

Construction Traffic Management Plan – Luddenham Road Roundabout Construction

Western Sydney Airport – Surface and Civil Alignment Works

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Document Approval

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A	6/04.2023				External review
B	13/04/2023				External review
C	23/06/2023				For approval
D	12/07/2023				For approval
Signature					

Distribution and Authorisation

Document Control

The CPBUI JV Project Director is responsible for ensuring this plan is reviewed and approved. The Construction Manager is responsible for updating this plan to reflect changes to the project, legal and other requirements, as required.

The controlled master version will be maintained on Teambinder. All circulated hard copies are deemed to be uncontrolled.

Amendments

The implementation of this Plan is under the authority of the CPBUI Delegated Authority Matrix. All Contract personnel will perform their duties in accordance with this Plan, supporting plans, and related procedures.

Revision Details

Rev.	Details
A	For external review
B	For external review – update to TGS for Stage 3 including portable traffic control signals
C	For approval – updated based on comments received and modelling report included
D	For approval – updated based on comments received and traffic data included

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Abbreviations and definitions

Table 1 Abbreviations and definitions

Abbreviation	Description
CJP	Customer Journey Planning (formerly SCO)
CPB	CPB Contractors Pty Ltd
CPBUI JV	CPB Contractors Pty Limited and United Infrastructure Pty Limited Joint Venture
CTMP	Construction Traffic Management Plan
HML	Higher Mass Limit
HVNL	Heavy Vehicle National Law
IAP	Intelligent Access Program
LTC	Local Traffic Committees
OSOM	Oversize and/or over mass
PedMP	Pedestrian Management Plan
PMP	Project Management Plan
PMS	Project Management System
PkMP	Parking Management Plan
QR	Quick Response
RAV	Restricted Access Vehicle
ROL	Road Occupancy Licence
RSA	Road Safety Audit
SBT	Sydney Metro – Western Sydney Airport, Station Boxes and Tunnelling package
SCAW	Western Sydney Airport Surface and Civil Alignment Works package
SCO	Sydney Coordination Office (now CJP)
SSTOM	Sydney Metro – Western Sydney Airport, Stations, Systems, Trains, Operations and Maintenance package
SWTC	Scope of Work and Technical Criteria
TCG	Transport Coordination Group
TCP	Traffic Control Plan now known as Traffic Guidance Scheme
TfNSW	Transport for New South Wales
TGS	Traffic Guidance Scheme (formerly TCP)
TTLG	Traffic and Transport Liaison Group
UI	United Infrastructure Pty Limited
VMP	Vehicle Movement Plan
VMS	Variable message signs
WSA	Western Sydney Airport
WSI	Western Sydney International

Part A Overview

1. Introduction

1.1. Project Scope

The SMWSA Project involves the construction and operation of a new 23km metro rail line that extends from the existing Sydney Trains suburban T1 western line (at St Marys) in the north to the Aerotropolis (at Bringelly) in the south. The alignment includes a combination of tunnels and civil structures, including viaducts, bridges, and surface and open-cut troughs between the two tunnel sections. The Project also includes six new metro stations, and a stabling and maintenance facility and operational control centre at Orchard Hills. The SCAW package is the second major contract package to be procured for the Project. The successful and timely completion of the SCAW package is critical to the subsequent construction activities and ultimate completion of the entire Project.

1.1.1. Surface, Civil and Alignment Works (SCAW) scope

The scope for the SCAW package includes approximately 10.6km of alignment up to the underside of track formation from Orchard Hills to the WSI airport. This includes approximately:

- 3.6km of viaduct
 - 400m of viaduct over Blaxland Creek
 - 660m of viaduct over the Patons Lane area and un-named creek
 - 2.5km of viaduct in the Luddenham Road area including across the Warragamba pipeline, at Luddenham Station, across Luddenham Road and across Cosgrove Creek
- 205m of bridges
 - An over rail bridge, approximately 180m long, over the proposed M12 Motorway
 - An over rail bridge, approximately 25m long, over the drainage swale on the WSI airport site
- 6.9km of at-grade alignment
 - 600m at Orchard Hills, south of Lansdowne Road
 - 1.6km alongside the stabling maintenance facility in Orchard Hills
 - 900m to the north of the Warragamba pipelines
 - 1.1km north of the proposed M12 motorway
 - 1.4km south of the proposed M12 Motorway on Elizabeth Drive
 - 1.3km within the Airport site from the northern boundary to the Airport Business Park Station
- Temporary and permanent access roads.

The scope of works can be seen on Figure 1, noting that the tunnel and station works are by others.

1.2. Plan Purpose and Objectives

The Luddenham Road Construction Traffic Management Plan Roundabout Construction (CTMP or this plan) has been developed by CPB Contractors, United Infrastructure Joint Venture (CPBUIJV) to identify the traffic management measures at the Luddenham Road roundabout worksite for all phases of works associated with the Sydney Metro Western Sydney Airport Surface Civils and Alignment Works (SCAW works).

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

This plan has been prepared in accordance with the Construction Traffic Management Framework, SSI 10051 Planning Approval Condition E103 and will be submitted to the Planning Secretary of the NSW Department of Planning and Environment for information prior to the commencement of activities noted in the CTMP.

The key objectives of this plan are to ensure:

- The provision of a safe environment for road users, pedestrians, cyclists and workers
- Any impact on road users is kept to a minimum.
- Access is maintained for the local community, transport operators and commercial developments.
- Works are staged on key parts of the network to maintain levels of service.
- The SCAW package is represented as a proactive member of relevant local traffic coordination groups.
- Road users, local businesses, local Councils, Emergency Services, stakeholders and local communities are informed to changed traffic conditions, and
- There is sufficient advance warning of changes to normal traffic conditions.

2. Locality and existing conditions

The site is located north of the existing site access gates 4 and 5, refer to Figure 2.

Figure 2: Luddenham Road access points

Gates 4 and 5 are the subject of a separate CTMP, which was previously approved. Gate 4 provides the main access into the Luddenham Road Metro Station site. Gate 5 is to be used to provide access and egress to the south and towards Elizabeth Drive



The road network surrounding the access points are as noted on Figure 3.

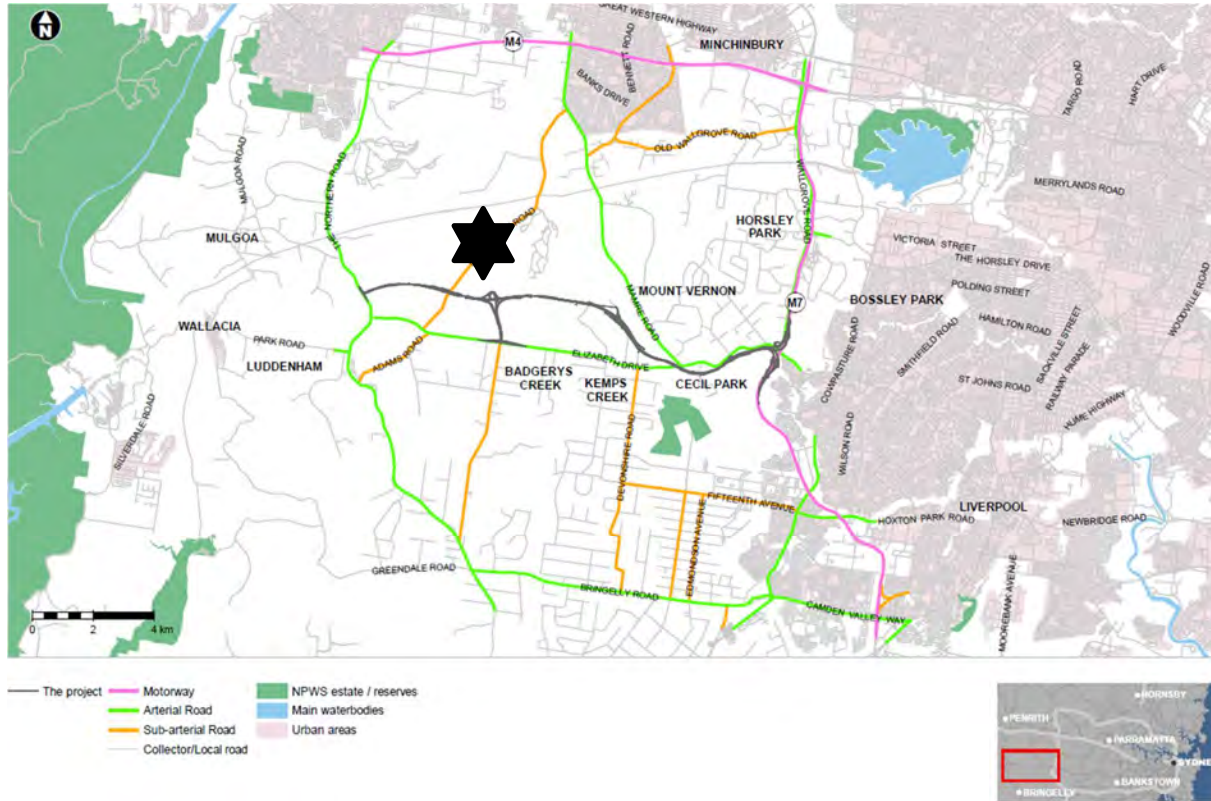


Figure 3 Road network surrounding the project

2.1. Luddenham Road, Luddenham

Luddenham Road is a regional road. Regional roads typically fall under council care with control of the road exercised between Council and TfNSW with TfNSW agreement required for any regulatory changes. Luddenham Road runs in a north-south direction. Luddenham Road terminates to the north at Mamre Road and to the south at Elizabeth Drive. It has a speed limit of 70km/hr near the work area. There is no on street parking along Luddenham Road. There are no existing footpaths or off road cycle facilities along Luddenham Road, refer to Figure 4.

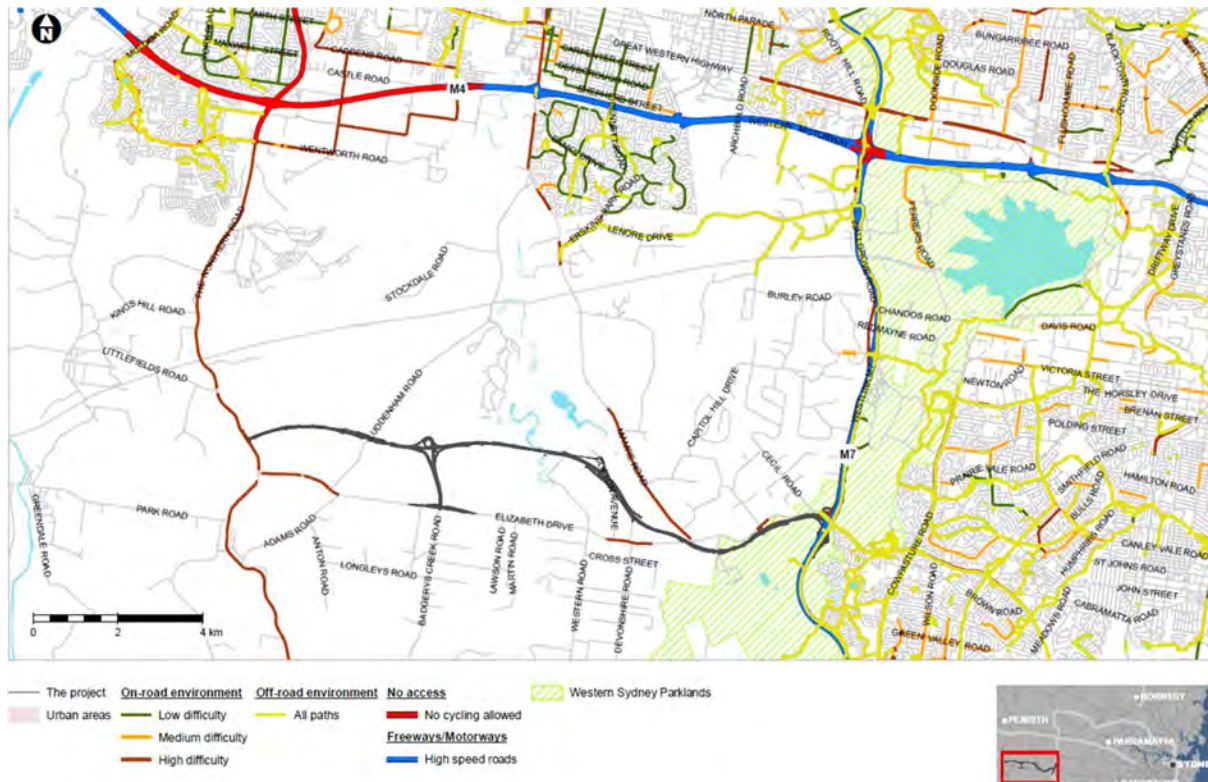


Figure 4: Existing cycle network

However, a small section of on road cycling facilities are provided adjacent to Gate 4 (northbound only), refer to Figure 5.



Figure 5: Gate 4 entry with on-road cycle route

Two school buses use Luddenham Road one runs in the morning and the other in the afternoon. There are no known bus stops along Luddenham Road, refer to Figure 6.

Figure 6

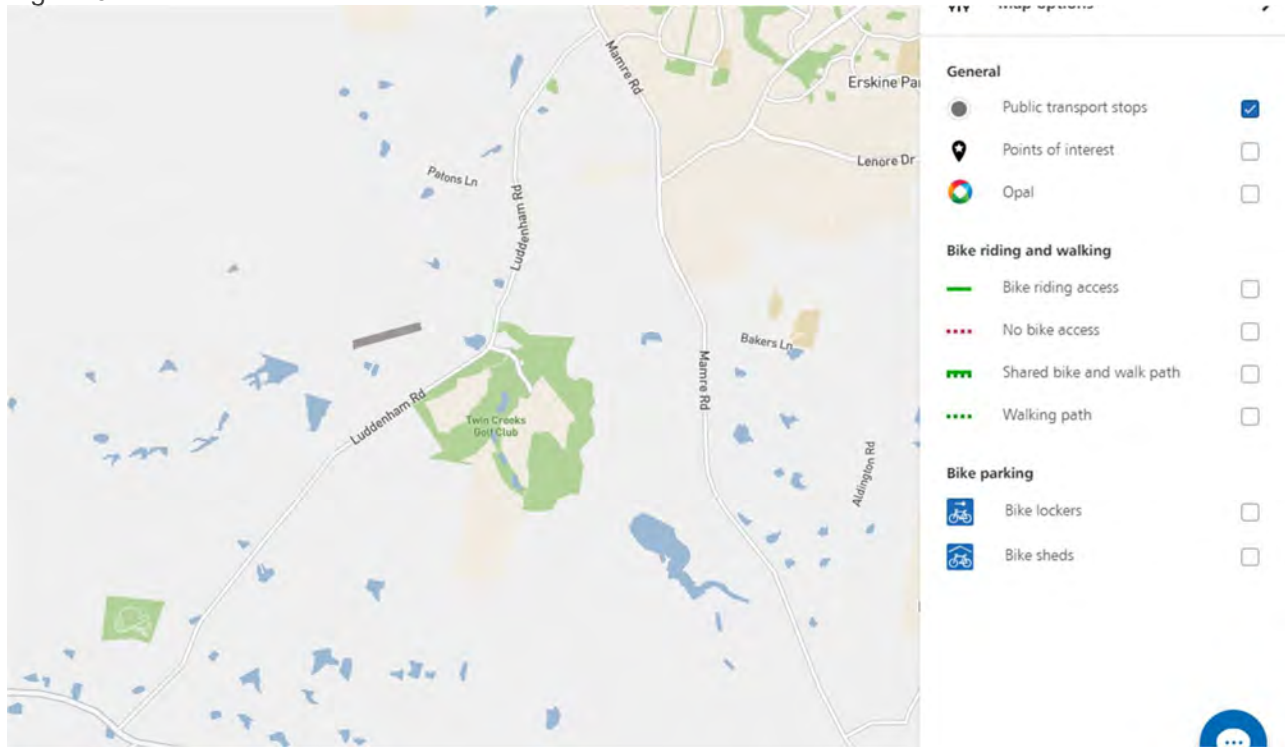


Figure 6: TfNSW [trip planner](#)

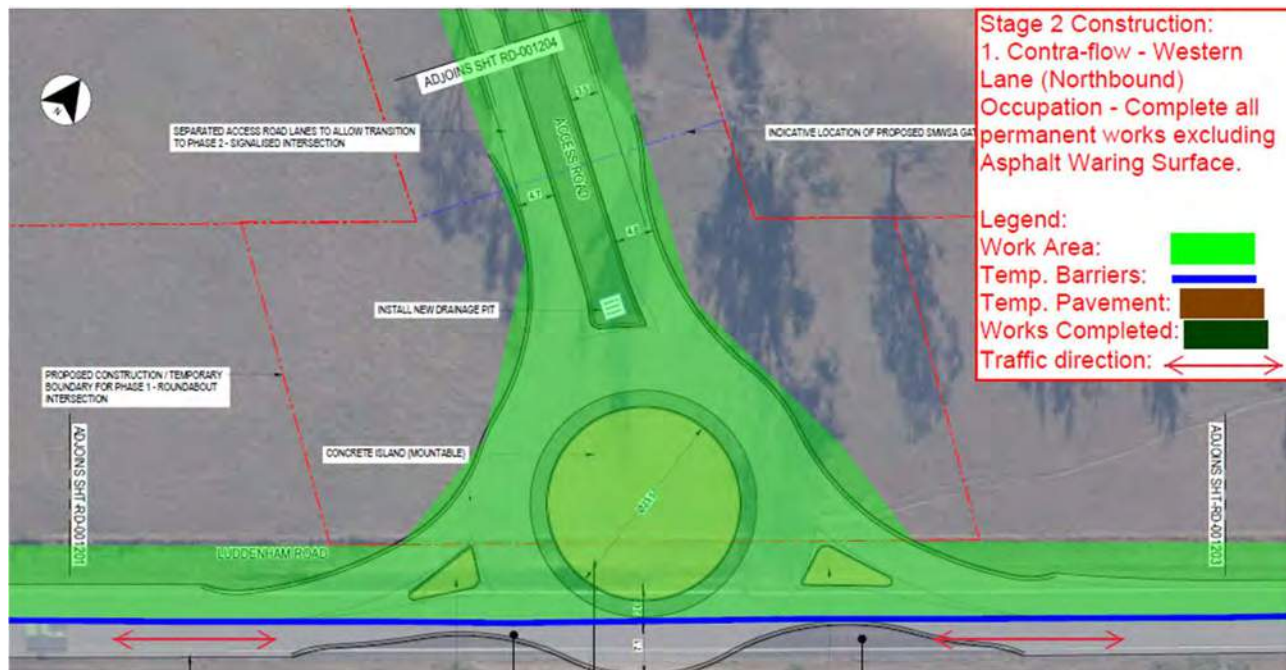


Figure 8: Stage 2 Roundabout schematic

3.4. Stage 3 works required

Duration: 2-3 weeks

Works to be undertaken during the roundabout Stage 3 construction, refer to Figure 9, include:

- Realign traffic onto the new roundabout alignment and implement stop slow under portable traffic control signals. Outside of working hours, the portable traffic signals will be operational. During working hours traffic controllers will be on site to facilitate site access and egress
- Installation of temporary barriers and appropriate end treatment(s) and reflectors to delineate and protect the work area
- Construct the remaining full depth pavement located within Luddenham Road corridor.

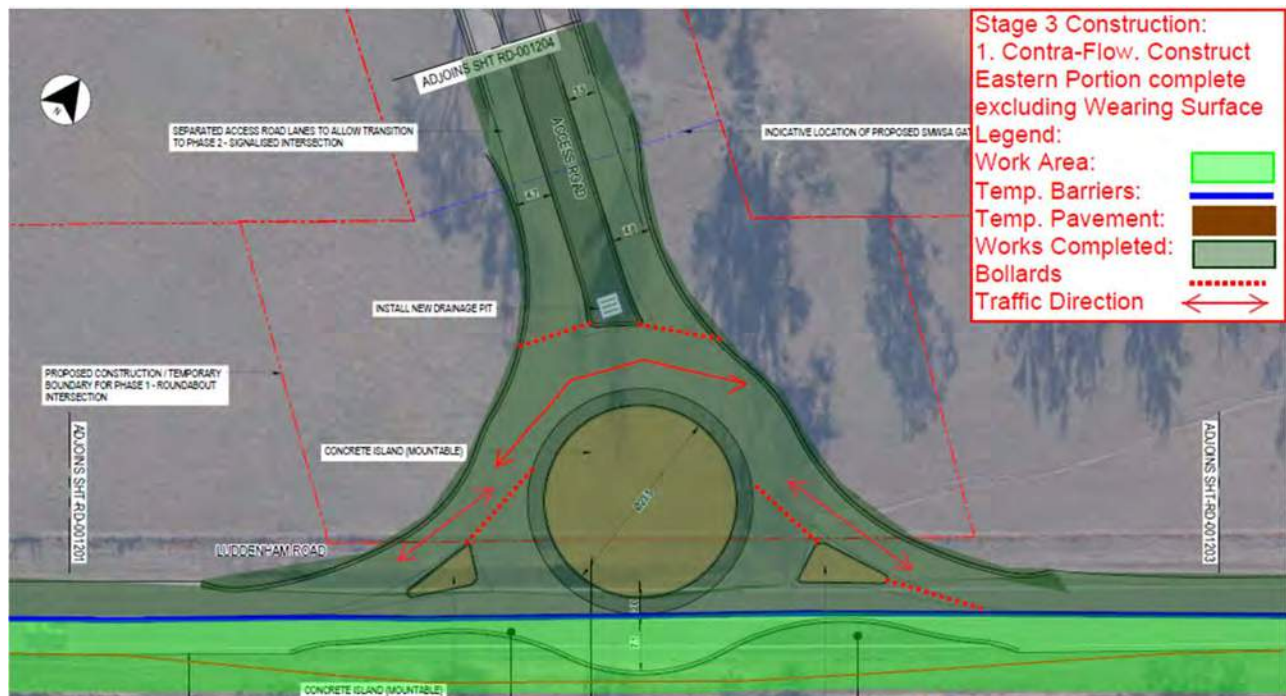


Figure 9: Stage 3 Roundabout schematic

3.5. Working hours

Works will generally be undertaken between the hours of 7AM-6PM Monday to Friday and 8AM-1PM Saturday.

3.6. Operating conditions

Vehicles will enter and exit the site via Luddenham Road via dedicated access egress points provided in Stage 1. During stages 2 and 3, access to the site will be under the stop slow arrangements.

3.6.1. Impact on traffic flow

During Stage 1, the works will maintain two lanes of traffic (one in each direction) outside of short term Traffic Guidance Scheme implementation. The TGS provides for stop slow using a porta boom and traffic controllers.

Stages 2 and 3 requires the implementation of Stop Slow for 24/7 until the full depth pavement works are completed. During working hours, traffic controllers will be on site to facilitate access/ egress from the site for work vehicles. This stop slow arrangement will include the use of portable traffic control signals.

The forecast vehicle numbers are provided in Table 2. It should be noted that the majority of vehicle movements associated with the Stage 1 works will be via the Gate 4 access point. Those vehicle numbers were provided in the Gate 4 and 5 CTMP.

Table 2: Forecast vehicle numbers during the various stages of roundabout construction

	Vehicle Type	Peak construction movements ¹					
		AM PEAK			PM PEAK		
		IN	OUT	Total	IN	OUT	Total
Stage 1	LV Staff	2	0	2	0	2	2
	LV Deliveries	2	2	4	2	2	4
	HV	2	2	4	2	2	4
Stage 2	LV Staff	2	0	2	0	2	2
	LV Deliveries	0	0	0	0	0	0
	HV	2	2	4	2	2	4
Stage 3	LV Staff	2	0	2	0	2	2
	LV Deliveries	0	0	0	0	0	0
	HV	2	2	4	2	2	4

During the Stage 1 works, the majority of construction vehicles will access the work site from Gate 4. Heavy vehicle movements will predominantly relate to the importation of road base materials with unsuitable material being removed from the site and concrete pours related to the roundabout. During the Stage 1 works utility works will continue on Luddenham Road. The majority of heavy vehicles will be single unit trucks and concrete agitators. Road base will be placed at the access/ egress points on the Luddenham Road shoulder to facilitate truck movements.

Stages 2 and 3 will relate to the importation of road base materials and the removal of unsuitable material. These movements will require access and egress onto Luddenham Road. Single unit trucks will be used.

Traffic counts and modelling have been undertaken by Austraffic and Headway Traffic and Transport respectively and the results of the modelling and timings to be used for the portable traffic signals are

provided in Appendix F. The results of the modelling show that the Degree of Saturation (DoS¹) is less than 0.6 in both directions. The traffic counts are also provided in Appendix G.

3.6.2. Impact on public transport

There is no impact on public transport during these works as there are limited services that operate in the area, as noted in section 2.1. No bus stops or services will be affected by the works.

3.6.3. Impact on active transport users

There are no existing footpaths or cycles routes provided along Luddenham Road. There is a small section of on road cycling facilities provided for approximately 600m at Gate 4, refer to Figure 2 and Figure 5 within this CTMP.

3.6.4. Impact on property and utilities access

Access to residential-and commercial properties will be retained during the roundabout works. Access for utility providers/ maintainers will not be impacted. Any property access that is physically affected by the Project Works will be reinstated to at least an equivalent standard, in consultation with the landowner or alternative access provided in consultation with the landowner.

During construction, all reasonably practicable measures will be implemented to maintain pedestrian and vehicular access to, and parking in the vicinity of, residences, businesses and affected properties. Disruptions will be avoided, where possible and where avoidance is not possible, minimised. Where disruption cannot be minimised, alternative pedestrian and vehicular access, and parking arrangements will be developed in consultation with affected residents, businesses and affected property owners and implemented before the disruption. Adequate signage and directions to businesses will be provided before, and for the duration of, any disruption.

Any changes to access arrangements or alternative access that are necessary during construction will be done in with consultation with the landowner. Any changes to access will provide the same equivalent pre-existing level of access unless agreed to by the land owner. Property access that is physically affected by the project will be reinstated to at least an equivalent standard, in consultation with the landowner.

3.6.5. Cumulative impacts

There are a number of construction activities within the immediate area associated with services installation on Luddenham Road, M12 West minor interface works.

Regular meetings (weekly for works on Luddenham Road) are held with the various contractors working around the SCAW worksites. At these meetings the up and coming traffic events are discussed and confirmed. Attendees at these meetings include:

- Sydney Metro Western Sydney Airport project team
- AARNet – Australia’s Academic and Research Network
- TfNSW’s M12 project team
- CPBGG M12 West contractor
- Endeavour Energy
- Garde (Endeavour Energy’s contractor)

¹ The degree of saturation (DoS) of an intersection (typically under [traffic signal](#) control) measures the demand relative to the total capacity. A DoS value of 100% (DoS=1) meaning that demand and capacity are equal and no further traffic is able to progress through the intersection. Values over .85-.9 indicate traffic congestion with queues beginning to form.

- Celestino (developer of Sydney Science Park)
- CJP and
- SCAW

3.7. Staff and labour parking

All vehicles associated with the works will park within the site.

3.8. Traffic Guidance Schemes

Traffic Guidance Schemes required for these works are provided in Appendix C and include:

- Stop slow arrangements to implement the various stages identified previously including enabling works
- Stop slow arrangements for Stages 1, 2 and 3 operations

3.9. Required Council approvals

Penrith City Council and TfNSW are the approval authorities for works on Luddenham Road. CJP are the approvers of this CTMP.

4. Fleet management

Trucks to be used for the delivery of the SCAW works will be compliant with NSW legislation and standards including Heavy Vehicle National Legislation (HVNL). All heavy vehicle operations will be conducted in accordance with CPBUI JV Chain of Responsibility (CoR) Management Plan and the Principal's Contractors Safety Standard as noted in the Overarching TMP.

A combination of truck types will be used during the SCAW works including single unit trucks, semi-trailers, truck and dog combinations and low loaders, for example.

The location of all heavy vehicles used for spoil haulage will be monitored in real time and these records can be made available electronically to the Planning Secretary and the Environmental Protection Authority (EPA) upon request for a period of no less than one (1) year following the completion of construction.

There is sufficient room on site for all heavy vehicles required for the works. Therefore, marshalling facilities are not proposed for this site. Heavy vehicle will not idle or queue on roads surrounding the site.

4.1. Haulage routes

Generally, the haulage routes will be via arterial roads, freeways or tollways. The routes included in the EIS have been adopted for this site, refer to Figure 10 and Figure 11. The routes include Elizabeth Drive and Luddenham Road from The Northern Road, from the east from the M7 Motorway, Elizabeth Drive and Luddenham Road and Luddenham Road from the north. CPBUI JV will predominately use The Northern Road for material delivery and disposal for gate 4. Heavy vehicles will be accessing the arterial network as soon as possible after leaving the construction sites.

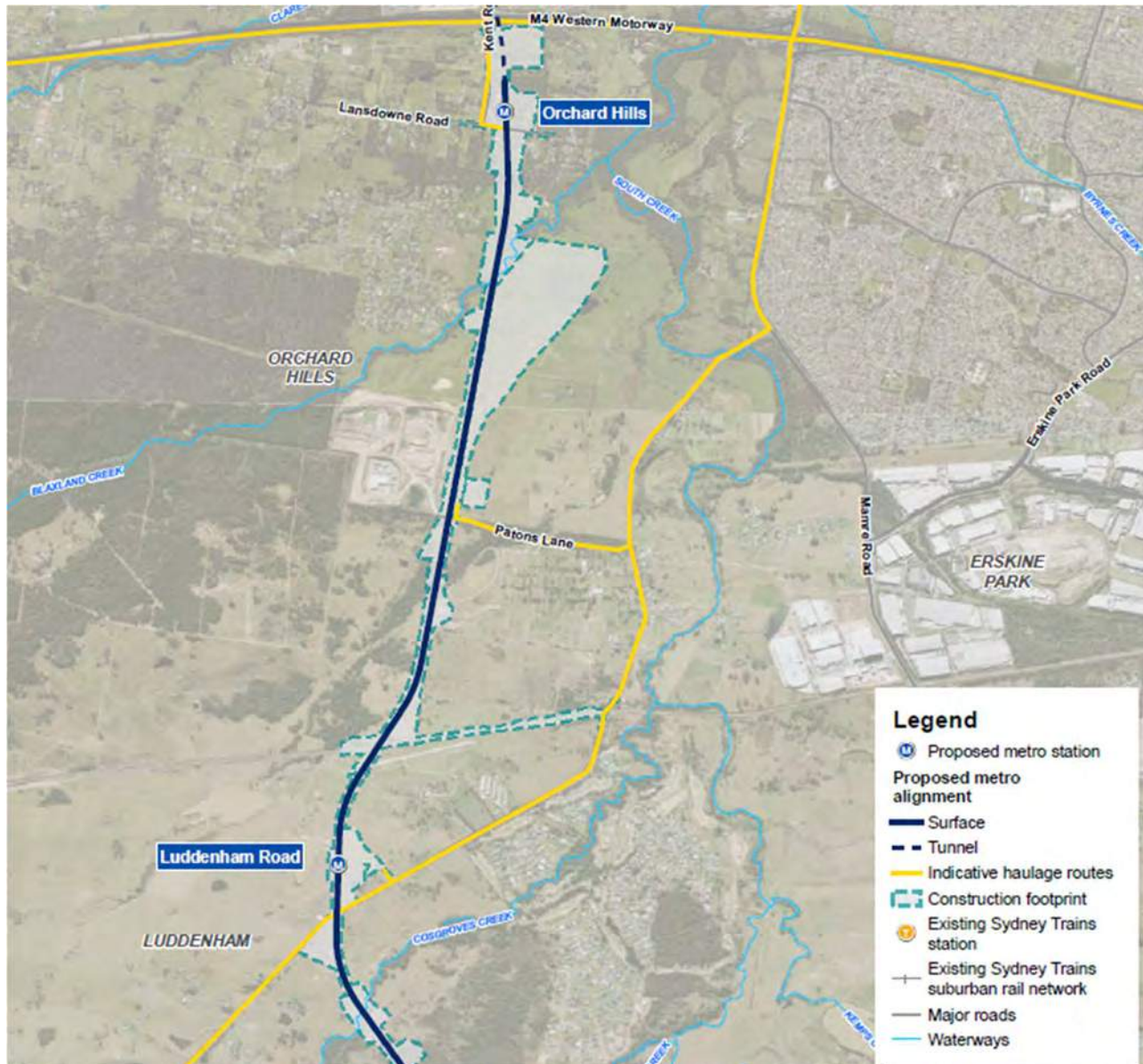


Figure 10: EIS haulage routes from the north

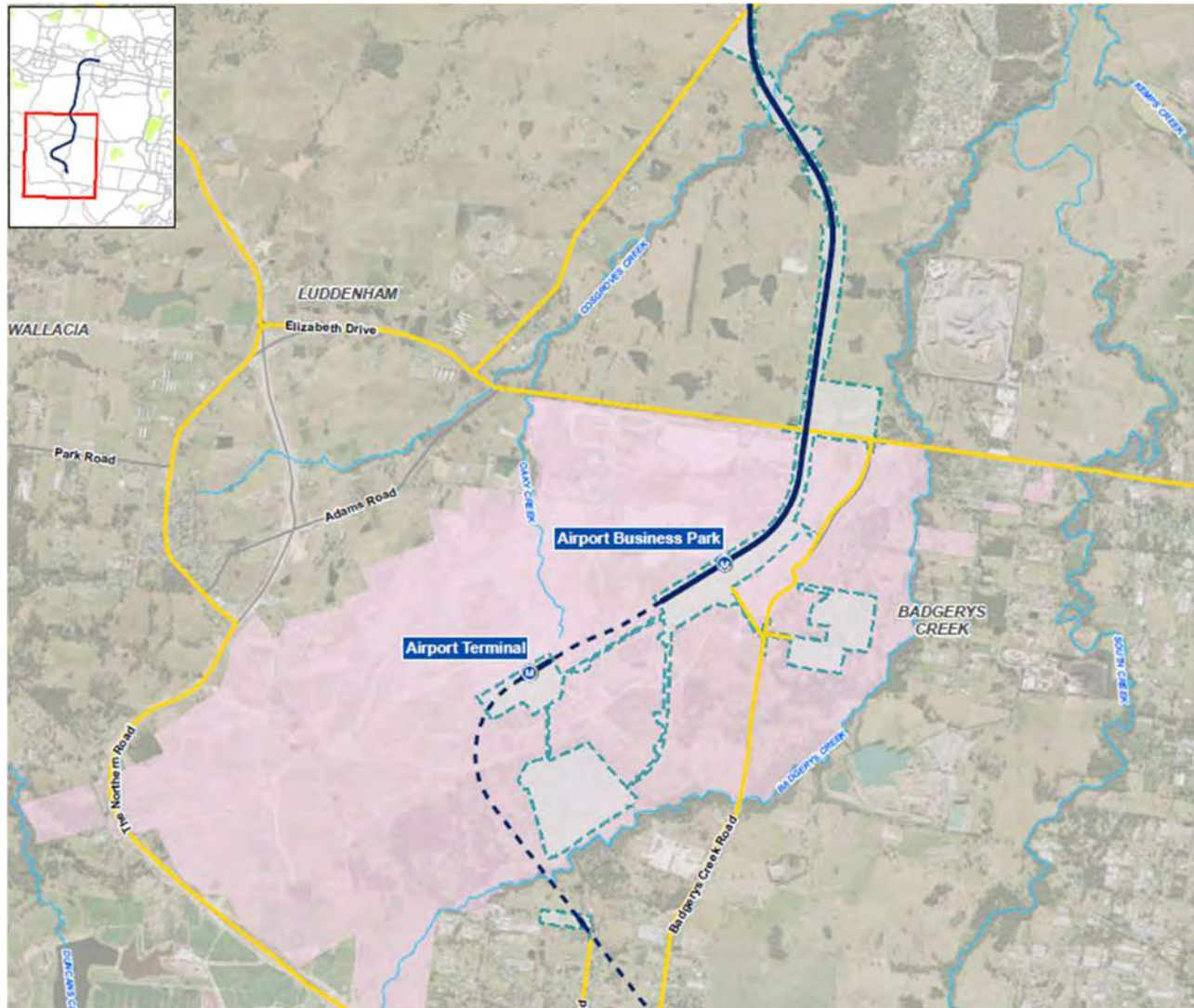


Figure 11: EIS haulage routes

4.2. Road dilapidation report

As noted in the Ministerial Conditions of Approval, road dilapidation report has been prepared for local roads and provided to Penrith City Council.

4.3. Permits for over-dimensional vehicles

Permit for vehicles greater than 4.5t through the National Heavy Vehicle Regulator (NVHR). This applies to particular special purpose vehicles (SPV) such as mobile cranes and other oversize/ over mass (OSOM) vehicles. TfNSW is currently undertaking this permit issue.

For over dimensional vehicles generally vehicles that are greater than 25m in length of 3.5m wide require a pilot(s). Extremely long or wide vehicles will require an escort, fee payable. Permits are generally applied for by the transport operator.

There is no requirement for over mass/ oversize vehicles during the works identified in this CTMP.

5. Other matters

5.1. Road Safety Audits

Road safety audits will be undertaken during the development and implementation of the CTMP. The audit will be undertaken as noted in section 10 of the Construction Traffic Management Framework. A copy of the road safety audit is provided in Appendix G.

5.2. Communications and the community

CPBUI JV will be responsible for the dissemination of information to the community including affected residents, relevant councils, businesses and the public.

5.2.1. Proposed communications

Typical timelines for the various notifications are:

- Community notices (notifications) issued at least seven (7) days prior to:
 - Start of work
 - New work with a new activity that has the potential to impact on stakeholders and the community
 - Handover of a construction site to a new contractor
 - Activities requiring notification to comply with relevant Environmental Protection License (EPL) usually out of hours works
- Precinct updates/ e-update (newsletters) – published 2 per year and for changes to planning approvals
- email and internet updates - done with publication and deliver to letterboxes of notifications and newsletters
- advertisement – published in advance of significant traffic management changes, detours, traffic disruptions
- advance warning signs – as noted in the CTMP where required.

Table 3: Proposed communications

Notification	Site operations
Community notice	Yes
Precinct update/ e-update	Yes
Email and internet	Yes
Print advertising	No
Advance warning sign(s)	Yes
Gate signs	No

5.2.2. Travelling public

Where the SCAW works will impact on the travelling public, CPGUI JV will undertake the following communications:

- Public transport interruptions will be communicated via on site signage
- Motoring public will be forewarned of any changes including road closures, road changes and lane changes well in advance using appropriate signs including Variable Message Signs (VMS)
- Active transport users will be provided with advance warning signs

Variable message signs (VMS) will be installed at the locations noted in Table 4 and these will be used to highlight the changed traffic conditions ahead. (Note: hyperlinks are provided in the table for the locations and refer to Appendix E).

Table 4: VMS

VMS ID#	Location	VMS type	Direction	Preworks	Works use
1	Luddenham Road NB VMS	Temporary	Northbound	Yes	Yes
2	Luddenham Road SB VMS	Temporary	Southbound	Yes	Yes

Table 5: VMS messages

Preworks message								Works message							
L	U	D	D	E	H	A	M		P	R	E	P	A	R	E
		R	O	A	D				T	O		S	T	O	P
	C	H	A	N	G	E	S								
			D	D					T	R	A	F	F	I	C
			M	M					S	I	G	N	A	L	S
			T	I	M	E			A	H	E	A	D		

The VMS will be in place 1 week prior to Stage 2 and will remain in place for the duration of Stages 2 and 3.

5.3. Stakeholders

There are a number of stakeholders consulted during the development of this CTMP. A copy of their review comments are provided in Appendix H. Table 6 provides an overview of the consultation undertaken for this CTMP.

Table 6: Consultation undertaken

Stakeholder	Consultation Type	Date
CJP	Presentation of staging	27 th March 2023
Traffic and Transport Liaison Group	Presentation	6 th April 2023
CJP	Submission of CTMP	6 th April 2023
Sydney Metro Western Sydney Airport project team	Submission of CTMP	6 th April 2023
Penrith City Council	Submission of CTMP	6 th April 2023
TfNSW	Submission of CTMP	6 th April 2023
Endeavour Energy and Garde meeting	Presentation of staging	
CJP	Submission of CTMP	13 th April 2023
Sydney Metro Western Sydney Airport project team	Submission of CTMP	13 th April 2023
Penrith City Council	Submission of CTMP	13 th April 2023
TfNSW	Submission of CTMP	13 th April 2023
CJP	Resubmission of CTMP	23 rd June 2023
Sydney Metro Western Sydney Airport project team	Resubmission of CTMP	23 rd June 2023
Penrith City Council	Resubmission of CTMP	23 rd June 2023
TfNSW	Resubmission of CTMP	23 rd June 2023
CJP	Resubmission of CTMP	12 th July 2023

Stakeholder	Consultation Type	Date
Sydney Metro Western Sydney Airport project team	Resubmission of CTMP	12 th July 2023
Penrith City Council	Resubmission of CTMP	12 th July 2023
TfNSW	Resubmission of CTMP	12 th July 2023

5.3.1. Traffic and Transport Liaison Group

The Traffic and Transport Liaison Group (TTLG) has been established by Sydney Metro Western Sydney Airport for the project, as required under MCoA E116. The TTLG consists of members from Sydney Metro Western Sydney Airport project team, Liverpool City Council, Penrith City Council, Customer Journey Planning, Western Sydney Airport Corporation (WSA Co), Western Parkland City Authority (WPCA), TfNSW's Planning and Programs, other contractors associated with the project and Emergency Services.

Further development of this CTMP will occur in consultation with this group. It is noted that this group meets monthly.

Supplementary analysis and modelling as required by Sydney Metro Western Sydney Airport and/ or the TTLG will be undertaken to demonstrate that construction traffic can be managed to minimise disruption to traffic networks operations including changes to the management of pedestrians, cyclists and public transport networks and services. Any revised traffic management measure will be incorporated into the CTMP.

5.3.2. Traffic Control Group

The Traffic Control Group (TCG) has been established by Sydney Metro Western Sydney Airport for the project. The TCG consists of members from Sydney Metro Western Sydney Airport project team, Liverpool City Council, Penrith City Council, Customer Journey Planning, Western Sydney Airport Corporation (WSA Co), Western Parkland City Authority (WPCA), TfNSW's Planning and Programs and other contractors associated with the project. The TCG meets fortnightly.

The purpose of the TCG is for open and honest technical discussion on the contractors proposed works, methodologies and traffic management plans. The TCG will:

- Provide feedback on proposals
- Guide CTMP and other document finalization prior to submission for review/ approval
- Guide coordination of works and traffic management activities on and off airport (local, regional and state roads)
- Assist in transport mitigation

5.4. Special events

When planning the works, CPGUI JV will identify special events which directly impact the works or haulage activities and will continue to interrogate event websites that provide details on forthcoming events such as:

- NSW and Sydney events - [Destination NSW](#)
- NSW events and festivals - [Visit NSW](#)
- Major events - [Penrith City Council Upcoming events](#)

5.5. Training

CPBUI JV will ensure that all personnel, including subcontractors are aware of the specific requirements of TfNSW's customers, general public, residents and businesses, prior to attending site through the induction process and regular updates through tool box talks. Specific training will be provided to heavy vehicle drivers regarding the possible presence of pedestrians and cyclists and the increased risk of high speed run off the road and head on collision types due to the narrow road widths, high speeds and little to no shoulder availability.

5.6. Inspections and monitoring

The site will be monitored by the site supervisor. Any changes to signs and lines that impact on the public will be recorded. Daily monitoring will be undertaken during the site operating hours.

Traffic control used for pedestrian management, lane closures etc will need to provide records of the traffic control implemented. Any changes required to a traffic control set up will be authorised by a holder of a SafeWork NSW “Prepare a Work Zone Traffic Management Plan” or equivalent. Checklist for monitoring of the implemented CTMP are provided in Appendix I.

5.7. Site contacts

Table 7 provides the contact details for the works identified in this CTMP.

Table 7: Site contacts

Name	Position	Mobile#
[Redacted Content]		

5.8. References

The following documents were used in the development of this CTMP:

- Construction Traffic Management Framework, Sydney Metro West and Sydney Metro Western Sydney Airport
- TfNSW’s Traffic Control at Worksites Manual v6.1
- Relevant AustRoads Guides and TfNSW Supplements
- Sydney Metro Principal Contractor Health and Safety Standard

Part C Appendices

Appendix A – Compliance Matrix

Sydney Metro Western Sydney Airport CSSI Infrastructure Approval (SSI 10051)

Project Planning Approval (SSI 10051)		
E103	Construction Traffic Management Plans (CTMPs) must be prepared in accordance with the Construction Traffic Management Framework. A copy of the CTMPs must be submitted to the Planning Secretary for information before the commencement of any construction in the area identified and managed within the relevant CTMP.	This plan
E104	The locations of all Heavy Vehicles used for spoil haulage must be monitored in real time and the records of monitoring be made available electronically to the Planning Secretary and the EPA upon request for a period of no less than one (1) year following the completion of construction.	Refer to Overarching CTMP
E105	Local roads proposed to be used by Heavy Vehicles to directly access ancillary facilities / construction sites that are not identified in the documents listed in Condition A1 must be approved by the Planning Secretary and be included in the CTMP.	Not applicable to this CTMP as all roads to be used are included in the EIS
E106	All requests to the Planning Secretary for approval to use local roads under Condition E105 above must include the following: (a) a swept path analysis; (b) demonstration that the use of local roads by Heavy Vehicles for the CSSI will not compromise the safety of pedestrians and cyclists of the safety of two-way traffic flow on two-way roadways; (c) details as to the date of completion of the road dilapidation surveys for the subject local roads; and (d) measures that will be implemented to avoid where practicable the use of local roads past schools, aged care facilities and child care facilities during their peak operation times; and (e) written advice from an appropriately qualified professional on the suitability of the proposed Heavy Vehicle route which takes into consideration items (a) to (d) of this condition.	Not applicable to this CTMP as all roads to be used are included in the EIS
E107	Before any local road is used by a Heavy Vehicle for the purposes of construction of the CSSI, a Road Dilapidation Report must be prepared for the road. A copy of the Road Dilapidation Report must be provided to the Relevant Road Authority(s) within three (3) weeks of completion of the survey and at no later than one (1) month before the road being used by Heavy Vehicles associated with the construction of the CSSI.	Section 4.2
E108	If damage to roads occurs as a result of the construction of the CSSI, the Proponent must either (at the Relevant Road Authority's discretion): (a) compensate the Relevant Road Authority for the damage so caused; or (b) rectify the damage to restore the road to at least the condition it was in pre-work as identified in the Road Dilapidation Report.	Section 4.2
E109	Vehicles associated with the project workforce (including light vehicles and Heavy Vehicles) must be managed to: (a) minimise parking on public roads; (b) minimise idling and queueing on state and regional roads; (c) not carry out marshalling of construction vehicles near sensitive use	Section 4

Project Planning Approval (SSI 10051)		
	(d) not block or disrupt access across pedestrian or shared user paths at any time unless alternate access is provided; and (e) ensure spoil haulage vehicles adhere to the nominated haulage routes identified in the CTMP.	
E110	Access to all utilities and properties must be maintained during works, unless otherwise agreed with the relevant utility owner, landowner or occupier.	Section 3.6.4
E111	The Proponent must maintain access to properties during the entirety of works unless an alternative access is agreed in writing with the landowner(s) whose access is impacted by the CSSI works.	Section 3.6.4
E112	Where construction of the CSSI restricts a property's access to a public road, the Proponent must, until their primary access is reinstated, provide the property with temporary alternate access to an agreed road decided through consultation with the landowner, at no cost to the property landowner, unless otherwise agreed with the landowner.	Section 3.6.4
E113	Any property access physically affected by the CSSI must be reinstated to at least an equivalent standard, unless otherwise agreed by the landowner or occupier. Property access must be reinstated within one (1) month of the work that physically affected the access is completed or in any other timeframe agreed with the landowner or occupier.	Section 3.6.4
E114	During construction, all reasonably practicable measures must be implemented to maintain pedestrian, cyclist and vehicular access to, and parking in the vicinity of, businesses and affected properties. Disruptions are to be avoided, and where avoidance is not possible, minimised. Where disruption cannot be minimised, alternative pedestrian, cyclist and vehicular access, and parking arrangements must be developed in consultation with affected businesses and landowners and implemented before the disruption. Adequate signage and directions to businesses must be provided before, and for the duration of, any disruption.	Sections 3.6.3 and 3.6.4
E115	Safe pedestrian and cyclist access must be maintained around the St Marys construction site during construction. In circumstances where pedestrian and cyclist access is restricted or removed due to construction activities, a proximate alternate route which complies with the relevant standards, must be provided and signposted before the restriction or removal of the impacted access.	Not applicable to the SCAW scope of works
E116	A Traffic and Transport Liaison Group(s) must be established in accordance with the Construction Traffic Management Framework to inform the development of CTMP.	Sydney Metro will establish the TTLG Section 0
E117	Supplementary analysis and modelling as required by TfNSW and / or the Traffic and Transport Liaison Group(s) must be undertaken to demonstrate that construction and operational traffic can be managed to minimise disruption to traffic network operations including changes to and the management of pedestrian, bicycle and public transport networks, public transport services, and pedestrian and cyclist movements. Revised traffic management measures must be incorporated into the CTMP.	Section 0
E118	As part of Condition E117 the Traffic and Transport Liaison Group(s) is to identify opportunities to improve the intersection performance during operation at:	Not applicable to the SCAW scope of works

Project Planning Approval (SSI 10051)

	<p>a) Queen Street/Great Western Highway/Mamre Road in St Marys; b) Glossop Street/ Forrester Road in St Marys; and c) Glossop Street / Great Western highway in St Marys. Identified improvements must be implemented prior to the commencement of operation.</p>	
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Sydney Metro Western Sydney Airport Environmental Impact Statement

Revised Environmental Management Measures (REMMs)

T1	Construction Traffic Management Plans would be prepared in accordance with the Construction Traffic Management Framework	This plan
T2	The Construction Traffic Management Plan for St Marys would be developed in consultation with the Traffic and Transport Liaison Group to ensure existing transport interchange infrastructure continues to operate effectively within the St Marys station precinct.	Not applicable to the SCAW scope of works
T3	Coordination with Western Sydney Airport and Transport for NSW would be undertaken through the Traffic and Transport Liaison Group to manage potential cumulative construction traffic impacts with M12 Motorway and Elizabeth Drive	Section 0
T4	Road Safety Audits would be carried out to address vehicular access and egress, and pedestrian, cyclist and public transport safety. Road Safety Audits would be carried out as per the guidelines outlined in Section 10 of the Construction Traffic Management Framework	Section 5.1
T5	Maintain access for pedestrians and cyclists around construction sites as per the guidelines outlined in the Construction Traffic Management Framework. Appropriate signage and line marking would be provided to guide pedestrians and cyclists past construction sites and on the surrounding network to allow access to be maintained	Section 3.6.3
T6	Access for construction vehicles to be planned as per the guidelines outlined in the Construction Traffic Management Framework. Construction site traffic would be managed to minimise movements during peak periods. Vehicle access to and from construction sites would be managed to maintain pedestrian, cyclist and motorist safety	Section 4

Sydney Metro Western Sydney Airport Revised performance outcomes

Revised Performance outcomes - Transport

<p>Network connectivity, safety and efficiency of the transport system in the vicinity of the project are managed to minimise impacts. The safety of transport system customers is maintained. Impacts on network capacity and the level of service are effectively managed</p>	Safe and efficient routes are provided for pedestrians, cyclists, and road users at/ near construction sites	Not applicable to the SCAW scope of works
	Access to the existing St Marys Station is maintained while train services are operating	Not applicable to the SCAW scope of works
	Safe access to properties and businesses is maintained during construction, unless alternatives are agreed with property owners and businesses	Section 3.6.3
	Heavy vehicles access the arterial network as soon as practicable on route to, and immediately after leaving a construction site	Section 4.1
	The local community and relevant authorities are informed of transport, access and parking changes/ impacts to minimise inconvenience to the public	Section 5.2.1

Appendix B – Haulage routes

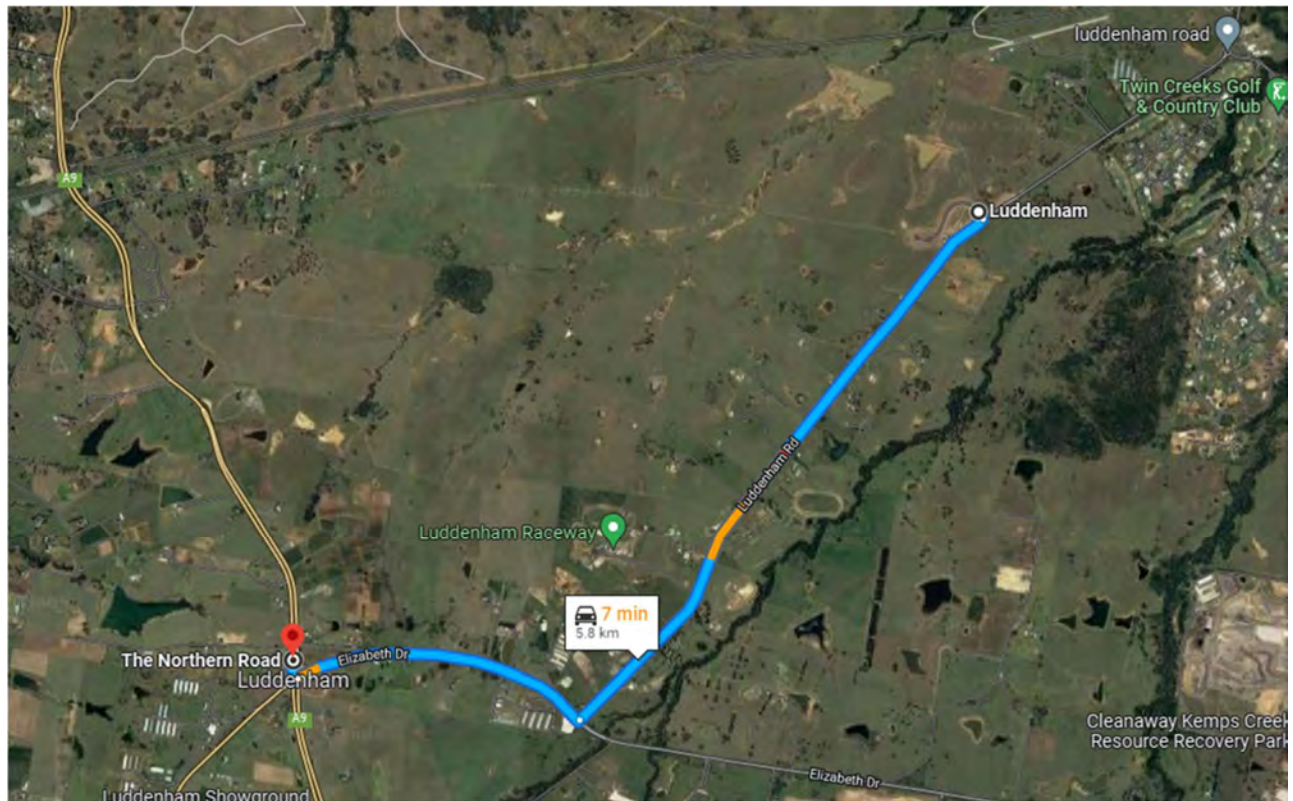


Figure 12: From the Northern Road for roundabout site

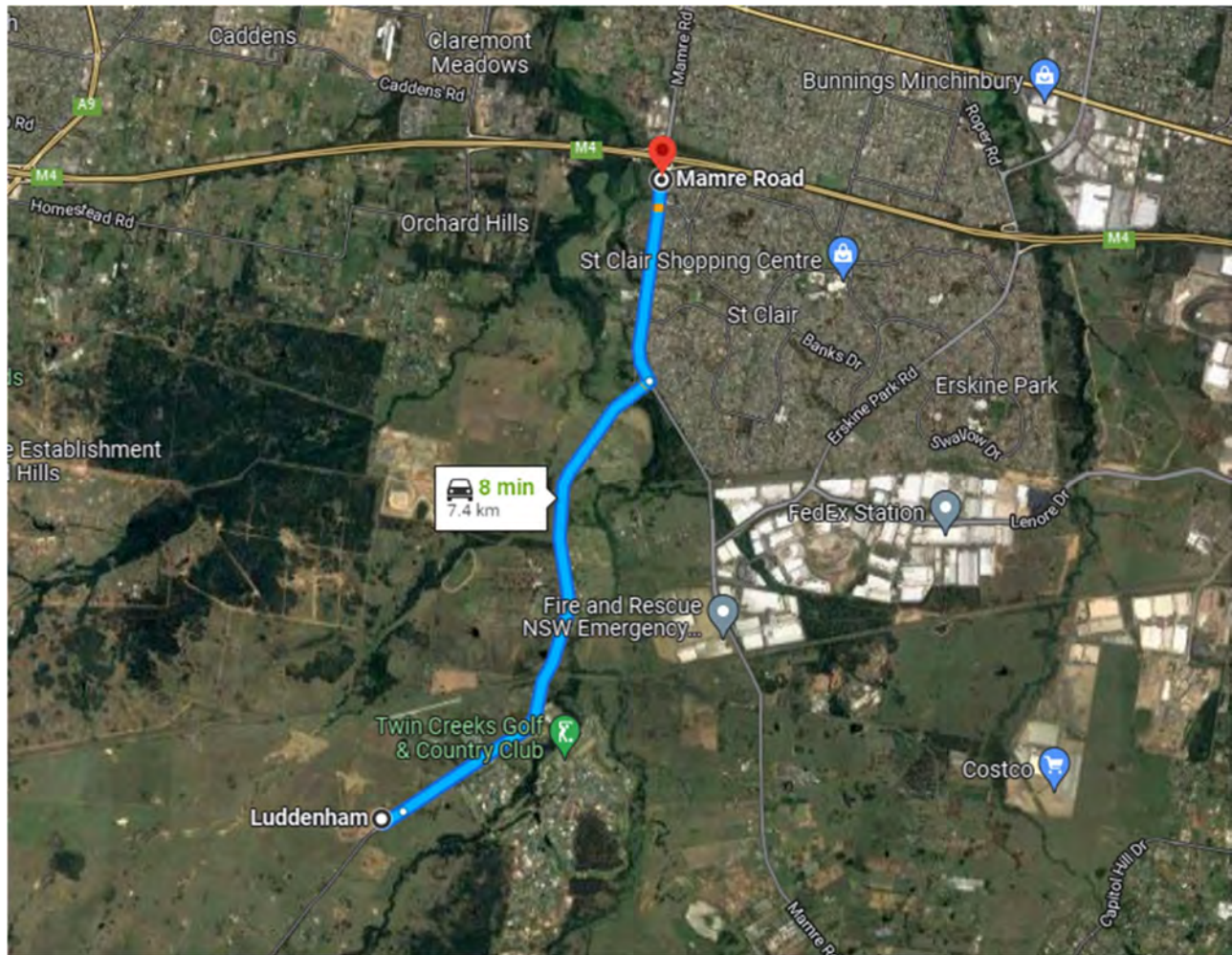


Figure 13: [To the M4 Motorway](#) for roundabout egress

Appendix C – Traffic Guidance Schemes

Table 8: Traffic Guidance Schemes

TGS#	Location	From	Time	Traffic control	Works	Impacts
CPBUI-LUD-TGS-0001 (Sheets 1-4)	Luddenham Road	Roundabout site	24/7	Long term stage	Stage 1	Minimal impacts as traffic flow is maintained
CPBUI-LUD-TGS-0002 (Sheets 1-4)	Luddenham Road	Roundabout site	24/7	Long term stage	Stage 2	Minimal impacts as traffic flow is maintained under stop slow arrangements
CPBUI-LUD-TGS-0003 (Sheets 1-4)	Luddenham Road	Roundabout site	24/7	Long term stage	Stage 3	Minimal impacts as traffic flow is maintained under stop slow arrangements
SCAW-TGS-LUD-R001	Luddenham Road	Roundabout site	Day	Stop slow	Stage 1 barrier installation and removal	Minimal impacts as traffic flow is maintained under stop slow arrangements
SCAW-TGS-LUD-R007	Luddenham Road	Roundabout site	Day	Stop slow	Access and egress for Stage 1	Minimal impacts as traffic flow is maintained under stop slow arrangements
SCAW-TGS-LUD-R006	Luddenham Road	Roundabout site	24/7	Stage 2	Various works	Stop slow required due to full depth pavement
SCAW-TGS-LUD-R004	Luddenham Road	Roundabout site	24/7	Stage 3	Various works	Stop slow required due to full depth pavement
SCAW-TGS-LUD-R005	Luddenham Road	Roundabout site	Day	Stop slow	Sign installation and removal	Minimal impacts as traffic flow is maintained
GEN-LM	Luddenham Road	Roundabout site	Day	Dynamic Work area	Line marking install and removal	Minimal impacts as traffic flow is maintained
SCAW-TGS-LUD-R011	Luddenham Road	Joint Bay 26 site	Day	Stop slow	Various works	Minimal impacts as traffic flow is maintained

GENERAL NOTES

- THIS TGS HAS BEEN PREPARED IN ACCORDANCE WITH THE TCAWS MANUAL V6.1 2022 AND AUSTRADS GUIDE TO TEMPORARY TRAFFIC MANAGEMENT 2019.
- THE CONTRACTOR SHALL ENSURE ALL ROAD OCCUPANCY PERMITS AND SPEED ZONE AUTHORISATION REQUIREMENTS ARE SATISFIED PRIOR IMPLEMENTATION OF THIS TGS.
- ANY EXISTING SIGNAGE THAT CONFLICTS WITH THIS TGS MUST BE COVERED AT THE START OF OPERATION AND UNCOVERED AT THE COMPLETION.
- THE SITE MUST COMPLY WITH THE TRAFFIC CONTROL AT WORK SITES MANUAL V6.1 2022 EDITION, AUSTRADS GUIDE TO TEMPORARY TRAFFIC MANAGEMENT 2019 AND A.S. 1742.3
- LOCATION CHECKLIST MUST BE COMPLETED FOR ALL WORKSITES
- SIGNS TO BE POSITIONED IN ACCORDANCE WITH THE TCAWS MANUAL V6.1 2022.
- TRAFFIC CONTROLLERS TO BE POSITIONED WHERE THEY CAN MAINTAIN A CLEAR ESCAPE PATH



SHEET 3

SHEET 4

SITE SPECIFIC NOTES	
PRIMARY ROAD	LUDDENHAM RD
SECONDARY ROAD	
PERMITTED TIMES FOR USE	24
PREDICTED END-OF-QUEUE LENGTH	LIMITED - LOW VOLUME
EXISTING SPEED - PRIMARY ROAD	80km/h
EXISTING SPEED - SECONDARY ROAD	
DIMENSION D ADOPTED	80m
CONE SPACING (MAX)	4m
SIGN SIZE (MIN)	A
MINIMUM CLEARANCE TO WORKERS FROM TRAFFIC	1.5m

REV	BY	DATE	DESCRIPTION	APPD.
03	AG	9.07.23	UPDATE SECTION AND SIGNS	AG
02	AG	14.05.23	UPDATE SITE ACCESS SIGNAGE	AG
01	AG	3.04.23	UPDATE CROSS SECTION AND LEGEND	AG
00	AG	10.03.23	ORIGINAL ISSUE	AG

DRAWN BY: [Redacted]

DRW CHECK: [Redacted]

APPROVED: [Redacted]

IND REVIEW: [Redacted]



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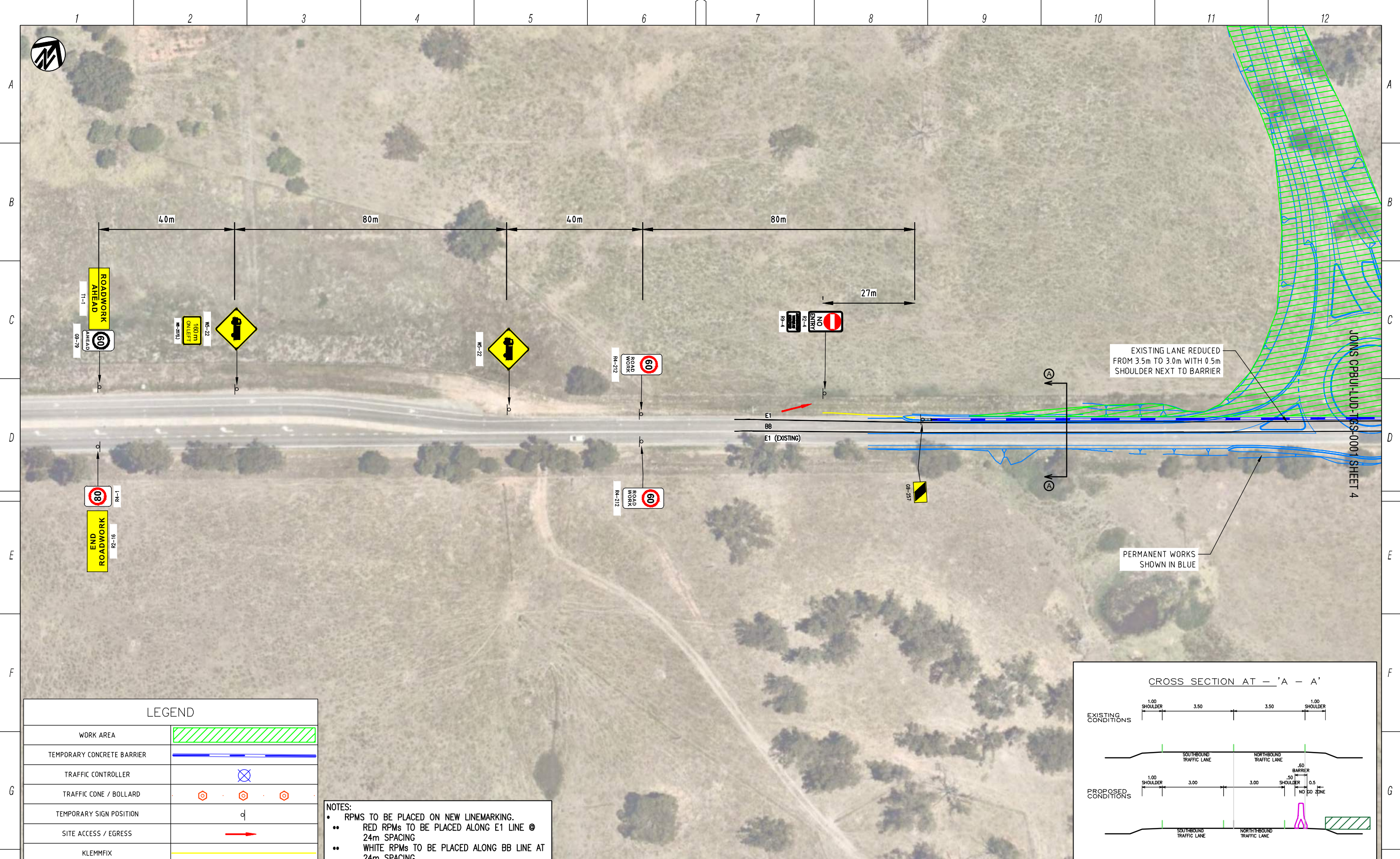
WSA - SURFACE AND CIVIL ALIGNMENT WORKS

**LUDDENHAM ROAD STAGE ONE
BARRIER INSTALLATION
LOCALITY PLAN AND VMS MESSAGING**

DRAWING No: CPBUI-LUD-TGS-0001

SHEET 2 **OF** 4

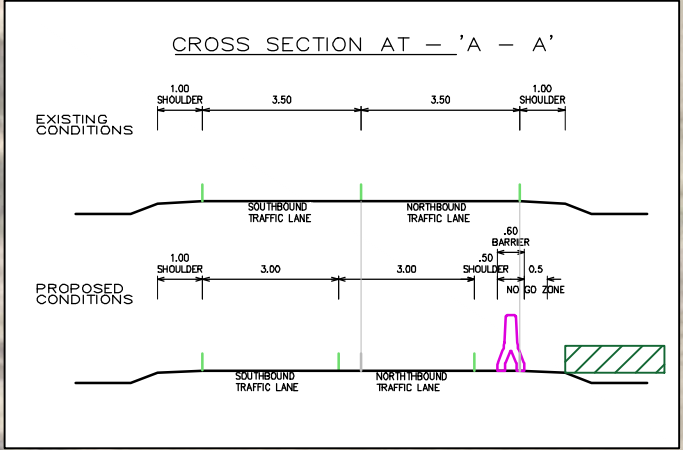
REVISION 03



LEGEND

WORK AREA	
TEMPORARY CONCRETE BARRIER	
TRAFFIC CONTROLLER	
TRAFFIC CONE / BOLLARD	
TEMPORARY SIGN POSITION	
SITE ACCESS / EGRESS	
KLEMMFIX	

- NOTES:**
- RPMS TO BE PLACED ON NEW LINEMARKING.
 - RED RPMS TO BE PLACED ALONG E1 LINE @ 24m SPACING
 - WHITE RPMS TO BE PLACED ALONG BB LINE AT 24m SPACING



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APPROVED: [Redacted]

IND REVIEW: [Redacted]



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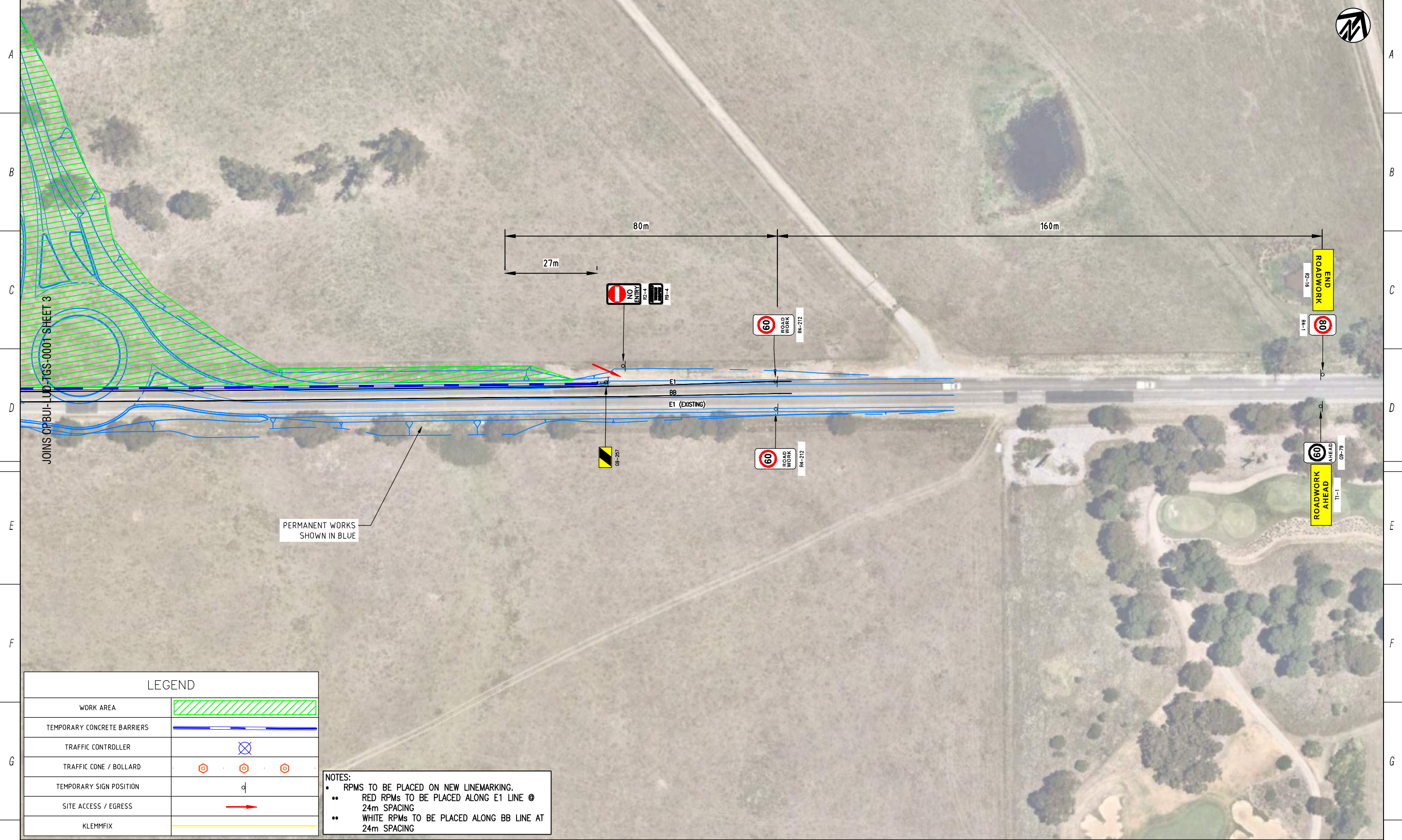
WSA - SURFACE AND CIVIL ALIGNMENT WORKS

**LUDDENHAM ROAD STAGE ONE
BARRIER INSTALLATION
TRAFFIC GUIDANCE SCHEME**

DRAWING No: CPBUI-LUD-TGS-0001

SHEET 3 OF 4

REVISION 03



PERMANENT WORKS SHOWN IN BLUE

LEGEND	
WORK AREA	
TEMPORARY CONCRETE BARRIERS	
TRAFFIC CONTROLLER	
TRAFFIC CONE / BOLLARD	
TEMPORARY SIGN POSITION	
SITE ACCESS / EGRESS	
KLEMMFIX	

NOTES:
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CLIENT
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**LUDDENHAM ROAD STAGE ONE
 BARRIER INSTALLATION
 TRAFFIC GUIDANCE SCHEME**

DRAWING No:	CPBUI-LUD-TGS-0001		
SHEET	4	OF	4
REVISION	03		

GENERAL NOTES

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- TRAFFIC CONTROLLERS TO BE POSITIONED WHERE THEY CAN MAINTAIN A CLEAR ESCAPE PATH



SHEET 3

SHEET 4

SITE SPECIFIC NOTES	
PRIMARY ROAD	LUDDENHAM RD
SECONDARY ROAD	
PERMITTED TIMES FOR USE	24
PREDICTED END-OF-QUEUE LENGTH	LIMITED - LOW VOLUME
EXISTING SPEED - PRIMARY ROAD	80km/h
EXISTING SPEED - SECONDARY ROAD	
DIMENSION D ADOPTED	80m
CONE SPACING (MAX)	4m
SIGN SIZE (MIN)	A
MINIMUM CLEARANCE TO WORKERS FROM TRAFFIC	1.5m

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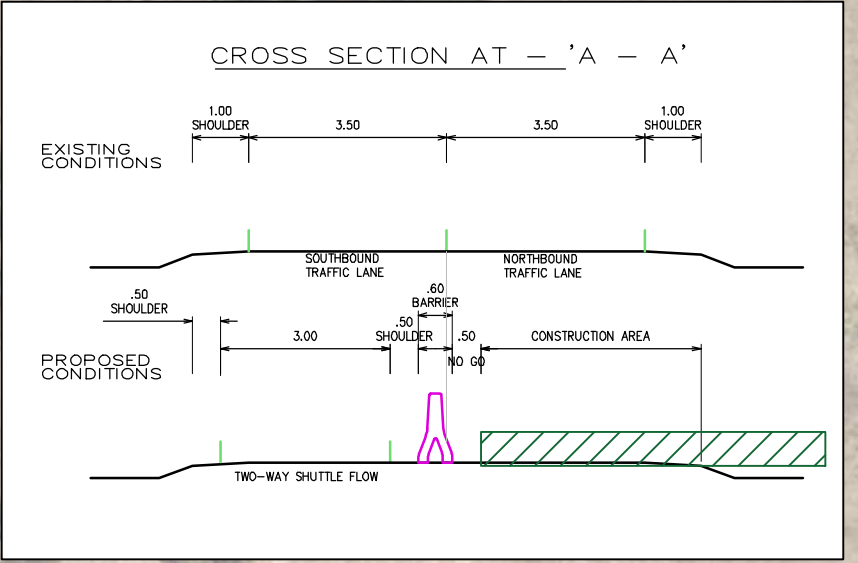
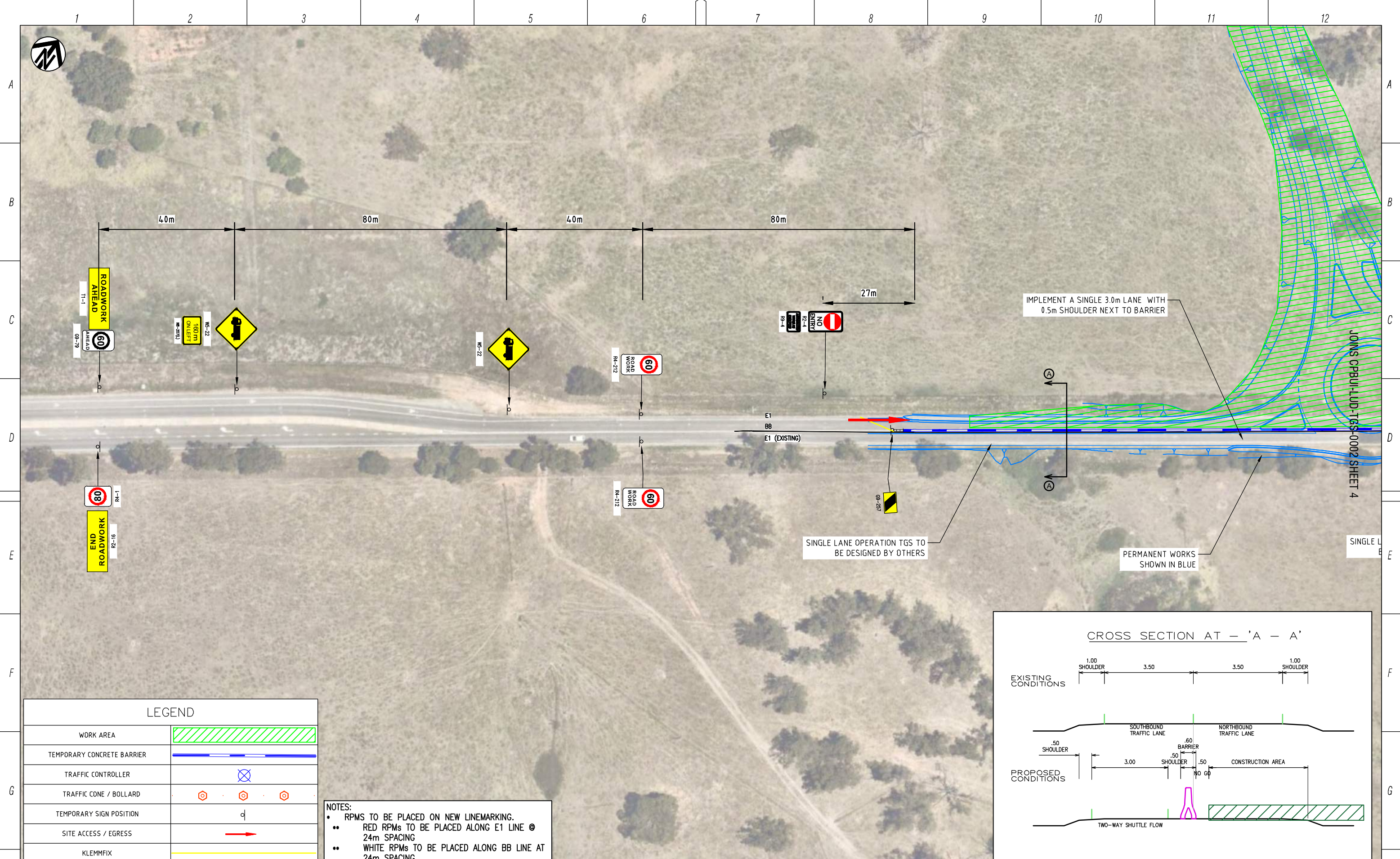
WSA - SURFACE AND CIVIL ALIGNMENT WORKS

**LUDDENHAM ROAD STAGE 2
BARRIER INSTALLATION
LOCALITY PLAN AND VMS MESSAGING**

DRAWING No: CPBUI-LUD-TGS-0002

SHEET 2 **OF** 4

REVISION 03



- NOTES:**
- RPMS TO BE PLACED ON NEW LINEMARKING.
 - RED RPMS TO BE PLACED ALONG E1 LINE @ 24m SPACING
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LEGEND	
WORK AREA	
TEMPORARY CONCRETE BARRIER	
TRAFFIC CONTROLLER	
TRAFFIC CONE / BOLLARD	
TEMPORARY SIGN POSITION	
SITE ACCESS / EGRESS	
KLEMMFIX	

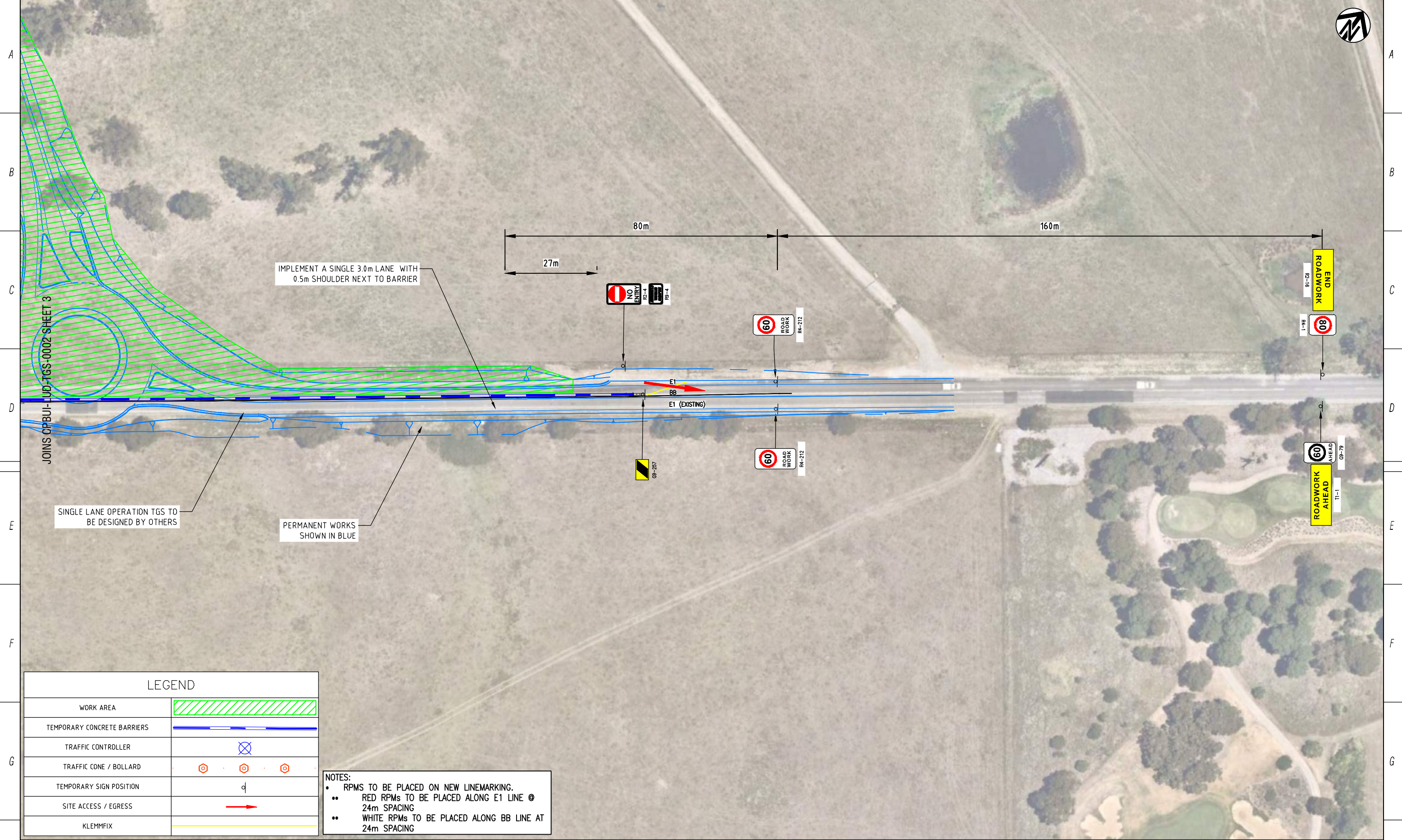
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DRAWN BY: [Redacted]
 DRW CHECK: [Redacted]
 APPROVED: [Redacted]
 IND REVIEW: [Redacted]



CLIENT
 WSA - SURFACE AND CIVIL ALIGNMENT WORKS
 LUDDENHAM ROAD STAGE 2
 BARRIER INSTALLATION
 TRAFFIC GUIDANCE SCHEME

DRAWING No:	CPBUI-LUD-TGS-0002		
SHEET	3	OF	4
REVISION	03		



JOINS CPBUI-LUD-TGS-0002 SHEET 3

IMPLEMENT A SINGLE 3.0m LANE WITH 0.5m SHOULDER NEXT TO BARRIER

SINGLE LANE OPERATION TGS TO BE DESIGNED BY OTHERS

PERMANENT WORKS SHOWN IN BLUE

LEGEND	
WORK AREA	
TEMPORARY CONCRETE BARRIERS	
TRAFFIC CONTROLLER	
TRAFFIC CONE / BOLLARD	
TEMPORARY SIGN POSITION	
SITE ACCESS / EGRESS	
KLEMMFIX	

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 IND REVIEW: [Redacted]



CLIENT
 WSA - SURFACE AND CIVIL ALIGNMENT WORKS
 LUDDENHAM ROAD STAGE 2
 BARRIER INSTALLATION
 TRAFFIC GUIDANCE SCHEME

DRAWING No:	CPBUI-LUD-TGS-0002		
SHEET	4	OF	4
REVISION	03		

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SHEET 3

SHEET 4

SITE SPECIFIC NOTES	
PRIMARY ROAD	LUDDENHAM RD
SECONDARY ROAD	
PERMITTED TIMES FOR USE	24
PREDICTED END-OF-QUEUE LENGTH	LIMITED - LOW VOLUME
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CONE SPACING (MAX)	4m
SIGN SIZE (MIN)	A
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DRAWN BY: [Redacted]

DRW CHECK: [Redacted]

APPROVED: [Redacted]

IND REVIEW: [Redacted]

CLIENT



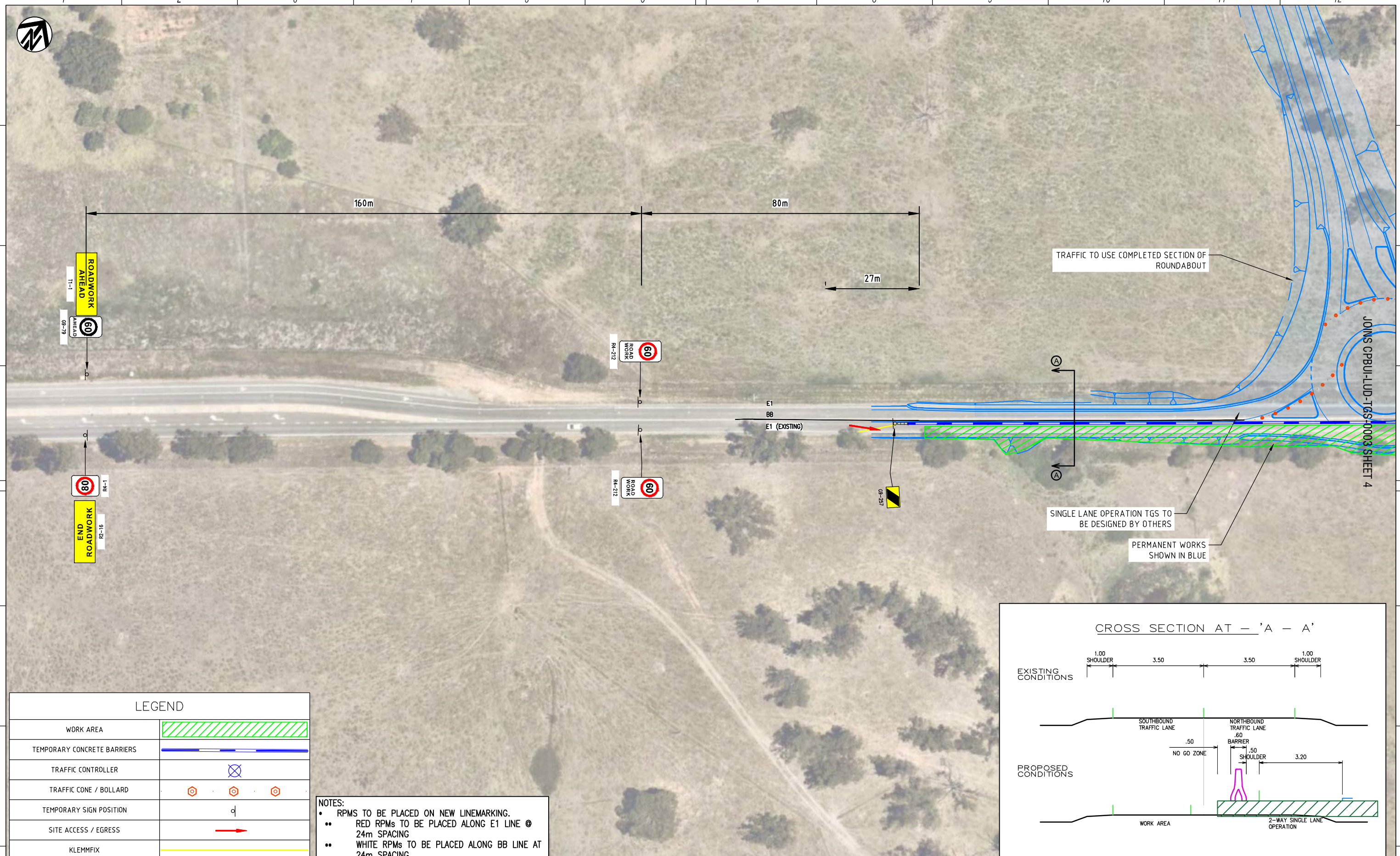

WSA - SURFACE AND CIVIL ALIGNMENT WORKS

**LUDDENHAM ROAD STAGE 3
BARRIER INSTALLATION
LOCALITY PLAN AND VMS MESSAGING**

DRAWING No: CPBUI-LUD-TGS-0003

SHEET 2 OF 4

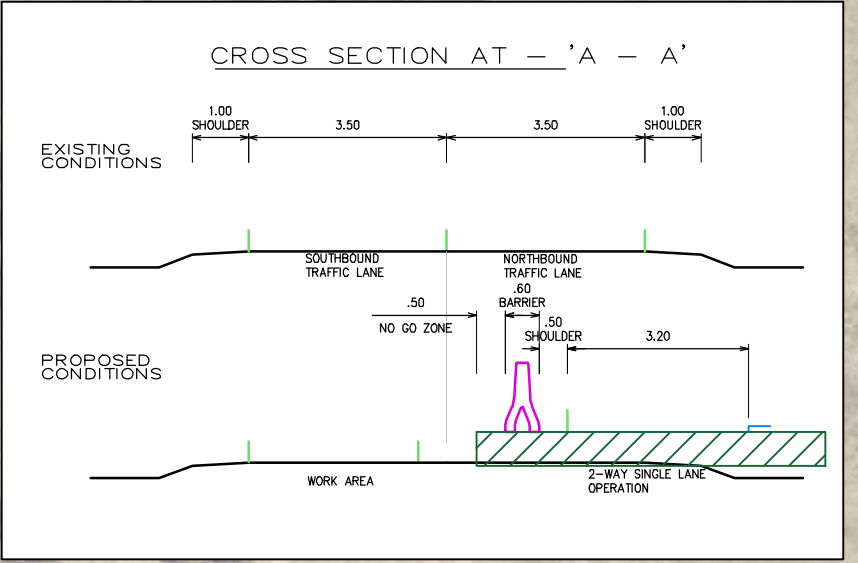
REVISION 02



LEGEND

WORK AREA	
TEMPORARY CONCRETE BARRIERS	
TRAFFIC CONTROLLER	
TRAFFIC CONE / BOLLARD	
TEMPORARY SIGN POSITION	
SITE ACCESS / EGRESS	
KLEMMFIX	

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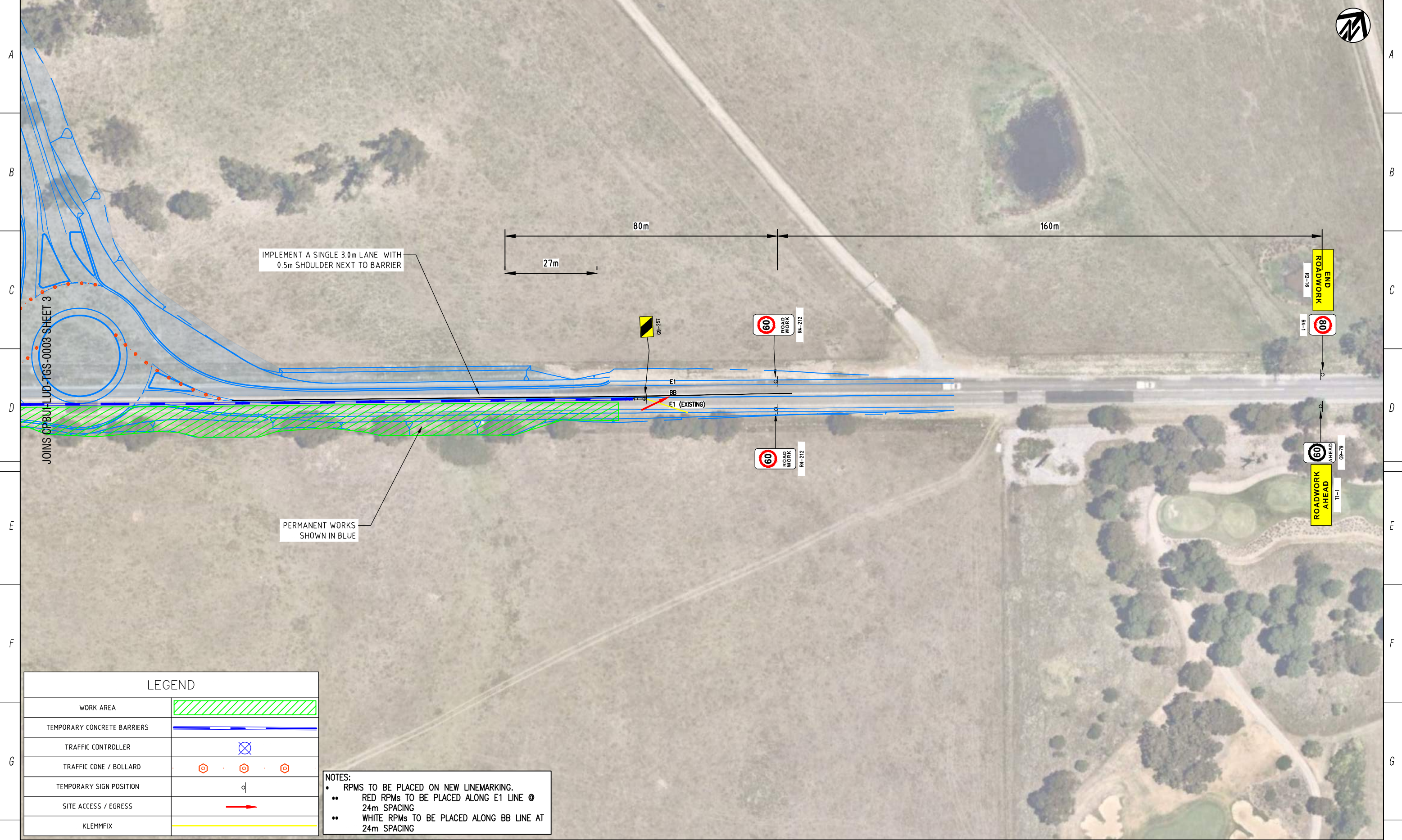
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00	AG	10.03.23	ORIGINAL ISSUE	AG

DRAWN BY: [Redacted]
 DRW CHECK: [Redacted]
 APPROVED: [Redacted]
 IND REVIEW: [Redacted]



CLIENT
WSA - SURFACE AND CIVIL ALIGNMENT WORKS
LUDDENHAM ROAD STAGE 3
BARRIER INSTALLATION
TRAFFIC GUIDANCE SCHEME

DRAWING No:	CPBUI-LUD-TGS-0003		
SHEET	3	OF	4
REVISION	02		



IMPLEMENT A SINGLE 3.0m LANE WITH 0.5m SHOULDER NEXT TO BARRIER

PERMANENT WORKS SHOWN IN BLUE

JOINS CPBUI-LUD-TGS-0003 SHEET 3

LEGEND	
WORK AREA	
TEMPORARY CONCRETE BARRIERS	
TRAFFIC CONTROLLER	
TRAFFIC CONE / BOLLARD	
TEMPORARY SIGN POSITION	
SITE ACCESS / EGRESS	
KLEMMFIX	

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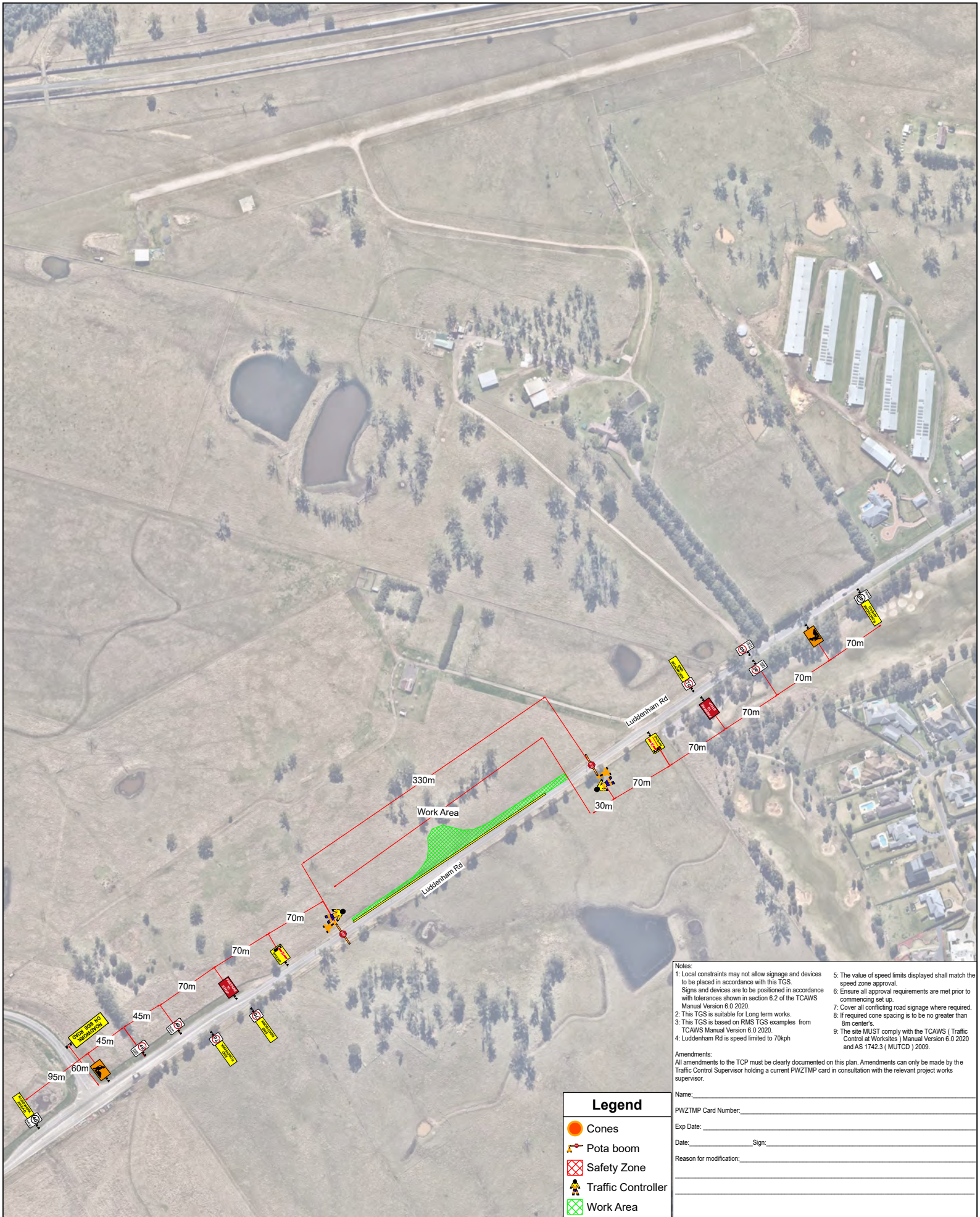
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DRAWN BY: [Redacted]
 DRW CHECK: [Redacted]
 APPROVED: [Redacted]
 IND REVIEW: [Redacted]



CLIENT
 WSA - SURFACE AND CIVIL ALIGNMENT WORKS
 LUDDENHAM ROAD STAGE 3
 BARRIER INSTALLATION
 TRAFFIC GUIDANCE SCHEME

DRAWING No:	CPBUI-LUD-TGS-0003		
SHEET	4	OF	4
REVISION	02		



- Notes:
1. Local constraints may not allow signage and devices to be placed in accordance with this TGS.
 2. Signs and devices are to be positioned in accordance with tolerances shown in section 6.2 of the TCAWS Manual Version 6.0 2020.
 3. This TGS is suitable for Long term works.
 4. This TGS is based on RMS TGS examples from TCAWS Manual Version 6.0 2020.
 5. Luddenham Rd is speed limited to 70kph
 6. The value of speed limits displayed shall match the speed zone approval.
 7. Ensure all approval requirements are met prior to commencing set up.
 8. Cover all conflicting road signage where required.
 9. If required cone spacing is to be no greater than 8m center's.
 10. The site MUST comply with the TCAWS (Traffic Control at Worksites) Manual Version 6.0 2020 and AS 1742.3 (MUTCD) 2009.

Amendments:
All amendments to the TCP must be clearly documented on this plan. Amendments can only be made by the Traffic Control Supervisor holding a current PWZTMP card in consultation with the relevant project works supervisor.

Legend	
	Cones
	Pota boom
	Safety Zone
	Traffic Controller
	Work Area

Name: _____

PWZTMP Card Number: _____

Exp Date: _____

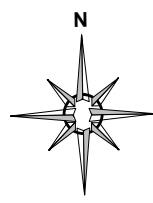
Date: _____ Sign: _____

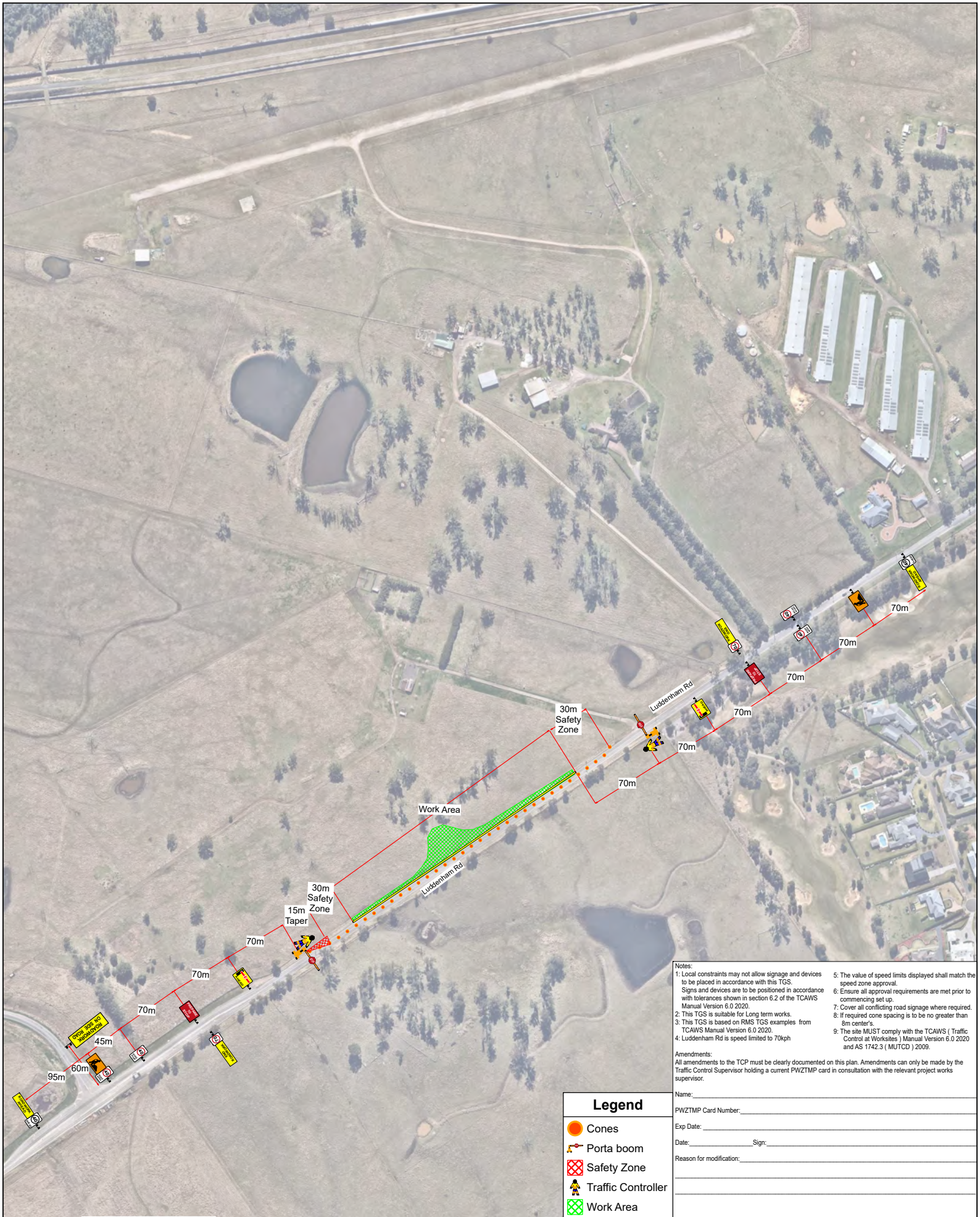
Reason for modification: _____

TGS DRAWN BY :	
PWZTMP :	
SIGNATURE :	
TGS APPROVED BY :	
PWZTMP :	
SIGNATURE :	

SCALE : NOT TO SCALE
Date : 04/03/2023
SHEET NUMBER 1
Issue : 3

PROJECT : Ludenham Rd Ludenham Stage 1 works
TITLE : SCAW-TGS-LUD-R001





- Notes:
1. Local constraints may not allow signage and devices to be placed in accordance with this TGS.
 2. Signs and devices are to be positioned in accordance with tolerances shown in section 6.2 of the TCAWS Manual Version 6.0 2020.
 3. This TGS is suitable for Long term works.
 4. This TGS is based on RMS TGS examples from TCAWS Manual Version 6.0 2020.
 5. Ludenham Rd is speed limited to 70kph
 6. The value of speed limits displayed shall match the speed zone approval.
 7. Ensure all approval requirements are met prior to commencing set up.
 8. Cover all conflicting road signage where required.
 9. If required cone spacing is to be no greater than 8m center's.
 10. The site MUST comply with the TCAWS (Traffic Control at Worksites) Manual Version 6.0 2020 and AS 1742.3 (MUTCD) 2009.

Amendments:
All amendments to the TCP must be clearly documented on this plan. Amendments can only be made by the Traffic Control Supervisor holding a current PWZTMP card in consultation with the relevant project works supervisor.

Legend	
	Cones
	Porta boom
	Safety Zone
	Traffic Controller
	Work Area

Name: _____

PWZTMP Card Number: _____

Exp Date: _____

Date: _____ Sign: _____

Reason for modification: _____

TGS DRAWN BY : _____

PWZTMP : _____

SIGNATURE : _____

TGS APPROVED BY : _____

PWZTMP : _____

SIGNATURE : _____

SCALE : NOT TO SCALE

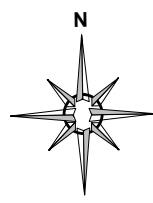
Date : 04/03/2023

SHEET NUMBER 1

Issue : 1

PROJECT : Ludenham Rd Ludenham Stage 1 works

TITLE : SCAW-TGS-LUD-R001

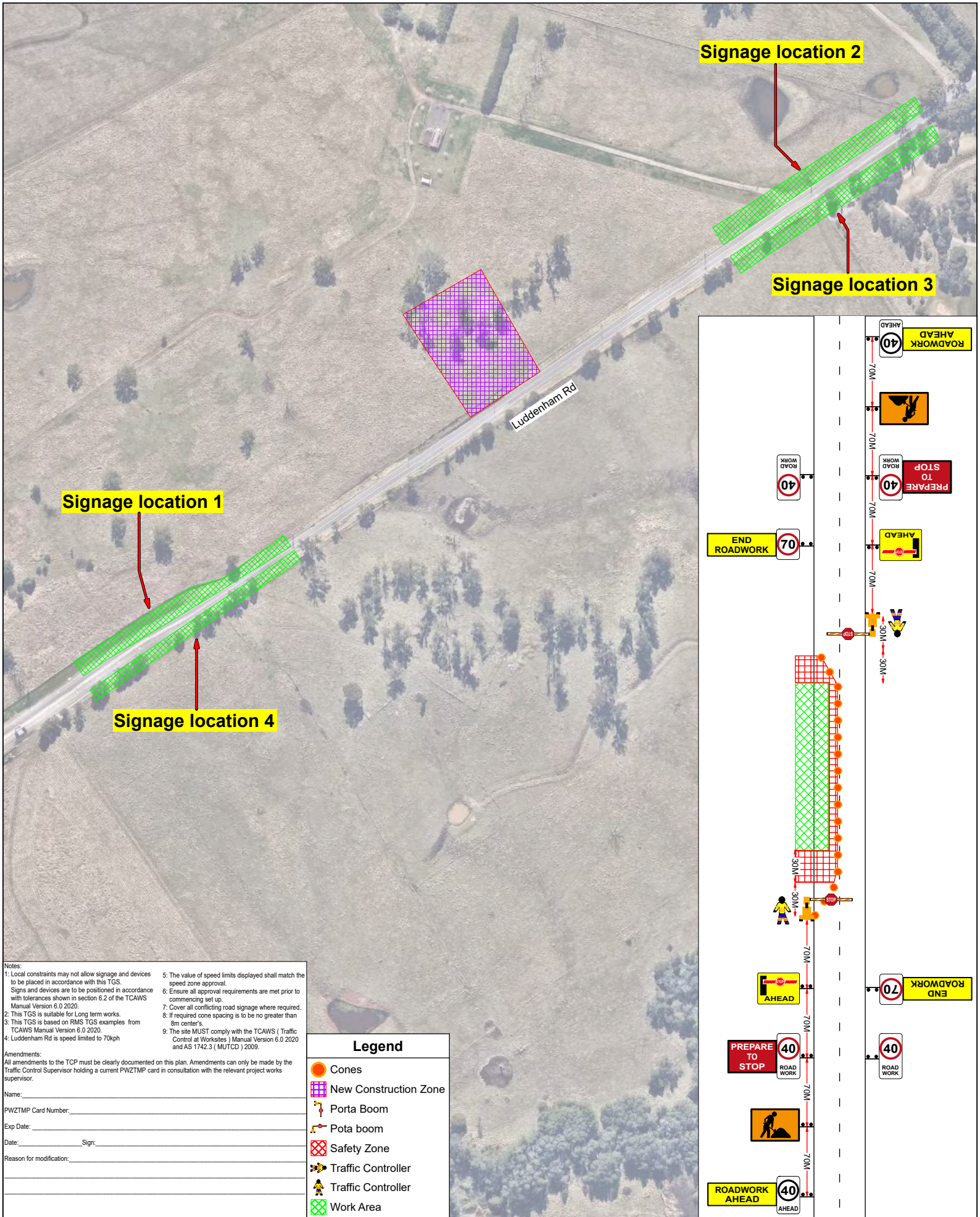




LEGEND	
	TC Vehicle
	Work Zone
	Buffer Zone
	Traffic Cones
	Traffic Controller
	Eastbound Traffic Flow
	Westbound Traffic Flow
	Pedestrian movements
	Bus Stop
	Concrete Barriers
	Crash Cushion

- NOTES**
1. Traffic control works shall be installed & maintained in accordance with A.S. 1742.3 (Traffic Control Devices for Works on Roads) & Traffic control at Work Sites Manual.
 2. Local constraints may not allow sign and devices to be placed exactly in accordance with the TGS, therefore it may necessary to place sign and devices as close as possible to the spacing indicated.
 3. Signs should generally be placed 1 meter clear of the travelled path where possible and be clearly visible and free of debris.
 4. Signs are to be Class 1 retroreflective (day/night)
 5. Access to bus stops to be maintained
 6. Access to private property driveways to be maintained
 7. D as noted in TCAWS 6.1, Section 7.3 is the regulatory speed approaching each advance sign
 8. Existing Speed Signs to be covered with opaque material, if a Roadwork Speed Limit is enforced.

TGS IMPLEMENTED / AMENDED BY :		 Western Sydney Airport Surface and Civil Alignment
NAME -		
CERT. NO. -		
DATE -		
SIGNED -		
ROAD SPEED - 80km/h		WORK SCOPE - Access and Exit Management PLAN NUMBER - SCWA-TGS-LUD-R005 DATE DRAWN - 22/05/2023
ROAD LAYOUT - Local Street		
THIS TGS SHALL BE SETUP IN ACCORDANCE WITH THE TNSW TRAFFIC CONTROL AT WORK SITES MANUAL 6.1 & AUSTRALIAN STANDARDS AS 1/42.32U19		



Notes:

- 1: Local constraints may not allow signage and devices to be placed in accordance with this TGS. Signs and devices are to be positioned in accordance with tolerances shown in section 6.2 of the TCAWS Manual Version 6.0 2020.
- 2: This TGS is suitable for Long term works.
- 3: This TGS is based on RMS TGS examples from TCAWS Manual Version 6.0 2020.
- 4: Luddenham Rd is speed limited to 70kph
- 5: The value of speed limits displayed shall match the speed zone approval.
- 6: Ensure all approval requirements are met prior to commencing set up.
- 7: Cover all conflicting road signage where required.
- 8: If required cone spacing is to be no greater than 8m center's.
- 9: The site MUST comply with the TCAWS (Traffic Control at Worksites) Manual Version 6.0 2020 and AS 1742.3 (MUTCD) 2009.

Amendments:
All amendments to the TCP must be clearly documented on this plan. Amendments can only be made by the Traffic Control Supervisor holding a current PWZTMP card in consultation with the relevant project works supervisor.

Name: _____

PWZTMP Card Number: _____

Exp Date: _____

Date: _____ Sign: _____

Reason for modification: _____

Legend	
	Cones
	New Construction Zone
	Porta Boom
	Pota boom
	Safety Zone
	Traffic Controller
	Traffic Controller
	Work Area

TGS DRAWN BY : _____

PWZTMP : _____

SIGNATURE : _____

TGS APPROVED BY : _____

PWZTMP : _____

SIGNATURE : _____

SCALE : NOT TO SCALE

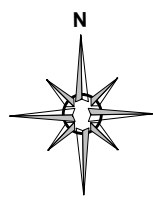
Date : 24/03/2023

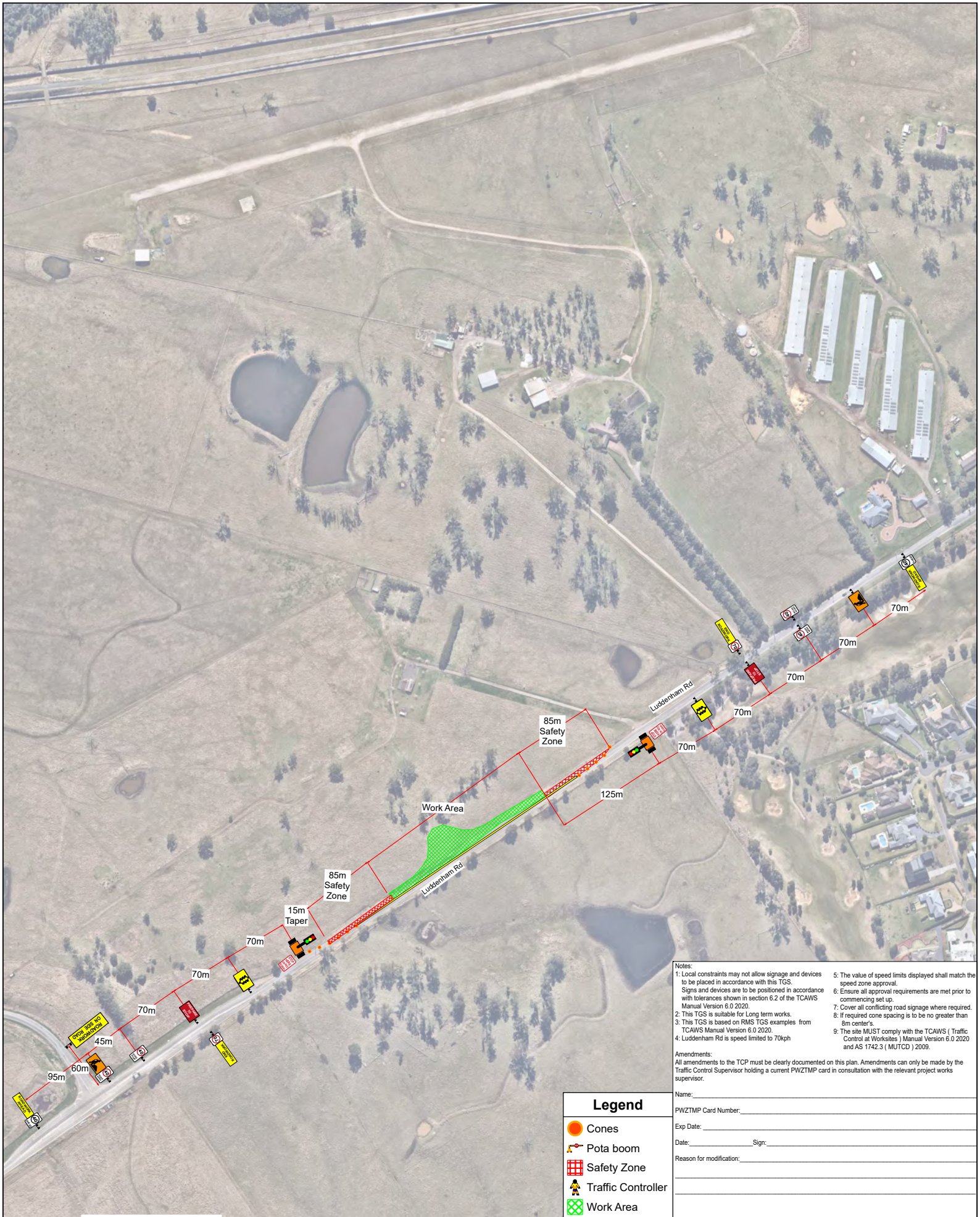
SHEET NUMBER 1

Issue : 1

PROJECT : Ludenham Rd Ludenham Signage Install

TITLE : SCAW-TGS-LUD-R005





- Notes:
1. Local constraints may not allow signage and devices to be placed in accordance with this TGS.
 2. Signs and devices are to be positioned in accordance with tolerances shown in section 6.2 of the TCAWS Manual Version 6.0 2020.
 3. This TGS is suitable for Long term works.
 4. This TGS is based on RMS TGS examples from TCAWS Manual Version 6.0 2020.
 5. Ludenham Rd is speed limited to 70kph
 6. The value of speed limits displayed shall match the speed zone approval.
 7. Ensure all approval requirements are met prior to commencing set up.
 8. Cover all conflicting road signage where required.
 9. If required cone spacing is to be no greater than 8m center's.
 10. The site MUST comply with the TCAWS (Traffic Control at Worksites) Manual Version 6.0 2020 and AS 1742.3 (MUTCD) 2009.

Amendments:
All amendments to the TCP must be clearly documented on this plan. Amendments can only be made by the Traffic Control Supervisor holding a current PWZTMP card in consultation with the relevant project works supervisor.

Legend	
	Cones
	Pota boom
	Safety Zone
	Traffic Controller
	Work Area

Name: _____

PWZTMP Card Number: _____

Exp Date: _____

Date: _____ Sign: _____

Reason for modification: _____

TGS DRAWN BY : _____

PWZTMP : _____

SIGNATURE : _____

TGS APPROVED

PWZT

SIGNATU

SCALE : NOT TO SCALE

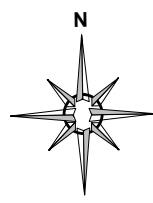
Date : 24/03/2023

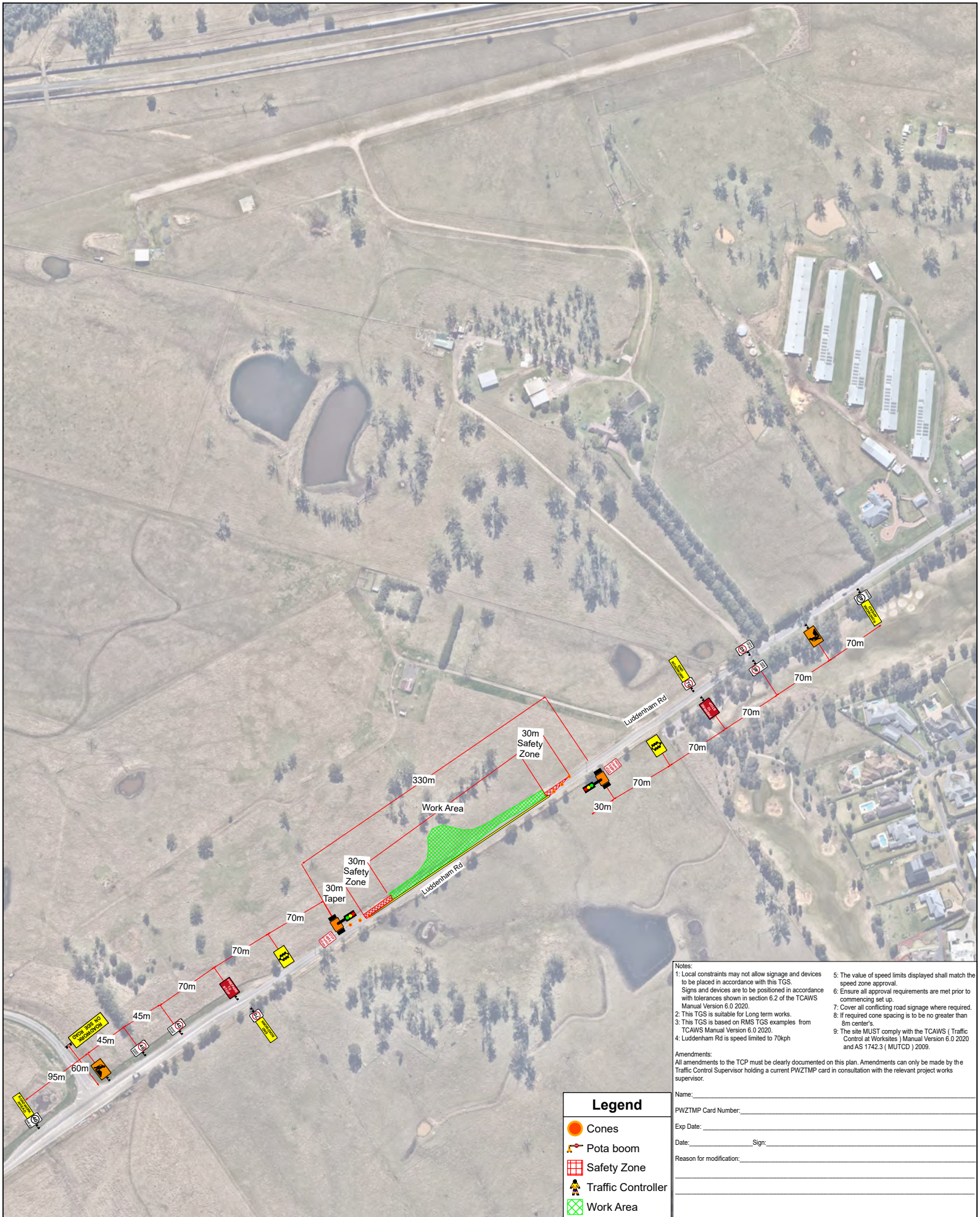
SHEET NUMBER 1

Issue : 2

PROJECT : Ludenham Rd Ludenham Stage 2 works

TITLE : SCAW-TGS-LUD-R006





Notes:

1. Local constraints may not allow signage and devices to be placed in accordance with this TGS.
2. Signs and devices are to be positioned in accordance with tolerances shown in section 6.2 of the TCAWS Manual Version 6.0 2020.
3. This TGS is suitable for Long term works.
4. This TGS is based on RMS TGS examples from TCAWS Manual Version 6.0 2020.
5. Luddenham Rd is speed limited to 70kph
6. The value of speed limits displayed shall match the speed zone approval.
7. Ensure all approval requirements are met prior to commencing set up.
8. Cover all conflicting road signage where required.
9. If required cone spacing is to be no greater than 8m center's.
10. The site MUST comply with the TCAWS (Traffic Control at Worksites) Manual Version 6.0 2020 and AS 1742.3 (MUTCD) 2009.

Amendments:
All amendments to the TCP must be clearly documented on this plan. Amendments can only be made by the Traffic Control Supervisor holding a current PWZTMP card in consultation with the relevant project works supervisor.

Legend	
	Cones
	Pota boom
	Safety Zone
	Traffic Controller
	Work Area

Name: _____

PWZTMP Card Number: _____

Exp Date: _____

Date: _____ Sign: _____

Reason for modification: _____

TGS DRAWN BY _____

PWZTMP : _____

SIGNATURE _____

TGS APPROVED _____

PWZT _____

SIGNATU _____

SCALE : NOT TO SCALE

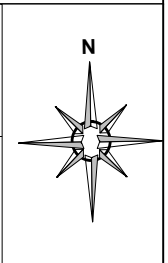
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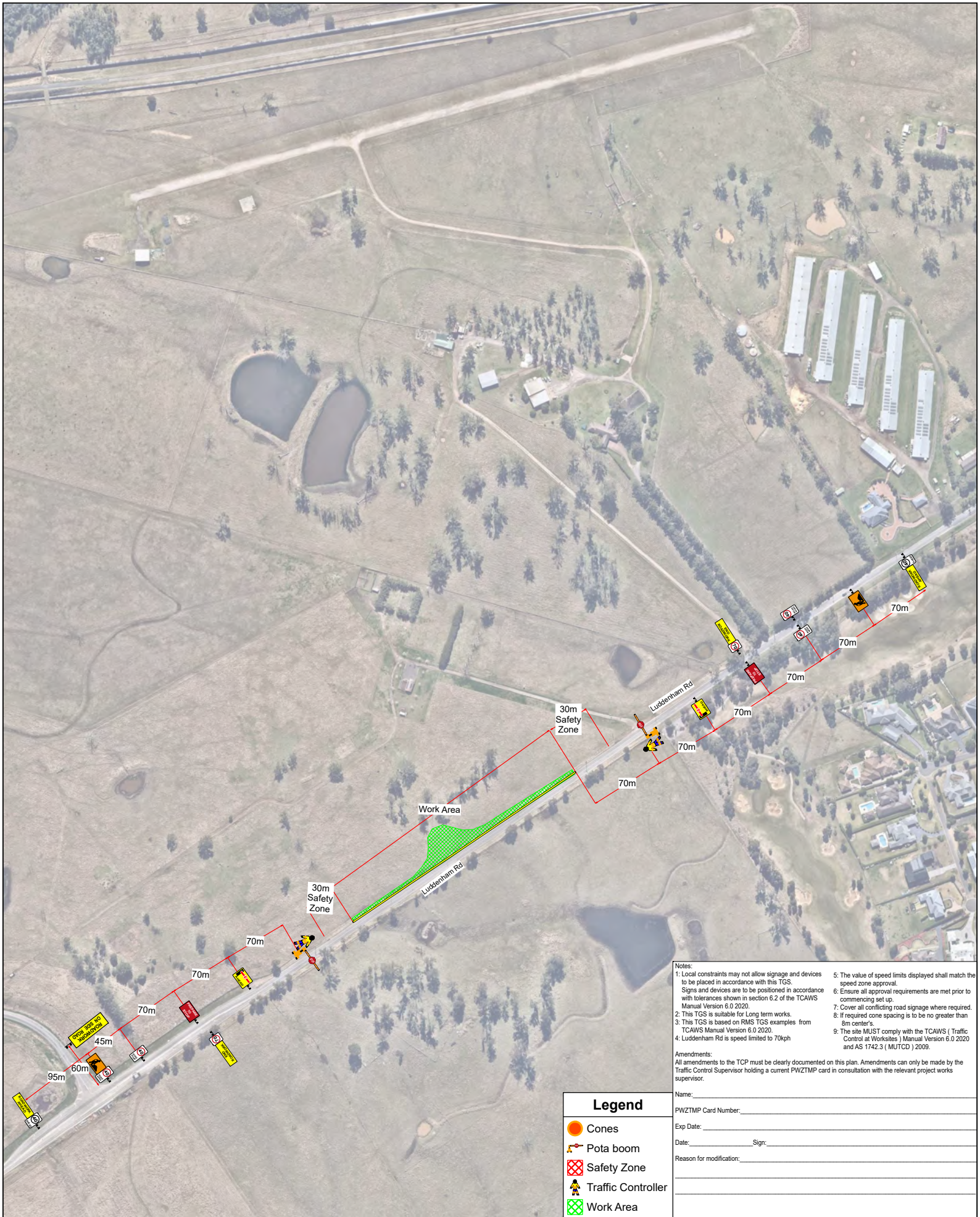
SHEET NUMBER 1

Issue : 3

PROJECT : Ludenham Rd Ludenham Stage 2 works

TITLE : SCAW-TGS-LUD-R006





- Notes:
1. Local constraints may not allow signage and devices to be placed in accordance with this TGS.
 2. Signs and devices are to be positioned in accordance with tolerances shown in section 6.2 of the TCAWS Manual Version 6.0 2020.
 3. This TGS is suitable for Long term works.
 4. This TGS is based on RMS TGS examples from TCAWS Manual Version 6.0 2020.
 5. Ludenham Rd is speed limited to 70kph
 6. The value of speed limits displayed shall match the speed zone approval.
 7. Ensure all approval requirements are met prior to commencing set up.
 8. Cover all conflicting road signage where required.
 9. If required cone spacing is to be no greater than 8m center's.
 10. The site MUST comply with the TCAWS (Traffic Control at Worksites) Manual Version 6.0 2020 and AS 1742.3 (MUTCD) 2009.

Amendments:
All amendments to the TCP must be clearly documented on this plan. Amendments can only be made by the Traffic Control Supervisor holding a current PWZTMP card in consultation with the relevant project works supervisor.

Legend	
	Cones
	Pota boom
	Safety Zone
	Traffic Controller
	Work Area

Name: _____

PWZTMP Card Number: _____

Exp Date: _____

Date: _____ Sign: _____

Reason for modification: _____

TGS DRAWN BY : _____

PWZTMP : _____

SIGNATURE : _____

TGS APPROVED

PWZT

SIGNATU

SCALE : NOT TO SCALE

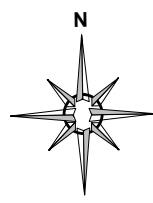
Date : 04/03/2023

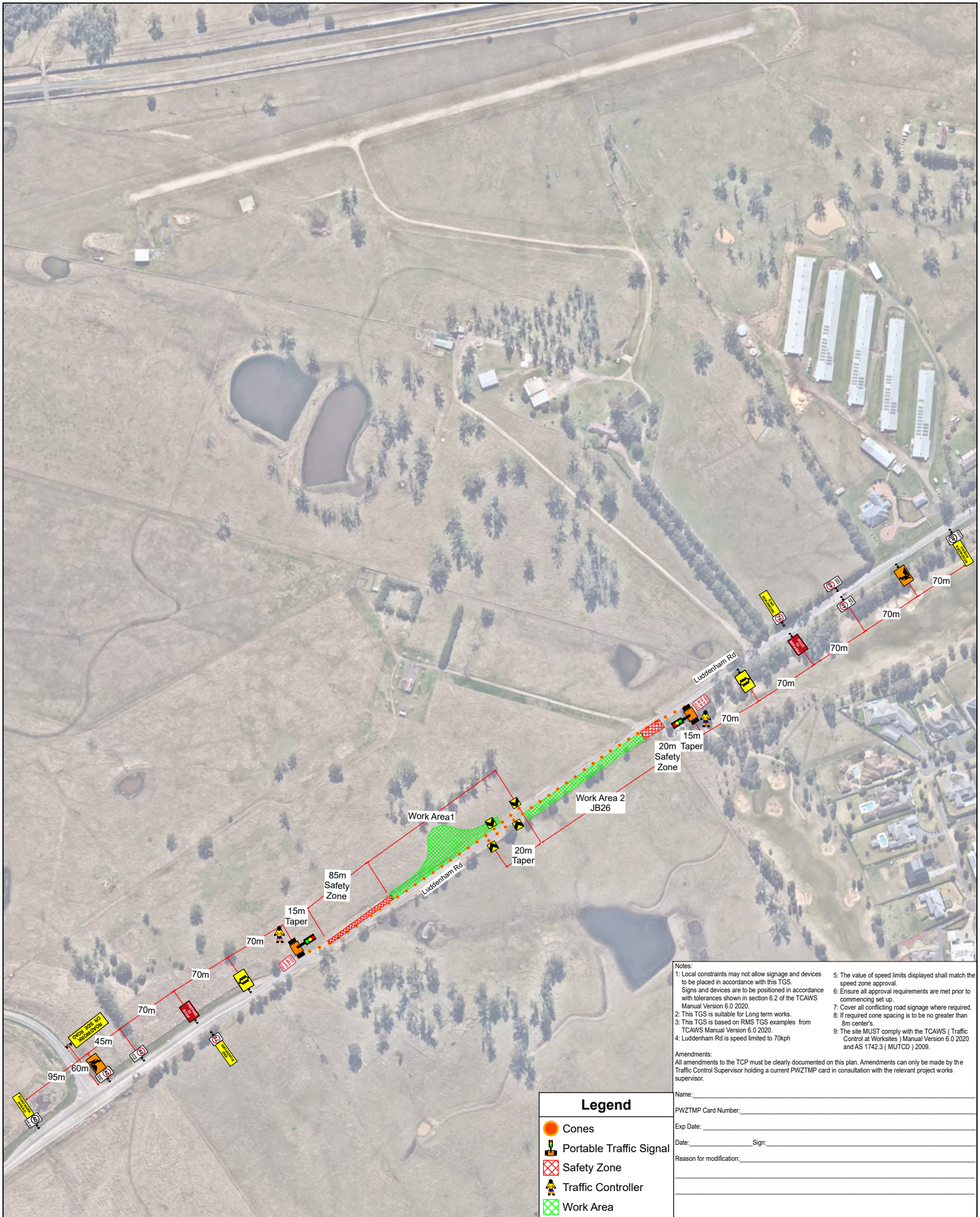
SHEET NUMBER 1

Issue : 2

PROJECT : Ludenham Rd Ludenham Stage 1 works

TITLE : SCAW-TGS-LUD-R007





- Notes:
1. Local constraints may not allow signage and devices to be placed in accordance with this TGS.
 2. Signs and devices are to be positioned in accordance with tolerances shown in section 6.2 of the TCAWS Manual Version 6.0 2020.
 3. This TGS is suitable for Long term works.
 4. This TGS is based on RMS TGS examples from TCAWS Manual Version 6.0 2020.
 5. The value of speed limits displayed shall match the speed zone approval.
 6. Ensure all approval requirements are met prior to commencing set up.
 7. Cover all conflicting road signage where required.
 8. If required cone spacing is to be no greater than 8m center's.
 9. The site MUST comply with the TCAWS (Traffic Control at Worksites) Manual Version 6.0 2020 and AS 1742.3 (MUTCD) 2009.

Amendments:
All amendments to the TCP must be clearly documented on this plan. Amendments can only be made by the Traffic Control Supervisor holding a current PWZTMP card in consultation with the relevant project works supervisor.

Legend	
	Cones
	Portable Traffic Signal
	Safety Zone
	Traffic Controller
	Work Area

Name: _____

PWZTMP Card Number: _____

Exp Date: _____

Date: _____ Sign: _____

Reason for modification: _____

TGS DRAWN BY : _____

PWZTMP : _____

SIGNATURE : _____

TGS APPROVED

PWZTM

SIGNATU

SCALE : NOT TO SCALE

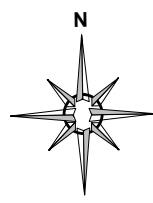
Date : 28/06/2023

SHEET NUMBER 1

Issue : 1

PROJECT : Ludenham Rd Ludenham

TITLE : SCAW-TGS-LUD-012



TGS DRAWN BY :

PWZTMP :

SIGNATURE :

TGS APPROVED

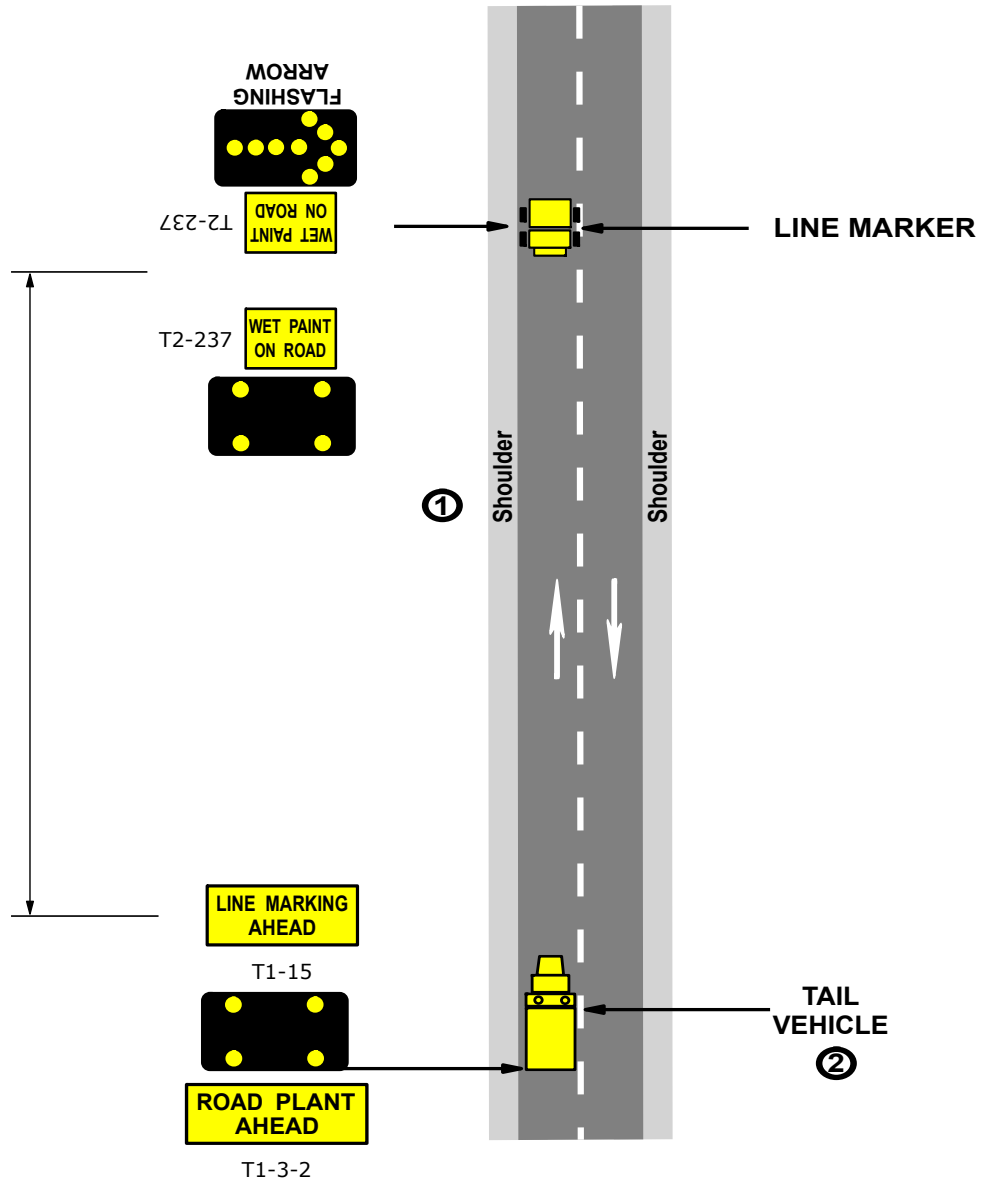
PWZTI

SIGNATU

Good sight distance: Open Road - 300m to 500m

Built-Up - 200m to 300m

Poor sight distance: Tail Vehicle to remain at start of
 Poor Sight Distance section until
 work vehicle has reached a section
 where good sight distance is available.



NOTES:

- ① A mirror image of this arrangement to apply for right-hand edge line on divided carriageways.
- ② On crests and curves, ensure that sight distance to Tail Vehicle is not less than D.

DYNAMIC WORK
 2 LANE / 2 WAY
 LINE MARKING - LEFT EDGE LINE

Appendix D – Permanent signs and lines

Table 9: Design drawings

Drawing #	Description
DS2021/000632	Luddenham Road Roundabout Intersection Access Linemarking and Signage Plan Sheets 1-4

Appendix E – VMS



Figure 14: VMS locations



Figure 15: VMS 1 for northbound traffic



Figure 16: VMS 2 for southbound traffic

Appendix F – Modelling report



Modelling Analysis

Luddenham Road

Signalised Stop/Slow

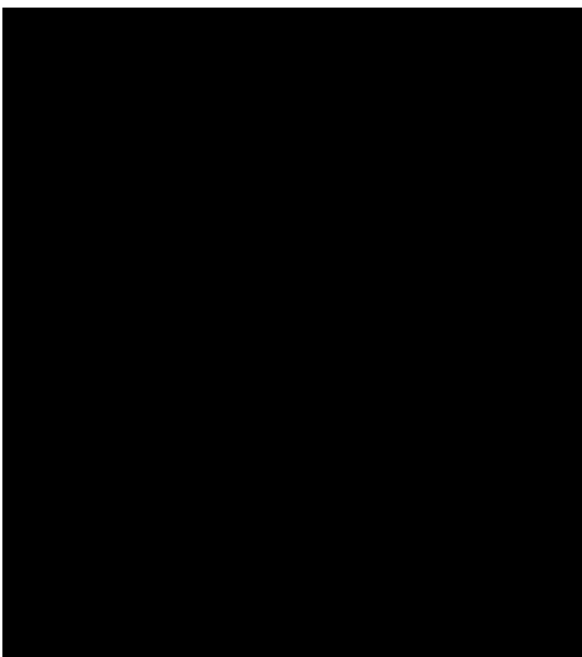
Surface, Civil Alignment - SCAW

Traffic Engineering

Transport Planning

Data Analysis

Consulting Services





Revision History

Project	Luddenham Road – Stop/Slow Analysis		
Client	[Redacted]		
Issue	Date	Prepared by	Signed
A.01	18/06/2023	[Redacted]	

Table 1: Revision History

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Headway Traffic and Transport Pty Ltd does not accept any liability where assumptions have been made within this document. Assumptions will be clearly identified.

Headway Traffic and Transport excludes implied warranties and conditions, to the extent legally permissible.

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Table 2:	Summary of Sidra Results - User Specified Timings	4

References

Austraffic: Traffic Counts undertaken between Friday 2/6/2023 and Thursday 8/6/2023

TfNSW: Traffic Control at Worksites Manual (TCAWS)

TfNSW: Traffic Modelling Guidelines

1 Introduction

Headway Traffic and Transport (HTT) has been engaged to undertake intersection modelling for a stop/slow arrangement to be implemented on Luddenham Road. The stop/slow arrangement will be located within the vicinity of the future Luddenham Metro Station.

The stop/slow modelling has been based on the following parameters:

- Roadwork speed limit of 40km/h,
- Stop line to Stop line length of up to 330 metres,
- Traffic volumes undertaken by Austraffic between Friday 2/6/2023 and Thursday 8/6/2023, and
- The intersection is considered isolated for performance assessment purposes.

The use of the term phasing is based on Sidra being used to model the intersection. The use of temporary signals, porta booms or other stop/slow devices is not anticipated to alter the results in anyway. Rather the findings of this report can be used to set the green and red times for each approach.

1.1 Model Outputs

Detailed Sidra outputs are provided in the **Appendix A:**

The following parameters are fixed for all scenarios modelled.

Red Time: 25 seconds

Amber Time: 4 seconds

Green Time: 50 seconds (note – a model was performed to optimise the timings. This did not result in any significant difference between the optimised times and user specified. Green times outside of peak periods could be based on demand and managed manually rather than fixed).

Roadwork Length: Up to 330 metres

Figure 1: Sidra Model Schematic is the schematic of the model used and not reflective of the actual site configuration.

Table 2: Summary of Sidra Results - User Specified Timings summarises the Sidra results.

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.

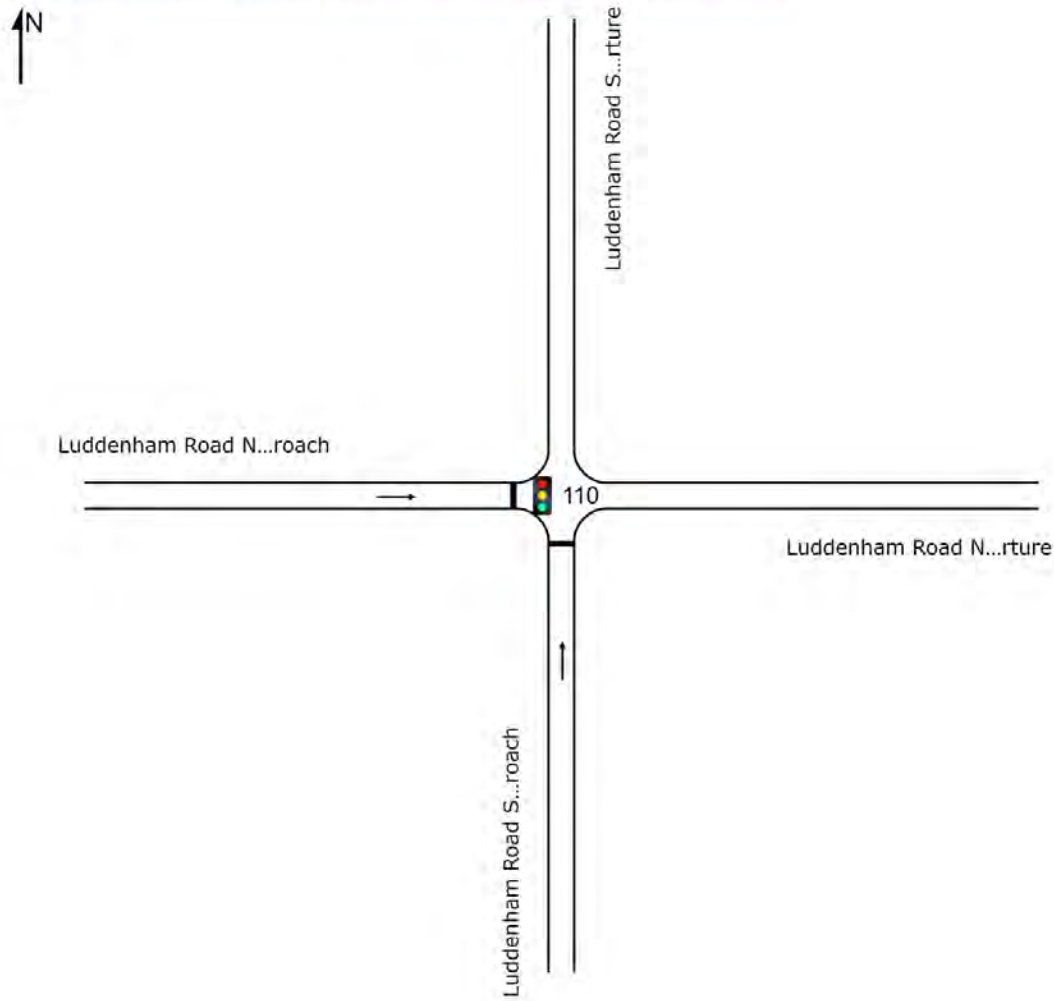


Figure 1: Sidra Model Schematic

LOS/Seconds Delay		Queue Length (m & veh)		Deg Saturation	
Peak Direction	Off Peak Direction	Peak Direction	Off Peak Direction	Peak Direction	Off Peak Direction
Morning Peak – Peak Direction SB					
LOS D 50	LOS D 48	156m 20 veh	123m 16 veh	0.556	0.456
Afternoon Peak – Peak Direction SB					
LOS D 50	LOS D 48	154m 20 veh	131m 17 veh	0.550	0.480

Table 2: Summary of Sidra Results - User Specified Timings

2 Conclusion

Based on the modelled intersection there will be no adverse impacts to Luddenham Road by implementing a stop/slow arrangement (either traffic control managed or signalised). It should be noted that:

- As there is no specific peak direction (southbound movements accounting for morning and afternoon peak direction) optimising the phasing times would not provide any real benefit, rather using the times specified in TCAWS will be sufficient.
- The LOS is not a good descriptor of the impact to the traffic as it is based on the delay in seconds. The degree of saturation is less than 0.6 in both directions indicating confidence that all vehicles will clear within the stop/slow arrangement within the average delay specified in **Table 2** during peak periods, and
- The performance of the stop/slow should be monitored to ensure that site conditions are reflective of those modelled.

Appendix A: Sidra Outputs

Additional outputs are available upon request.

User specified analysis and optimised green time analysis have been provided.

SITE LAYOUT

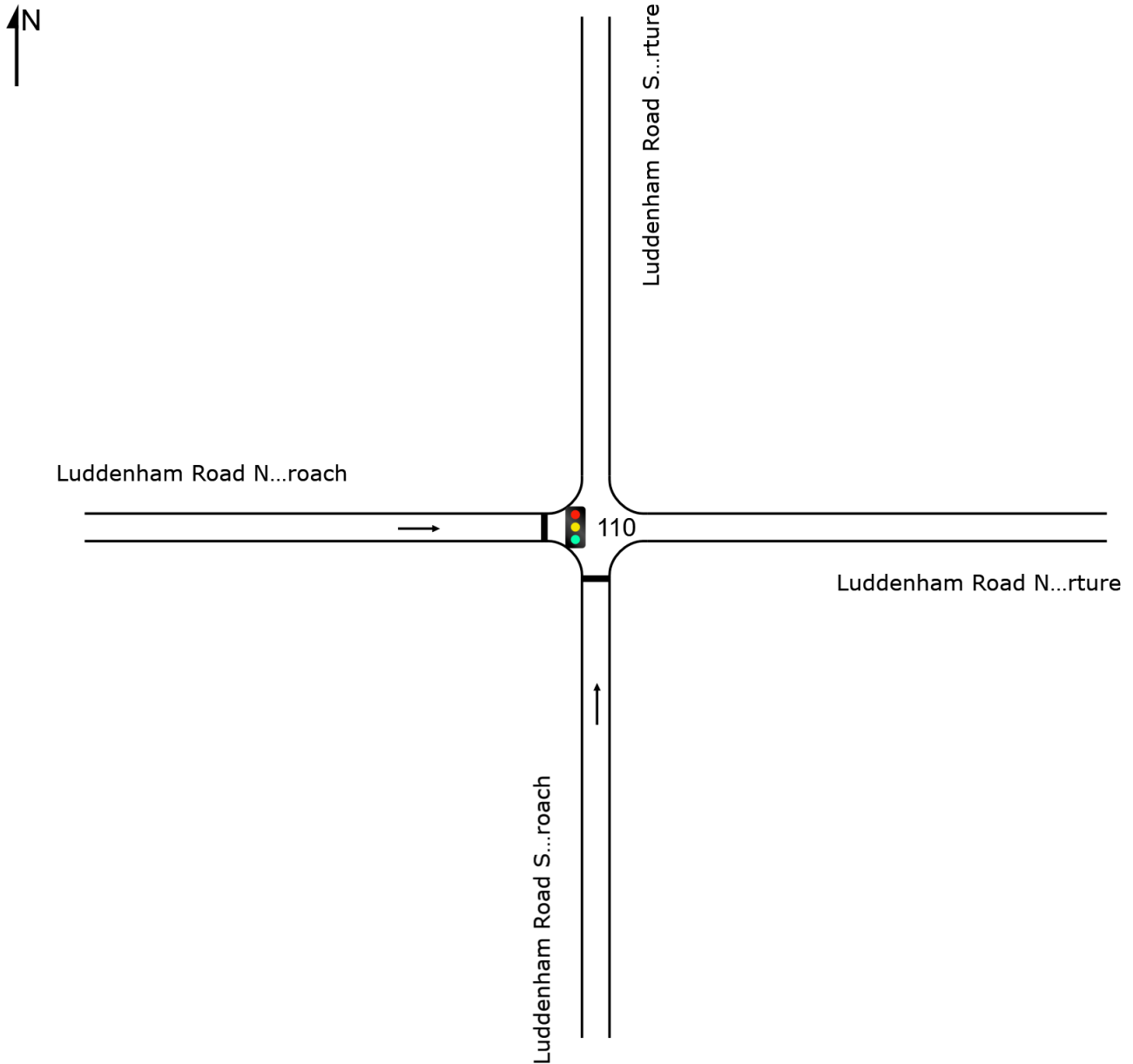
 Site: 110 [Luddenham Road - Morning Peak - User Specified - 25sec RED 330m (Site Folder: General)]

New Site

Site Category: Morning AM Peak

Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Organisation: HEADWAY TRAFFIC AND TRANSPORT | Licence: NETWORK / 1PC | Created: Sunday, 18 June 2023 4:46:04 PM

Project: C:\Users\micha\Headway Traffic and Transport Pty Ltd\Projects - Documents\1. Projects\SUE 2301 - Luddenham Road\2. Deliverables
\1. Current\SIDRA Analysis - Luddenham Road - A.01.sip9

INTERSECTION SUMMARY

Site: 110 [Luddenham Road - Morning Peak - User Specified - 25sec RED 330m (Site Folder: General)]

New Site

Site Category: Morning AM Peak

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 158 seconds (Site User-Given Phase Times)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	29.1 km/h	29.1 km/h
Travel Distance (Total)	570.9 veh-km/h	685.1 pers-km/h
Travel Time (Total)	19.6 veh-h/h	23.5 pers-h/h
Desired Speed (Program)	48.1 km/h	
Speed Efficiency	0.61	
Travel Time Index	5.62	
Congestion Coefficient	1.65	
Demand Flows (Total)	565 veh/h	678 pers/h
Percent Heavy Vehicles (Demand)	16.0 %	
Degree of Saturation	0.556	
Practical Spare Capacity	62.0 %	
Effective Intersection Capacity	1017 veh/h	
Control Delay (Total)	7.75 veh-h/h	9.29 pers-h/h
Control Delay (Average)	49.3 sec	49.3 sec
Control Delay (Worst Lane)	50.1 sec	
Control Delay (Worst Movement)	50.1 sec	50.1 sec
Geometric Delay (Average)	2.3 sec	
Stop-Line Delay (Average)	47.0 sec	
Idling Time (Average)	43.6 sec	
Intersection Level of Service (LOS)	LOS D	
95% Back of Queue - Vehicles (Worst Lane)	19.7 veh	
95% Back of Queue - Distance (Worst Lane)	156.8 m	
Ave. Queue Storage Ratio (Worst Lane)	0.19	
Total Effective Stops	449 veh/h	539 pers/h
Effective Stop Rate	0.79	0.79
Proportion Queued	0.87	0.87
Performance Index	62.9	62.9
Cost (Total)	817.81 \$/h	817.81 \$/h
Fuel Consumption (Total)	74.9 L/h	
Carbon Dioxide (Total)	182.3 kg/h	
Hydrocarbons (Total)	0.018 kg/h	
Carbon Monoxide (Total)	0.175 kg/h	
NOx (Total)	0.663 kg/h	

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Intersection LOS value for Vehicles is based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Site Model Variability Index (Iterations 3 to N): 0.0 %

Number of Iterations: 2 (Maximum: 10)

Largest change in Lane Degrees of Saturation for the last three Main (Timing-Capacity) Iterations: 0.0% 0.0% 0.0%

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	271,326 veh/y	325,592 pers/y
Delay	3,718 veh-h/y	4,461 pers-h/y
Effective Stops	215,590 veh/y	258,708 pers/y
Travel Distance	274,040 veh-km/y	328,848 pers-km/y
Travel Time	9,408 veh-h/y	11,290 pers-h/y
Cost	392,547 \$/y	392,547 \$/y
Fuel Consumption	35,972 L/y	
Carbon Dioxide	87,480 kg/y	
Hydrocarbons	9 kg/y	
Carbon Monoxide	84 kg/y	
NOx	318 kg/y	

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Project: C:\Users\micha\Headway Traffic and Transport Pty Ltd\Projects - Documents\1. Projects\SUE 2301 - Luddenham Road\2. Deliverables
\1. Current\SIDRA Analysis - Luddenham Road - A.01.sip9

MOVEMENT SUMMARY

Site: 110 [Luddenham Road - Morning Peak - User Specified - 25sec RED 330m (Site Folder: General)]

New Site

Site Category: Morning AM Peak

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 158 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Luddenham Road SB Approach														
SB	T1	295	16.0	311	16.0	* 0.556	50.1	LOS D	19.7	156.8	0.89	0.81	0.89	28.9
Approach		295	16.0	311	16.0	0.556	50.1	LOS D	19.7	156.8	0.89	0.81	0.89	28.9
West: Luddenham Road NB Approach														
NB	T1	242	16.0	255	16.0	* 0.456	48.3	LOS D	15.5	123.7	0.85	0.78	0.85	29.4
Approach		242	16.0	255	16.0	0.456	48.3	LOS D	15.5	123.7	0.85	0.78	0.85	29.4
All Vehicles		537	16.0	565	16.0	0.556	49.3	LOS D	19.7	156.8	0.87	0.79	0.87	29.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

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PHASING SUMMARY

Site: 110 [Luddenham Road - Morning Peak - User Specified - 25sec RED 330m (Site Folder: General)]

New Site

Site Category: Morning AM Peak

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 158 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: Leading Right Turn

Reference Phase: Phase B

Input Phase Sequence: A, B

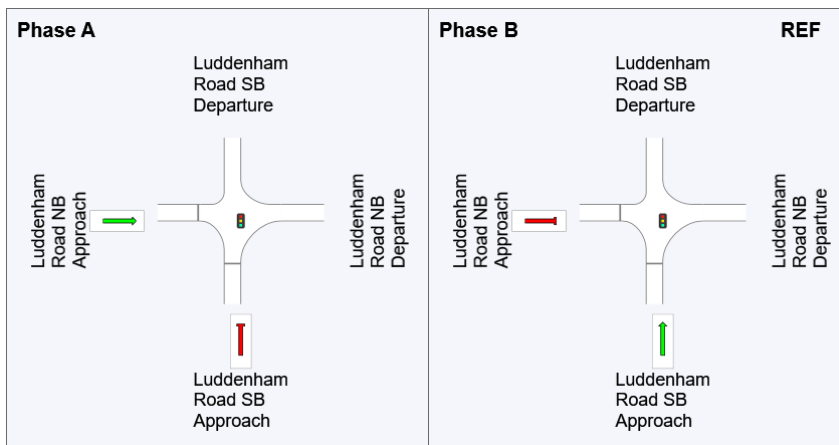
Output Phase Sequence: A, B

Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	79	0
Green Time (sec)	50	50
Phase Time (sec)	79	79
Phase Split	50%	50%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

INTERSECTION SUMMARY

Site: 110 [Luddenham Road - Afternoon Peak - User Specified - 25sec RED 330m (Site Folder: General)]

New Site

Site Category: Morning AM Peak

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 158 seconds (Site User-Given Phase Times)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	29.1 km/h	29.1 km/h
Travel Distance (Total)	581.5 veh-km/h	697.9 pers-km/h
Travel Time (Total)	20.0 veh-h/h	24.0 pers-h/h
Desired Speed (Program)	48.1 km/h	
Speed Efficiency	0.61	
Travel Time Index	5.61	
Congestion Coefficient	1.65	
Demand Flows (Total)	576 veh/h	691 pers/h
Percent Heavy Vehicles (Demand)	16.0 %	
Degree of Saturation	0.550	
Practical Spare Capacity	63.7 %	
Effective Intersection Capacity	1047 veh/h	
Control Delay (Total)	7.91 veh-h/h	9.49 pers-h/h
Control Delay (Average)	49.4 sec	49.4 sec
Control Delay (Worst Lane)	50.0 sec	
Control Delay (Worst Movement)	50.0 sec	50.0 sec
Geometric Delay (Average)	2.3 sec	
Stop-Line Delay (Average)	47.1 sec	
Idling Time (Average)	43.7 sec	
Intersection Level of Service (LOS)	LOS D	
95% Back of Queue - Vehicles (Worst Lane)	19.5 veh	
95% Back of Queue - Distance (Worst Lane)	154.9 m	
Ave. Queue Storage Ratio (Worst Lane)	0.19	
Total Effective Stops	459 veh/h	550 pers/h
Effective Stop Rate	0.80	0.80
Proportion Queued	0.87	0.87
Performance Index	64.3	64.3
Cost (Total)	833.78 \$/h	833.78 \$/h
Fuel Consumption (Total)	76.4 L/h	
Carbon Dioxide (Total)	185.8 kg/h	
Hydrocarbons (Total)	0.018 kg/h	
Carbon Monoxide (Total)	0.179 kg/h	
NOx (Total)	0.676 kg/h	

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Intersection LOS value for Vehicles is based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Site Model Variability Index (Iterations 3 to N): 0.0 %

Number of Iterations: 2 (Maximum: 10)

Largest change in Lane Degrees of Saturation for the last three Main (Timing-Capacity) Iterations: 0.0% 0.0% 0.0%

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	276,379 veh/y	331,655 pers/y
Delay	3,796 veh-h/y	4,555 pers-h/y
Effective Stops	220,101 veh/y	264,122 pers/y
Travel Distance	279,143 veh-km/y	334,971 pers-km/y
Travel Time	9,593 veh-h/y	11,511 pers-h/y
Cost	400,215 \$/y	400,215 \$/y
Fuel Consumption	36,668 L/y	
Carbon Dioxide	89,172 kg/y	
Hydrocarbons	9 kg/y	
Carbon Monoxide	86 kg/y	
NOx	324 kg/y	

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MOVEMENT SUMMARY

Site: 110 [Luddenham Road - Afternoon Peak - User Specified - 25sec RED 330m (Site Folder: General)]

New Site

Site Category: Morning AM Peak

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 158 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Luddenham Road SB Approach														
SB	T1	292	16.0	307	16.0	* 0.550	50.0	LOS D	19.5	154.9	0.88	0.80	0.88	29.0
Approach		292	16.0	307	16.0	0.550	50.0	LOS D	19.5	154.9	0.88	0.80	0.88	29.0
West: Luddenham Road NB Approach														
NB	T1	255	16.0	268	16.0	* 0.480	48.8	LOS D	16.5	131.6	0.86	0.79	0.86	29.3
Approach		255	16.0	268	16.0	0.480	48.8	LOS D	16.5	131.6	0.86	0.79	0.86	29.3
All Vehicles		547	16.0	576	16.0	0.550	49.4	LOS D	19.5	154.9	0.87	0.80	0.87	29.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

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PHASING SUMMARY

Site: 110 [Luddenham Road - Afternoon Peak - User Specified - 25sec RED 330m (Site Folder: General)]

New Site

Site Category: Morning AM Peak

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 158 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: Leading Right Turn

Reference Phase: Phase B

Input Phase Sequence: A, B

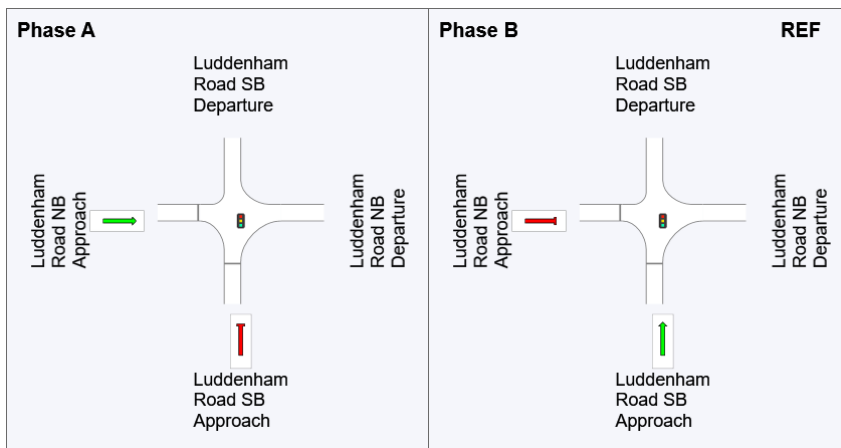
Output Phase Sequence: A, B

Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	79	0
Green Time (sec)	50	50
Phase Time (sec)	79	79
Phase Split	50%	50%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

INTERSECTION SUMMARY

Site: 110 [Luddenham Road - Morning Peak - Optimised - 25sec RED 330m (Site Folder: General)]

New Site

Site Category: Morning AM Peak

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	30.4 km/h	30.4 km/h
Travel Distance (Total)	570.9 veh-km/h	685.1 pers-km/h
Travel Time (Total)	18.8 veh-h/h	22.5 pers-h/h
Desired Speed (Program)	48.1 km/h	
Speed Efficiency	0.63	
Travel Time Index	5.91	
Congestion Coefficient	1.58	
Demand Flows (Total)	565 veh/h	678 pers/h
Percent Heavy Vehicles (Demand)	16.0 %	
Degree of Saturation	0.690	
Practical Spare Capacity	30.5 %	
Effective Intersection Capacity	820 veh/h	
Control Delay (Total)	6.93 veh-h/h	8.32 pers-h/h
Control Delay (Average)	44.1 sec	44.1 sec
Control Delay (Worst Lane)	47.1 sec	
Control Delay (Worst Movement)	47.1 sec	47.1 sec
Geometric Delay (Average)	2.3 sec	
Stop-Line Delay (Average)	41.8 sec	
Idling Time (Average)	37.9 sec	
Intersection Level of Service (LOS)	LOS D	
95% Back of Queue - Vehicles (Worst Lane)	15.1 veh	
95% Back of Queue - Distance (Worst Lane)	119.9 m	
Ave. Queue Storage Ratio (Worst Lane)	0.15	
Total Effective Stops	475 veh/h	570 pers/h
Effective Stop Rate	0.84	0.84
Proportion Queued	0.96	0.96
Performance Index	53.5	53.5
Cost (Total)	791.22 \$/h	791.22 \$/h
Fuel Consumption (Total)	75.1 L/h	
Carbon Dioxide (Total)	182.6 kg/h	
Hydrocarbons (Total)	0.018 kg/h	
Carbon Monoxide (Total)	0.173 kg/h	
NOx (Total)	0.676 kg/h	

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Intersection LOS value for Vehicles is based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Site Model Variability Index (Iterations 3 to N): 0.0 %

Number of Iterations: 2 (Maximum: 10)

Largest change in Lane Degrees of Saturation for the last three Main (Timing-Capacity) Iterations: 0.0% 0.0% 0.0%

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	271,326 veh/y	325,592 pers/y
Delay	3,327 veh-h/y	3,993 pers-h/y
Effective Stops	227,857 veh/y	273,429 pers/y
Travel Distance	274,040 veh-km/y	328,848 pers-km/y
Travel Time	9,018 veh-h/y	10,822 pers-h/y
Cost	379,784 \$/y	379,784 \$/y
Fuel Consumption	36,048 L/y	
Carbon Dioxide	87,661 kg/y	
Hydrocarbons	9 kg/y	
Carbon Monoxide	83 kg/y	

NOx

324 kg/y

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MOVEMENT SUMMARY

Site: 110 [Luddenham Road - Morning Peak - Optimised - 25sec RED 330m (Site Folder: General)]

New Site

Site Category: Morning AM Peak

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Luddenham Road SB Approach														
SB	T1	295	16.0	311	16.0	* 0.667	41.7	LOS C	15.1	119.9	0.95	0.83	0.95	31.0
Approach		295	16.0	311	16.0	0.667	41.7	LOS C	15.1	119.9	0.95	0.83	0.95	31.0
West: Luddenham Road NB Approach														
NB	T1	242	16.0	255	16.0	* 0.690	47.1	LOS D	13.0	103.8	0.98	0.85	1.01	29.7
Approach		242	16.0	255	16.0	0.690	47.1	LOS D	13.0	103.8	0.98	0.85	1.01	29.7
All Vehicles		537	16.0	565	16.0	0.690	44.1	LOS D	15.1	119.9	0.96	0.84	0.98	30.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

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 \1. Current\SIDRA Analysis - Luddenham Road - A.01.sip9

PHASING SUMMARY

Site: 110 [Luddenham Road - Morning Peak - Optimised - 25sec RED 330m (Site Folder: General)]

New Site

Site Category: Morning AM Peak

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase B

Input Phase Sequence: A, B

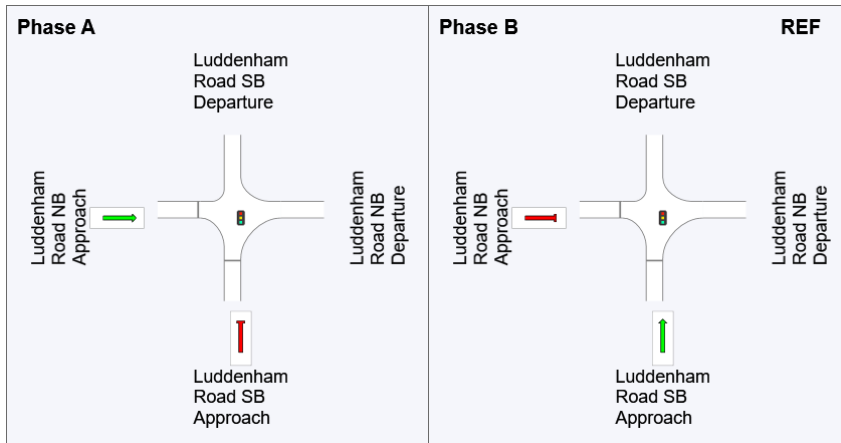
Output Phase Sequence: A, B

Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	58	0
Green Time (sec)	23	29
Phase Time (sec)	52	58
Phase Split	47%	53%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

INTERSECTION SUMMARY

Site: 110 [Luddenham Road - Afternoon Peak - Optimised - 25sec RED 330m (Site Folder: General)]

New Site

Site Category: Morning AM Peak

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	30.3 km/h	30.3 km/h
Travel Distance (Total)	581.5 veh-km/h	697.9 pers-km/h
Travel Time (Total)	19.2 veh-h/h	23.0 pers-h/h
Desired Speed (Program)	48.1 km/h	
Speed Efficiency	0.63	
Travel Time Index	5.89	
Congestion Coefficient	1.59	
Demand Flows (Total)	576 veh/h	691 pers/h
Percent Heavy Vehicles (Demand)	16.0 %	
Degree of Saturation	0.697	
Practical Spare Capacity	29.2 %	
Effective Intersection Capacity	827 veh/h	
Control Delay (Total)	7.12 veh-h/h	8.55 pers-h/h
Control Delay (Average)	44.5 sec	44.5 sec
Control Delay (Worst Lane)	46.5 sec	
Control Delay (Worst Movement)	46.5 sec	46.5 sec
Geometric Delay (Average)	2.3 sec	
Stop-Line Delay (Average)	42.2 sec	
Idling Time (Average)	38.2 sec	
Intersection Level of Service (LOS)	LOS D	
95% Back of Queue - Vehicles (Worst Lane)	15.1 veh	
95% Back of Queue - Distance (Worst Lane)	120.4 m	
Ave. Queue Storage Ratio (Worst Lane)	0.15	
Total Effective Stops	487 veh/h	584 pers/h
Effective Stop Rate	0.85	0.85
Proportion Queued	0.97	0.97
Performance Index	54.9	54.9
Cost (Total)	808.36 \$/h	808.36 \$/h
Fuel Consumption (Total)	76.7 L/h	
Carbon Dioxide (Total)	186.5 kg/h	
Hydrocarbons (Total)	0.018 kg/h	
Carbon Monoxide (Total)	0.177 kg/h	
NOx (Total)	0.690 kg/h	

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Intersection LOS value for Vehicles is based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Site Model Variability Index (Iterations 3 to N): 0.0 %

Number of Iterations: 2 (Maximum: 10)

Largest change in Lane Degrees of Saturation for the last three Main (Timing-Capacity) Iterations: 0.0% 0.0% 0.0%

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	276,379 veh/y	331,655 pers/y
Delay	3,418 veh-h/y	4,102 pers-h/y
Effective Stops	233,766 veh/y	280,519 pers/y
Travel Distance	279,143 veh-km/y	334,971 pers-km/y
Travel Time	9,215 veh-h/y	11,058 pers-h/y
Cost	388,014 \$/y	388,014 \$/y
Fuel Consumption	36,809 L/y	
Carbon Dioxide	89,509 kg/y	
Hydrocarbons	9 kg/y	
Carbon Monoxide	85 kg/y	

NOx

331 kg/y

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MOVEMENT SUMMARY

Site: 110 [Luddenham Road - Afternoon Peak - Optimised - 25sec RED 330m (Site Folder: General)]

New Site

Site Category: Morning AM Peak

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] m				
South: Luddenham Road SB Approach														
SB	T1	292	16.0	307	16.0	* 0.684	42.8	LOS D	15.1	120.4	0.96	0.84	0.97	30.7
Approach		292	16.0	307	16.0	0.684	42.8	LOS D	15.1	120.4	0.96	0.84	0.97	30.7
West: Luddenham Road NB Approach														
NB	T1	255	16.0	268	16.0	* 0.697	46.5	LOS D	13.7	109.1	0.98	0.85	1.01	29.8
Approach		255	16.0	268	16.0	0.697	46.5	LOS D	13.7	109.1	0.98	0.85	1.01	29.8
All Vehicles		547	16.0	576	16.0	0.697	44.5	LOS D	15.1	120.4	0.97	0.85	0.99	30.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

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 \1. Current\SIDRA Analysis - Luddenham Road - A.01.sip9

PHASING SUMMARY

Site: 110 [Luddenham Road - Afternoon Peak - Optimised - 25sec RED 330m (Site Folder: General)]

New Site

Site Category: Morning AM Peak

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase B

Input Phase Sequence: A, B

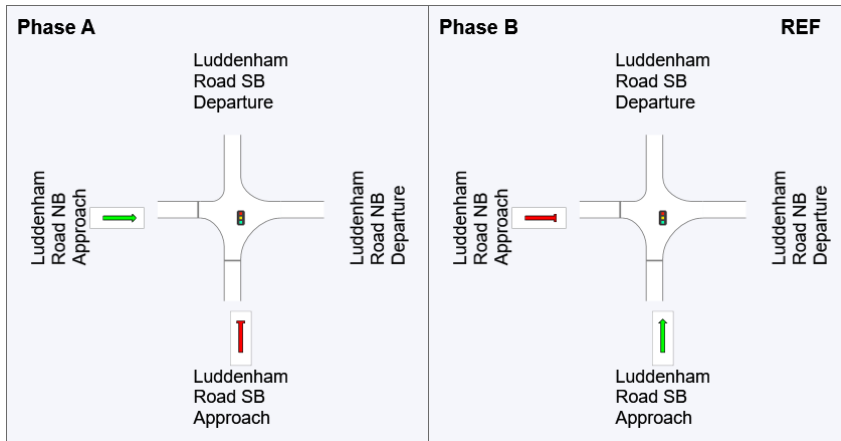
Output Phase Sequence: A, B

Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	57	0
Green Time (sec)	24	28
Phase Time (sec)	53	57
Phase Split	48%	52%

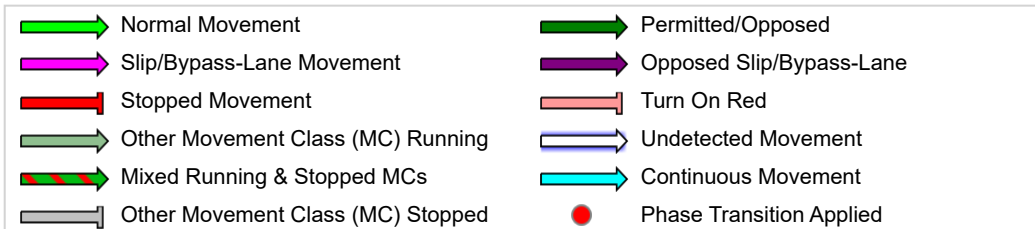
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase



Appendix G – Traffic Counts

Refer to separately provided EXCEL spreadsheet

Appendix H: - Road Safety Audit

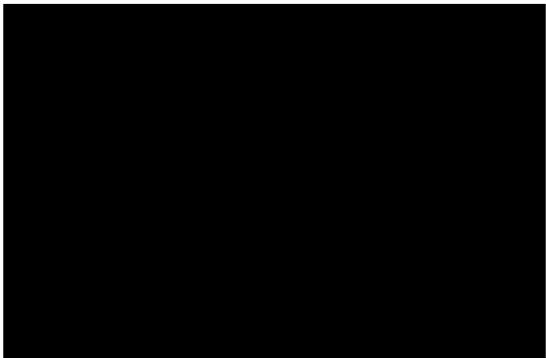
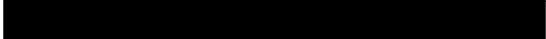


Road Safety Audit Report

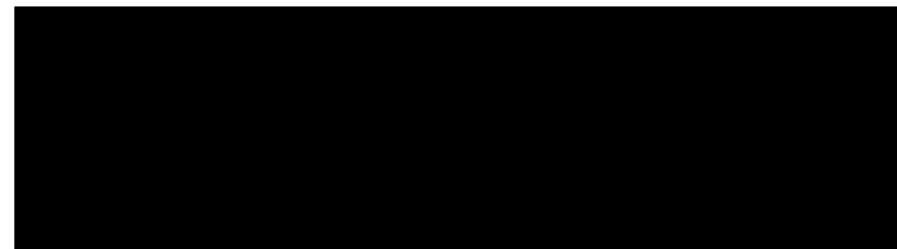
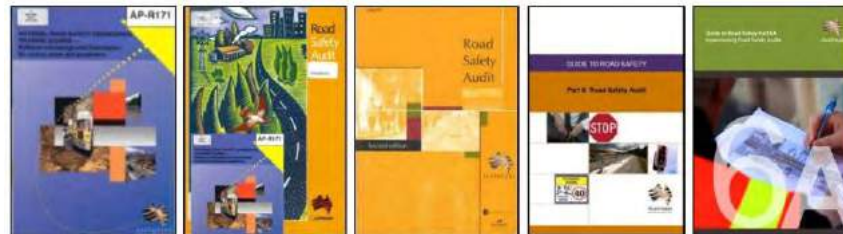
Luddenham Road Roundabout Construction



Practical
Independent
Specialised







Road/Area	Luddenham Road	Road Safety Audits Reference	RSA-13867
Traffic Stage/Phase	Western Sydney Airport – Surface and Civil Alignment Works	Report Date	25 March 2023
Audit Stage	Desktop Traffic Guidance Scheme	Lead Auditor Second Auditor	
Client		TMP / Drawings	Luddenham Road Roundabout Construction - Construction Traffic Management Plan (Document No: SMWSASCA-CPU-1NL000-TF-PLN-000009 Rev A) which included the following TGS: <ul style="list-style-type: none"> • Luddenham Road Stage 1 – CPBUI-LUD-TGS-0001 (4 sheets); • Luddenham Road Stage 1 – CPBUI-LUD-TGS-0002 (4 sheets); • Luddenham Road Stage 1 – CPBUI-LUD-TGS-0003 (4 sheets); • SCAW-TGS-LUD-R001, SCAW-TGS-LUD-R005, GEN-LM, SCAW-TGS-LUD-R006 & SCAW-TGS-LUD-R004
Client Contact		Report Provider	Road Safety Audits

Desktop TGS General Scope: The scope of the audit is to assess the plans on their merits and in the context of the road environment, with standards and guidelines as a reference.



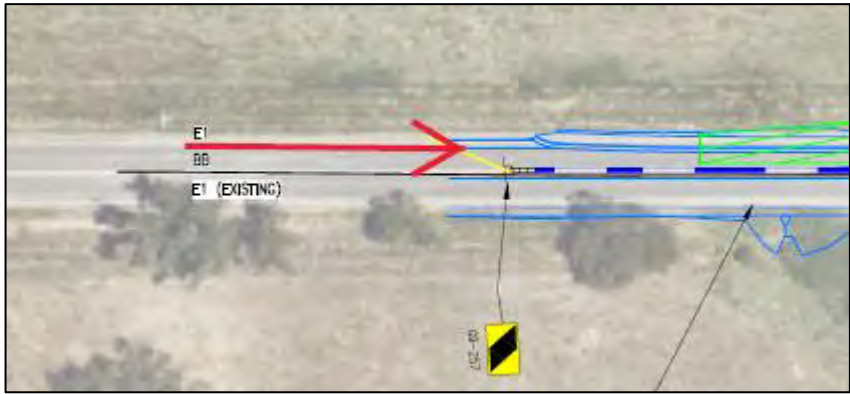



Luddenham Road Roundabout Construction Western Sydney Airport – Surface and Civil Alignment Works

	Audit Point	Treatment Option	Response	Status				
Barrier Installation – Stages 1, 2 & 3								
1.	The legend in the drawings for Stages 1 to 3 shows the blue dashed line as water filled barrier in the first page and as concrete barrier in the second page. It is assumed that this is a drafting error.	Correct drafting error to indicate which type of temporary barrier is proposed. Whichever type of barrier is selected, ensure that there is adequate offset between the barrier and the work area to allow for the barrier dynamic deflection width (No Go Zone).	All drawings amended	Closed				
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;">WATER FILLED BARRIER</td> <td style="padding: 5px;">  </td> </tr> <tr> <td style="padding: 5px;">TEMPORARY CONCRETE BARRIERS</td> <td style="padding: 5px;">  </td> </tr> </table>					WATER FILLED BARRIER		TEMPORARY CONCRETE BARRIERS	
WATER FILLED BARRIER								
TEMPORARY CONCRETE BARRIERS								



Luddenham Road Roundabout Construction Western Sydney Airport – Surface and Civil Alignment Works

	Audit Point	Treatment Option	Response	Status
Barrier Installation – Stage 2				
2.	Construction vehicle access into the work area during stage 2 is shown to be from the northeast bound traffic lane. It is unclear as to how this access location will interact with the proposed traffic control/stop location for northeast bound general traffic.	Clarify how construction traffic access will be managed during the shuttle flow to ensure that general northeast bound motorists do not follow construction vehicles into the work area. Similarly, how will any potential conflict with southwest bound traffic and construction traffic accessing the site be managed during the shuttle flow.	Site traffic will be called up via radio between TC and driver	Ongoing
<div style="display: flex; justify-content: space-around;">   </div>				
Barrier Installation – Stage 3				
3.	Same comments as per audit point 2, except in the southwest bound direction.	Refer to audit point 2.	Same response as point 2	Ongoing



Luddenham Road Roundabout Construction Western Sydney Airport – Surface and Civil Alignment Works				
	Audit Point	Treatment Option		
			Response	Status
SCAW-TGS-LUD-R001, R005, GEN-LM, R006, R004,				
4.	No road safety issues are identified in relation to the proposed signage and traffic control.	Nil. Note only. Risk: N/A	Noted	Closed



Explanatory Notes

Short Format: This 'short format' report has been pioneered by RSA (Road Safety Audits) since 2008, initiated through requests by clients to assist their processes, for ease with stakeholders, and for timeliness. It is typically confined in use to construction traffic management and typically for discrete packages of plans / areas and often for large projects with repetitious small audit sections. The use of this format assumes that the reader/s know what a road safety audit is and how to respond to it.

Projects: Audit points are often raised in projects in relation to: 1. specific themes (e.g. the use of a safety barrier type), or 2. the treatment of particular locations. Once key issues have been initially raised, they will not necessarily be re-raised in future audits. This will depend on the issue, the RSA's perception of the client's assessment and understanding of the issue, and other factors. Therefore, discrete audits as part of a project should be read and actioned by a [project representative who is familiar with the audit history](#).

Responding: Although the client receiving the report does not have to agree to the audit findings/suggestions, the issues and associated risks should be carefully considered. A written response should be made to all of the audit findings raised, then signed off by the responsible person from the project team.

***Response:** The responder should focus on and consider the [audit point](#), regardless of whether the audit team's suggested treatment option is feasible / appropriate / agreed to.

YStatus: The status of the issue as it sits with the Project. i.e. 'actioned', 'closed', 'pending information / further guidance'.

Language:

Austroroads Road Safety Audit Part 6 suggests that the organisation responding to the audit provides a risk assessment. However, RSA will at times offer a guide of 'high' 'medium' and 'low' risk, which is based on a professional appraisal of the risk ('severity' and 'frequency') for the responder to use as a guide. Other language commonly used and its intent is as follows:

- o 'Urgent': Needs immediate attention / changes as per RSA suggestion or similar.
- o 'Recommend' / 'Serious' / 'Important': Must be robustly reviewed. Most likely requires a change to avoid a high-risk road environment for one or more user groups.
- o 'Should' / 'Suggest' / 'Significant': Based on the view of the RSA team the suggestion should be done, but it concedes that there could be reasons why inaction or alternative action may be preferred. Must be robustly reviewed by contractor and where relevant with key traffic engineering project stakeholders.
- o 'Review' / 'Consider': RSA is raising an observation but has no strong opinion on the outcome and need for changes. Project should review because it's not an immediate and high risk and may not be immediately obvious to RSA the reasons for the practice / setup / behaviour. May need monitoring.
- o 'Minor': Typically, a low road-safety consequence / compliance issues (to guidelines or plans) / administrative controls. Unlikely to increase risk of crash.
- o 'Note': Little or no road safety significance. Typically added to give a complete picture of the design, site, context, analysis, auditors understanding.

Intent of Issues Listing Order: Audit points might be clustered according to location, theme, or time. When this is not done and the audit comprises an uncategorised list of points, the key issues are often discussed first. However, there is no official ordering of points, and they should all be read on their merits and on the basis of the language guide above.

References: 1. Austroroads Guide to Road Safety – Road Safety Audit – (2019) 6 and 6A; 2. AS 1742.3 – 2019; 3. State specific codes and guidelines re: Traffic Control at Work Sites; and 4. Design: 1. Austroroads guidelines and 2. state-specific supplements and technical publications as relevant.

Safe System: Austroroads GRS-RSA6A encourages practitioners to adopt safe system principles within the road safety audit. Safe system (roads) calls for a design to not allow serious injury and fatalities to occur for the expected road users and the typical crash types expected for that design type. This design-objective is considered within this road safety audit as a good practice objective. However, in practice, safe system-based analysis of risks and treatment options is typically not adopted for traffic management stage audits in the same way as it is in design stage audits.

Process and Quality: RSA's quality assurance process is based on its senior auditors having a rich experience base, but also utilises customised checklists designed for niche areas in traffic engineering/road design (e.g. safety barriers, pavement shaping, CBD traffic management), in conjunction with a four-layer audit process: 1. on-site inspection; 2. media and data capture and review; 3. specialist / second auditor input; and (where warranted) 4. secondary blinded reviews.

Audit Coverage: The audit has attempted to balance the safety needs of all road users. As per Austroroads guidelines, the suggestions provided have attempted to be realistic/feasible and commensurate with the actual risk posed. Suggestions are made from a safety perspective only, and are made in the absence of full project knowledge and design constraints. RSA can provide a detailed risk assessment / issue evaluation report upon request. The audit raises potential safety risks noted / observed / anticipated by the audit team, and in particular the higher-risk issues. However, a road safety audit is undertaken by people, highly influenced by the experience, views and limitations of the individual team members. It is expected that the project team has competence to identify safety issues itself as the project progresses, and to ask the audit team further questions where necessary.

Appendix I – Stakeholder comments

CONTRACT NO.	DOCUMENT NO.	TITLE	VER	STATUS	NO.	DATE	COMPANY	RAISED BY	REVIEW DOC. NO.*	DOCUMENT REF*	DEED REF*	COMMENTS / RESPONSE	COMMENT CATEGORY*	LINKED ITEM NO	CLOSED OUT
SCA	SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Traffic Management Plan, Luddenham Rd - Roundabout	C.01	S3	01	11/04/2023	SMD		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.5.5	CTMF	Re cumulative impacts - include text in this section clarifying what, if any, consultation is occurring between the SCAW contractor and these other contractors to ensure works are planned to minimise impacts as per the CTMF.	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.5.5	CTMF		Observation		Y
					01.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.5.5	CTMF	Document amended	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.5.5	CTMF		Observation		Y
					02	11/04/2023	SMD		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	General	CTMF	The document needs to make reference to forecast light and heavy vehicle volumes by vehicle type.	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	General	CTMF		Observation		Y
					02.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	General	CTMF	Document amended	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	General	CTMF		Observation		Y
					03	11/04/2023	SMD		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 2 (page 8)	N/A	Figure 2 is unclear and confusing. Please consider using the overview drawing that was included in the TTLG presentation. The overview drawing should include the new roundabout location, details of existing site access points (shown in the correct location), and the Luddenham Road Station Site Compound area - all clearly labelled.	Minor Non-Compliance		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 2 (page 8)	N/A		Minor Non-Compliance		Y
					03.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 2 (page 8)	N/A	Document amended	Minor Non-Compliance		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 2 (page 8)	N/A		Minor Non-Compliance		Y
					04	11/04/2023	SMD		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 2	N/A	Consider including more background information that explains to readers the other related works and access locations. For example, this CTMP refers to Gate 4 in a number of places so it would be helpful to explain that Gate 4 is the main access location for the Luddenham Station site and roundabout construction site. It would also be helpful to reference the Gate 4 & 5 CTMP in this document so that the reader knows there is an approved CTMP already in place for these works.	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 2	N/A		Observation		Y
					04.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 2	N/A	Document amended	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 2	N/A		Observation		Y
					05	11/04/2023	SMD		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.1	N/A	Consider adding an additional note to explain that the majority of access to the worksite will be via Gate 4 and then through the SCAW worksite. Only minimal numbers of vehicles will access (or exit) behind the barriers while travelling northbound on Luddenham Road.	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.1	N/A		Observation		Y
					05.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.1	N/A	Document amended	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.1	N/A		Observation		Y
					06	11/04/2023	SMD		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Sections 3.2 and 3.3	N/A	It is not clear in these sections that once barriers and lines have been reinstated that the "24/7 stop slow" is a 24/7 unmanned traffic light controlled contraflow arrangement. Please consider including additional words to make it clear what is being proposed. Please also include a reference to the TGS included in Appendix C.	Observation		Y

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									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Sections 3.2 and 3.3	N/A		Observation		Y
					06.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Sections 3.2 and 3.3	N/A	Document amended	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Sections 3.2 and 3.3	N/A		Observation		Y
					07	11/04/2023	SMD		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.7	N/A	Traffic Guidance Schemes are provided for both the implementation of the stages, and the individual stages. Please clarify. Please also include reference to Appendix C that contains the TGS.	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.7	N/A		Observation		Y
					07.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.7	N/A	Document amended	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.7	N/A		Observation		Y
					08	11/04/2023	SMD		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 5.2.2	N/A	How many VMS are proposed to be used? Where will they be located and for how long?	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 5.2.2	N/A		Observation		Y
					08.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 5.2.2	N/A	VMS plan included	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 5.2.2	N/A		Observation		Y
					09	11/04/2023	SMD		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	5.3	N/A	Please list all consultation that has occurred. Eg. Meetings have been held with CJP where staging proposals were presented and discussed. There has also been discussion and meeting with Garde and Endeavour Energy to consider the impact of the staging on their works.	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	5.3	N/A		Observation		Y
					09.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	5.3	N/A	Document amended	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	5.3	N/A		Observation		Y
					10	17/04/2023	TFN		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	2.1 Luddenham Road, Luddenham	NA	The last sentence in this section refers to two school buses using the route. Please confirm in the text if there are any bus stops along Luddenham Road and if they will be impacted by the works. Thanks.	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	2.1 Luddenham Road, Luddenham	NA		Observation		Y
					10.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	2.1 Luddenham Road, Luddenham	NA	There are no known bus stops along Luddenham Road - trip planner bus stop figure inserted	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	2.1 Luddenham Road, Luddenham	NA		Observation		Y
					10.01.01	23/06/2023	TFN					Document updated, comment closed.	Observation		Y
													Observation		Y
					11	17/04/2023	TFN		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.5.3 Impact on active transport users	NA	Please clarify what the impact will be on this short section of on road cycle facility (including if that is nil impact) and also the impact on any cyclists legally riding on road along Luddenham Road and how they will be treated.	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.5.3 Impact on active transport users	NA		Observation		Y
					11.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.5.3 Impact on active transport users	NA	Nil impact as the worksite is located approximately 500m to the north of this site. Cyclists will be treated as vehicles as they are under law	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.5.3 Impact on active transport users	NA		Observation		Y
					11.01.01	23/06/2023	TFN					Response noted, comment closed.	Observation		Y
													Observation		Y

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					12	17/04/2023	TFN		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C - Traffic Guidance Schemes. CPBUI-LUD-TGS-0001	NA	The red arrow on these images appears to show vehicles entering the work site off road at 60km/h - this will increase the likelihood of crashes occurring. Vehicles re entering Luddenham Road are likely to be doing so at a slower pace then on road traffic which will also increase the risk of crashes occurring. There is also a risk public vehicles may follow a work vehicle off road. Please consider these risks and implement additional signage and speed advisory signs to assist in reducing the risk of incidents occurring.	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C - Traffic Guidance Schemes. CPBUI-LUD-TGS-0001	NA		Observation		Y
					12.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C - Traffic Guidance Schemes. CPBUI-LUD-TGS-0001	NA	During work hours traffic controllers will be in place to manage the access and egress. Refer to new TGS	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C - Traffic Guidance Schemes. CPBUI-LUD-TGS-0001	NA		Observation		Y
					12.01.01	23/06/2023	TFN					Satisfied with response and TGS updated to show traffic controllers in place. Comment closed.	Observation		Y
													Observation		Y
					13	17/04/2023	TFN		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C - Traffic Guidance Schemes. CPBUI-LUD-TGS-0002	NA	Sheet 4 of 4 shows work site vehicles reentering Luddenham Road are able to travel straight ahead. This may lead to side swipe crashes with general traffic as they are not aware of vehicles attempting to merge or site distance may be restricted by concrete barriers. Please consider the risk and demonstrate how it will be mitigated SFAIRP.	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C - Traffic Guidance Schemes. CPBUI-LUD-TGS-0002	NA		Observation		Y
					13.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C - Traffic Guidance Schemes. CPBUI-LUD-TGS-0002	NA	During work hours traffic controllers will be in place to manage the access and egress.	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C - Traffic Guidance Schemes. CPBUI-LUD-TGS-0002	NA		Observation		Y
					13.01.01	23/06/2023	TFN					Satisfied with response and TGS updated to show traffic controllers in place. Comment closed.	Observation		Y
													Observation		Y
					14	17/04/2023	TFN		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C - Traffic Guidance Schemes. CPBUI-LUD-TGS-0003	NA	Sheet 4 of 4 shows work site vehicles re entering Luddenham Road needing to cross back on to the correct side of the road. Drivers may be focused on traffic travelling East along Luddenham Road and selecting a safe gap to merge without considering oncoming traffic, increasing the risk of head on collisions. Please consider this risk and demonstrate how it will be managed SFAIRP.	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C - Traffic Guidance Schemes. CPBUI-LUD-TGS-0003	NA		Observation		Y
					14.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C - Traffic Guidance Schemes. CPBUI-LUD-TGS-0003	NA	During work hours traffic controllers will be in place to manage the access and egress.	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C - Traffic Guidance Schemes. CPBUI-LUD-TGS-0003	NA		Observation		Y
					14.01.01	23/06/2023	TFN					Satisfied with response and TGS updated to show traffic controllers in place. Comment closed.	Observation		Y
													Observation		Y
					15	17/04/2023	TFN		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C - Traffic Guidance Schemes. SCAW-TGS-LUD-R0005	NA	It is unclear on this TGS how work vehicles will safely enter and exit site - signage in the way and nothing identifying need to merge / trucks entering / exiting. It is also unclear how traffic will be managed if someone passes the traffic signal at stop and enters the one way section when they are not meant to. Please consider these risks and demonstrate how they will be managed SFAIRP. Thanks.	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C - Traffic Guidance Schemes. SCAW-TGS-LUD-R0005	NA		Observation		Y
					15.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C - Traffic Guidance Schemes. SCAW-TGS-LUD-R0005	NA	During work hours traffic controllers will be in place to manage the access and egress.	Observation		Y

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									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C - Traffic Guidance Schemes. SCAW-TGS-LUD-R0005	NA		Observation		Y
					15.01.01	23/06/2023	TFN					TGS updated to show traffic controllers in place. Comment closed.	Observation		Y
													Observation		Y
					17	21/04/2023	TFN		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.2 /3.3	N/A	Assuming consecutive staging, does this mean stage 2 and 3 would be undertaken once Endeavour / Garden works have completed their works along Luddenham Rd?	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.2 /3.3	N/A		Observation		Y
					17.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.2 /3.3	N/A	Yes confirmed	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.2 /3.3	N/A		Observation		Y
					18	21/04/2023	TFN		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.4 & 3.5.1	NA	It is possible to extend the working hours outlined in Section 3.4 to minimise total duration and impact of stages 2 and 3? Understanding that the times provided will be conditioned as part of the approval because of the impacts to the network.	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.4 & 3.5.1	NA		Observation		Y
					18.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.4 & 3.5.1	NA	OOHW permits are currently being applied for.SCAW understand and will comply with the previously agreed 2-3 weeks per Stage 2 and the same for Stage 3	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.4 & 3.5.1	NA		Observation		Y
					19	21/04/2023	TFN		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.5.1	NA	Have traffic counts been undertaken to determine whether a stop/slow arrangement could be sustained on Luddenham Rd over the required distance, particularly during peak periods? The impact of such has not really been discussed in the document.	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.5.1	NA		Observation		Y
					19.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.5.1	NA	Traffic counts have been undertaken by Austraffic with modelling undertaken by Headway Traffic and Transport - the results of that modelling is included in Appendix F	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.5.1	NA		Observation		Y
					20	21/04/2023	TFN		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.5.5	NA	Is gate 4 still active when the roundabout is completed?	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.5.5	NA		Observation		Y
					20.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.5.5	NA	Yes confirmed - other users such as Celestrino will be using this gate for their development works	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.5.5	NA		Observation		Y
					21	21/04/2023	TFN		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.5.5	NA	There is no Section 3.2.5 as referenced in the text. It is important for SCAW to liaise with all adjacent projects on a regular basis to coordinate works, minimise impacts to the local community and ensure that no conflicting setups are implemented at any time.	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.5.5	NA		Observation		Y
					21.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.5.5	NA	Document amended	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	3.5.5	NA		Observation		Y
					22	21/04/2023	TFN		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	4.1	NA	Every effort should be made to avoid using Elizabeth Drive, east of Badgerys Creek Road as a haulage route to minimise impacts to the local community as per appendix B	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	4.1	NA		Observation		Y
					22.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	4.1	NA	Noted - we will provide VMP to the truck drivers. Note that there is only asphalt and roadbase deliveries with limited concrete trucks required for the roundabout works	Observation		Y

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									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	4.1	NA		Observation		Y
					23	21/04/2023	TFN		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C	NA	During daylight hours and especially during peak periods, the portable signals will need to be manned to ensure traffic flow is effectively managed and delays reduced. It is not appropriate for them to be operated on set phase times as this could in-turn promote risky motorist behaviour in the event of unnecessary delays.	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C	NA		Observation		Y
					23.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C	NA	Agree during working hours (0700-1800 Monday to Friday and 0800-1300) these portable traffic control devices will be manned	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C	NA		Observation		Y
					24	21/04/2023	TFN		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C	NA	Conflicting traffic management is presented in each set of TGS' provided - one shows portable signals and the other portabooms under TC operation. Are there separate times that each plan will be implemented? If yes, then this needs to be clearly communicated with different TGS numbers and times provided in Table 5, and on the plan itself. If no, then exactly what is proposed to be in place on a 24/7 basis?	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C	NA		Observation		Y
					24.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C	NA	This has been amended in subsequent revisions	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C	NA		Observation		Y
					24.01.01	29/06/2023	TFN					Closed subject to a traffic controller being present during work hours to man the portable signals as stated in the response for #23.	Observation		Y
													Observation		Y
					25	21/04/2023	TFN		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C	NA	It is unclear in the TMP what is the length of the proposed work zone and the timing for the overnight automatic traffic signal phasing?	Observation		N
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C	NA		Observation		N
					25.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C	NA	up to 330m and proposed signal timing included in Appendix F	Observation		N
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix C	NA		Observation		N
					25.01.01	29/06/2023	TFN					The signals will need to be managed and operated by a qualified traffic controller between the hours of 06:00-19:00. The proposed times being provided to give an LOS D is unacceptable on a road that did operate at an LOS A (and probably LOS B with all the current works). This will not work and will lead to adverse motorist behaviour with serious safety implications. The traffic count data should also be included alongside the modelling report to help provide a full picture of Luddenham Rd volumes.	Observation		N
												Traffic count data provided - Traffic controllers will be in place between the hours of 0600-1900 Monday to Friday. It should be noted as per the modelling report that "the LOS is not a good descriptor of the impact to the traffic as it is based on the delay in seconds. The Degree of Saturation is less than 0.6 in both directions indicating confidence that all vehicles will clear within the stop/ slow arrangement within the average delay"	Observation		N
					26	24/04/2023	PCC		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	General	NA	The TGS's within the CTMP appear to indicate that Luddenham Road will be reduced to one lane with stop slow arrangement controlling opposing traffic for the duration of construction of the roundabout. If this is the case, what modelling has been completed based on current traffic volumes to show that this arrangement will allow traffic on Luddenham Road to operate at a satisfactory level of service?	Observation		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	General	NA		Observation		Y
					26.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	General	NA	Only stages 2 and 3 will require the reduction of Luddenham Road to 1 lane operation. These stages are only between 4-6 weeks maximum and is similar in scope to the traffic control set up for the Endeavour Energy works. Modelling report now included	Observation		Y

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								SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	General	NA		Observation		Y
					27	24/04/2023	PCC	SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	General	NA	Permanent signage and linemarking for the roundabout are shown in the CTMP. The design plans, including signage and linemarking, are required to be presented to the Local Traffic Committee for endorsement, and Council acceptance, prior to commencing construction.	Observation		N
								SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	General	NA		Observation		N
					27.01	23/06/2023	CPU	SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	General	NA	Sydney Metro is responsible for the design plans	Observation		N
								SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	General	NA		Observation		N
					27.01.01	30/06/2023	PCC				Works are pending Local Traffic Committee endorsement and Council approval.	Observation		N
											Noted	Observation		N
					28	28/04/2023	TFN	SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.5	-	Please quantify the construction impacts, including the volumes of construction traffic by vehicle types and purposes for consultation.	Minor Non-Compliance		N
								SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.5	-		Minor Non-Compliance		N
					28.01	23/06/2023	CPU	SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.5	-	Stage 1 - all vehicles will enter and exit via Gate 4 - these vehicle numbers were provided in the Gates 4&5 CTMP. Stages 2 and 3 - will see on average 4 HV per day and 2LV	Minor Non-Compliance		N
								SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.5	-	Section 3.6.1 amended. Table 2 provides the vehicle type.	Minor Non-Compliance		N
					28.01.01	30/06/2023	TFN	SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix F – Modelling report		Comments on SIDRA assessment: 1. The stop/slow points in TGSs (pg. 43 to 46) indicate a contraflow length of approximately 440m measuring from Nearmap. This is different to the adopted SIDRA modelled length of 330m requiring some justifications. Alternatively, can the contraflow section be shortened to match the modelling assumption as that will mitigate traffic disruption? 2. The AM & PM count volumes seem very close, assuming that is correct. 3. The indicated delays from modelling are approx. 50 seconds with traffic queues that could build up to 20 vehicles by direction, requiring close monitoring of traffic conditions during TGS implementation.	Minor Non-Compliance		N
								SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Appendix F – Modelling report		Contra flow shortened to match modelling report Traffic counts now included in CTMP It is noted that traffic controllers will be in attendance between the hours of 6AM to 7PM Monday to Friday to monitor queue lengths	Minor Non-Compliance		N
					29	28/04/2023	TFN	SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.5.5	-	There is a number of ongoing/planned construction works by different contractors and service providers along Luddenham Road within the project timeframe, and with OSOM transport scheduled at night. The CTMP should: - Clearly state the impacted works. - Clarify management strategy to minimise project impacts. - Include coordination strategy with other operators to control cumulative impacts.	Minor Non-Compliance		Y
								SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.5.5	-		Minor Non-Compliance		Y
					29.01	23/06/2023	CPU	SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.5.5	-	Regular meetings are held with all contractors along Luddenham Road to coordinate the various works and work sites. These meetings are chaired by Sydney Metro and are attended by Endeavour Energy, the M12 West Contractors. Document amended	Minor Non-Compliance		Y
								SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 3.5.5	-		Minor Non-Compliance		Y
					30	28/04/2023	TFN	SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 4.1	-	Was it a typo or a plan to have material delivery and disposal at Gate 4 for the roundabout works?	Observation		Y
								SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 4.1	-		Observation		Y
					30.01	23/06/2023	CPU	SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 4.1	-	The majority of deliveries for the Stage 1 of the roundabout works will be via Gate 4, as noted in the CTMP. The vehicle numbers provided in the CTMP for Gates 4 and 5 included the vehicles associated with the roundabout construction	Observation		Y
								SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	Section 4.1	-		Observation		Y

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					31	28/04/2023	TFN		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	CPBUI-LUD-TGS-0001; CPBUI-LUD-TGS-0002		Suggestions: 1. Would the barrier relocation from stage 1 to stage 2 impact road traffic? If yes need traffic controls. A similar arrangement should apply to stage 1 if impacting live traffic. 2. Stage 1 site access: can trucks leave and enter Luddenham Rd at the indicated locations safely? No driveways or even paper roads are available. 3. Stage 2 site access: what sort of strategy to manage construction vehicles entering the work zone and prevent general traffic following? 4. Consider additional signage to advance warn traffic of truck access points for stages 1 & 2.	Minor Non-Compliance		N
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	CPBUI-LUD-TGS-0001; CPBUI-LUD-TGS-0002			Minor Non-Compliance		N
					31.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	CPBUI-LUD-TGS-0001; CPBUI-LUD-TGS-0002		1. Yes traffic will be impacted during barrier install and relocation - refer to the TGS included in the CTMP2. Trucks will leave under traffic control3. During work hours when construction vehicles are required to enter and exit the site this will be done under traffic control with traffic controllers in place4 Drawings amended	Minor Non-Compliance		N
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	CPBUI-LUD-TGS-0001; CPBUI-LUD-TGS-0002			Minor Non-Compliance		N
					31.01.01	30/06/2023	TFN		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	TGSs on pg.33, 34 & 38		TGSs on pg. 34 & 38: the '160m truck on left' signage (southbound) could confuse the southbound traffic as there is no truck ingress/egress in this direction. It's taken note that truck access to/from the work zone during stage 1 will be under traffic controls; however, a concern remains about not providing a temporary driveway/access path to manage such movements. What are the level differences between road and kerb at the truck access points?	Minor Non-Compliance		N
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	TGSs on pg.33, 34 & 38		Truck signs removed on relevant TGS As noted in the text the majority of vehicle movements during Stage 1 will occur via Gate 4 and these vehicle movements were included in the Gates 4 and 5 CTMP which was previously approved. Vehicle movements required for Stage 1 off Luddenham Road will be under traffic control. Road base will be placed at the access/egress points to cater for these movements	Minor Non-Compliance		N
					32	28/04/2023	TFN		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	?SCAW-TGS-LUD-R001; SCAW-TGS-LUD-R006		Should the work zone be protected by barriers not traffic cones? Refer to CPBUI-LUD-TGS-0001 & CPBUI-LUD-TGS-0002. Any considerations for using pota boom at stage 1 and pota signal at stages 2 & 3?	Potential Non-Compliance		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	?SCAW-TGS-LUD-R001; SCAW-TGS-LUD-R006			Potential Non-Compliance		Y
					32.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	?SCAW-TGS-LUD-R001; SCAW-TGS-LUD-R006		The work site is protected by barriers - refer to CPBUI-LUD-TGS-0001-01 and CPBUI-LUD-TGS-0002-01. The TGS pota booms are provided to allow installation of the Stage 1 set up and will be used during the site's day to day operations. Stages 2 and 3 are both portable traffic control signals which will be manned during work hours	Potential Non-Compliance		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	?SCAW-TGS-LUD-R001; SCAW-TGS-LUD-R006			Potential Non-Compliance		Y
					33	28/04/2023	TFN		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	SCAW-TGSLUD- R004 (pg.44)		Any considerations for the lateral shift setting for northbound (south of the roundabout)?	Potential Non-Compliance		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	SCAW-TGSLUD- R004 (pg.44)			Potential Non-Compliance		Y
					33.01	23/06/2023	CPU		SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	SCAW-TGSLUD- R004 (pg.44)		The lateral shift is required to manage the southbound traffic back onto the correct lane south of the roundabout. We have flattened out the lateral shift but it is still required for southbound traffic to get into the correct lane	Potential Non-Compliance		Y
									SMWSASCA-CPU-1NL-NL000-TF-PLN-000009	SCAW-TGSLUD- R004 (pg.44)			Potential Non-Compliance		Y

Appendix J – Inspection checklists

E.4 Shift / Daily TTM inspection checklist

Shift Inspections must be undertaken by a person holding the PWZTMP or ITCP qualification when a TGS is installed, changed or updated, to ensure the TGS is implemented as designed. This includes at a minimum, twice per shift (recommended every 2 hours). This form can also be used for inspecting 'Aftercare' arrangements.

Completed by:					
Name:		Signature:			
TMP Reference:		TGS Reference:			
Date:		Time/s	Inspection 1	Inspection 2	Inspection 3
			00-00	00-00	00-00
Drive through TGS inspection			Inspection 1	Inspection 2	Inspection 3
Have any adjustments been made to the approved TGS?			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, provide details:	Are changes within tolerances? <i>If no, TGS must be reviewed by a PWZTMP</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Have changes been approved? <i>If no, TGS must be approved</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Comments or details of action taken:					
Have all signs and devices been installed in accordance with approved TGS? <i>If no, provide detail of action taken</i>			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Comments or details of action taken:					

Drive through TGS inspection		<i>Inspection 1</i>	<i>Inspection 2</i>	<i>Inspection 3</i>
Are PTCs positioned as prescribed in TGS? <i>If no, provide detail of action taken</i>		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Comments or details of action taken:				
Are manual traffic controllers clear of travel lane, have suitable escape route? <i>If no, provide detail and reposition manual traffic controllers</i>		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Comments or details of action taken:				
Are sign and devices in good condition, clearly visible to road users? <i>If no, provide detail of action taken</i>		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Comments or details of action taken:				
Are all signs mounted level and suitably clear of travel lanes? <i>If no, provide detail of action taken</i>		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Comments or details of action taken:				
Are conflicting or non-applicable signs covered or removed? <i>If no, provide detail and remove or cover signs</i>		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Comments or details of action taken:				

Drive through TGS inspection		<i>Inspection 1</i>	<i>Inspection 2</i>	<i>Inspection 3</i>
Is temporary delineation installed as prescribed i.e. straight line forming taper? <i>If no provide details and rectify delineation</i>		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Comments or details of action taken:				
Have site conditions changed due to shade, park vehicles, glare etc. <i>If yes provide details and note if action is required</i>		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Comments or details of action taken:				
Are registered trailers i.e. VMS / light towers; suitably clear of travel lanes and delineated? <i>If no provide details and rectify location</i>		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Comments or details of action taken:				
Are temporary speed zones operating as prescribed? <i>If no provide details and discuss with work supervisor</i>		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Comments or details of action taken:				
Are workers on foot / plant clearances been applied / observed? <i>If no provide details and implement controls to rectify</i>		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Comments or details of action taken:				

Post drive through confirmation		<i>Inspection 1</i>	<i>Inspection 2</i>	<i>Inspection 3</i>
Is TGS valid for the site activity and operating safely as intended? <i>If no provide details and implement controls to rectify</i>		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Comments or details of action taken:				
Is TGS is appropriate for the current traffic conditions? <i>If no provide details and implement controls to rectify</i>		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Comments or details of action taken:				
Have potential hazards identified in TGS been addressed? i.e. end-of-queue management <i>If no provide details of additional hazards and controls required</i>		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Comments or details of action taken:				

Additional comments:

E.5 Post completion inspection checklist

Completed by:			
Name:		Road name/Staging Plan number:	
Signature:		Date / time:	
ITCP or PWZTMP card number			
Drive through post completed inspection			
Item		Comments / Action	
Have all work activities been completed?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Has all plant and equipment been removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Have all TTM signs and devices been removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Has all TTM linemarking been obliterated?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Have existing permanent speed limits been reinstated?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Have all TTM site hazards been removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Other	<input type="checkbox"/> Yes <input type="checkbox"/> No		

Desktop post completion inspection		
Have all TGSs for completed tasks been retained?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Have all TMP required documents been placed in relevant folders?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Has TMP/TGS designer requested addition information post TTM removal?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Is the road safe for opening to road users?	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Additional comments:

E.3 Weekly TTM inspection checklist

Weekly inspections must only be carried out by a PWZTMP qualified person. Weekly inspections must be carried out when a site is first open and at least once every week thereafter.

Completed by:			
Name:		Signature:	
TMP Reference:		TGS Reference:	
Date:		Inspection type	<input type="checkbox"/> Pre-opening <input type="checkbox"/> Weekly
Desktop review			
Is a copy of the location TMP and relevant TGS available? <i>If no inspection must not be undertaken until documents are obtained</i>			<input type="checkbox"/> Yes <input type="checkbox"/> No
Details of TMP and TGS:			
Are the location TMP and relevant TGS approved? <i>If no, work must be stopped until documents are approved</i>			<input type="checkbox"/> Yes <input type="checkbox"/> No
Comments or details of action taken:			
Site Inspection			
Inspection completed:	<input type="checkbox"/> During the day <input type="checkbox"/> During the night		
Signs and devices positioned as prescribed and commanding attention? <i>If no provide details and rectify signs</i>			<input type="checkbox"/> Yes <input type="checkbox"/> No
Comments or details of action taken:			

Site Inspection		
Sign sizes as prescribed?		<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If no provide details and rectify signs</i>		
Comments or details of action taken:		
Signs are mounted level and suitably clear of travel lanes?		<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If no provide details and rectify signs</i>		
Comments or details of action taken:		
Has temporary delineation been applied as prescribed, with permanent markings obliterated?		<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If no provide details of action required to rectify delineation</i>		
Comments or details of action taken:		
Are registered trailers i.e. VMS / light towers; suitably clear of travel lanes and delineated?		<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If no provide details and rectify location</i>		
Comments or details of action taken:		
Are temporary speed zones operating as prescribed?		<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If no provide details and discuss with work supervisor</i>		
Comments or details of action taken:		
Are PTCD positioned as prescribed in TGS?		<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If no provide details of action required to rectify</i>		
Comments or details of action taken:		

Site Inspection		
Are manual traffic controllers clear of travel lane, have suitable escape route?		<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If no provide details of action required to rectify</i>		
Comments or details of action taken:		
Are site accesses and egresses well defined and safe for work vehicles?		<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If no provide details of action required to rectify</i>		
Comments or details of action taken:		
Termination signs are suitably located? i.e. D downstream of last activity.		<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If no provide details of action required to rectify</i>		
Comments or details of action taken:		

Post site inspection confirmation	
Is worksite layout operating safely as intended?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If no provide details and implement controls to rectify</i>	
Comments or details of action taken:	
Has TMP identified and addressed key TTM risks?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If no provide details and implement controls to rectify</i>	
Comments or details of action taken:	
Have key TTM risks been addressed on site?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If no provide details of additional hazards and controls required</i>	
Comments or details of action taken:	
Have copies of Shift Inspections been sighted as completed as required?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
<i>If no provide details and discuss with nominated rep completing Shift Inspections</i>	
Comments or details of action taken:	

Additional comments:

