
	Daily work hours; From		To		Weekend work applicable	Yes <input type="checkbox"/> Sat <input type="checkbox"/> Sun <input type="checkbox"/> No <input type="checkbox"/>
	Location of works (Road/Street Suburb),					
	Road type (eg undivided, two lane)					
	Description of works					
	Are alterations to permanent traffic signals required?	Yes <input type="checkbox"/>		No <input type="checkbox"/>		N/A <input type="checkbox"/>
	Posted Speed Limit		Worksite speed limit		After hours speed limit	

<sup>1</sup> A person with AWTM accreditation is permitted to endorse a variation of less than 135 % of the allowable lane capacity as outlined in AGTTM3. See section 5.6 of the Code of Practice

C	TMP Designer						
	Accreditation Number						
	Postal address						
	Suburb		State		Postcode		
	Email		Telephone		Facsimile		
	Endorsement signature					Date	

D	RTM Endorsing Variation <sup>1</sup>						
	Accreditation Number						
	Postal address						
	Suburb		State		Postcode		
	Email		Telephone		Facsimile		
	Endorsement signature <sup>1</sup>					Date	

<b>For Internal Use Only</b>							
Approving Road Authority							
Approving Officer Position							
Application Approved		Yes <input type="checkbox"/>		No <input type="checkbox"/>		If Not Why Not	
Additional Conditions							
Approved By: Signature		Title		Date		File	

E	Description of Variation Requested	Specify Point of Departure from Standard / AGTMM / Code of Practice  (List section and page number)	Justification  (Why is this necessary)	Additional Counter Measures To Be Taken  (Identify additional counter measures to be used to negate the lesser treatment)	Residual Risk <sup>2</sup>		
					L	C	RR

<sup>2</sup> Note: the risk assessment in the TMP also needs to record the variation and include the risk event, pre-treatment risk, treatment and residual risk.

## APPENDIX C - RECORD FORMS



## Daily Diary Daily Traffic Management Diary

<b>Location:</b> _____		<b>Client:</b> _____		<b>Date:</b> _____	
<b>TMP No:</b> _____	<b>TGS No:</b> _____	<b>Weather Conditions:</b> _____		<b>Diary Sheet:</b> _____	<b>of</b> _____
<b>Start Time at Depot:</b> _____	<b>Time Arrive Onsite:</b> _____	<b>Commencement of Site Setup:</b> _____		<b>Site Setup and Operational:</b> _____	
<b>Site Pulled Down at:</b> _____	<b>Time Aftercare signs setup:</b> _____	<b>TGS No:</b> _____	<b>Time left site:</b> _____	<b>Finish time at Depot:</b> _____	
<input type="checkbox"/> Day Works	<input type="checkbox"/> Night Works	<input type="checkbox"/> Emergency Response	Site Setup as per TGS <input type="checkbox"/> Yes <input type="checkbox"/> No (if not comment on next page)		
<input type="checkbox"/> Attendance at Pre-Start Meeting	Did an incident occur (if yes complete incident report form) <input type="checkbox"/> Yes <input type="checkbox"/> No				

I confirm that the above times of 'setup' and 'pulldown' of traffic management signs and devices are a true and correct

Name (Site Supervisor): \_\_\_\_\_ Signed: \_\_\_\_\_

**Drive Through Checks** (Checks must be conducted at least every 2 hours)

Time of check entered. Rule off and leave blank if the check does not apply to the site. Make a note of any issues on the next page.

Traffic Management Site Checks	1	2	3	4	5	6	7	8	9	10
<b>Time</b>										
Are signs upright, clean, visible, level & stable										
Are taper lengths correct										
Are speed limit signs correct and doubled up										
Are sign spacings correct										
Are cone/bollard alignments straight & spaced correctly										
Are devices operating correctly										
Have pedestrians been catered for										
Are lane widths adequate										
Are vehicle queue lengths acceptable										
Is road surface condition adequate										

No. of Traffic Management Vehicles Onsite: \_\_\_\_\_ No. of Traffic Management Personnel Onsite: \_\_\_\_\_

Traffic Management Personnel Names & Accreditations:

Position	Name	Accreditation Details	Time of Break from Stop/Slow (Traffic controllers must have a 15 minute break every two hours of constant stop/slow operation)							
			On	Off	On	Off	On	Off	On	Off
Crew Leader:			:	:	:	:	:	:	:	:
Traffic Controller:			:	:	:	:	:	:	:	:
Traffic Controller:			:	:	:	:	:	:	:	:
Traffic Controller:			:	:	:	:	:	:	:	:
Traffic Controller:			:	:	:	:	:	:	:	:
Traffic Controller:			:	:	:	:	:	:	:	:

Additional Comments \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
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 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

I confirm that the details contained herein are true and correct

Name: (Traffic Management Crew Leader): \_\_\_\_\_ Signed: \_\_\_\_\_





## APPENDIX D - TRAFFIC ANALYSIS AND VOLUME COUNTS

### SEVENOAKS STREET - WEEKDAYS



SITE 2642

### Hourly Volume

Sevenoaks St (1140011)

2021/22  
Monday to Friday

North of Wharf St (SLK 2.33)

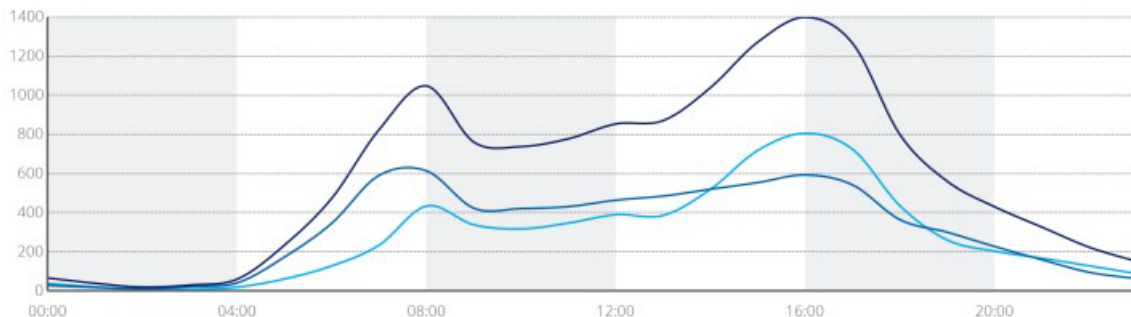
	All Vehicles				Heavy Vehicles				
	NB	SB	Both	NB	SB	Both	%		
00:00	38	28	66	1	1	2	3.0		
01:00	21	18	39	1	1	2	5.1		
02:00	8	11	19	0	1	1	5.3		
03:00	8	22	30	1	1	2	6.7		
04:00	19	41	60	3	2	5	8.3		
05:00	61	173	234	4	11	15	6.4		
06:00	128	346	474	16	26	42	8.9		
07:00	234	591	825	22	42	64	7.8		
08:00	434	614	1048	38	41	79	7.5		
09:00	338	423	761	31	34	65	8.5		
10:00	317	421	738	30	45	75	10.2		
11:00	347	431	778	33	41	74	9.5		
12:00	390	464	854	36	45	81	9.5		
13:00	386	485	871	29	45	74	8.5		
14:00	520	520	1040	38	42	80	7.7		
15:00	719	554	1273	38	40	78	6.1		
16:00	806	593	1399	48	31	79	5.6		
17:00	724	542	1266	27	22	49	3.9		
18:00	435	364	799	12	10	22	2.8		
19:00	260	300	560	6	10	16	2.9		
20:00	203	227	430	4	6	10	2.3		
21:00	167	159	326	4	4	8	2.5		
22:00	128	95	223	3	2	5	2.2		
23:00	88	63	151	3	2	5	3.3		
<b>TOTAL</b>	<b>6779</b>	<b>7485</b>	<b>14264</b>	<b>428</b>	<b>505</b>	<b>933</b>	<b>6.5</b>		



### Peak Statistics

<b>AM</b>	<b>TIME</b>	08:15	07:30	<b>08:00</b>	08:00	07:15	<b>11:45</b>
	<b>VOL</b>	444	647	<b>1048</b>	38	48	<b>82</b>
<b>PM</b>	<b>TIME</b>	16:15	15:45	<b>16:15</b>	48	47	<b>83</b>
	<b>VOL</b>	814	595	<b>1402</b>			

Volume



— Northbound — Southbound — Both Directions

## SEVENOAKS STREET - WEEKEND



SITE 2642

### Hourly Volume

Sevenoaks St (1140011)

2021/22

North of Wharf St (SLK 2.33)

Weekend

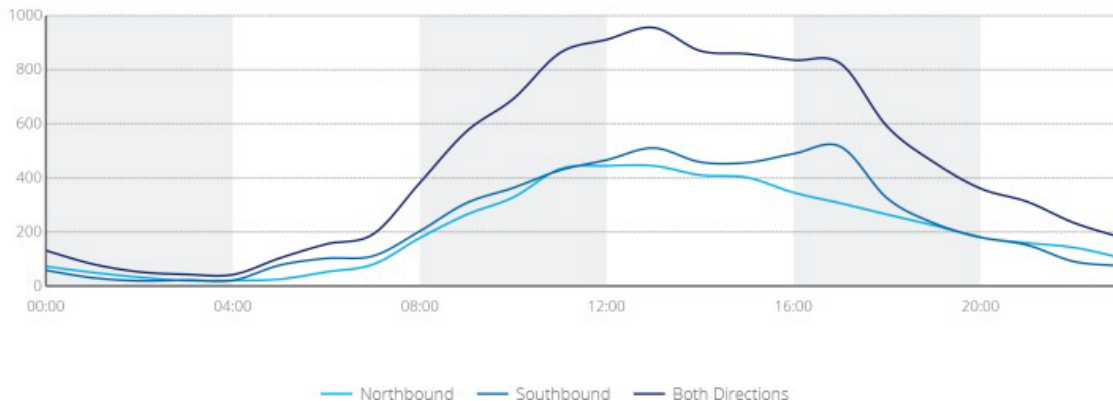
	All Vehicles				Heavy Vehicles				
	NB	SB	Both	NB	SB	Both	Truck	%	
00:00	73	59	132	1	2	3		2.3	
01:00	51	31	82	2	0	2		2.4	
02:00	33	20	53	0	1	1		1.9	
03:00	21	23	44	1	0	1		2.3	
04:00	21	22	43	1	1	2		4.7	
05:00	26	78	104	0	3	3		2.9	
06:00	53	103	156	4	5	9		5.8	
07:00	81	112	193	4	3	7		3.6	
08:00	179	204	383	6	7	13		3.4	
09:00	265	308	573	9	6	15		2.6	
10:00	329	364	693	11	11	22		3.2	
11:00	434	429	863	14	16	30		3.5	
12:00	445	467	912	12	13	25		2.7	
13:00	445	511	956	11	17	28		2.9	
14:00	411	459	870	12	17	29		3.3	
15:00	402	457	859	14	13	27		3.1	
16:00	346	490	836	9	10	19		2.3	
17:00	307	516	823	11	16	27		3.3	
18:00	265	325	590	6	7	13		2.2	
19:00	225	233	458	6	8	14		3.1	
20:00	180	181	361	3	7	10		2.8	
21:00	160	152	312	1	3	4		1.3	
22:00	143	91	234	2	4	6		2.6	
23:00	105	76	181	3	3	6		3.3	
<b>TOTAL</b>	<b>5000</b>	<b>5711</b>	<b>10711</b>	<b>143</b>	<b>173</b>	<b>316</b>		<b>3.0</b>	



### Peak Statistics

AM	TIME	11:15	11:45	11:45	11:45	11:15	11:15
	VOL	467	479	929	15	17	31
PM	TIME	12:45	16:30	13:00	15:15	14:30	14:00
	VOL	452	564	956	15	17	29

Volume



## SEVENOAKS STREET – HAMILTON STREET LM 0640

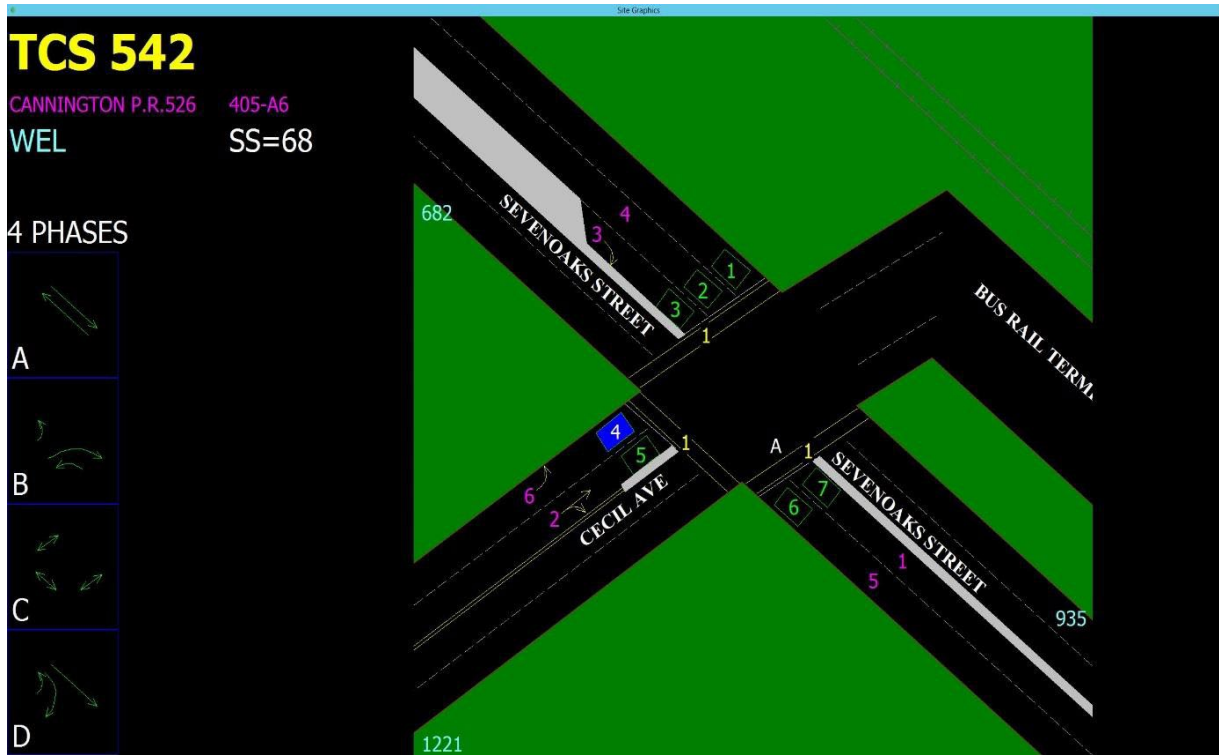


	Weekday Average							
	Sevenoaks St				Hamilton St			
	Northbound		Southbound		Eastbound		Westbound	
	Before Signals	After Signals	Before Signals	After Signals	Before Signals	After Signals	Before Signals	After Signals
0:00 - 1:00	33	25	42	37	12	18	16	23
1:00 - 2:00	18	14	19	17	6	8	9	13
2:00 - 3:00	20	15	20	15	3	8	6	11
3:00 - 4:00	21	17	16	13	7	9	9	13
4:00 - 5:00	46	38	19	25	16	20	29	28
5:00 - 6:00	181	145	58	77	66	73	89	99
6:00 - 7:00	321	260	129	159	112	129	173	188
7:00 - 8:00	517	448	236	302	232	223	349	362
8:00 - 9:00	515	486	360	511	272	260	604	493
9:00 - 10:00	361	312	290	337	146	173	319	295
10:00 - 11:00	339	278	269	302	107	144	273	264
11:00 - 12:00	360	294	314	319	119	168	251	263
12:00 - 13:00	375	308	325	344	140	181	271	278
13:00 - 14:00	362	301	342	358	129	172	286	288
14:00 - 15:00	424	359	409	459	169	207	389	365
15:00 - 16:00	441	399	582	640	227	260	504	455
16:00 - 17:00	462	402	619	644	193	245	479	463
17:00 - 18:00	421	347	592	562	155	215	341	386
18:00 - 19:00	312	251	346	337	103	145	225	253
19:00 - 20:00	263	205	251	245	82	118	162	190
20:00 - 21:00	198	155	216	198	65	104	114	136
21:00 - 22:00	129	105	194	174	62	85	81	102
22:00 - 23:00	83	70	134	120	43	58	58	70
23:00 - 24:00	57	45	72	63	21	32	31	41



	Weekend Average							
	Sevenoaks St				Hamilton St			
	Northbound		Southbound		Eastbound		Westbound	
	Before Signals	After Signals	Before Signals	After Signals	Before Signals	After Signals	Before Signals	After Signals
0:00 - 1:00	51	39	41	41	19	26	26	30
1:00 - 2:00	23	18	24	27	10	14	20	17
2:00 - 3:00	21	14	22	21	9	12	9	11
3:00 - 4:00	17	15	19	17	10	12	11	12
4:00 - 5:00	31	22	18	18	8	12	13	16
5:00 - 6:00	74	58	30	37	21	26	40	44
6:00 - 7:00	106	91	56	68	33	41	87	81
7:00 - 8:00	123	107	96	109	54	63	104	97
8:00 - 9:00	173	148	134	165	57	70	174	154
9:00 - 10:00	273	222	181	225	92	105	222	215
10:00 - 11:00	318	252	265	274	96	132	213	233
11:00 - 12:00	350	275	288	307	93	142	254	258
12:00 - 13:00	345	272	319	324	96	145	244	261
13:00 - 14:00	358	271	288	282	84	134	198	241
14:00 - 15:00	349	264	294	289	90	136	196	239
15:00 - 16:00	320	250	311	299	99	143	191	230
16:00 - 17:00	356	272	265	268	90	134	203	239
17:00 - 18:00	333	253	236	238	97	136	169	206
18:00 - 19:00	225	187	164	191	85	110	180	166
19:00 - 20:00	203	175	182	202	93	113	174	161
20:00 - 21:00	167	139	161	160	74	94	111	119
21:00 - 22:00	105	93	138	137	69	82	85	84
22:00 - 23:00	88	73	114	111	48	58	61	68
23:00 - 24:00	67	52	63	61	29	35	34	44

## SEVENOAKS STREET – CECIL AVENUE STREET LM 0542



	Weekday Average							
	Sevenoaks St				Ceicel Ave/Bus			
	Northbound		Southbound		Eastbound		Westbound	
	Before Signals	After Signals	Before Signals	After Signals	Before Signals	After Signals	Before Signals	After Signals
0:00 - 1:00	17	19	30	26	10	3	0	9
1:00 - 2:00	11	12	16	15	6	2	0	5
2:00 - 3:00	10	11	13	12	5	2	0	4
3:00 - 4:00	9	9	8	7	3	1	0	3
4:00 - 5:00	42	36	22	20	7	3	0	12
5:00 - 6:00	171	144	62	56	25	12	0	46
6:00 - 7:00	322	262	124	96	50	28	0	110
7:00 - 8:00	509	443	193	137	111	47	0	185
8:00 - 9:00	513	497	379	245	183	55	0	279
9:00 - 10:00	337	326	317	205	137	44	0	215
10:00 - 11:00	313	296	283	189	125	42	0	194
11:00 - 12:00	328	326	298	191	139	43	0	206
12:00 - 13:00	342	342	304	206	148	45	0	202
13:00 - 14:00	325	357	347	240	174	44	0	205
14:00 - 15:00	395	425	417	296	198	49	0	239
15:00 - 16:00	412	426	568	409	203	61	0	286
16:00 - 17:00	439	447	612	455	206	64	0	293
17:00 - 18:00	378	401	518	409	207	63	0	230
18:00 - 19:00	255	292	294	218	171	46	0	164
19:00 - 20:00	190	206	217	176	113	34	0	105
20:00 - 21:00	132	171	154	132	97	21	0	59
21:00 - 22:00	106	117	123	102	60	16	0	55
22:00 - 23:00	57	68	93	84	43	12	0	29
23:00 - 24:00	33	38	51	47	23	7	0	16

# Traffic Management Plan

	Weekend Average							
	Sevenoaks St				Ceicel Ave/Bus			
	Northbound		Southbound		Eastbound		Westbound	
	Before Signals	After Signals	Before Signals	After Signals	Before Signals	After Signals	Before Signals	After Signals
0:00 - 1:00	27	29	34	32	15	5	0	11
1:00 - 2:00	12	13	26	24	10	4	0	7
2:00 - 3:00	10	11	16	13	5	1	0	6
3:00 - 4:00	7	6	8	7	2	1	0	3
4:00 - 5:00	19	16	8	7	2	1	0	5
5:00 - 6:00	42	34	27	22	6	3	0	15
6:00 - 7:00	77	66	49	37	16	5	0	34
7:00 - 8:00	110	100	79	54	31	9	0	57
8:00 - 9:00	145	149	151	87	64	16	0	107
9:00 - 10:00	225	233	197	123	107	27	0	145
10:00 - 11:00	229	270	274	164	142	27	0	184
11:00 - 12:00	263	307	292	166	159	31	0	209
12:00 - 13:00	286	356	326	205	199	38	0	212
13:00 - 14:00	265	324	283	195	177	35	0	171
14:00 - 15:00	296	334	280	190	161	35	0	177
15:00 - 16:00	258	305	289	189	164	33	0	183
16:00 - 17:00	263	333	229	156	189	34	0	157
17:00 - 18:00	238	279	202	143	141	30	0	128
18:00 - 19:00	168	181	153	115	92	23	0	93
19:00 - 20:00	146	162	134	101	87	21	0	82
20:00 - 21:00	102	127	120	82	73	15	0	69
21:00 - 22:00	88	91	89	77	48	18	0	39
22:00 - 23:00	51	62	76	59	38	11	0	32
23:00 - 24:00	38	45	55	46	26	6	0	20

## OATS STREET WEEKDAY



SITE 1412

### Hourly Volume

Oats St (1290117)

2016/17  
Monday to Friday

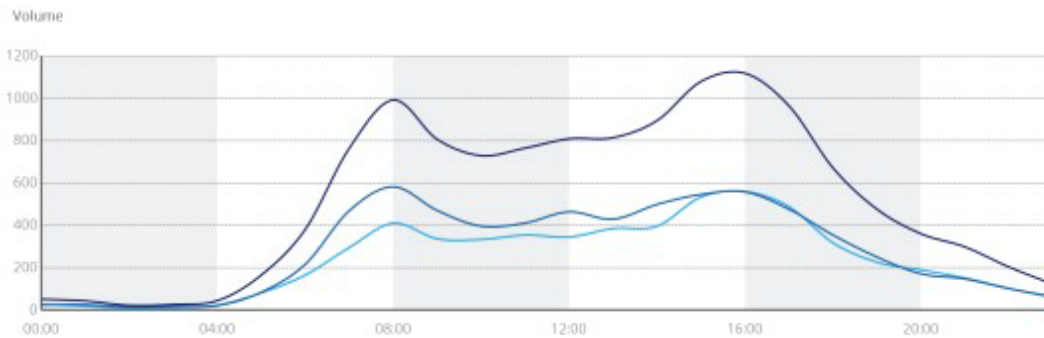
South of Rutland Av (SLK 1.41)

	All Vehicles			Heavy Vehicles			
	NB	SB	Both	NB	SB	Both	%
00:00	27	24	51	0	0	0	0.0
01:00	18	25	43	0	1	1	2.3
02:00	8	14	22	0	1	1	4.5
03:00	10	16	26	2	4	6	23.1
04:00	23	21	44	1	2	3	6.8
05:00	81	84	165	5	6	11	6.7
06:00	165	216	381	19	20	39	10.2
07:00	295	469	764	24	37	61	8.0
08:00	410	582	992	26	40	66	6.7
09:00	336	470	806	28	37	65	8.1
10:00	333	396	729	28	39	67	9.2
11:00	354	411	765	30	37	67	8.8
12:00	345	464	809	27	45	72	8.9
13:00	385	429	814	24	31	55	6.8
14:00	396	499	895	23	32	55	6.1
15:00	534	546	1080	28	31	59	5.5
16:00	560	558	1118	23	20	43	3.8
17:00	488	476	964	20	11	31	3.2
18:00	317	354	671	10	11	21	3.1
19:00	226	250	476	9	10	19	4.0
20:00	189	171	360	6	2	8	2.2
21:00	151	147	298	6	2	8	2.7
22:00	102	101	203	3	3	6	3.0
23:00	59	63	122	1	2	3	2.5
<b>TOTAL</b>	<b>5812</b>	<b>6786</b>	<b>12598</b>	<b>343</b>	<b>434</b>	<b>767</b>	<b>6.1</b>



### Peak Statistics

<b>AM TIME</b>	08:15	07:45	<b>07:45</b>	08:45	07:30	<b>08:15</b>
<b>VOL</b>	416	616	<b>1015</b>	32	44	<b>72</b>
<b>PM TIME</b>	16:00	16:00	<b>16:00</b>	15:15	12:15	<b>12:15</b>
<b>VOL</b>	560	558	<b>1118</b>	29	45	<b>72</b>



## OATS STREET WEEKEND



SITE 1412

### Hourly Volume

Oats St (1290117)

2016/17  
Weekend

South of Rutland Av (SLK 1.41)

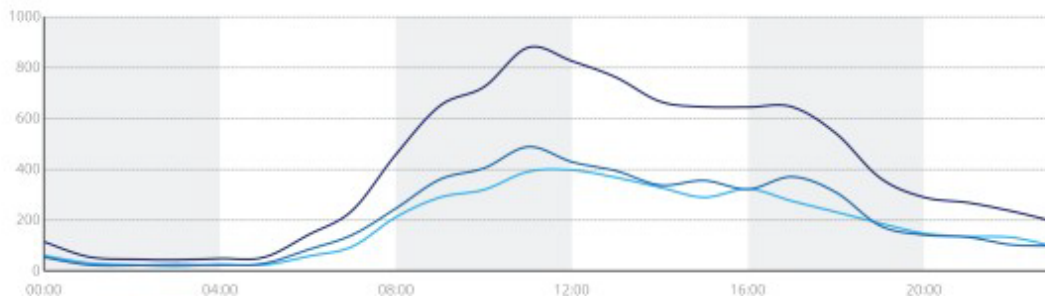
	All Vehicles			Heavy Vehicles				
	NB	SB	Both	NB	SB	Both	%	
00:00	61	54	115	6	3	9	7.8	
01:00	32	24	56	1	0	1	1.8	
02:00	24	22	46	1	0	1	2.2	
03:00	19	25	44	0	2	2	4.5	
04:00	26	23	49	0	2	2	4.1	
05:00	24	30	54	3	0	3	5.6	
06:00	58	84	142	4	7	11	7.7	
07:00	96	142	238	8	7	15	6.3	
08:00	213	247	460	5	11	16	3.5	
09:00	290	361	651	16	11	27	4.1	
10:00	320	405	725	13	18	31	4.3	
11:00	391	489	880	11	20	31	3.5	
12:00	397	429	826	10	18	28	3.4	
13:00	368	394	762	13	8	21	2.8	
14:00	329	338	667	9	8	17	2.5	
15:00	290	356	646	7	11	18	2.8	
16:00	323	322	645	7	10	17	2.6	
17:00	275	371	646	12	10	22	3.4	
18:00	232	309	541	7	3	10	1.8	
19:00	188	178	366	10	5	15	4.1	
20:00	148	142	290	3	3	6	2.1	
21:00	136	133	269	6	0	6	2.2	
22:00	132	103	235	3	1	4	1.7	
23:00	94	99	193	3	1	4	2.1	
<b>TOTAL</b>	<b>4466</b>	<b>5080</b>	<b>9546</b>	<b>158</b>	<b>159</b>	<b>317</b>	<b>3.3</b>	



### Peak Statistics

<b>AM</b>	<b>TIME</b>	11:45	11:00	11:00	09:15	10:15	10:45
	<b>VCL</b>	401	489	880	18	24	37
<b>PM</b>	<b>TIME</b>	12:00	12:00	12:00	13:30	12:15	12:00
	<b>VCL</b>	397	429	826	13	18	28

Volume





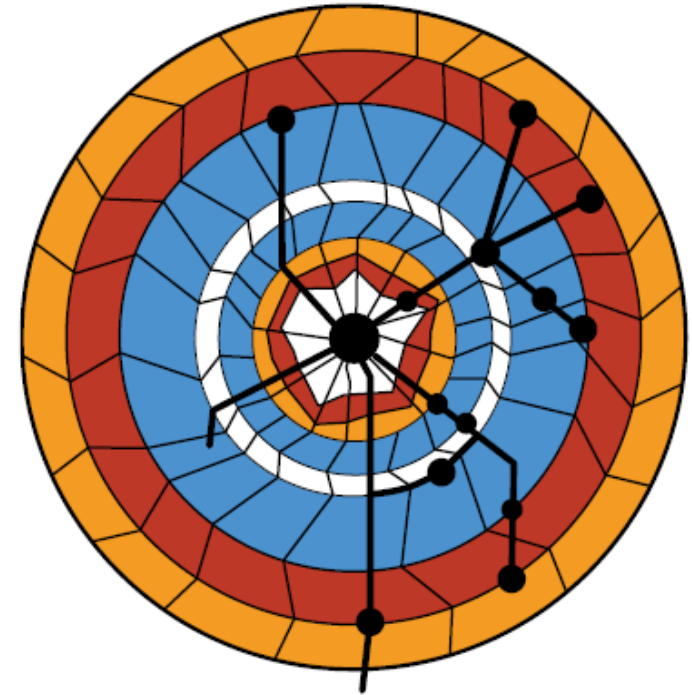
# Traffic Management Strategy Heavy Haulage



# Acknowledgement of Country

ALUA acknowledges the people of the Noongar Nation as Traditional Custodians of the land on which the project is located.

ALUA would also like to pay our respect to their Elders, both past and present.





# Agenda



- Project Overview
- Heavy Haulage Strategy
  - Planned route
  - Access to site
- Load Types and Numbers
- Traffic Management Plan
- Impact to PSP

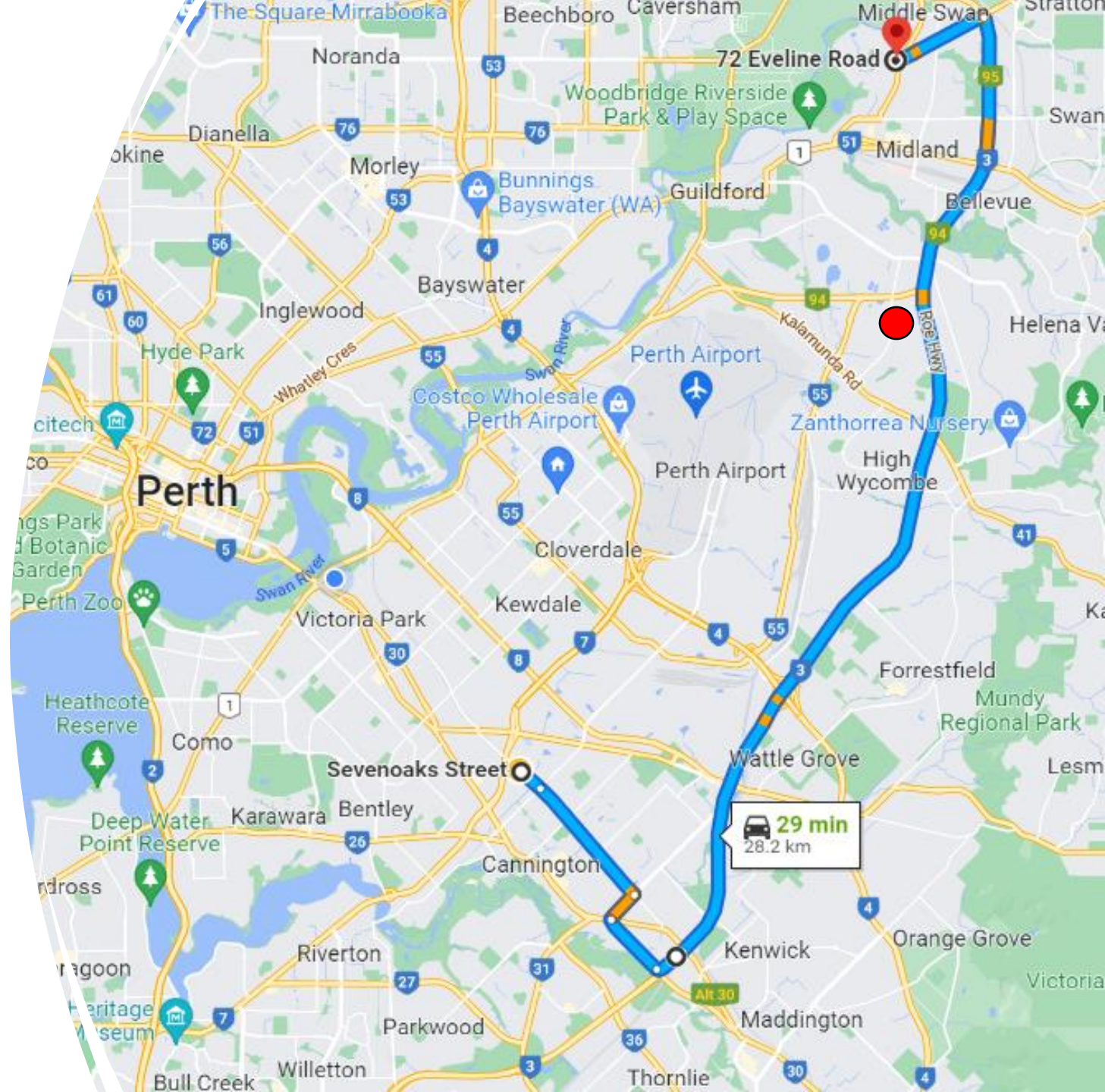
# Project Overview



- Victoria Park to Beckenham Level Crossing Removal Project
- 6 Level crossings to be removed
- 4 Elevated viaducts to be built
- 5 Elevated stations to be built
- Works to be delivered over 18 months shutdown of Armadale Line
- Shutdown commences late 2023
- Heavy Haulage from January 2024 to September 2024

# Heavy Haulage Strategy

- Just in time delivery
- Roe Highway
- Avoid Welshpool Rd
- Access site via Bank St & Sevenoaks St
- Connect Bank St & Sevenoaks St

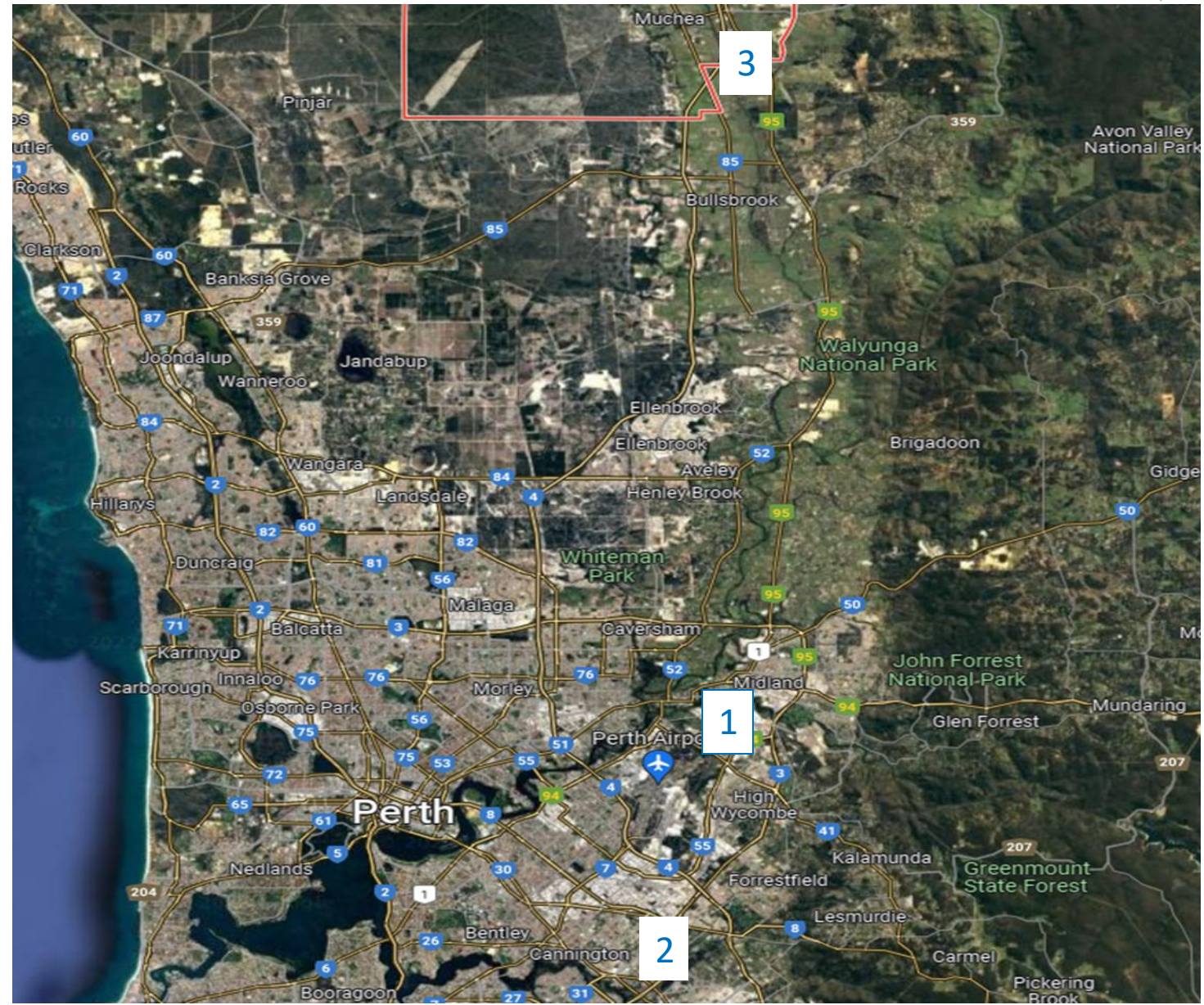




# Temporary Storage

## Current Option Locations

- 1: 54 Lakes Road, Hazelmere
- 2: Bickley Road, Kenwick
- 3: Tallangatta, Muchea





# Heavy Haulage - Access to Site

Due to the restricted working area of the site, most of the large precast items will be delivered and installed in a 'just in time' arrangement.

## 1 Mint Street, 2 Oats Street, and 3 Welshpool Road



L Shape Precast Beam Transport Route via Bank Street and Sevenoaks Street from William Street to avoid congestion at Welshpool Road

## 4 Hamilton Street, 5 Wharf Street, and 6 William Street



L Shape Precast Beam Transport Route via Sevenoaks Street from William Street to avoid congestion at Welshpool Road. Modification to existing traffic island and light pole is required.

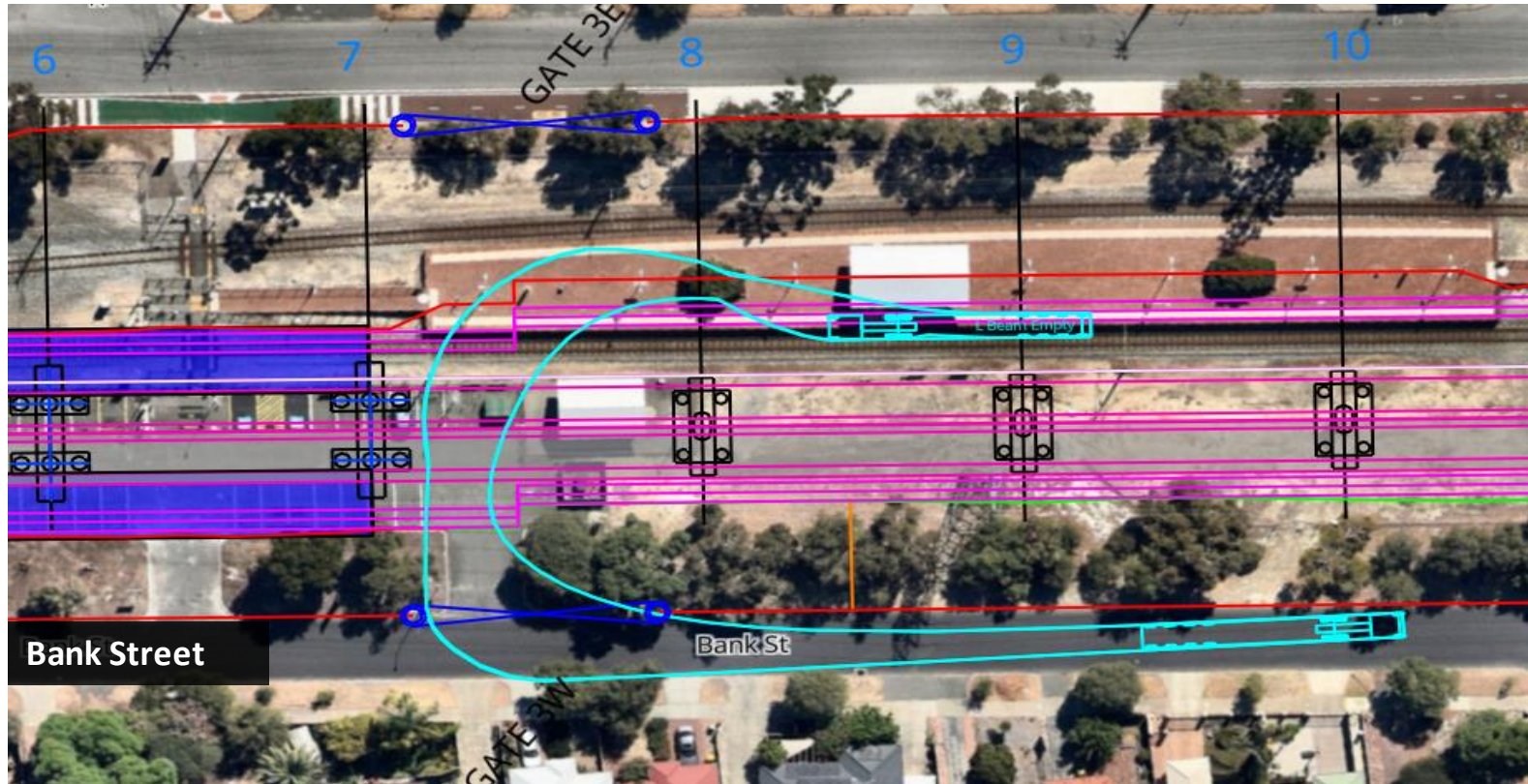




# Viaduct 1 Access Routes

## Heavy Haulage Exit from Construction site

- Access Gate located at Pier 7 and 8 for exiting before Carlisle station.





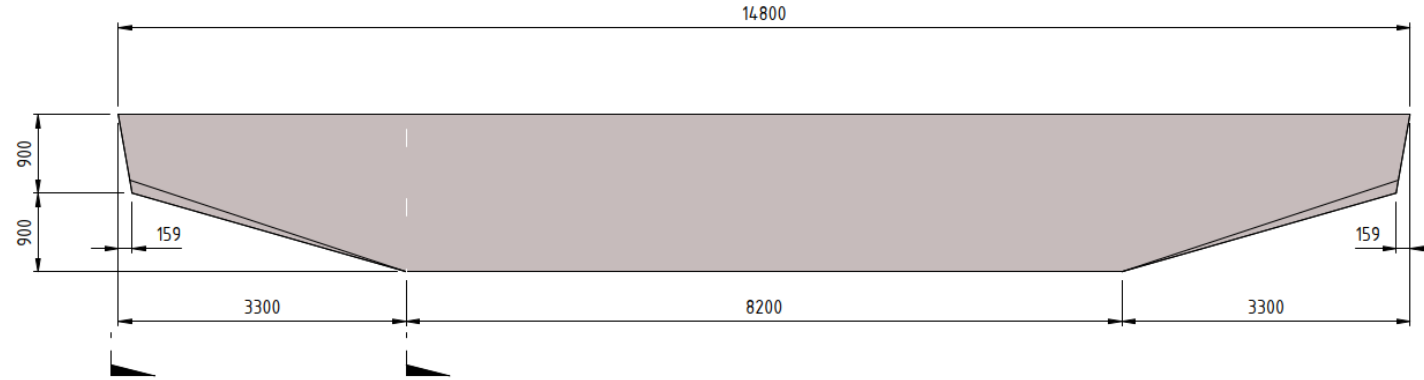
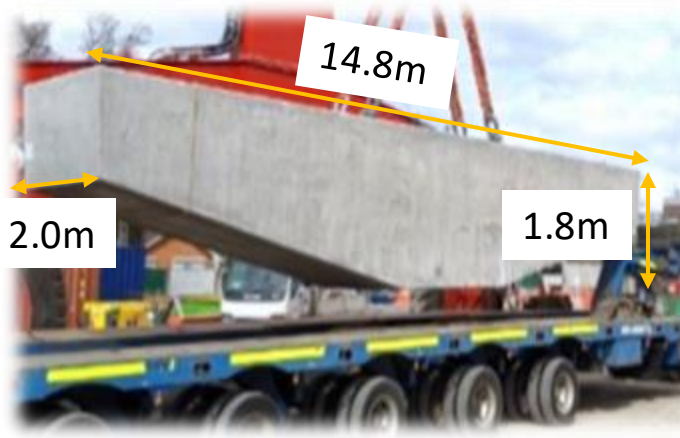
# Summary of Heavy Elements

## Number of Structural Elements Needs To Be Transported



Element Name	Quantity
Super T	40
Pier	169
Crosshead	154
L-Beams	532

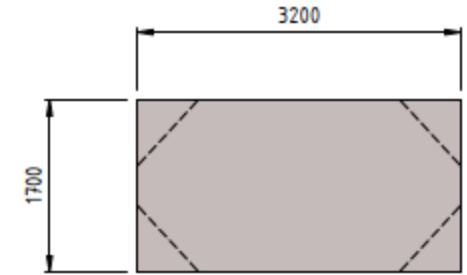
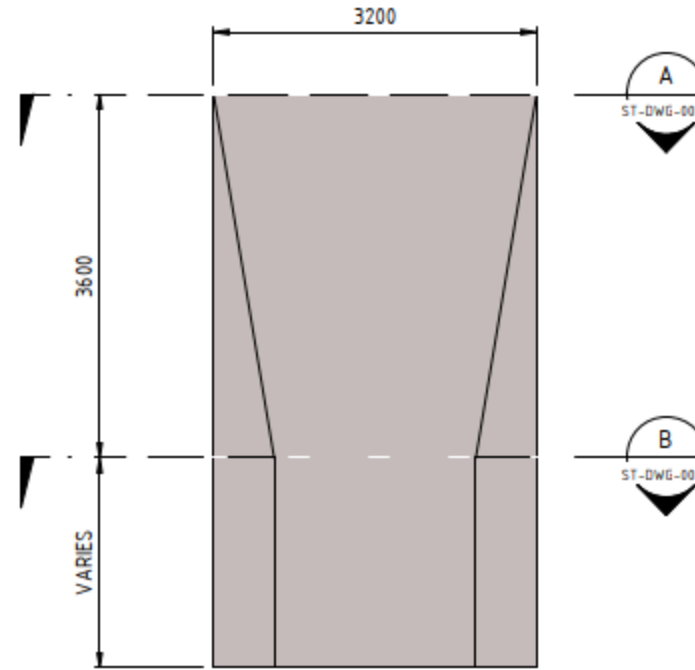
# Crosshead



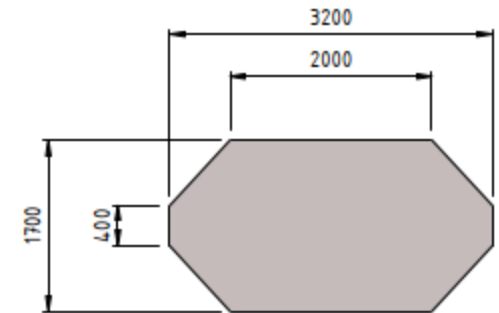
Max Weight	Max Dimensions	Quantity
120 tonnes	14.8m Wide 1.8m Deep 2.0m Long	154

➤ Delivering rate → Average: 5.8/week; Peak: 15/week over 7 month period

# Pier



SECTION A  
SCALE 1 : 50  
ST-DWG-0035

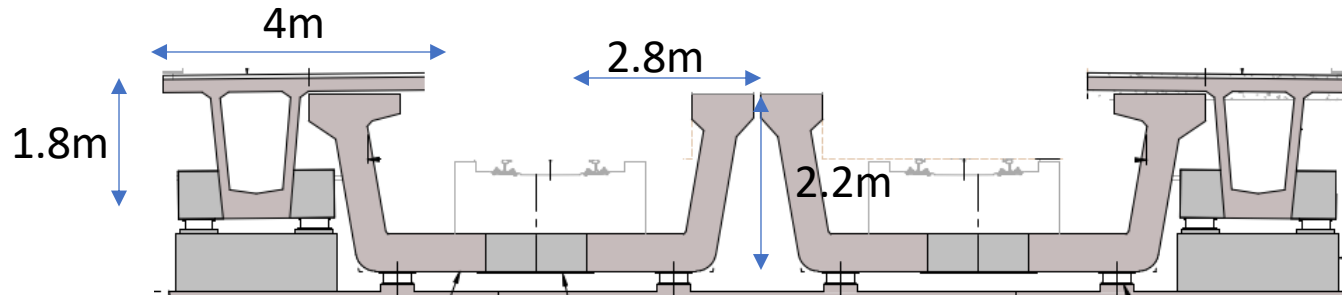


SECTION B  
SCALE 1 : 50  
ST-DWG-0035

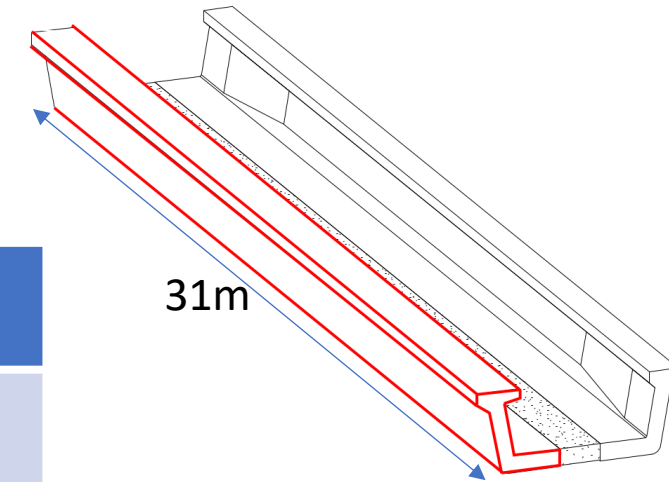
Max Weight	Max Dimensions	Quantity
90 tonnes	3.2m Wide 7m Deep (max) 1.7m Long	169

➤ Delivering rate → Average: 5/week; Peak: 13/week over 7 month period

# Super T & L-Beam



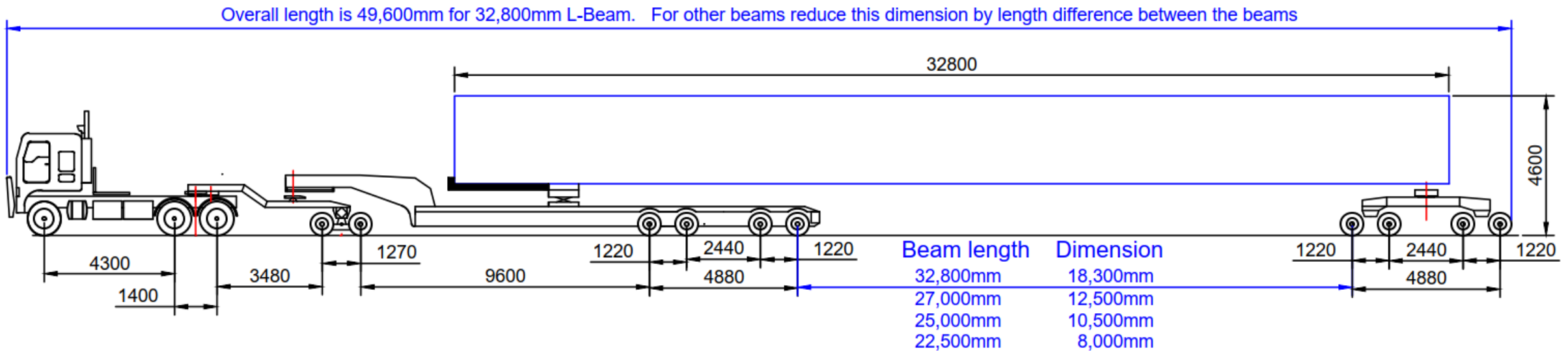
Element Name	Max Dimensions	Max Weight	Quantity
<b>Super T</b>	4m Wide 1.8m Deep 31m Long	130 tonnes	40
<b>L-Beam</b>	2.8 Wide 2.2m Deep 31m Long	130 tonnes	532



- Delivering rate (**Super T**) → Average: 3/week; Peak: 6/week over 3 month period
- Delivering rate (**L-Beams**) → Average: 14/week; Peak: 24/week over 7 month period

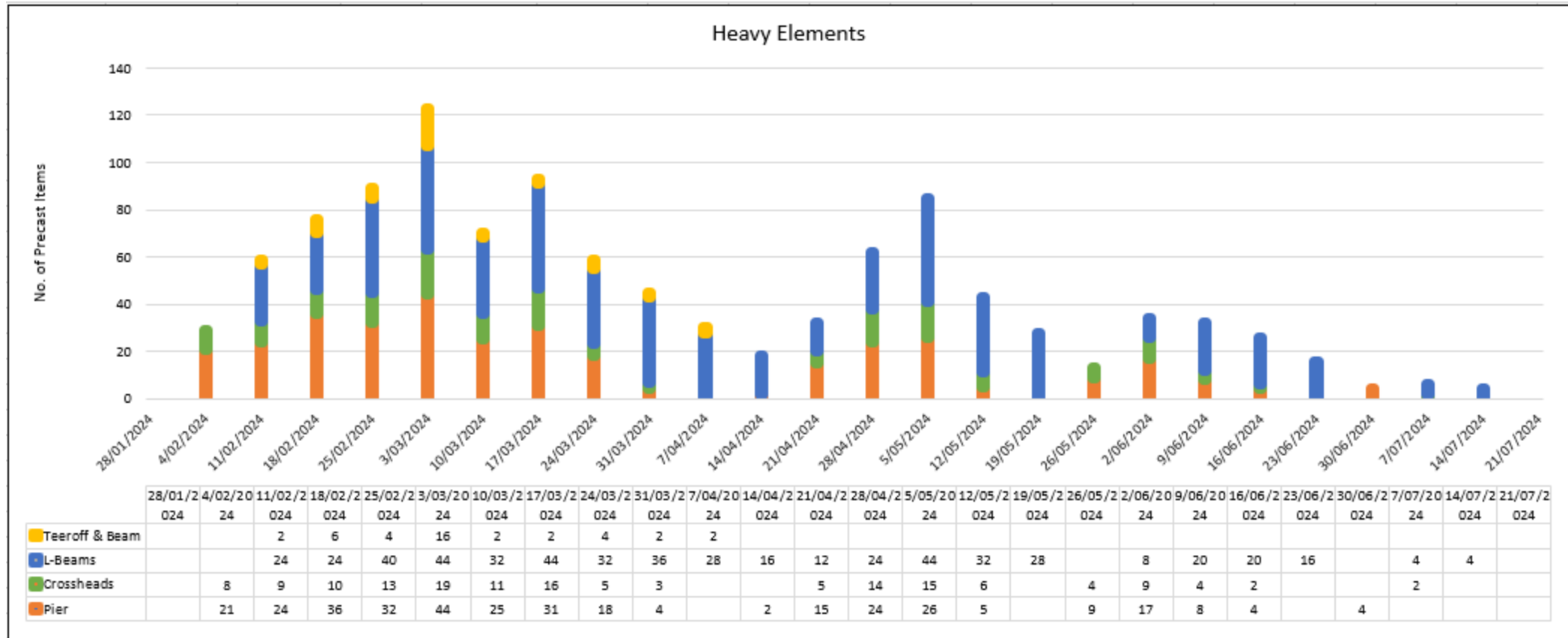
# Super T & L-Beam

## Typical Transport Haulage Layout



# Heavy Haulage Schedule

## Volume of Deliveries



# Impact to PSP

## Construction works affecting existing Armadale Railway PSP

- Package 1: Only impact around Welshpool Road
- Construction vehicles will access/egress the site from the west side, avoiding crossing the PSP
- PSP detour will be required on the south side of Welshpool Rd, to enable the construction of the new PSP.





# Impact to PSP

## Construction works affecting existing Armadale Railway PSP

- Package 2: Affecting Mills St to Gerald St
- Access/egress to site will remain on the west side. Minimizing any interacting between site vehicles and PSP users.
- PSP detours will be required to enable construction works.
- Assessment is being done to move temporary PSP onto Railway Parade.



# Traffic Management Plan

## Documentation



### **Haulage TMP document will provide:**

- Overview of route with detailed route mapping
- Assessment of all turns incl swept paths where required
- Height assessments where required
- Bridge assessments (based on MRWA HVS requirements/information, see below)
- Risk assessment for areas that require special treatment
- TGS for intersections/turns that require active control for OSOM loads
- Geometrical design for temporary pavements required to enable loads to move (i.e. Williams to Sevenoaks)