



Traffic & Transportation Direction



Romani BESS

Booroorban, NSW

Traffic Impact Assessment

20 August 2025

Reference: 964 rep 250820 final

Romani BESS

Booroorban, NSW

Traffic Impact Assessment

Prepared for: Environmental Resource Management
Australia Pty Ltd

Status: Final report

Date: 20 August 2025

Reference: 964 rep 250820 final

Revision	Date	Description	Author	Reviewed	Approved
A	19/12/2024	Draft 01	S. Edwards	K. Ballantyne	M. Willson
B	30/05/2025	Draft 02	S. Edwards	K. Ballantyne	M. Willson
C	13/06/2025	Final	S. Edwards	K. Ballantyne	M. Willson
D	23/06/2025	Final – Revised SEARs	S. Edwards	K. Ballantyne	M. Willson
E	31/07/2025	Final – DPHI Comments	S. Edwards	K. Ballantyne	M. Willson
F	20/08/2025	Final – Updates	S. Edwards	K. Ballantyne	M. Willson

Contact

Website: www.amberorg.com.au

E: info@amberorg.com.au

Phone: 1800 022 363

Executive Summary

Amber Organisation Pty Ltd was engaged by Environmental Resource Management Australia Pty Ltd (ERM) to prepare a Traffic Impact Assessment for the Romani Battery Energy Storage System (Project) for Samsung C&T Renewable Energy Australia (the Applicant).

The Battery Energy Storage System (BESS) is proposed to have a capacity of up to 200MW / 800MWh.

The Project Area is located on the northern side of Booroorban-Tchelery Road in Booroorban, approximately 44 kilometres south-west of Hay. There is one vehicle access to the site via Booroorban-Tchelery Road approximately 18 kilometres west of Cobb Highway.

Traffic generated by the Project can be separated into three distinct stages: construction, operation and decommissioning. The peak traffic generating potential is during construction which generates trips associated with the workforce accessing the Project Area and the delivery of raw materials and plant. During operation the Project is expected to generate a minimal amount of traffic with only a small number of maintenance staff accessing the Project Area periodically. Decommissioning is anticipated to generate a similar level of traffic to the construction stage.

On-site construction activities are expected to commence in mid-2026 and take approximately 20 months, with the peak construction period expected to take 10 months. A construction workforce of up to 100 full-time equivalent (FTE) personnel would be on-site during the peak construction phase and would be drawn from the nearby towns of Hay, Deniliquin and Moulamein.

It is anticipated that during peak construction the Project could generate up to 54 light and 56 heavy vehicle trips per day. The Project is expected to generate approximately 39 vehicle trips during the morning and evening peak hours during the peak construction period, which would reduce to 26 vehicle trips over the typical construction periods.

In order to determine the traffic impacts generated during construction, an analysis of the operation of the Cobb Highway / Booroorban-Tchelery Road intersection was carried out using SIDRA computer modelling program. The assessment also included review of the cumulative traffic on the road network generated by other major projects in the surrounding area. Overall, the construction traffic is expected to have a minimal impact on the operation of the road network. Accordingly, it is concluded that the road network is able to accommodate the traffic generated by the development during the construction period.

The Port of Geelong and/or the Port of Melbourne have been identified as the preferred port where the BESS plant would be imported. All B-Doubles are to travel along the access route to/from the site utilising Booroorban-Tchelery Road. The access route generally utilises roads that are designated for B-Double vehicles as outlined within the National Heavy Vehicle Regulator (NHVR) Restricted Access Vehicle Map. It is noted that Booroorban-Tchelery Road is unrated and requires approval from Edward River Council for B-Double access.

The preferred access route for oversize/overmass vehicles, including the transformer transport vehicle, has been identified within a Route Assessment which identifies some minor road upgrades such as additional hardstand areas, mountable kerbing, and temporary removal of traffic signs in order to allow the vehicles to successfully access the Project Area. The Route Assessment is summarised at Section 6 and provided at Appendix F of this document.

Amber has undertaken an assessment of the State Road intersections impacted by the Project. It was identified that a Basic Left (BAL) and Short Channelised Right (CHR(s)) turn treatment are required at the Cobb Highway / Booroorban-Tchelery Road intersection to comply with the requirements of the Austroads Guide. A concept plan has been prepared for the proposed intersection upgrade which has been designed for simultaneous B-double movements and the largest OSOM vehicle expected to access the site.

In order to mitigate the impacts of the Project during construction, a Traffic Management Plan would be prepared which outlines a range of traffic management measures in order to ensure the construction traffic would have a minimal impact to the capacity and safety of the surrounding road network. The Traffic Management Plan would be prepared post-approval and prior to the construction of the Project.

Based on the assessment, it is concluded that the road network is able to accommodate the expected vehicle types and traffic volumes during the construction, operation, and decommissioning phases of the Project subject to the proposed road upgrades outlined within this report. Furthermore, the site access has been suitably designed to allow vehicles to safely enter and exit the site.

Table of Contents

1.	Background	9
1.1	Introduction	9
1.2	Environmental Assessment Requirements	10
1.3	Road/Rail Authority Consultation	13
1.4	Purpose of Document	14
2.	Existing Conditions	15
2.1	Site Location	15
2.2	Road Network	16
2.3	Traffic Volumes	18
2.4	Public Transport Services	24
2.5	Restricted Vehicle Access	24
2.6	Crash History	28
3.	Project Description	29
3.1	Proposed Works	29
3.2	Construction Information	29
4.	Traffic Assessment	30
4.1	Definitions	30
4.2	Construction Phase	31
4.3	Operational Traffic	41
4.4	Decommissioning Traffic	41
4.5	Summary	41
5.	Heavy Vehicle Route Assessment	43
5.1	General Access Vehicles	43
5.2	B-Double Access Route	44
5.3	Local Road Upgrades	46
5.4	Mitigation Measures	49
6.	High Risk OSOM Vehicles	50
6.1	Load and Vehicle Configurations	50
6.2	Transformer Vehicle	50
6.3	Access Route	51
6.4	Bridge and Rail Infrastructure	54
6.5	Summary	56
7.	Intersection Assessment	58
7.1	Turn Treatments	58
7.2	Sight Distance Assessment	59
8.	Site Access	61
8.1	Design	61

8.2	Sight Distance Assessment	61
9.	Traffic Management Plan.....	62
9.1	Information and Communication	62
9.2	Signage.....	63
9.3	Shuttle Buses	63
9.4	On-Site Mitigation Measures	63
9.5	Driver Protocols	64
10.	Mitigation Measure Summary	65
10.1	Schedule of Road Upgrades	65
11.	Conclusion	67

List of Tables

Table 1: Response to SEARs and Where Addressed	11
Table 2: Road/Rail Authority Consultation	13
Table 3: Road Network.....	16
Table 4: Intersection Summary	17
Table 5: Cobb Highway Traffic Volumes – 20 metres southeast of Booroorban-Tchelery Road	21
Table 6: Sturt Highway Traffic Volumes – 450 metres south of Sturt Highway	22
Table 7: Booroorban-Tchelery Road Traffic Volumes – 1.7km west of Romani Road	23
Table 8: Romani Road Traffic Volumes – 2.8km north of Booroorban-Tchelery Road.....	23
Table 9: Maude Road Traffic Volumes – 40 metres southeast of Maude Road	23
Table 10: Traffic Assessment Definitions	30
Table 11: Standard Construction Traffic.....	31
Table 12: Traffic Generation During Construction Period.....	32
Table 13: Assessment of Cumulative Impacts of Nearby Developments.....	35
Table 14: SIDRA Analysis Results – Cobb Highway / Booroorban-Tchelery Road Intersection	40
Table 15: B-Double Vehicle Route – Access Roads from Port of Geelong.....	45
Table 16: B-Double Vehicle Route – Access Roads from Port of Melbourne	46
Table 17: Unsealed Roads Classification System (ARRB Guide).....	47
Table 18: Expected Traffic Volumes on Booroorban-Tchelery Road	47
Table 19: Estimated Transformer Specifications.....	50
Table 20: OSOM Route – Access Roads.....	52
Table 21: OSOM Route – Access Roads	54
Table 22: Railway Level Crossing Assessment.....	55
Table 23: Road Works Schedule - OSOM Vehicles.....	56
Table 24: Turn Treatment Calculations for Cobb Highway/Booroorban-Tchelery Road Intersection.....	58
Table 25: Response to TfNSW Agency Advice	1

List of Figures

Figure 1: Project Layout	10
Figure 2: Project Location.....	15
Figure 3: Aerial Photograph of Site and Surrounding Area	16
Figure 4: Traffic Survey Locations	18
Figure 5: Turning Movement Count Results – Cobb Highway/Booroorban-Tchelery Road	19
Figure 6: Turning Movement Count Results – Sturt Highway/Romani Road.....	20
Figure 7: Cobb Highway Weekday Traffic Volume Data	21
Figure 8: Sturt Highway Weekday Traffic Volume Data.....	22
Figure 9: Maude Road Weekday Traffic Volume Data.....	24
Figure 10: NHVR 26m B-Double Network Approved Roads	25
Figure 11: NHVR Class 1 Oversize Overmass Load Carrying Vehicles Network Approved Roads.....	26
Figure 12: NHVR SPV Level 3 Network Approved Roads.....	27
Figure 13: Expected Project Traffic During Peak Construction	34
Figure 14: Potential Cumulative Traffic Volumes During Peak Construction	38
Figure 15: Peak Construction Traffic Volumes	40
Figure 16: General Access Vehicle Route from Port of Geelong	43
Figure 17: General Access Vehicle Route from Port of Melbourne	44
Figure 18: OSOM Vehicle	51
Figure 19: OSOM Route from Port of Geelong.....	52
Figure 20: OSOM Route from Port of Melbourne.....	53
Figure 21: Turn Treatment Requirement for Cobb Highway / Booroorban-Tchelery Road	58
Figure 22: Sight Distance Assessment.....	59
Figure 23: Sight Distance Photographs – Site Access.....	61

Appendices

Appendix A

Response to Agency Advice – TFNSW

Appendix B

Photographs – Road Network

Appendix C

Intersection Turning Movement Surveys

Appendix D

Tube Count Data

Appendix E

SIDRA Results

Appendix F

OSOM Vehicle Route Assessment

Appendix G

Site Access – Design and Swept Path Assessment

Appendix H

Intersection Upgrade – Cobb Highway / Booroorban-Tchelery Road

Appendix I

Sight Distance Assessments

Definitions

Term	Definition
Project	A Battery Energy Storage System (BESS) as described in Section 3 of the EIS to which this Application applies.
Project Area	Red boundary shown on Figure 1 to which the Application applies (unless otherwise stipulated)
Applicant	Samsung C&T Renewable Energy Australia
Application	Application for Development Consent under Part 4.7 of the EP&A Act; and Determination under Part 9 of the EPBC Act.

1. Background

1.1 Introduction

Amber Organisation Pty Ltd has been engaged by Environmental Resource Management Australia Pty Ltd (ERM) to prepare a Traffic Impact Assessment for the Romani Battery Energy Storage System (Project) for Samsung C&T Renewable Energy Australia (the Applicant).

This report supports a State Significant Development (SSD) application under Part 4, Division 4.7 of the Environmental Planning and Assessment Act 1979 (SSD- 67105475), as an appendix to the Environmental Impact Statement (EIS) for the Project.

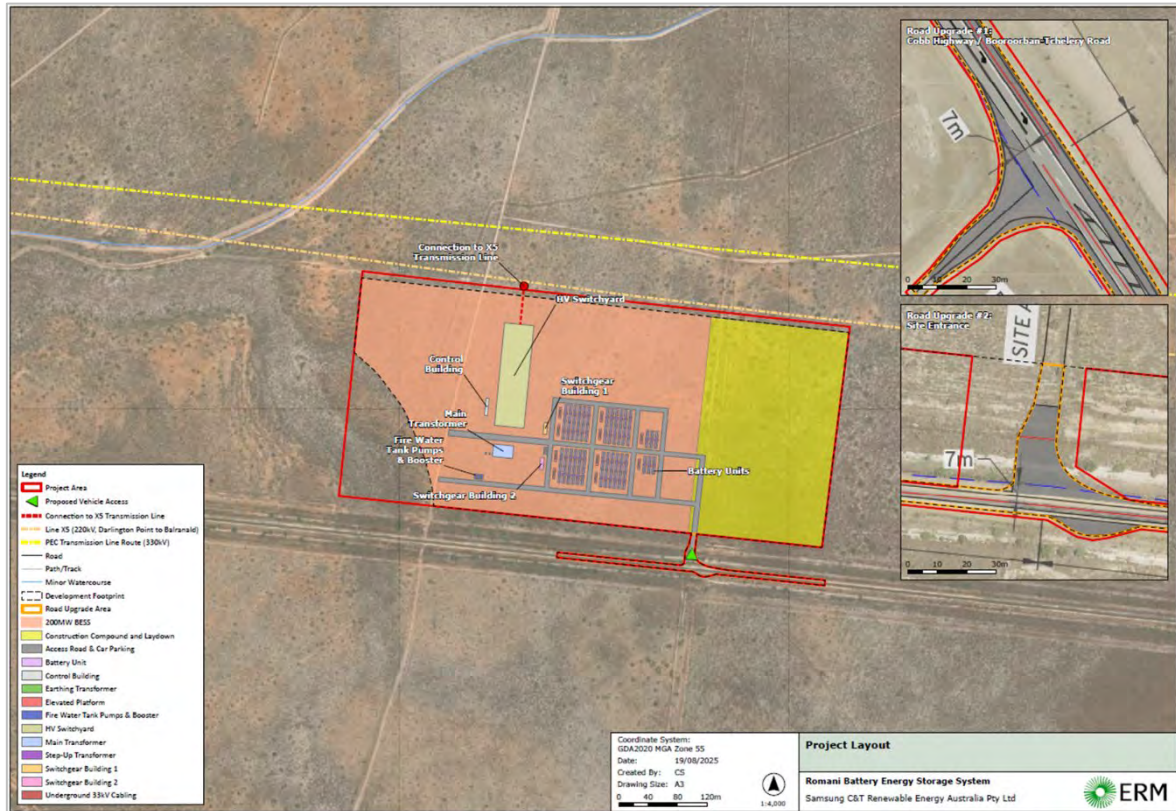
The Project includes the construction, operation and decommissioning of a Battery Energy Storage System (BESS), including the construction of a substation transformer with a storage capacity of 200MW/800MWh.

The Project covers an area of approximately 21ha as indicated in Figure 1, which shows the proposed layout of the site in relation to the road network, access location, and existing infrastructure. It is located approximately 44 kilometres south-west of Hay in the rural locality of Booroorban in south-western NSW, entirely within the South West Renewable Energy Zone (REZ).

There is one vehicle access to the site via Booroorban-Tchelery Road which connects to the State and Regional road network via Cobb Highway to the east and Maude Road to the west, respectively. The workforce is expected to primarily be located in the townships of Hay, Deniliquin and Moulamein, with plant originating from overseas to be delivered from the Port of Geelong or Port of Melbourne.

The impacts and proposed mitigation for traffic generated by the proposed construction, operation and decommissioning phases of the Project are addressed in this report in accordance with relevant regulatory requirements and guidelines (this assessment).

Figure 1: Project Layout



Source: Environmental Resource Management Australia Pty Ltd

1.2 Environmental Assessment Requirements

This report supports a State Significant Development (SSD) application for Development Consent under Part 4, Division 4.7 of the Environmental Planning and Assessment Act 1979 (SSD-67105475), as an appendix to the Environmental Impact Statement (EIS) for the Project. Each of the Secretary's Environmental Assessment Requirements (SEARs) is listed in Table 1 which also indicates where each is addressed within this report.

Table 1: Response to SEARs and Where Addressed

SEARs	Response
An assessment of the peak and average traffic generation, including light vehicles (including shuttle buses), heavy vehicles, heavy vehicles requiring escort, high risk vehicles requiring escort and construction worker transportation.	The assessment presented within Section 4 indicates the road network is expected to continue to operate with acceptable conditions during peak and average construction periods. There are three different stages to the Project, Construction, Operation and Decommissioning. The highest level of traffic is expected to be generated during the peak 10 months of the 20 month construction period when most staff arrive and depart the site at the start and end of the day via light vehicles or shuttle buses. The traffic modelling for Cobb Highway / Booroorban-Tchelery Road indicates the road network is able to accommodate the Project traffic and is expected to continue to operate with a good level of service. During the middle of the day the traffic movements are expected to be predominantly associated with heavy vehicles with up to 5 to 6 heavy vehicles per hour. This increase in traffic can be readily accommodated on the road network given the existing low traffic volumes and the road network would operate with less vehicles than during the peak hour. It is anticipated that 4 oversize/overmass (OSOM) vehicles and 4 high risk OSOM vehicles would access the site during construction. These vehicles would travel outside of the peak periods and would be able to be accommodated on the road network with minimal impacts following the adoption of suitable road management strategies which would be confirmed as part of specific permits that would be applied for prior to construction.
An assessment of the likely transport impacts to the site access route(s) from the above listed vehicles including any access points(s) and any Crown land, particularly in relation to the capacity and condition of the roads, road safety and intersection performance.	The access route assessment for heavy vehicles and OSOM vehicles are outlined within Section 5 and Section 6 of this report, respectively. The access route generally utilises roads that are designated for B-Double vehicles as outlined within the TfNSW Restricted Access Vehicle Map and Victoria's Gazetted B-Double Network map. It is noted that Booroorban-Tchelery Road is unrated and its use for B-Double vehicles requires approval from Edward River Council. A discussion on the suitability of the unrated component of the access route is provided within Section 5.2. A swept path assessment has been prepared which demonstrates all construction vehicles, including B-Doubles and OSOM vehicles, are able to suitably access the site from Booroorban-Tchelery Road. Accordingly, the roads along the access route are able to accommodate the loads and type of vehicle movements to be generated during construction of the BESS.
A concept level route analysis required for heavy vehicles requiring escort and high risk heavy vehicles requiring escort.	A high-risk OSOM vehicle route assessment has been undertaken to demonstrate accessibility from the port to the Project Area on the road network. The assessment shows there are some requirements for minor road upgrades at pinch points to accommodate the OSOM vehicle. This assessment represents the largest vehicle and load that will be accessing the Project Area. Details of the route assessment are provided in Section 6 and the swept path assessment provided in Appendix F. Other heavy vehicles would take a more direct route to the Project Area and use roads that are suitable for the vehicle type, as per the NHVR OSOM network map, with the exception of Booroorban-Tchelery Road which will require Council approval. Non-high risk vehicle routes are presented in Section 5.

SEARs	Response
A cumulative impact assessment of traffic from nearby developments (including mining operations).	The assessment presented within Section 4.2.5 provides a review of the cumulative impacts of the Project and other major projects within the surrounding area. The assessment identifies some projects are expected to generate additional vehicle movements within Hay and Deniliquin. These vehicle movements would be distributed on the surrounding road network and are expected to have a minimal cumulative impact on the operation of the road network. The review indicates that the following projects have the potential to generate additional vehicle movements along Cobb Highway or Sturt Highway in the vicinity of the Project Area during the construction period: • Pottinger Wind Farm; • Bullawah Wind Farm; and • The Plains Wind Farm. Estimated traffic volumes for these projects have been used to assess the cumulative impacts on the Project. It should be noted that construction schedules for the above projects are not confirmed and as such their overlap with this Project construction schedule can not be confirmed. Notwithstanding the above, the estimated traffic generation has conservatively considered the impacts of nearby projects as a worst case scenario.
Provide details of measures to mitigate and/or manage potential impacts (developed in consultation with the relevant road authorities) including: • a schedule of all required road upgrades (including resulting from heavy vehicle and over mass / over dimensional traffic haulage routes); • Strategic concept designs of proposed road upgrades (including the site access point); • road maintenance contributions, and any other traffic control measures.	A Traffic Management Plan (TMP) is to be developed prior to construction of the Project which should include the recommendations provided within this document. The adoption of the mitigation measures outlined within the TMP would ensure construction traffic has minimal impact on the capacity and safety of the surrounding road network. This assessment has identified a number of traffic management measures that are to be implemented during construction and recommended to be included in the TMP. The key measures are summarised in Section 10 along with a schedule of the recommended road upgrades to be completed prior to construction of the Project commencing. Concept plans of the proposed road upgrades at the intersection of Cobb Highway / Booroorban-Tchelery Road and Booroorban-Tchelery Road / Site Access are attached at Appendix H and Appendix G, respectively.

This Traffic Impact Assessment has also been prepared in response to the Agency Advice provided by Transport for New South Wales (TfNSW). Responses to each of the comments provided within the Agency Advice are outlined within Appendix A.

1.3 Road/Rail Authority Consultation

This Traffic Impact Assessment has been undertaken in consultation with TfNSW, Edward River Council, V/Line and ARTC/UGL with a summary provided in Table 2.

Table 2: Road/Rail Authority Consultation

Road/Rail Authority	Method	Correspondence
Transport for NSW	Email sent 22/5/2025 Response received 31/5/2025	A yearly traffic growth rate of 1.5% is to be applied to background traffic. The project must take into account any road projects along the route to the site. Conduct assessment of road safety issues at the subject site and ensure safe intersections and sight distances are applied as per Austroads and TfNSW supplements. Concept level route analysis is required for high risk OSOM. Thorough responses to agency advice in SEARS is required.
Edward River Council	Email, phone, and online meeting held 7/5/2025	Requested Council position on expectation of road upgrades to Booroorban-Tchelery Road for construction of the Project. Council expressed concern that other major projects in the area have caused damage to local roads, with maintenance and repair of damage an issue. Council's preference is that Booroorban-Tchelery Road be widened between Cobb Highway and the site to 8.0 metres with 1.0 metre sealed shoulders on each side. A response to the local road upgrades is discussed at Section 5.3.
ARTC	Email sent 23/5/2025	No response at time of reporting. Website advises to apply to ODL Permits at DoT Heavy Vehicle Consent - Structural Engineering.
V/Line	Email sent 23/5/2025 Response received 27/5/2025 Phone call 18/6/2025	Fill out application form along with indemnity form and initial purchase Order of \$1,560 plus GST. Apply for OD Load with V/Line. Ph: Advised that crossings on Cobb Highway are not restricted and the above application process should be followed.

1.4 Purpose of Document

This Traffic Impact Assessment has been prepared to assess the construction, operational and decommissioning traffic impacts, and the access arrangements of the Project. The assessment responds to the SEARs and details how road impacts of the Project traffic, particularly from heavy vehicle use and oversize and overmass vehicles, would be avoided or managed using road-use management strategies.

More specifically, the report addresses the following key matters:

- Details of both light and heavy vehicle traffic volumes and proposed transport routes.
- An assessment of the potential traffic impacts of the Project on road network function and safety.
- An assessment of the capacity of the existing road network to accommodate the type and volume of traffic generated by the Project.
- Details of measures to mitigate and/or manage potential impacts, including construction traffic control, road dilapidation surveys and measures to control dust generated by traffic volumes.
- Details of access roads and how these connect to the existing road network and ongoing operational maintenance.

The traffic assessment has been undertaken in accordance with the *RTA Guide to Transport Impact Assessment* and relevant Austroads Guidelines.

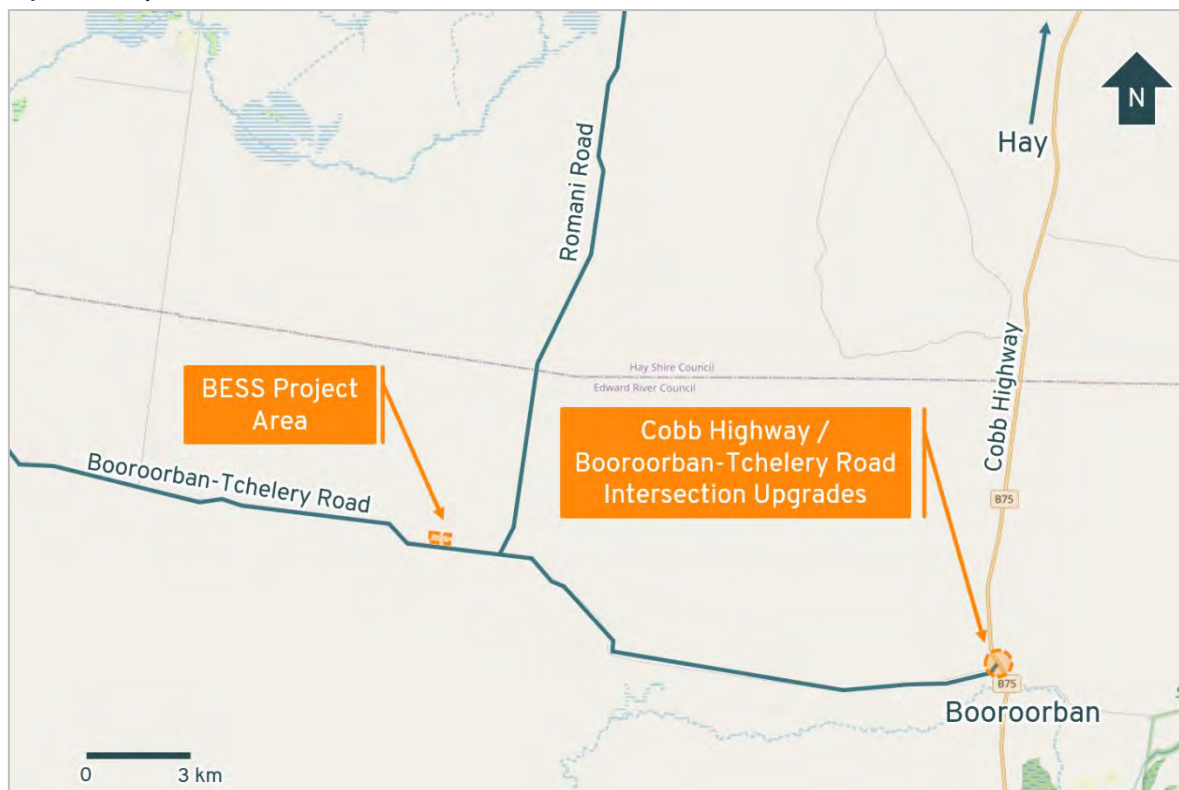
2. Existing Conditions

2.1 Site Location

The Project Area is located on the north side of Booroorban-Tchelery Road approximately 18 kilometres west of Cobb Highway and 44 kilometres south-west of Hay. The Project Area extends over approximately 21ha and is situated within the South West Renewable Energy Zone (REZ) of New South Wales.

Figure 2 shows the location of the Project in relation to the surrounding transport network.

Figure 2: Project Location



Source: OpenStreetMap

The figure shows the Project Area is connected with the surrounding State Road network through Cobb Highway and Sturt Highway which provide access to the nearby townships including Hay to the north-east and Deniliquin to the south-east. The Project Area is located entirely within the Edward River Council.

The Project Area and surrounding land are zoned *RU1 - Primary Production* and are primarily occupied by agricultural or vegetated land. The Project Area is currently used for agricultural purposes and has access to the road network via a network of internal tracks which connect with Booroorban-Tchelery Road and Romani Road.

Figure 3 provides an aerial photograph of the site and surrounding area. The figure shows that the site and surrounding area are occupied by agricultural land use.

Figure 3: Aerial Photograph of Site and Surrounding Area



Source: SixMaps

2.2 Road Network

2.2.1 Overview

A summary of the surrounding road network is provided within Table 3. Photographs of the carriageway and roadside environment along each of the relevant roads are provided in Appendix B.

Table 3: Road Network

Road	Surface	Typical Width	Speed Limit	Alignment
State Roads				
Sturt Highway	Sealed	7.0m providing one lane of traffic in each direction and narrow sealed shoulders.	110 km/hr	General east-west alignment between Hume Highway (east of Wagga Wagga) and Adelaide.
Cobb Highway	Sealed	7.0m providing one lane of traffic in each direction and narrow sealed shoulders.	110 km/hr	General north-south alignment between Barrier Highway in Wilcannia and Warren Street in Echuca.
Regional Roads				
Maude Road	Sealed	6.0m providing two-way simultaneous vehicle movement.	100 km/hr	General north-south alignment between Moulamein in the south and Hay in the north-east.

Road	Surface	Typical Width	Speed Limit	Alignment
Local Roads				
Romani Road	Unsealed / Sealed	5.0m sealed for 10km from Sturt Highway, 6.0m unsealed to Booroorban-Tchelery Road accommodating two-way traffic. Many cattle grids reduce road width to 3.0m.	100 km/hr	General north-south alignment between Sturt Highway and Booroorban-Tchelery Road.
Booroorban-Tchelery Road	Sealed / Unsealed	4.0m sealed width accommodating two-way traffic with 2.0m unsealed shoulders. 1.5km unsealed section of road approximately 8.5km east of Maude Road. Seven cattle grids between Project Area and Cobb Highway which reduce road width to a minimum of 3.6m.	100 km/hr	General east-west alignment between Cobb Highway and Maude Road.

2.2.2 Key Intersections

An overview of the key intersections within the surrounding area is provided in Table 4.

Table 4: Intersection Summary

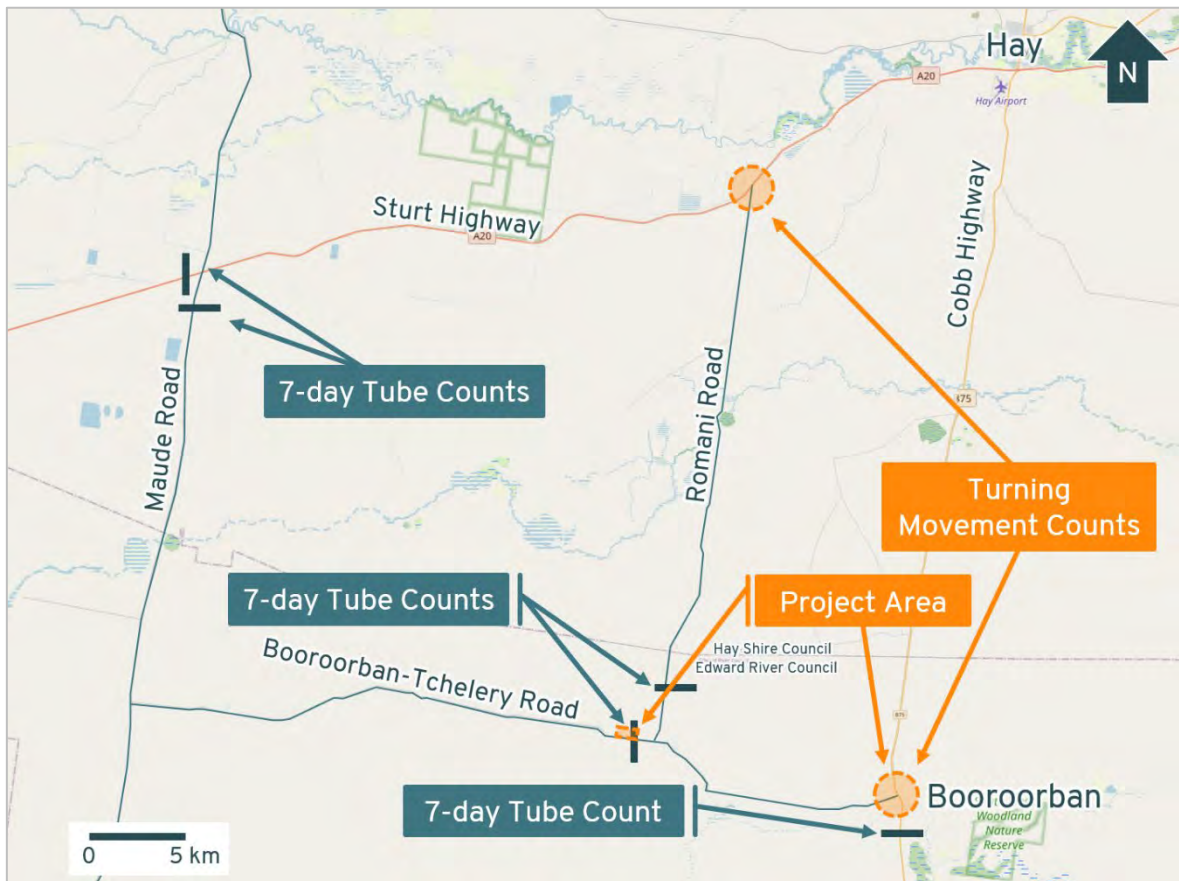
Intersection	Configuration	Control / Turn Treatments
Cobb Highway / Sturt Highway	Roundabout	'Give Way' signage and associated line marking are provided at each approach.
Cobb Highway / Booroorban-Tchelery Road	T-intersection	Priority controlled with associated line marking for vehicles exiting Booroorban-Tchelery Road. No turn treatments are provided.
Sturt Highway / Romani Road	T-intersection	Priority controlled with associated line marking for vehicles exiting Romani Road. A Basic Left (BAL) turn treatment is provided.
Maude Road / Booroorban-Tchelery Road	T-intersection	'Give Way' signage is provided for vehicles exiting Booroorban-Tchelery Road. No turn treatments are provided.
Booroorban-Tchelery Road / Romani Road	T-intersection	'Give Way' signage is provided for vehicles exiting Romani Road. No turn treatments are provided.

The intersections across the surrounding local road network in the vicinity of the Project are all priority controlled.

2.3 Traffic Volumes

Amber commissioned various traffic surveys of the local and State Road network surrounding the Project Area to establish the existing traffic conditions. The surveys included turning movement counts at key intersections and 7-day tube counts of nearby roads. The survey locations can be seen in Figure 4.

Figure 4: Traffic Survey Locations



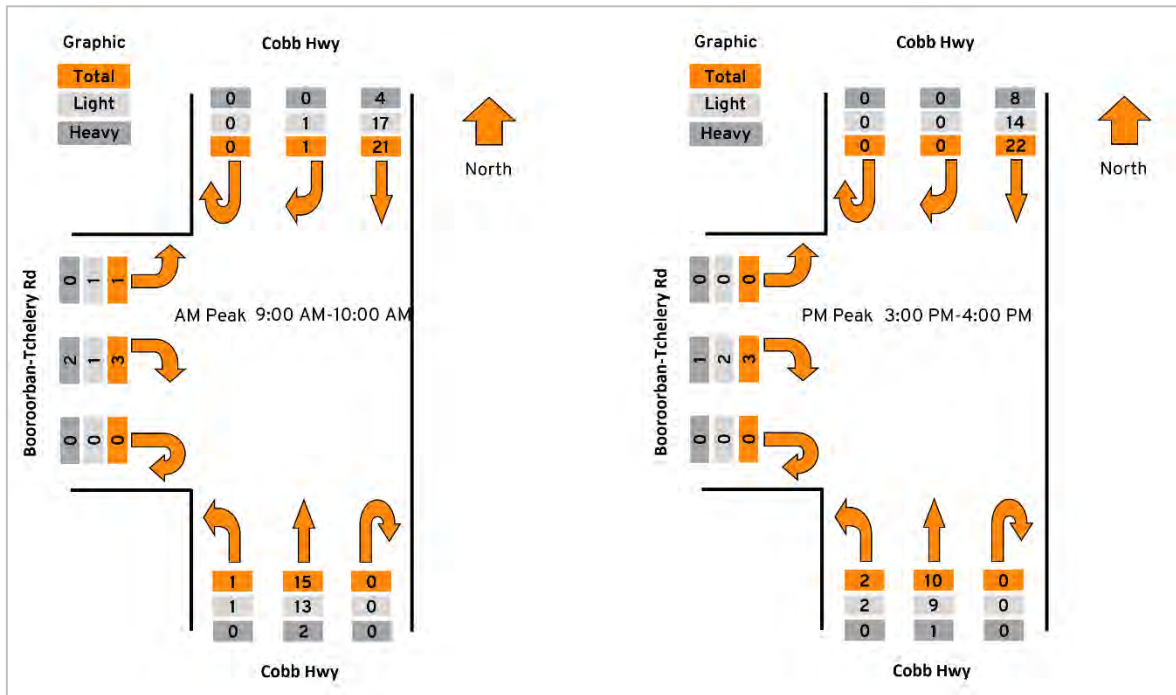
Source: OpenStreetMap

2.3.1 Turning Movement Counts

Turning movement count surveys were completed at key State Road intersections on Thursday 31 October 2024 between 6:00am-10:00am and 3:00pm-7:00pm. A summary of the survey results are presented below with the full data provided within Appendix C.

2.3.1.1 Cobb Highway / Booroorban-Tchelery Road

Figure 5: Turning Movement Count Results – Cobb Highway/Booroorban-Tchelery Road

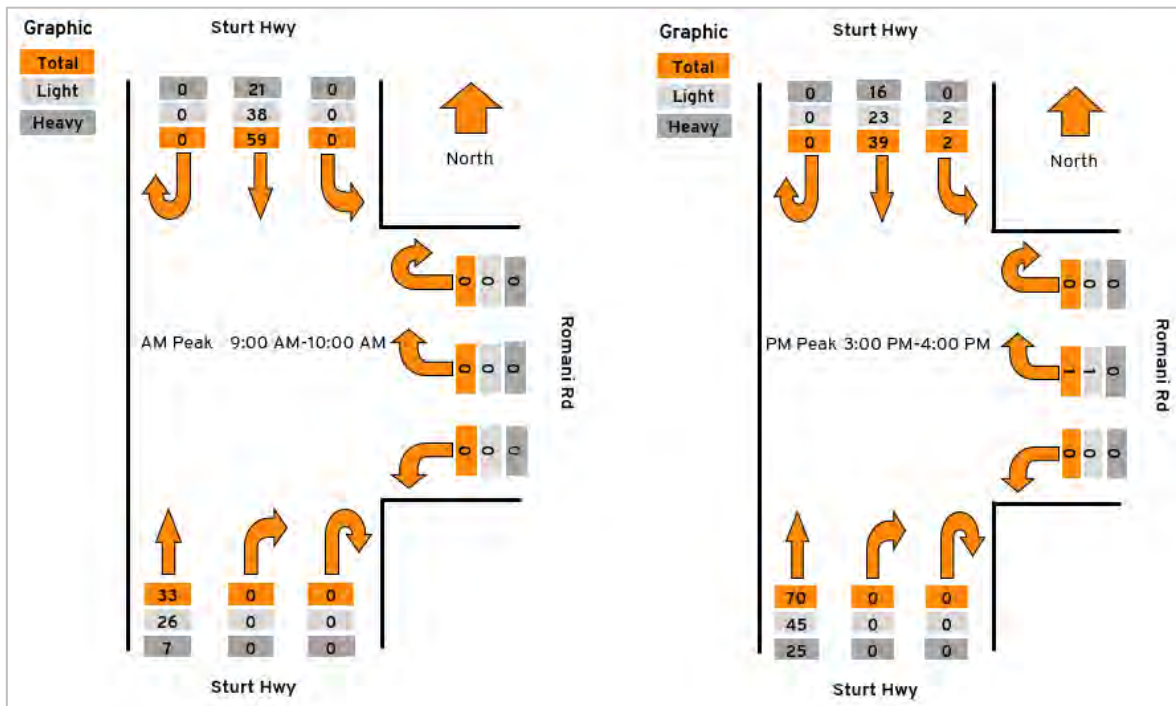


The survey results indicate the intersection currently carries a very low level of traffic in the order of 42 and 37 vehicles in the morning and evening peak hours, respectively. The morning peak hour was recorded from 9:00am to 10:00am and the evening peak hour was recorded from 3:00pm to 4:00pm.

The majority of vehicle trips during the morning and evening peak periods are through traffic movements along Cobb Highway. A total of 6 and 5 vehicles were recorded on Booroorban-Tchelery Road in the respective morning and evening peak hours. Overall, the results indicate both roads accommodate a very low level of traffic.

2.3.1.2 Sturt Highway / Romani Road

Figure 6: Turning Movement Count Results – Sturt Highway/Romani Road



The survey results indicate the intersection currently carries a low level of traffic in the order of 92 and 112 vehicles in the morning and evening peak hours, respectively. The morning peak hour was recorded from 9:00am to 10:00am and the evening peak hour was recorded from 3:00pm to 4:00pm.

The majority of vehicle trips during the morning and evening peak periods are through traffic movements along Sturt Highway. Only one vehicle was recorded on Romani Road during the evening peak hour and none in the morning peak hour. Overall, the results indicate both roads accommodate a low level of traffic.

2.3.2 Mid-block Volumes

Tube count surveys were completed for Cobb Highway, Sturt Highway, Booroorban-Tchelery Road, Romani Road, and Maude Road. The locations of the tube counts can be seen in Figure 4. The tube counts were completed over a 7-day period between Wednesday 30 October to Wednesday 6 November 2024 and provide data of the existing traffic volumes and speeds over a typical week. The survey results for each road are discussed in the following sections, with the full data provided at Appendix D.

2.3.2.1 Cobb Highway

The survey results for Cobb Highway are summarised in Table 5.

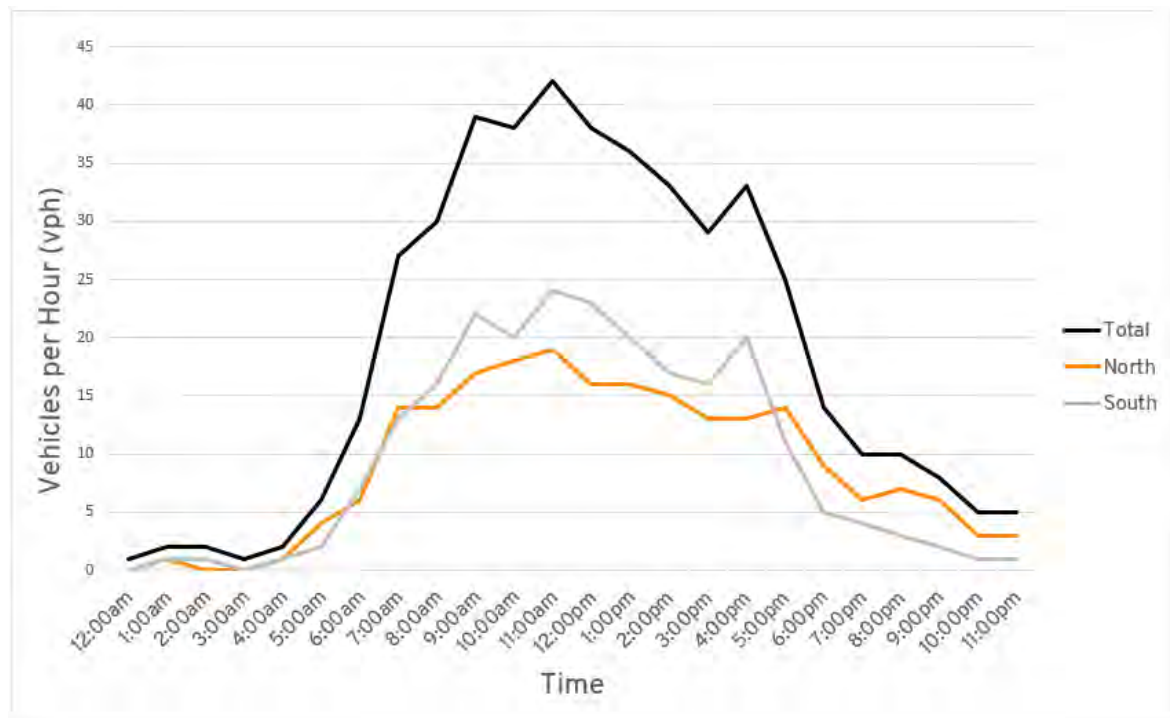
Table 5: Cobb Highway Traffic Volumes – 20 metres southeast of Booroorban-Tchelery Road

	Weekday Traffic (vpd)	Weekday AM Peak - 11:00 (vph)	Weekday PM Peak - 12:00 (vph)	85 th Percentile Speed	Heavy Vehicle Percentage
Northbound	215	19	16	107.0 km/hr	26.1%
Southbound	230	24	23	103.7 km/hr	25.0%
Both Directions	445	42	38	104.7 km/hr	25.5%

The survey data indicates the 85th percentile speed is generally below the posted speed limit and the road accommodates a high proportion of heavy vehicles.

The weekday hourly traffic volumes for Cobb Highway have been separated into northbound and southbound trips and are shown in Figure 7.

Figure 7: Cobb Highway Weekday Traffic Volume Data



The survey data indicates Cobb Highway currently experiences most vehicles between the hours of 6:00am and 6:00pm. The data also indicates the road experiences a relatively even distribution of traffic across the day in both directions. Overall, the survey results indicate Cobb Highway currently accommodates a low level of traffic for its road classification.

2.3.2.2 Sturt Highway

The survey results for Sturt Highway are summarised in Table 6.

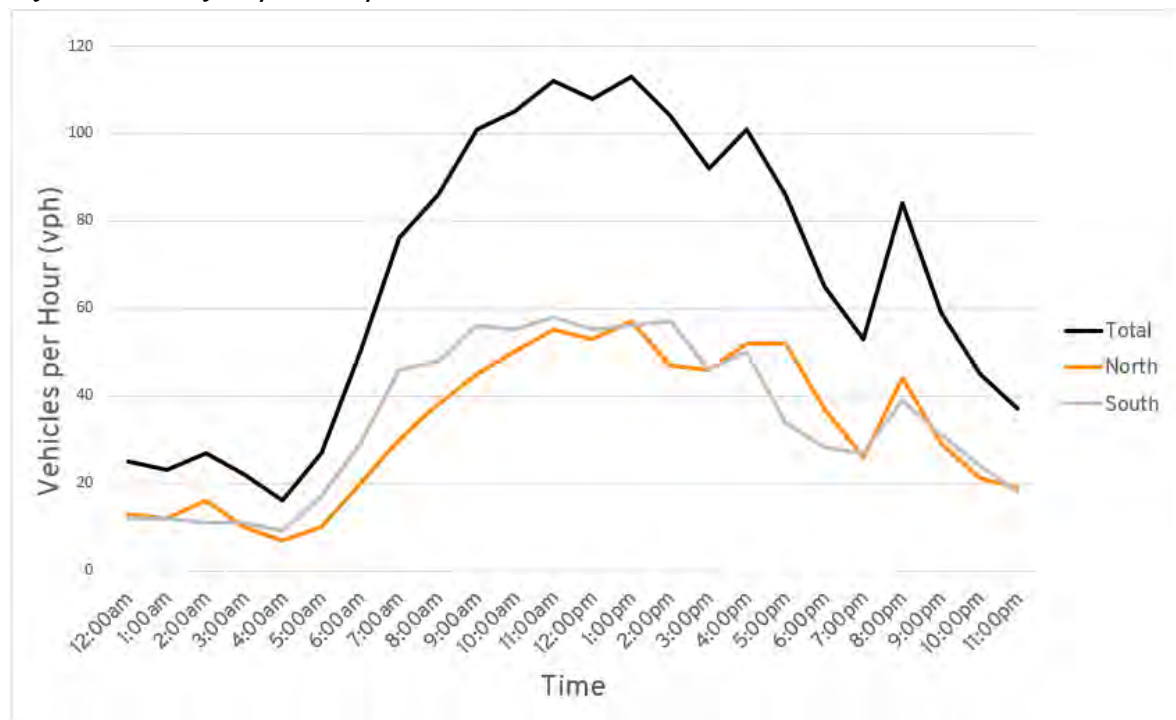
Table 6: Sturt Highway Traffic Volumes – 450 metres south of Sturt Highway

	Weekday Traffic (vpd)	Weekday AM Peak - 11:00 (vph)	Weekday PM Peak - 12:00 (vph)	85 th Percentile Speed	Heavy Vehicle Percentage
Eastbound	789	55	57	103.7 km/hr	31.5%
Westbound	829	58	56	104.6 km/hr	32.0%
Both Directions	1,618	112	113	104.2 km/hr	31.8%

The survey data indicates the 85th percentile speed is generally below the posted speed limit and the road accommodates a high proportion of heavy vehicles.

The weekday hourly traffic volumes for Sturt Highway have been separated into eastbound and westbound trips and are shown in Figure 8.

Figure 8: Sturt Highway Weekday Traffic Volume Data



The survey data indicates Sturt Highway currently experiences most vehicles between the hours of 6:00am and 9:00pm. The data also indicates the road experiences a relatively even distribution of traffic across the day in both directions. Overall, the survey results indicate Sturt Highway currently accommodates a low level of traffic for its road classification.

2.3.2.3 Booroorban-Tchelery Road

The survey results for Booroorban-Tchelery Road are summarised in Table 7.

Table 7: Booroorban-Tchelery Road Traffic Volumes – 1.7km west of Romani Road

	Weekday Traffic (vpd)	Weekday AM Peak - 11:00 (vph)	Weekday PM Peak - 12:00 (vph)	85 th Percentile Speed	Heavy Vehicle Percentage
Eastbound	9	1	1	98.5 km/hr	22.2%
Westbound	6	1	1	100.8 km/hr	22.2%
Both Directions	15	2	2	100.3 km/hr	12.5%

The survey data indicates the 85th percentile speed is generally equivalent to the default speed limit and the road accommodates a high proportion of heavy vehicles. Overall, the survey results indicate Booroorban-Tchelery Road currently accommodates a low level of traffic.

2.3.2.4 Romani Road

The survey results for Romani Road are summarised in Table 8.

Table 8: Romani Road Traffic Volumes – 2.8km north of Booroorban-Tchelery Road

	Weekday Traffic (vpd)	Weekday AM Peak - 7:00 (vph)	Weekday PM Peak - 12:00 (vph)	85 th Percentile Speed	Heavy Vehicle Percentage
Northbound	3	0	1	85.0 km/hr	20.0%
Southbound	3	1	0	86.7 km/hr	
Both Directions	6	1	1	86.3 km/hr	

The survey data indicates the 85th percentile speed is generally below the default speed limit of 100km/hr. Overall, the survey results indicate Romani Road currently accommodates a low level of traffic.

2.3.2.5 Maude Road

The survey results for Maude Road are summarised in Table 9.

Table 9: Maude Road Traffic Volumes – 40 metres southeast of Maude Road

	Weekday Traffic (vpd)	Weekday AM Peak - 10:00 (vph)	Weekday PM Peak - 12:00 (vph)	85 th Percentile Speed	Heavy Vehicle Percentage
Northbound	88	8	6	82.5 km/hr	26.1%
Southbound	107	10	11	85.9 km/hr	25.5%
Both Directions	195	18	17	83.5 km/hr	25.8%

The survey data indicates the 85th percentile speed is below the default speed limit and the road accommodates a high proportion of heavy vehicles.

The weekday hourly traffic volumes for Maude Road have been separated into northbound and southbound trips and are shown in Figure 9.

Figure 9: Maude Road Weekday Traffic Volume Data



The survey data indicates Maude Road currently experiences most vehicles between the hours of 6:00am and 7:00pm. The data also indicates the road experiences a higher southbound traffic volume during the morning and a higher northbound traffic volume during the afternoon. Overall, the survey results indicate Maude Road currently accommodates a low level of traffic.

2.4 Public Transport Services

There are no public transport services in the vicinity of the site, including on Cobb Highway between Hay and Deniliquin. Dyson Group operate school bus services in the surrounding area and have advised the following services operate in the area:

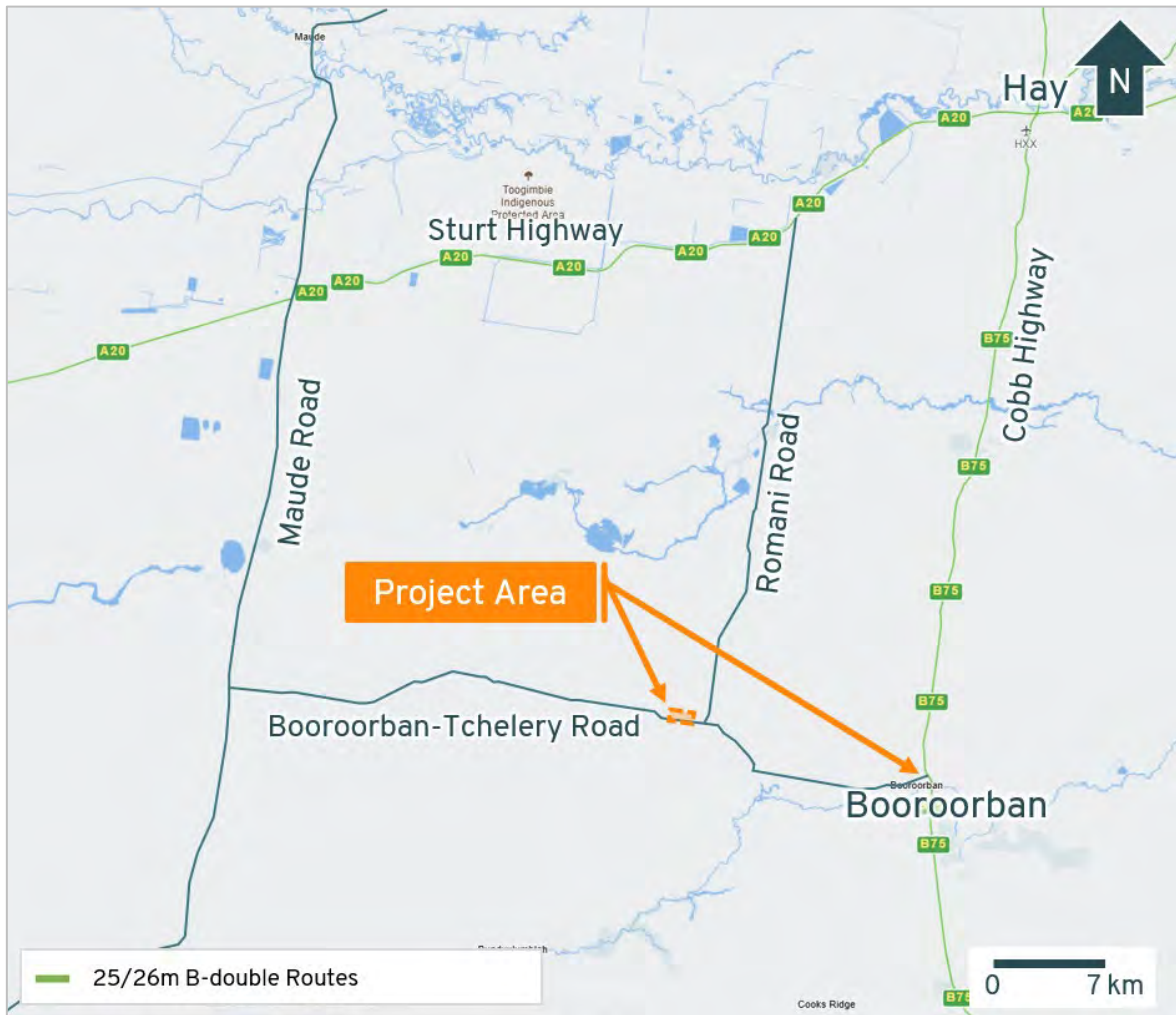
- Booroorban Bus, which travels along Cobb Highway past the Booroorban-Tchelery Road intersection at approximately 7:45am, 8:05am, 4:00pm and 4:05pm.
- Balranald Bus, which travels along Sturt Highway past the Romani Road intersection at approximately 7:15am, 8:15am, 4:05pm and 4:55pm.

2.5 Restricted Vehicle Access

2.5.1 B-Doubles

The National Heavy Vehicle Regulator (NHVR) Restricted Vehicle Access Map for the surrounding area is provided within Figure 10. The green lines indicate approved B-Double routes while the black lines represent approved routes with travel conditions. The figure shows that the Project Area generally has access to the B-Double approved network utilising Cobb Highway, however Booroorban-Tchelery Road is unrated and requires approval from Edward River Council.

Figure 10: NHVR 26m B-Double Network Approved Roads



Source: NHVR Restricted Vehicle Access Map

2.5.2 Class 1 OSOM Vehicles

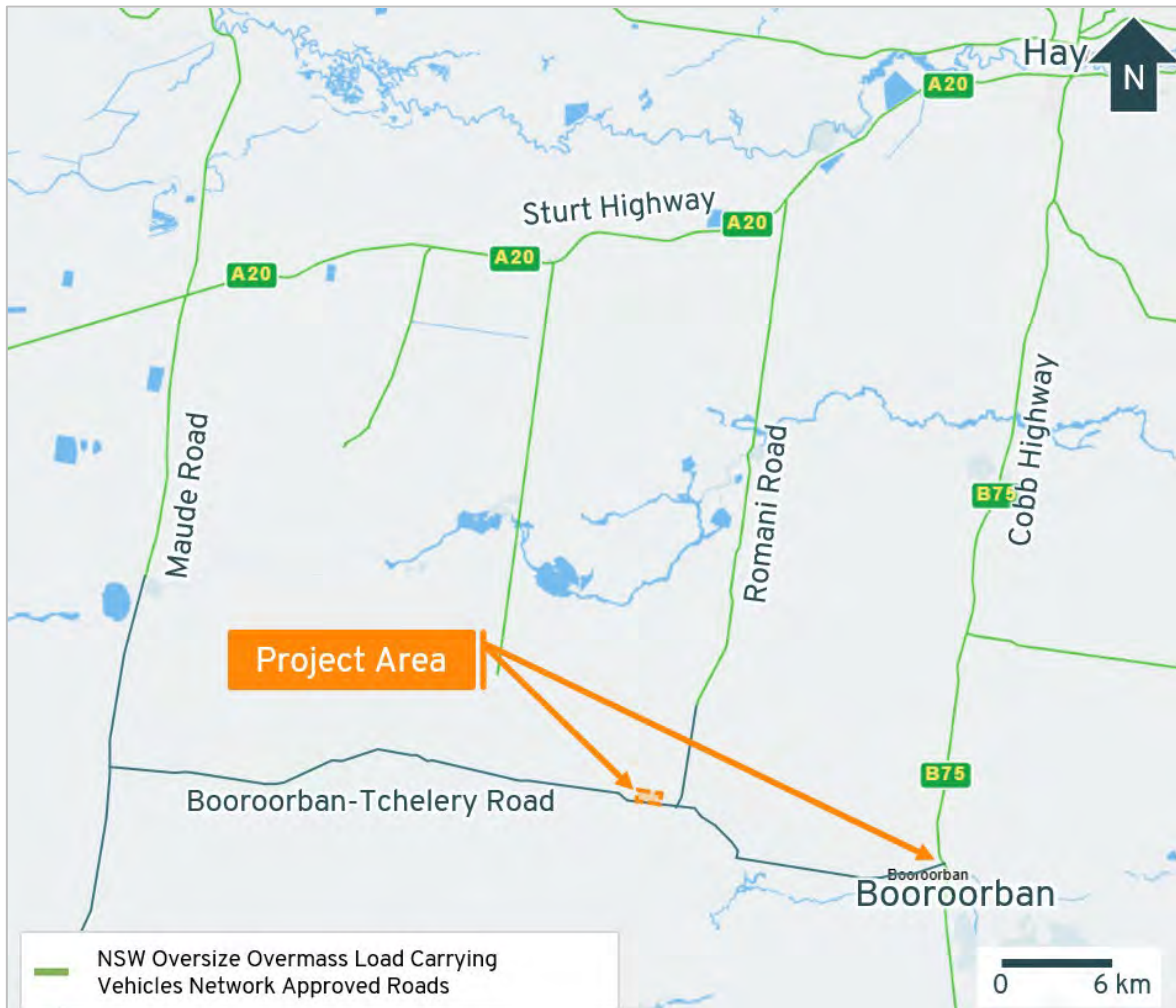
The NHVR Oversize Overmass Load Carrying Vehicles Network map for the surrounding area is provided within Figure 11. The map shows approved routes for eligible vehicles operating under the Multi-State Class 1 Load Carrying Vehicles Mass and Mass Exemption Notices. A summary of the allowances under each exemption within New South Wales notice is provided below:

- Dimension: up to 5.0m wide, 5.0m high, 30.0m long and 7.5m rear overhang on approved (state owned) routes in NSW.
- Mass: up to 115.0 tonnes for rows of 8 tyres low loaders and up to 77.5 tonnes for rows of 4 tyres low loader combinations.

Vehicles operating in the daytime and not exceeding 3.5m wide or 26m long generally do not require a pilot vehicle.

The green lines in Figure 11 indicate approved Class 1 OSOM Vehicle routes. Accordingly, the site has access to the Class 1 OSOM approved road network via Cobb Highway with Booroorban-Tchelery Road being unrated, requiring approval from Edward River Council.

Figure 11: NHVR Class 1 Oversize Overmass Load Carrying Vehicles Network Approved Roads



Source: NHVR OSOM Network Map

2.5.3 Special Purpose Vehicles (SPVs)

Vehicles built for a purpose other than carrying goods such as a mobile crane, a concrete pump or drill rig are defined as Special Purpose Vehicles (SPVs).

The NSW Special Purpose Vehicle Network map provides details of the approved roads as well as conditions of access and travel restrictions for eligible SPVs operating under the:

- National Class 1 Special Purpose Vehicle Notice;
- NSW Class 1 4-Axle & 5-Axle All Terrain Mobile Crane Mass and Dimension Exemption Notice; or
- NSW Class 1 All Terrain Mobile Crane and Dolly Combination Mass and Dimension Exemption Notice.

Roads that are not approved on the map require an access permit from the National Heavy Vehicle Regulator or the relevant road manager. There are six SPV access networks for cranes travelling on approved State Roads in NSW:

- SPV Level 1: Cranes and SPVs up to 40 tonnes that comply with the Bridge Formula.

- SPV Level 2: Crane and dolly combinations up to 70 tonnes that comply with the Bridge Formula.
- SPV Level 3: 3-axle All Terrain Cranes up to 36 tonnes and 4-axle All Terrain Cranes up to 43 tonnes.
- SPV Level 4: 4-axle All Terrain Cranes up to 45.8 tonnes and 5-axle All Terrain Cranes up to 50 tonnes.
- SPV Level 4 / 12t per axle: 4-axle All Terrain Cranes up to 48 tonnes and 5-axle All Terrain Cranes up to 50 tonnes.
- SPV Level 6: 5-axle All Terrain Cranes up to 60 tonnes.

The approved routes for SPV Level 3 vehicles travelling within the surrounding area are identified within Figure 12. The figure shows that the Project generally has access to the SPV Level 3 approved network from the town of Hay utilising Cobb Highway, however, Booroorban-Tchelery Road is unrated and requires approval from Edward River Council.

Figure 12: NHVR SPV Level 3 Network Approved Roads



Source: NHVR SPV Level 3 Network Map

It is noted that approved routes for SPV vehicles classified Level 4 or above are limited due to restricted structures (bridges) within the vicinity of the Project, including:

- Cobb Highway – Bridge over Bungah Creek, approximately 600m south of Sturt Highway in Hay South.
- Cobb Highway – Bridge over Coleambally Outfall Drain in Booroorban, approximately 650 metres south of the Booroorban-Tchelery Road intersection (SPV Level 6 restricted only).
- Cobb Highway – Bridge over Billabong Creek at Wanganella, approximately 33 kilometres south of the Booroorban-Tchelery Road intersection (SPV Level 6 restricted only).
- Cobb Highway – Bridge over Box Creek Escape Channel at Pretty Pine, approximately 55 kilometres south of the Booroorban-Tchelery Road intersection (SPV Level 6 restricted only).

2.6 Crash History

Amber has conducted a review of the TfNSW Road Safety database for all crashes along the length of Booroorban-Tchelery Road. The review also searched for crashes within 2.0km of the intersections of Cobb Highway/Booroorban-Tchelery Road and Maude Road/Booroorban-Tchelery Road. The crash database provides the location and severity of all crashes for the five-year period from 2019 to 2023.

The search did not reveal any recorded crashes within the search area and it is concluded that the road network is currently operating in a relatively safe manner.

3. Project Description

3.1 Proposed Works

The Project would involve the construction, operation, and decommissioning of a BESS and associated infrastructure. The Project would consist of the following components:

- Lithium-ion BESS with a storage capacity of 200MW/800MWh;
- Electrical reticulation network that is comprised of a 220 kV power transformer substation;
- Operations and maintenance compound, control building / control room and switch room;
- Additional switchyard and transformer;
- Temporary construction facilities such as offices, car park and amenities;
- Fencing and landscaping works, asset protection zones and drainage; and
- Access to Project Area via Booroorban-Tchelery Road with internal access roads.

3.2 Construction Information

The physical construction of the Project is expected to commence in mid-2026 and take approximately 20 months, with the peak construction period expected to take 10 months. Construction activities include site establishment, earthworks, construction and installation, commissioning and testing. All construction activities would be undertaken during standard daytime construction hours as follows:

- Monday to Friday: 7:00am – 6:00pm
- Saturday: 8:00am – 1:00pm
- No work on Sundays or public holidays.

Any construction outside of these normal working hours would only be undertaken with prior approval from relevant authorities and consultation with impacted road users.

A construction workforce of up to 100 employees would be on-site during the peak construction phase and would primarily be drawn from the nearby towns of Hay, Deniliquin and Moulamein. The workforce would reduce to 50 personnel during the average construction periods.

A Traffic Management Plan (TMP) would be prepared prior to construction commencing as outlined in Section 9.

4. Traffic Assessment

Traffic generated by the Project can be separated into three distinct stages: construction, operation and decommissioning. The peak traffic generating potential is during construction which generates vehicles associated with workers accessing the Project Area and the delivery of raw materials and plant. During operation the Project is expected to generate a lower amount of traffic associated with 3-5 full time maintenance personnel accessing the Project Area on an ad hoc basis (this assessment has considered a worst-case assessment of daily visits). Decommissioning of the Project is anticipated to generate a similar volume of traffic to the construction stage.

The following provides an assessment of the potential traffic impacts of the Project on the road network function for each of the three stages.

4.1 Definitions

The following terminology is referenced throughout this section and within the remainder of the report.

Table 10: Traffic Assessment Definitions

Terminology	Definition
Vehicle Trip	A trip is defined as a one way vehicular movement from one point to another excluding the return journey. Therefore, a return trip to and from the site is counted as two trips.
Vehicles per Day (vpd)	The volume of traffic (number of trips) occurring within a 24-hour period. For traffic volumes associated with the Project, this value is generally an even number to reflect the return trip associated with each vehicle.
Vehicles per Hour (vph)	The volume of traffic (number of trips) occurring within a one hour period.
Heavy Vehicle	A vehicle with a Gross Vehicle Mass (GVM) or Aggregate Trailer Mass (ATM) of more than 4.5 tonnes as defined in the Heavy Vehicle National Law (HVNL).
General Access Vehicle (GAV)	General Access Vehicles (GAV) don't require a permit or notice to access road networks; these vehicles have as-of-right access to the network unless signposted otherwise (e.g. a bridge tonnage restriction).
Restricted Access Vehicle (RAV)	Restricted Access Vehicles (RAV) include Class 1, 2 or 3 vehicles that operate under a notice or permit and vehicles operating under higher mass limits (HML) that have restrictions on the parts of the road network they can access.
Oversize and/or Overmass (OSOM) Vehicle	OSOM vehicles are defined as Class 1 vehicles under the Heavy Vehicle National Law. A vehicle or vehicle combination is considered to be OSOM if it exceeds any general access mass or dimension limits.
High Risk Oversize/Overmass (OSOM) Vehicle (requiring escort)	OSOM vehicles exceeding certain criteria for length, height, rear overhang, forward projection, width or total combination weight. These vehicles are subject to TMPs which provide a comprehensive planning and execution focus to ensure that these movements are carried out in a safe and responsible manner with reduced impact on other road users and road infrastructure. These vehicles also typically require pilot vehicle escort.

4.2 Construction Phase

4.2.1 Standard Construction Traffic Generation

Construction traffic generated by the Project on a day-to-day basis can be broadly separated into the following categories as outlined in Table 11.

Table 11: Standard Construction Traffic

Terminology	Definition
Light Vehicles	The use of light vehicles would be associated with transporting the workforce to/from the Project Area. A conservative vehicle occupancy of 1.5 people per car has been adopted to calculate the light vehicle traffic generation noting the workforce would be encouraged to carpool.
Heavy Vehicles	
Shuttle Buses	The Applicant has advised that shuttle buses would be utilised to transport a portion of the workforce to/from Hay and Deniliquin.
Rigid Trucks	Rigid Trucks would be used to deliver raw materials and smaller plant and have a typical length between 8 and 13 metres.
Truck and Dog	Truck and Dog vehicles consist of a rigid truck towing either a dog trailer or a pig trailer and are not more than 19 metres in length. A dog trailer is a trailer with axles at either end of the trailer, a pig trailer has the axles centred on the trailer. These vehicles would be utilised to transport the majority of quarry materials to/from the site.
Semitrailers	Semitrailers would be used to transport larger equipment and materials. These vehicles consist of a truck and a single trailer with a total length of 19 metres.
B-Doubles	B-Doubles would also be used to transport larger plant. B-Doubles consist of a truck with two trailers and have a maximum length of 26 metres.
Non High Risk OSOM	Class 1 OSOM vehicles which can operate on the approved network outlined in Section 2.5.2 subject to travel conditions, as well as vehicles built for a purpose other than carrying goods such as a mobile crane, a concrete pump or drill rig which are defined as Special Purpose Vehicles (SPVs) and can also operate on the relevant approved networks subject to travel conditions.

The peak hour for construction traffic would occur at the start and end of the day when workers are transported to/from the Project Area. Most workers would typically arrive on-site between 6:00am and 7:00am and depart between 5:00pm and 7:00pm. Workers generally have staggered finish times which results in the evening peak hour being less pronounced, however for the purpose of this assessment it is conservatively assumed that the evening peak hour Project traffic is the same duration as the morning peak, and the evening peak hour occurs from 5:00pm to 6:00pm.

The construction traffic volumes for the Project have been provided by the Applicant. It is anticipated that during peak construction the Project would generate up to 54 light and 56 heavy vehicle trips per day. Table 12 summarises the forecast traffic volumes expected to be generated during construction of the Project.

Table 12: Traffic Generation During Construction Period

Vehicle Type		Average Construction Periods		Peak Construction Period	
		Vehicle Trips per Day (vpd)	Peak Hour Trips (vph)	Vehicle Trips per Day (vpd)	Peak Hour Trips (vph)
Light Vehicles (LV)		34	17	54	27
Heavy Vehicles (HV)	Shuttle Buses	4	1	8	2
	Rigid Trucks	6	2	18	3
	Truck and Dog	6	2	18	3
	Semitrailers	4	2	6	2
	B-Doubles	4	2	6	2
	Non High Risk OSOM	4*	0	0	0
	<i>HV Subtotal</i>	28	9	56	12
Total		62	26	110	39

* Four non high risk OSOM vehicles are expected over the whole duration of construction of the Project

Overall, the Project is expected to generate up to 39 vehicles per hour in the morning and evening peak hours during the peak construction period, which would reduce to 26 vehicles per hour during the average construction period.

4.2.2 Non High Risk OSOM Vehicles

There will be four non high risk OSOM vehicles required over the duration of the construction period which would include vehicles and delivery of plant like:

- cranes
- drum rollers
- dump truck
- concrete pumps
- excavators
- grader
- compactors
- pile driving rig
- cable trenching and laying equipment

It is anticipated that the vehicles would comply with the Class 1 exemption notices and would be able to operate on the approved NSW Special Purpose Vehicle Network. The vehicles would access the Project Area directly from Booroorban-Tchelery Road and would require Council approval.

Many of the vehicles listed above would not create daily trips in and out of the Project Area. It is expected that there would be influxes of arrivals and departures from the site depending on the phase of the construction. Once arrived, they would remain until not required, before being removed from the site. The trips would be generated outside of peak access hours.

Non high risk OSOM vehicles carrying project plant would travel to the Project Area from either the Port of Melbourne or Port of Geelong. The origin of other non high risk OSOM vehicles used for construction, such as excavators, compactors, cranes, etc. is yet to be determined. These may travel from nearby townships such as Hay or Deniliquin, or from the Port of Melbourne or Port of Geelong.

Vehicle types and any necessary permits would be confirmed and obtained (as needed) once the construction methodology is determined.

4.2.3 High Risk OSOM vehicles

In addition to the traffic volumes outlined in Table 12, high risk OSOM vehicles would also be required for the delivery of the largest plant and equipment. These vehicles would exceed the Class 1 mass and/or dimension requirements and are subject to separate permit applications and regulations, including use of a vehicle escort.

Four high risk OSOM vehicles would be required to access the Project Area over the duration of the construction period and will contribute the smallest percentage of vehicles accessing the Project Area. These vehicles are subject to the development of Transport Management Plans to manage each vehicle trip in a safe manner. The movement and impact of these vehicles, and the subsequent road upgrades required, are discussed at Section 6.

4.2.4 Traffic Distribution

The following assessment focuses on the impacts of regular light and heavy vehicles outlined in Table 12 which excludes high risk OSOM vehicles. These movements generate the bulk of the traffic and represent the typical traffic impact of the Project on a day-to-day basis.

It is anticipated that all traffic would access the Project Area via Boorooban-Tchelery Road. The majority of the workforce for the construction of the Project would be located in the nearby towns including Hay, Deniliquin and Moulamein. Materials and equipment would generally be sourced from the surrounding area where practicable, with all larger plant expected to be delivered from the Port of Geelong and/or Port of Melbourne.

The vehicle distributions have been estimated based on the population of nearby towns, proximity to the Project Area, and availability of materials within each town. The following provides a breakdown of the distributions for each of the vehicle classifications outlined within Table 12:

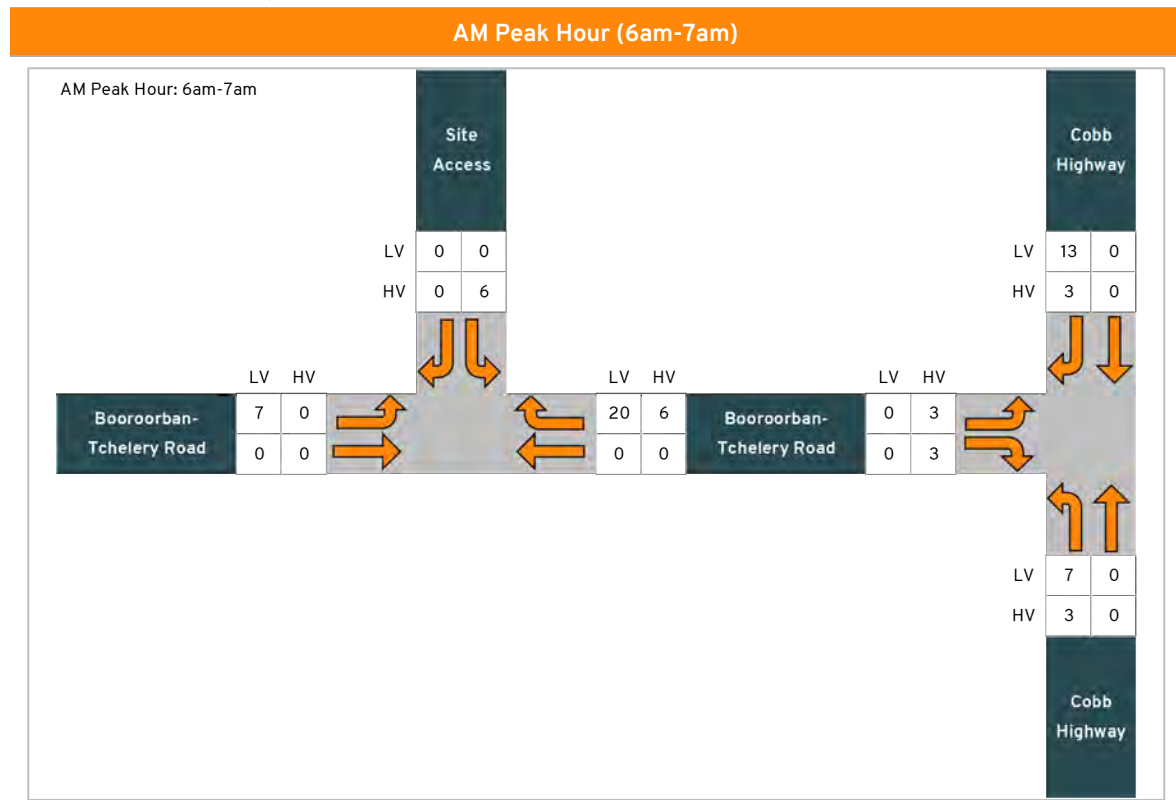
- **Light Vehicles:** Light vehicles would be associated with workers travelling to/from the Project. It is anticipated that the workforce would be split as follows:
 - o 50% located in Hay and travel to/from the north using Cobb Highway and Boorooban-Tchelery Road;
 - o 40% located in Deniliquin and travel to/from the south using Cobb Highway and Boorooban-Tchelery Road; and
 - o 10% located in Moulamein and travel to/from the south-west using Maude Road and Boorooban-Tchelery Road.
- **Shuttle Buses:** It is expected that shuttle buses would transport a portion of the workforce from both Hay and Deniliquin and be split evenly to/from the north and south and use Cobb Highway and Boorooban-Tchelery Road.

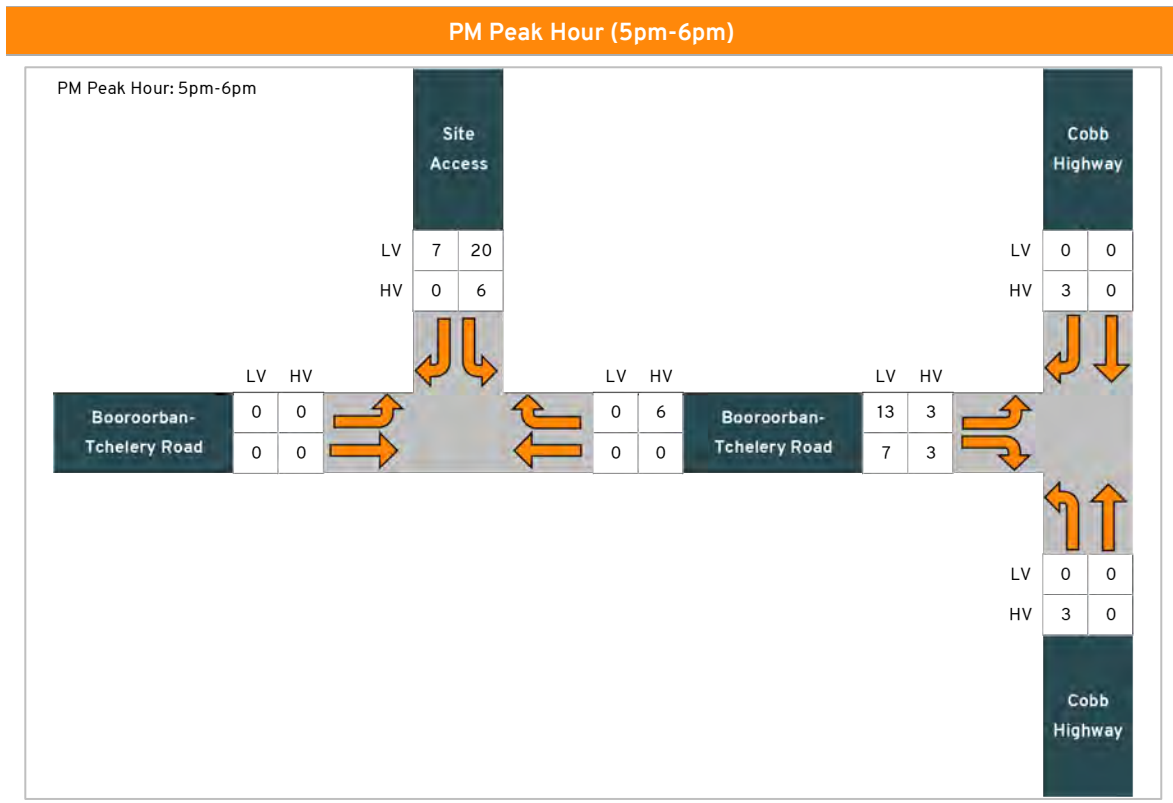
- **Rigid Trucks:** These vehicles would predominantly be water trucks and vehicles transporting materials such as concrete and fencing supplies which would generally be sourced from the surrounding area. The Applicant has advised that the trips would be split evenly between Hay and Deniliquin using Cobb Highway and Booroorban-Tchelery Road.
- **Truck and Dog:** These vehicles would transport quarry material from the local area. The Applicant has advised that the trips would be split evenly between Hay and Deniliquin using Cobb Highway and Booroorban-Tchelery Road.
- **Heavy vehicles delivering materials:** equipment and materials are expected to be sourced locally where possible. Therefore, the trips would be split evenly between Hay and Deniliquin using Cobb Highway and Booroorban-Tchelery Road.
- **Heavy vehicles delivering plant:** Plant would be transported from the Port of Geelong and/or Port of Melbourne to the Project Area via Booroorban-Tchelery Road. Therefore, all trips would be to/from the south on Cobb Highway.
- **Non High Risk OSOM:** The largest components and plant would be delivered from Port of Geelong and/or Port of Melbourne to the Project Area via Booroorban-Tchelery Road. Therefore, all trips would be to/from the south on Cobb Highway.

During the morning peak all vehicles would travel towards the Project Area and in the evening peak all vehicles would travel away from the Project Area. Heavy vehicles would be distributed throughout the day and the number of inbound and outbound vehicles would be split evenly.

The resulting peak hour volumes generated by the Project along Booroorban-Tchelery are outlined in Figure 13.

Figure 13: Expected Project Traffic During Peak Construction





4.2.5 Cumulative Traffic Impacts

The primary traffic impact of the Project is generated during the on-site construction phase which is anticipated to commence in mid-2026 and take approximately 20 months. A summary of the major projects that are proposed in the surrounding area is provided in Table 13.

Table 13: Assessment of Cumulative Impacts of Nearby Developments

Project	Description	Potential Vehicle Conflict
Pottinger Wind Farm (Recommendation)	Development of a wind farm with up to 253 turbines and associated infrastructure located in the vicinity of the Project Area. Has received access rights through Project Energy Connect.	There is potential for construction of both projects to overlap. The projects may utilise shared infrastructure, resources, and transport routes. The traffic generated from both projects may interact within the town of Hay and along Cobb Highway.
Bullawah Wind Farm (Assessment)	Development of a wind farm with up to 170 wind turbines and associated infrastructure, located adjacent to the Project Area to the north-east. Has received access rights through Project Energy Connect.	There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Hay and along Cobb Highway.
The Plains Wind Farm (Response to Submissions)	Development of a wind farm with up to 226 wind turbines and associated infrastructure, located adjacent to the Project Area to the west.	There is potential for construction of both projects to overlap. The traffic generated from both projects may interact along Cobb Highway and Maude Road.

Project	Description	Potential Vehicle Conflict
The Plains Solar Farm (Withdrawn)	Development of a 400MW solar farm and associated infrastructure, located adjacent to the Project Area to the west.	No potential conflict as project has been withdrawn.
Project Energy Connect NSW - Eastern Section (Approved)	Development of a new transmission line connecting Buronga Substation and Wagga Wagga Substation, and construction of the new Dinawan Substation (170 km west of Wagga Wagga).	Construction is anticipated to finish before Romani BESS construction begins. Minimal traffic is expected to regularly access the area during the operational phase.
Hay Solar Farm (Approved)	Development of a 70 MW solar farm and associated infrastructure at Sidonia Road, Hay.	Construction is anticipated to finish before Romani BESS construction begins. Minimal traffic is expected to regularly access the area during the operational phase.
Abercrombie Wind Farm (Prepare EIS)	The project would involve the construction, operation and maintenance and decommissioning of a new wind farm with up to 348 wind turbine generators, associated infrastructure, and battery energy storage systems, located approximately 75 km west of Hay	There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Hay.
Dinawan Renewable Energy Hub (Response to Submissions)	Development of a 2.6 GW proposed hybrid wind, solar and storage project located in the Riverina region, halfway between Coleambally and Jerilderie. Has received access rights through Project Energy Connect.	There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Hay.
Baldon Wind Farm (Assessment)	Development of a wind farm with up to 162 wind turbines and associated infrastructure, located approximately 64 km southwest of Hay.	There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Hay.
Yanco Delta Wind Farm (Approved)	Development of a wind farm with up to 208 wind turbines, energy storage and associated infrastructure, located approximately 10-40km northwest of Jerilderie. Has received access rights through Project Energy Connect.	There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Deniliquin.
Keri Keri Wind Farm (Response to Submissions)	Development of a wind energy generation project with up to 170 wind turbines, with transmission connection, energy storage and associated infrastructure near Sturt Highway in Keri Keri.	Projected to commence late 2027. There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Hay and along Sturt Highway.

Project	Description	Potential Vehicle Conflict
Currawarra Solar Farm (Approved)	Development of a 195 MW solar farm and associated infrastructure located 25km north east of Deniliquin.	There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Deniliquin.
Junction Rivers Wind Farm – formerly Burrawong (Response to Submissions)	Development of a 750 MW wind farm, including 107 turbines (up to 300m), battery storage and ancillary infrastructure at Balranald Road, Kyalite.	There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Hay.
Tarleigh Park Solar Farm (Approved)	Development of a 90 MW solar farm and associated infrastructure located 23km southeast of Deniliquin.	There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Deniliquin.
Tchelery Wind Farm (Prepare EIS)	Development of a wind farm with up to 120 wind turbines and associated infrastructure, located approximately 67 km southwest of Hay.	Projected to commence early 2028. There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Hay and along Maude Road or Sturt Highway.
Wilan Wind Farm (Prepare EIS)	Development of a wind farm with up to 107 wind turbines and associated infrastructure, located approximately 25 kilometres east of Balranald.	There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Hay and along Sturt Highway.
Booroorban (Saltbush) Wind Farm (Prepare EIS)	Development of a 400MW wind farm with up to 70 wind turbines (up to 280m), 600MW / 1200MWh battery storage and associated infrastructure at Wargam Road, Booroorban.	Construction is anticipated to finish before Romani BESS construction begins. Minimal traffic is expected to regularly access the area during the operational phase.
West Nyangay Solar Farm (Prepare EIS)	Development of an 800MW solar farm with energy storage and associated infrastructure at Cobb Highway, Booroorban.	There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the towns of Hay, Deniliquin and along Cobb Highway.
Victoria to NSW Interconnector West (Prepare EIS)	Development of new 500kV double circuit transmission lines between the NSW and Victoria border near Murrabit and the new Dinawan substation.	There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the towns of Hay, Deniliquin and along Cobb Highway.
Wanganella Wind Farm (Prepare EIS)	Development of an 840MW wind farm with up to 105 wind turbines (up to 270m), 600MW / 2400MWh battery storage and associated infrastructure at Wanganella.	Currently at early planning stage however there is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the towns of Hay, Deniliquin and along Cobb Highway. No TIA available

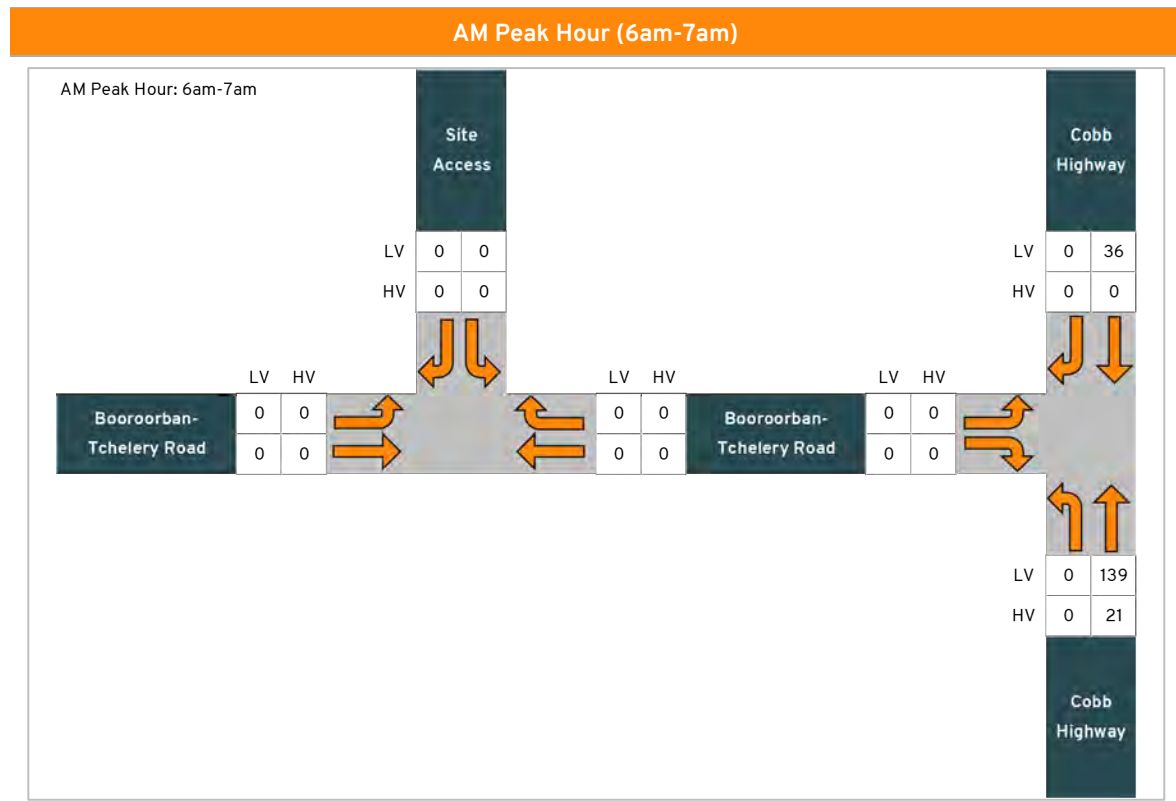
The above assessment indicates that a number of projects, should they be approved, are expected to generate additional vehicle movements within the towns of Hay and Deniliquin. These vehicle movements would be distributed on the surrounding road network and are expected to have a minimal cumulative impact on the operation of the road network. It should be noted that all approved projects listed above currently do not provide any information on construction timelines and as such come with a low risk of conflicting peak construction periods.

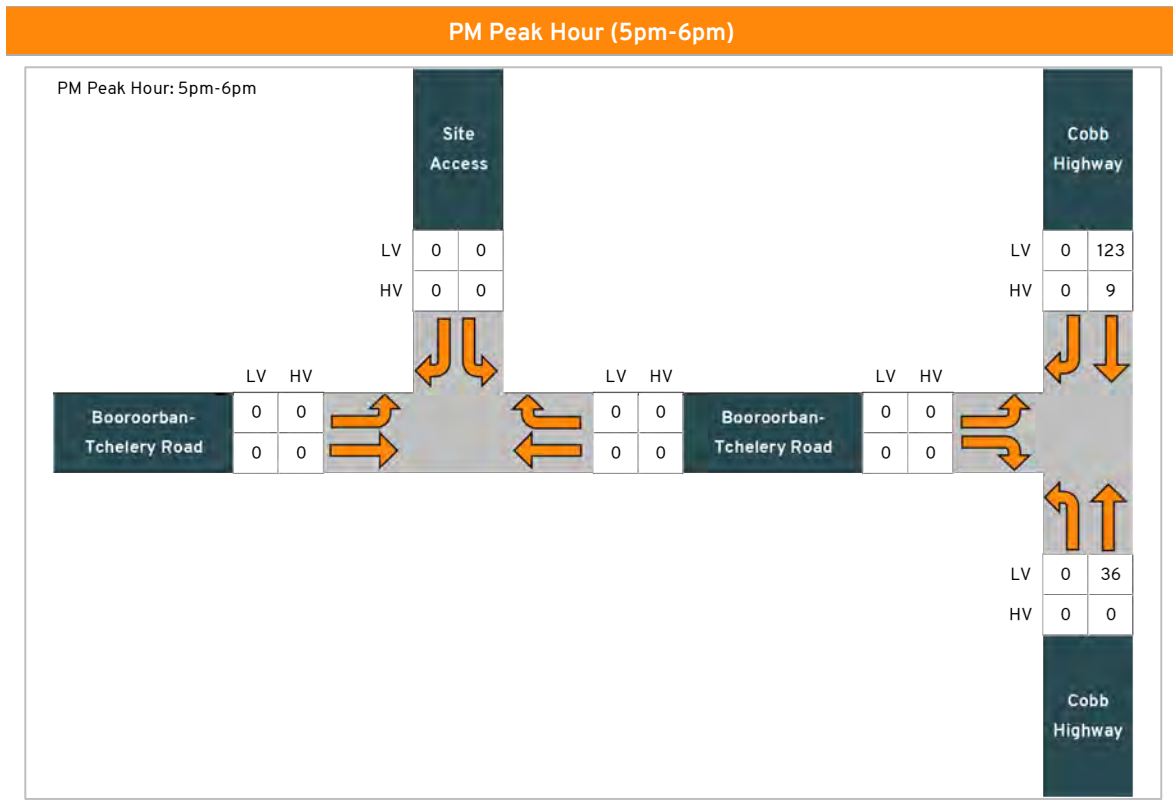
The following projects, which are highlighted in the table, have the potential to generate additional vehicle movements along Cobb Highway or Sturt Highway during the construction period:

- Pottinger Wind Farm;
- Bullawah Wind Farm; and
- The Plains Wind Farm.

Expected construction traffic volumes for the above projects have been sourced from available public documents and are outlined in Figure 14.

Figure 14: Potential Cumulative Traffic Volumes During Peak Construction





4.2.6 Traffic Assessment

All traffic accessing the Project Area would travel via the intersection of Cobb Highway / Booroorban-Tchelery Road or Maude Road / Booroorban-Tchelery Road. In order to determine the ability of the road network to accommodate the traffic expected to be generated during the peak construction period, a traffic modelling exercise has been undertaken for the nearest State Road connection using SIDRA intersection modelling software, being Cobb Highway / Booroorban-Tchelery Road. An analysis of the Maude Road/Booroorban-Tchelery Road intersection has not been completed as the peak hour Project traffic through this intersection is very low (7 light vehicle movements in the peak hours) and the existing peak hour volumes are negligible.

Level of Service (LOS) is a qualitative measure used to describe the operating conditions of a section of road or an intersection. Levels of Service are designated from A to F from best (free flow conditions) to worst (forced flow with stop start operation, long queues and delays) and represent the perception of the road conditions by motorists including speed and travel time, freedom to manoeuvre, traffic interruptions, comfort and convenience, and safety. The assessment of the level of service for sign-controlled intersections is based on the average delay (seconds/vehicle) of the critical movement.

The traffic modelling exercise has been undertaken for the morning peak hour (6:00am-7:00am) and evening peak hour (5:00pm-6:00pm) during the peak construction period. The traffic volumes utilised for the assessment is the total of the following:

- Existing surveyed traffic volumes presented within Appendix C adjusted by a 1.5% compounded annual growth rate over 3 years to reflect the end of the construction period in 2027;
- The peak construction traffic volumes presented within Figure 13; and

- The cumulative traffic impact volumes that may coincide with peak construction of the Project as outlined in Figure 14.

The resulting traffic volumes used for the assessment of the Cobb Highway / Booroorban-Tchelery Road intersection are presented in Figure 15. The results of the SIDRA analysis are summarised in Table 14, with the full results provided at Appendix E.

Figure 15: Peak Construction Traffic Volumes

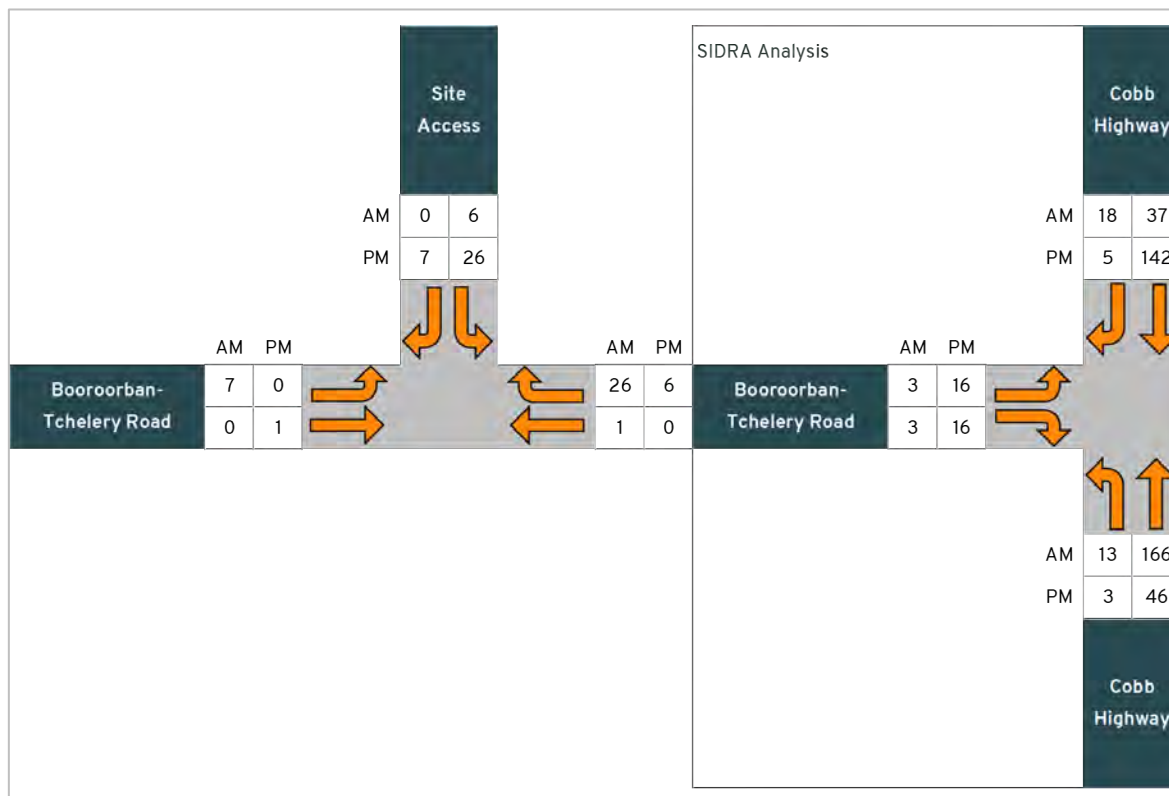


Table 14: SIDRA Analysis Results – Cobb Highway / Booroorban-Tchelery Road Intersection

Approach / Movement		Morning Peak Hour			Evening Peak Hour		
		Average Delay (sec)	95% Queue (m)	Level of Service	Average Delay (sec)	95% Queue (m)	Level of Service
Cobb Highway (South)	Left Turn	9.3	0.0	A	10.8	0.0	A
	Through	0.0	0.0	A	0.0	0.0	A
Cobb Highway (North)	Through	0.4	1.0	A	0.0	0.4	A
	Right Turn	6.5	1.0	A	6.3	0.4	A
Booroorban-Tchelery Road (West)	Left Turn	7.9	0.4	A	6.0	0.9	A
	Right Turn	8.7	0.4	A	6.7	0.9	A

The SIDRA analysis indicates the following:

- The intersection is expected to operate with minimal queue lengths on all legs;
- The overall average delay at the intersection is 1.3 and 1.2 seconds in the morning and evening peak hour, respectively; and
- The intersection is expected to continue to operate with good level of service (LOS A) at all times.

Accordingly, the intersection is expected to continue to operate with a good level of service with minimal queuing and delays expected during the peak construction period.

4.3 Operational Traffic

During operation the BESS is expected to generate a minimal level of traffic associated with maintenance and operation services. The BESS is expected to be operated by 3-5 full time maintenance personnel accessing the Project Area as required, which would result in a negligible change to the traffic environment. There would also be occasional light commercial vehicles delivering parts to the Project Area but only as required for maintenance.

4.4 Decommissioning Traffic

At the end of the operational life of the Project all above ground infrastructure would be dismantled and removed from the Project Area. Internal roads, if not required for ongoing farming purposes or fire access, would be removed and the site reinstated as close as possible to its original state and in accordance with the conditions of consent.

Traffic generation during decommissioning would be similar to traffic generation during the average construction period. A comprehensive Traffic Management Plan would be prepared prior to the decommissioning phase in conjunction with the relevant road authorities. This would aim to ensure adequate road safety and road network operations are maintained.

4.5 Summary

The Project is expected to generate the highest level of traffic during the peak construction period. The assessment also included a review of the cumulative traffic generated by other major projects within the surrounding area. The assessment presented above indicates that the road network is able to accommodate the Project traffic during the peak construction period. All intersections are expected to operate with minimal queues and delays, and the mid-block sections within the vicinity of the site are expected to continue to operate with a good level of service.

During construction the traffic volumes through the middle of the day are expected to be predominantly associated with heavy vehicles with approximately 5 to 6 vehicles per hour. This increase in traffic can be readily accommodated on the road network given the existing low traffic volumes and the road network would be operating with less vehicles than during the peak hour.

It is anticipated that approximately 8 OSOM vehicles would be required to access the Project during the construction period. The vehicles would be unloaded and kept to their smallest practicable dimensions when departing the site. The vehicles would travel outside of the peak periods and would be able to be accommodated on the road network subject to the road upgrades and mitigation measures discussed in Section 10 which would be confirmed as part of specific permits that would be applied for prior to construction.

During operation the periodic increase in traffic of 3-5 full time maintenance personnel accessing the Project Area each day would result in a negligible change to the traffic environment.

Accordingly, the road network is able to readily accommodate the traffic generated by the Project during the construction and operational periods.

5. Heavy Vehicle Route Assessment

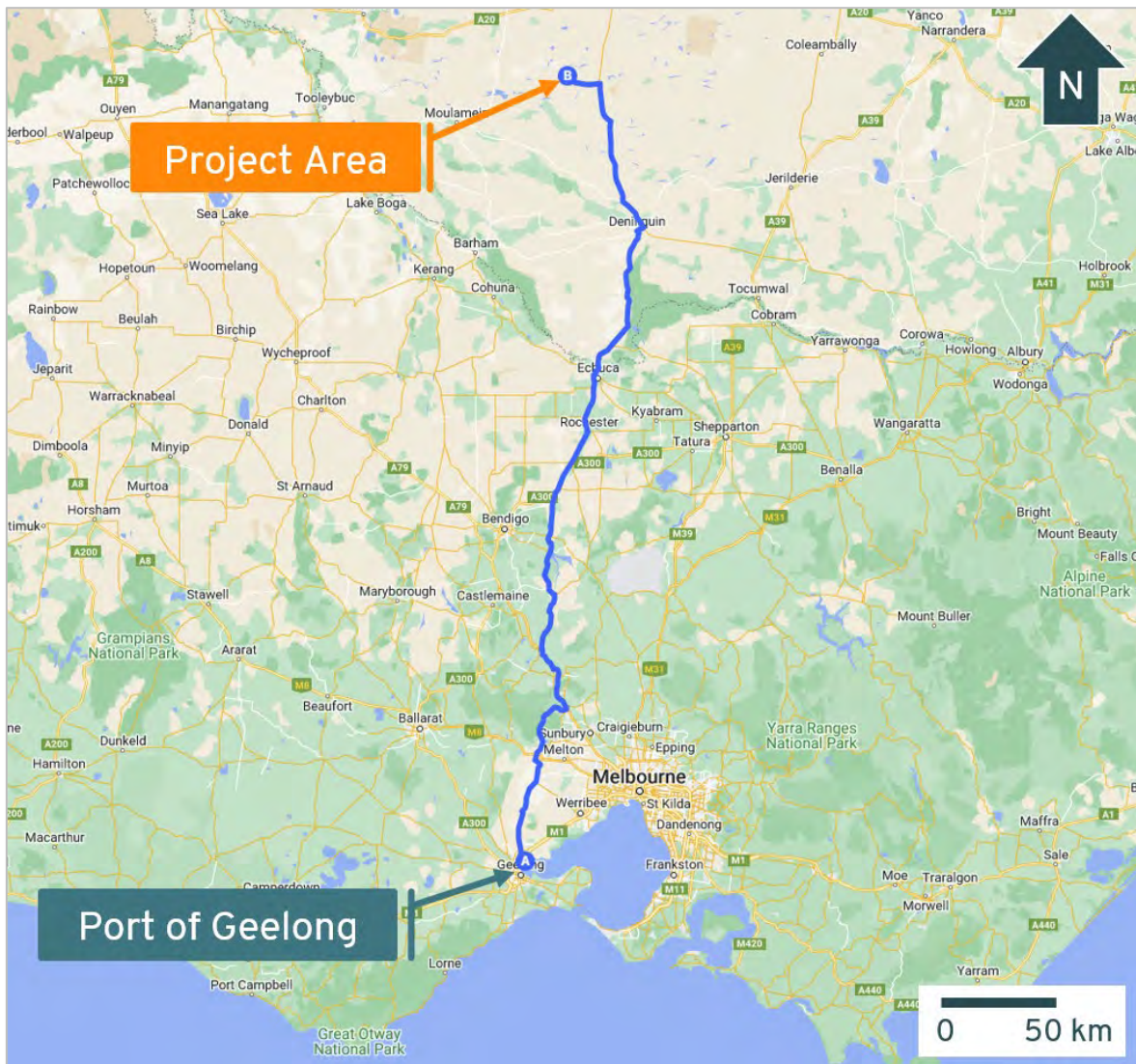
All specialist plant and BESS components are expected to be delivered from Port of Melbourne or Port of Geelong, Victoria. The following provides a review of the proposed access routes for heavy vehicles (excluding high risk OSOM vehicles) travelling from the ports.

5.1 General Access Vehicles

All heavy vehicle Project traffic up to and including semitrailers would be classified as General Access Vehicles (GAV) which have as-of-right access to the road network unless signposted otherwise. These vehicles would travel along a direct route between Port of Geelong or Port of Melbourne and the Project Area.

The proposed access route from Port of Geelong to the Project measures approximately 422 kilometres and is shown in Figure 16.

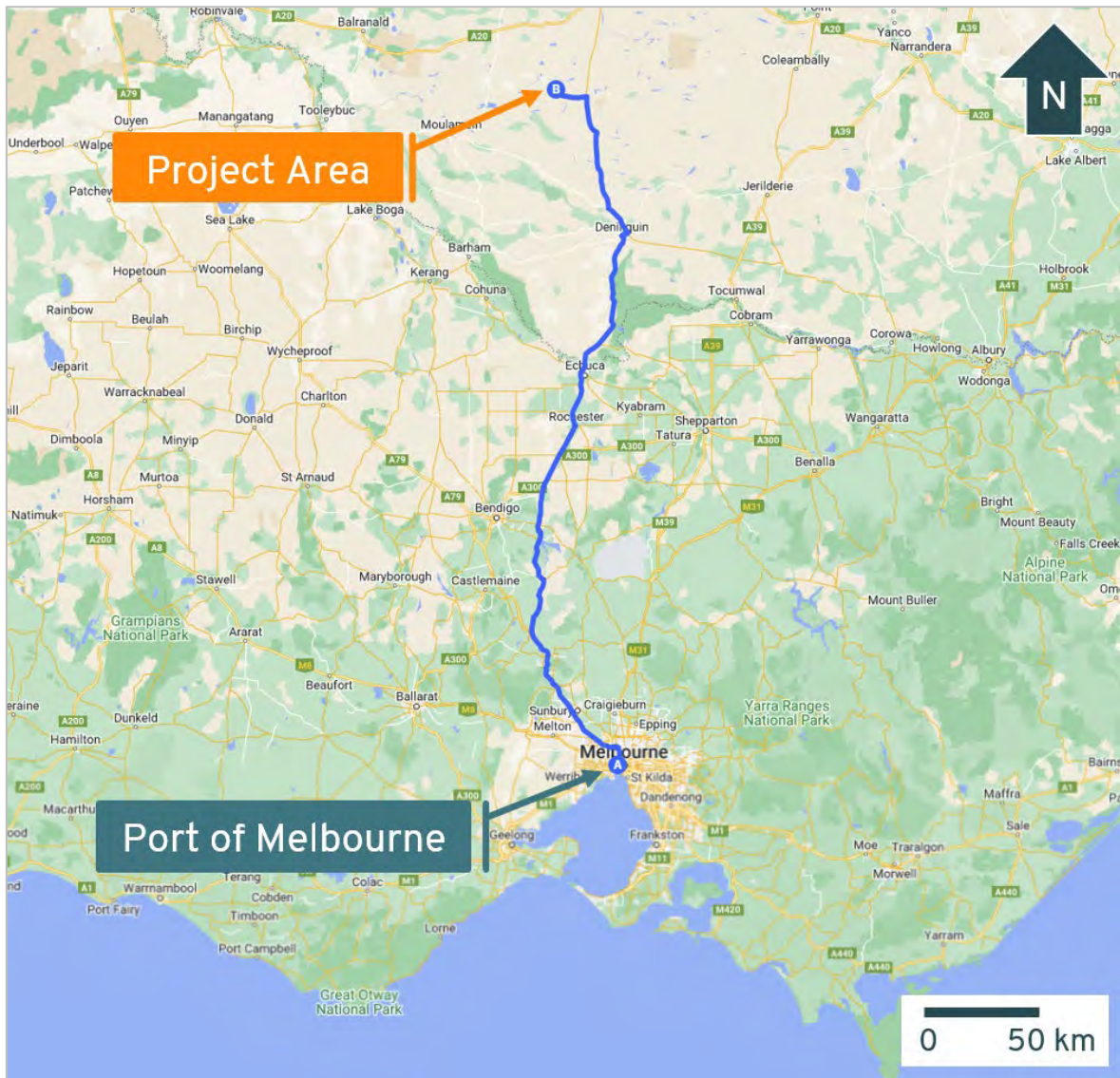
Figure 16: General Access Vehicle Route from Port of Geelong



Source: Google Maps - [Link](#)

The proposed access route from Port of Melbourne to the Project measures approximately 390 kilometres and is shown in Figure 17.

Figure 17: General Access Vehicle Route from Port of Melbourne



Source: Google Maps - [Link](#)

5.2 B-Double Access Route

5.2.1 Port of Geelong Access Route

The proposed access route for 26m B-Doubles travelling from Port of Geelong to the Project Area is the same as the GAV route proposed above in Section 5.1. A summary of the relevant roads is provided in Table 15.

Table 15: B-Double Vehicle Route – Access Roads from Port of Geelong

Road Name	State	Jurisdiction	B-Double Approved	
The Esplanade	Victoria	City of Greater Geelong	Approved	
Madden Avenue				
Bayside Road				
St Georges Road				
Geelong-Bacchus Marsh Road				
Grant Street		DTP (VIC)	Approved with Conditions	
Gisborne Road				
Bacchus Marsh-Gisborne Road				
Gisborne-Kilmore Road				
Calder Freeway				
Edgecombe Road				
Heathcote-Kyneton Road				
Bendigo-Redesdale Road				
Axedale-Kimbolton Road			City of Greater Bendigo	Approved
Mitchell Street				
Axedale-Goornong Road				
Midland Highway				
Northern Highway				
Murray Valley Highway	DTP (VIC)			
Cobb Highway		TfNSW		
Booroorban-Tchelery Road		Edward River Council	Unrated	

The access routes generally utilise roads that are designated for B-Double vehicles as outlined within the NHVR Restricted Access Vehicle Map. It is noted that Booroorban-Tchelery Road is unrated (as shown in Figure 10) and requires approval from Edward River Council for use by 26m B-Doubles.

5.2.2 Port of Melbourne Access Route

The proposed access route for 26m B-Doubles travelling from Port of Melbourne to the Project Area is the same as the GAV route proposed above in Section 5.1. A summary of the relevant roads is provided in Table 16.

Table 16: B-Double Vehicle Route – Access Roads from Port of Melbourne

Road Name	State	Jurisdiction	B-Double Approved
Docklands Highway	Victoria	DTP (VIC)	Approved
Western Link Tollway			
Calder Freeway			
Edgecombe Road			
Heathcote-Kyneton Road			
Bendigo-Redesdale Road			
Axedale-Kimbolton Road		City of Greater Bendigo	
Mitchell Street			
Axedale-Goorong Road			
Midland Highway		DTP (VIC)	
Northern Highway			
Murray Valley Highway			
Cobb Highway	New South Wales	TfNSW	Unrated
Booroorban-Tchelery Road		Edward River Council	

The access route generally utilises roads that are designated for B-Double vehicles as outlined within the TfNSW Restricted Access Vehicle Map and Victoria's Gazetted B-Double Network map. It is noted that Booroorban-Tchelery Road is unrated (as shown in Figure 10) and requires approval from Edward River Council for use by 26m B-Doubles.

5.3 Local Road Upgrades

Booroorban-Tchelery Road is a sealed road with a typical width of 4.0 metres and 2.0 metre unsealed verges on each side. There are seven cattle grids between Cobb Highway and the Project Area which reduce the width to a minimum of 3.6 metres. The road services a very low volume of traffic under existing conditions, with the traffic surveys recording in the order of 15 vehicles per day, including two vehicles within the peak hour.

Preliminary consultation with Edward River Council has been undertaken to gain an understanding of Council's road upgrade expectations for Booroorban-Tchelery Road. Council have advised that the road would need to have an 8.0 metre wide heavy vehicle seal with 1.0 metre wide sealed shoulders (i.e. total sealed width of 10 metres). This would be for an approximate length of 18km between Cobb Highway and the Project.

To understand the design intent of Booroorban-Tchelery Road, The *Australian Road Research Board Best Practice Guide for Unsealed Roads 2* (ARRB Guide), dated October 2020, has been referenced. While it is acknowledged that a portion of the road width is sealed, under existing conditions when two vehicles are required to pass it is undertaken within the unsealed verges. Accordingly, the ARRB Unsealed Road Guide has been referenced for this assessment.

The ARRB Guide provides a breakdown of the unsealed road classifications based on a functional classification system, which is reflective of the approach taken within the Austroads Guidelines. It is noted that the traffic volumes refer to Average Daily Traffic (two-way). A summary of the classifications outlined within Table 3.9 of the ARRB Guide is provided below.

Table 17: Unsealed Roads Classification System (ARRB Guide)

Road Class	Class Type	Service Function Description	Road Type Description
4A	Main Road > 150 vpd	This type of road is used for major movements between population centres and connection to adjacent areas. High traffic volumes occur, and the road can carry large vehicles.	- All weather road, predominantly two-lane and unsealed. Can be sealed if economically justified. - Operating speed standard of 50–80 km/h according to terrain. - Minimum carriageway width is 7m.
4B	Minor Road 50-150 vpd	This type of road is used for connection between local centres of population and links to the primary network.	- All-weather two-lane road formed and gravelled or single-lane sealed road with gravel shoulders. - Operating speed standard of 30–70 km/h according to terrain. - Minimum carriageway width is 5.5m.
4C	Access Road 10-50 vpd	Provides access to low use areas or individual rural property sites and forest areas. Caters for low travel speed and a range of vehicles and may be seasonally closed.	- Substantially a single lane two-way, generally dry weather, formed road. - Operating speeds standard of < 20–40 km/h according to terrain. - Minimum carriageway width is 4m.
4D	Tracks < 10 vpd	Mainly used for fire protection purposes, management access and limited recreational activities.	- Predominantly a single-lane two-way earth track (unformed) at or near the natural surface level. - Predominantly not conforming to any geometric design standards. - Minimum cleared width is 3m.

The existing traffic volumes on Booroorban-Tchelery Road would class the road as type 4C, however, the existing road design complies with class type 4B. The proposed Project traffic volumes during the peak construction period are anticipated to be 110 vehicles per day, which equates to 125 vehicles per day on Booroorban-Tchelery Road (i.e. peak construction volumes plus existing volumes). This falls within the threshold for class type 4B and accordingly, the existing road design and geometry are considered to meet the requirements of the ARRB Guide.

It is acknowledged that the operating speed of Booroorban-Tchelery Road is above the recommended operating speed of the ARRB Guide. Given that the primary traffic generation on the road during construction would be associated with the Project, a temporary speed reduction is recommended on Booroorban-Tchelery Road between Cobb Highway and the Project Area to improve the safety and operation of the road in accordance with the ARRB Guide.

The expected traffic conditions on Booroorban-Tchelery Road between Cobb Highway and the Project during the peak construction period are detailed in Table 18.

Table 18: Expected Traffic Volumes on Booroorban-Tchelery Road

Period	Vehicle Trips per Hour	Vehicle Type	Direction of Travel
AM Peak (6:00am – 7:00am)	32	Mostly light vehicles	Westbound
Middle of Day (7:00am – 5:00pm)	5-6	Mostly heavy vehicles	Both Directions
PM Peak (5:00pm – 6:00pm)	32	Mostly light vehicles	Eastbound

The above demonstrates that the majority of Project traffic would be using Booroorban-Tchelery Road in the morning and evening peak hours and be travelling in one direction. During the day vehicle movements would be primarily associated with heavy vehicles and would be split between inbound and outbound movements (between 5-6 movements). The likelihood of two heavy vehicles meeting and being required to pass on Booroorban-Tchelery Road is very low and could be undertaken within the unsealed verges at slower speeds. This is considered appropriate given that Booroorban-Tchelery Road is flat and relatively straight, providing good sightlines to on-coming vehicles to register one another and slow down and pass.

Widening Booroorban-Tchelery Road to a carriageway width of 8.0 metres would result in a wider road than the connecting State road, Cobb Highway, which is approximately 7.0 metres wide. Cobb Highway carries a larger vehicle loading, including 25.5% heavy vehicle usage as shown in Section 2.3.2.1, and warrants such a design. The proposed Project traffic volumes and the relatively short construction period does not warrant a road upgrade of this scale.

It is recommended to maintain Booroorban-Tchelery Road to its existing condition. Given the relatively straight and flat alignment of the road, there is good visibility to on-coming vehicles providing ample time for drivers to react and slow down. The existing carriageway width consisting of 4.0 metre wide seal and 2.0 metre wide unsealed shoulders is enough for heavy vehicles to pass at slower speeds in the unlikely event this occurs.

The condition of Booroorban-Tchelery Road is to be monitored continuously throughout the duration of the construction period. Dilapidation surveys would be undertaken prior to the commencement of the Project and the road would be returned to its original condition at the completion of the construction period. The unsealed verges should be maintained to a standard that supports sustained heavy vehicle usage to ensure safe passing manoeuvres can be undertaken during all weather conditions. Maintenance should be undertaken on any road surface that has been damaged by vehicle use attributed to the construction of the Project.

Passing bays could also be considered along Booroorban-Tchelery Road at intervals between Cobb Highway and the Project Area. This includes at the cattle grid crossings where vehicles are required to slow down to give way to on-coming vehicles. The passing bays would need to be at least 7.0 metres wide and of sufficient length to allow two 26m B-Doubles to pass. Driver protocols would need to be implemented to ensure that approaching vehicles wait within the nearest passing bay when required. Details of the driver protocols would be included within the Traffic Management Plan.

Accordingly, it is considered appropriate for Booroorban-Tchelery Road to remain as per existing conditions for the duration of construction of the Project for the following reasons:

- During peak construction Booroorban-Tchelery Road is expected to carry up to 125 vehicles per day, classing the road as type 4B under the ARRB Guide.
- The majority of the Project traffic would be travelling to or from the Project during the peak hours in one direction, reducing the likelihood of vehicles requiring to pass during the peak periods.
- During the day, Project traffic volumes would be low with 5-6 heavy vehicles expected which would be split between inbound and outbound movements.
- Booroorban-Tchelery Road is generally flat and straight with low-level roadside vegetation which would allow drivers to be able to see on-coming vehicles and react accordingly to pass at lower speeds within the verges.
- The likelihood of two heavy vehicles meeting and being required to pass on Booroorban-Tchelery Road is very low.

- The proposed Project traffic volumes and the relatively short construction period does not warrant a road upgrade. Post-construction, the Project traffic volumes would be negligible, and having a wide sealed road would not be practical for future traffic volumes on Booroorban-Tchelery Road. This would be an on-going maintenance cost for Council.

Accordingly, it is recommended that Booroorban-Tchelery Road between Cobb Highway and the Project remain as per the existing geometry. It is recommended that during construction traffic management be put in place to slow the operating speed on Booroorban-Tchelery Road to fall within the recommendations of the ARRB Guide, which can be addressed as part of the future TMP. If required, there is also an option to provide regular passing bays at intervals along Booroorban-Tchelery Road to allow two heavy vehicles to pass.

5.4 Mitigation Measures

A TMP is to be developed which is recommended to include the following measures to minimise the impact of construction traffic:

- Neighbours of the Project are to be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.
- Heavy vehicles should avoid travel during school bus operating times to limit the interaction of larger vehicles and vulnerable road users. Buses operate along Cobb Highway as outlined in Section 2.4 and would be detailed within the TMP.
- Project traffic is to maintain radio contact to manage heavy vehicle movements along Booroorban-Tchelery Road to minimise the likelihood of two heavy vehicles having to pass.

Therefore, it is concluded that the road network is suitable to accommodate the future light and heavy vehicle traffic volumes generated by the Project, subject to the above recommendations.

6. High Risk OSOM Vehicles

OSOM vehicles would be required to deliver larger plant to the Project such as the transformer and modular buildings. These vehicles are expected to exceed the Class 1 mass and/or dimension requirements and would be classified as high risk OSOM vehicles. These vehicles are subject to TMPs which provide a comprehensive planning and execution focus to ensure that vehicle movements are carried out in a safe and responsible manner with reduced impact on other road users and road infrastructure. High risk OSOM vehicles also typically require pilot vehicle escort.

The Applicant has advised that four high risk OSOM vehicles would be required to access the site during the construction period. The vehicles would be unloaded and kept to their smallest practicable dimensions when departing the site to avoid classification as OSOM where possible.

High risk OSOM vehicles would travel outside of the peak periods and would be subject to the mitigation measures discussed throughout this section which would be confirmed as part of specific permits that would be applied for prior to construction.

6.1 Load and Vehicle Configurations

The four high risk OSOM vehicles are outlined as follows:

- 1 vehicle to transport the main transformer. The delivery is assumed from either Port of Geelong or Port of Melbourne, which would result in the high risk OSOM vehicle accessing the Project Area loaded and departing unloaded during construction and decommissioning.
- 3 vehicles to transport the modular buildings resulting in the vehicle being classed as oversize in one direction only for both construction and decommissioning. The modular buildings would be delivered from either Port of Geelong or Port of Melbourne.

The following provides a review of the proposed access route for the transformer vehicle which is the largest transport vehicle configuration proposed.

6.2 Transformer Vehicle

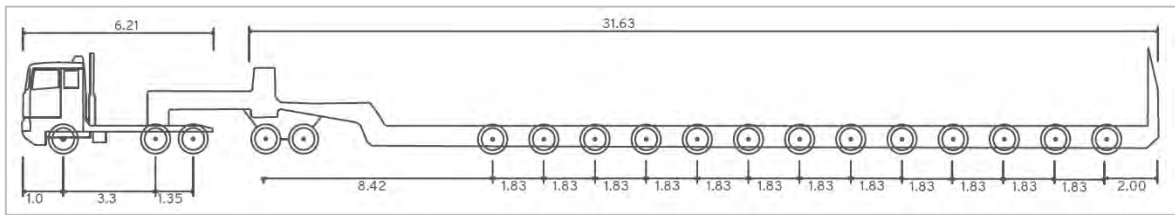
The largest component to be delivered to the site is expected to be the transformer. The Applicant has provided information regarding the expected specifications of the transformer which is outlined in Table 19.

Table 19: Estimated Transformer Specifications

Length (mm)	Width (mm)	Height (mm)	Mass	Trailer Specs
8400	4000	4250	> 150 tonnes	13x8 Platform Trailer with Dolly

An OSOM vehicle configuration has been identified for the expected transformer model. The vehicle used for the assessment is shown within Figure 18 and is based on feedback from a transport company which confirmed that the vehicle specification would be suitable for the weight and size of the transformer.

Figure 18: OSOM Vehicle



Source: RJA

6.3 Access Route

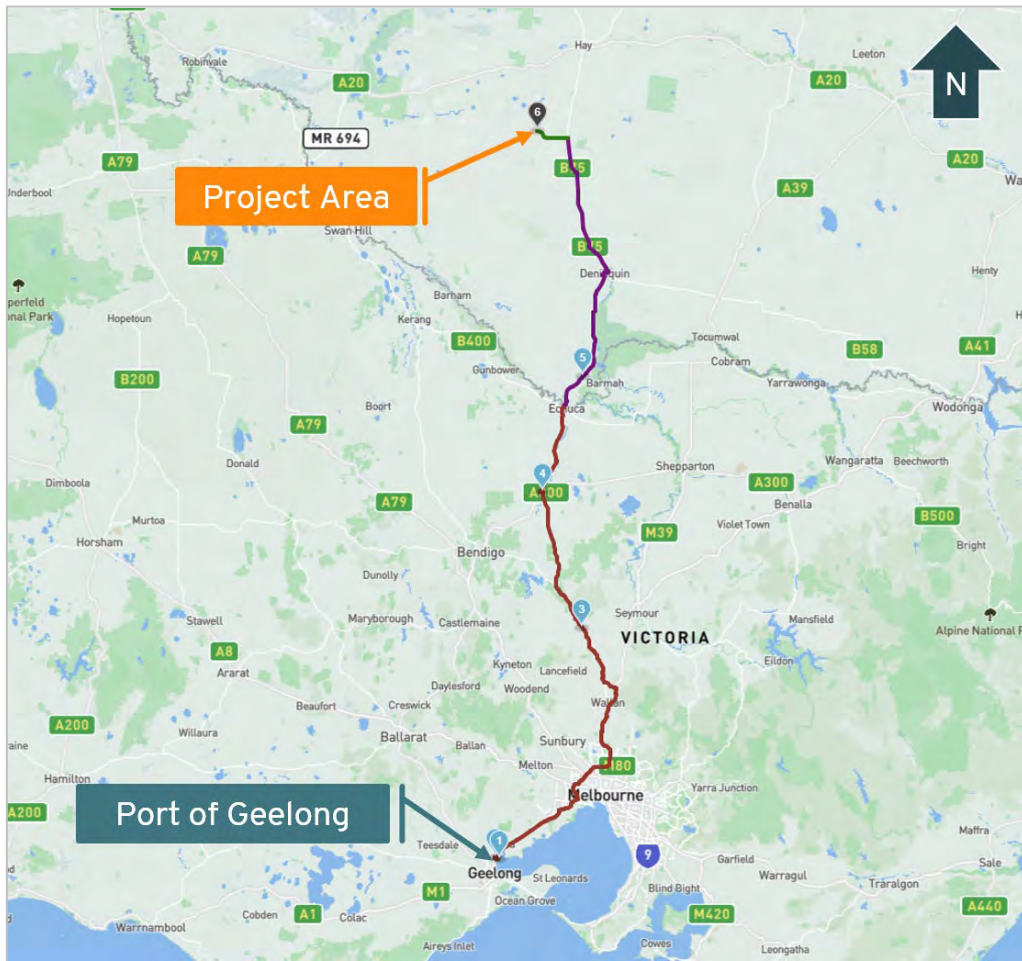
The Applicant has advised that the transformer and modular building deliveries would be to the Port of Geelong or Port of Melbourne. It is expected that the access routes from the two origins would utilise the same access route once on the Western Ring Road in Melbourne.

In order to determine whether any civil works are required to accommodate the OSOM vehicle on the road network, a route assessment has been undertaken by Amber and is attached at Appendix F. The OSOM vehicle would be provided with escort and pilot vehicles in accordance with relevant authority requirements.

6.3.1 Port of Geelong OSOM Access Route

The access route from Port of Geelong to the Project Area is shown in Figure 19. A total of 19 points of interest for further assessment were identified as part of the assessment for the access route. The points of interest have been assessed in further detail within the route assessment, along with the site access. Seven rest stop areas were also identified along the route noting that additional stopping areas may be available. The full assessment is provided within Appendix F.

Figure 19: OSOM Route from Port of Geelong



Source: NHVR Route Planner – Route ID 2MUJR-7

The proposed OSOM route between Port of Geelong and the Project is 450 kilometres. The route would utilise the following roads to access the Project as outlined in Table 20.

Table 20: OSOM Route – Access Roads

Road Name	State	Jurisdiction
The Esplanade	Victoria	City of Greater Geelong
Madden Avenue		
Bayside Road		
St Georges Road		
Princes Freeway West		
Western Ring Road		
Metropolitan Ring Road		
Hume Freeway	Victoria	DTP
Northern Highway		
Murray Valley Highway		
Cobb Highway	New South Wales	TfNSW
Boorooban-Tchelery Road		Edward River Council

The assessment of the access route identified that the vehicle is able to access the Project Area with minor civil works, signage relocation and suitable traffic management measures. A review of the key constraints along the route is provided below in Section 6.4, with an overview of the proposed treatments and/or management measures at each point of interest in Section 6.5.

6.3.2 Port of Melbourne OSOM Access Route

The access route from Port of Melbourne to the Project Area is shown in Figure 20. An additional seven points of interest for further assessment were identified as part of the assessment for the access route. The route becomes the same as the Port of Geelong route once on the Metropolitan Ring Road. The points of interest have been assessed in further detail within the route assessment. The full assessment is provided within Appendix F.

Figure 20: OSOM Route from Port of Melbourne



Source: NHVR Route Planner – Route ID 2MV07-1

The proposed OSOM route between Port of Melbourne and the Project is 408 kilometres. The route would utilise the following roads to access the Project as outlined in Table 21.

Table 21: OSOM Route – Access Roads

Road Name	State	Jurisdiction
Docklands Highway	Victoria	DTP
Somerville Road		Maribyrnong City Council DTP
Fairbairn Road		DTP
Boundary Road		
Western Ring Road		
Metropolitan Ring Road		
Hume Freeway		
Northern Highway		
Murray Valley Highway		
Cobb Highway	New South Wales	TfNSW
Booroorban-Tchelery Road		Edward River Council

The assessment of the access route identified that the vehicle is able to access the Project with minor civil works, signage relocation and suitable traffic management measures. A review of the key constraints along the route is provided below in Section 6.4, with an overview of the proposed treatments and/or management measures at each point of interest in Section 6.5.

6.4 Bridge and Rail Infrastructure

A desktop assessment of bridge and rail infrastructure has been undertaken to determine interfacing locations with the proposed OSOM routes.

6.4.1 Bridges and Overpasses

A detailed review of the load limits on all bridges and structures along the route would be undertaken as part of the permit process for the OSOM vehicles, however, it is noted that the route predominantly utilises major highways between Port of Geelong and Port of Melbourne. The State Roads along the route have been utilised for other renewable energy projects in the area and no restricted structures have been identified based on the TfNSW or Department of Transport and Planning Oversize/Overmass Load Carrying Vehicles Network maps. Accordingly, it is expected that the vehicle loading would be within the allowable limit for all bridges, culverts, and other structures on the State Road network.

6.4.2 Underpasses

An assessment of the height clearances along the Port of Geelong and Port of Melbourne OSOM routes to Romani BESS was undertaken to confirm the suitability of the proposed route for a total vehicle combination load height of approximately 5.3 metres. The assessment showed that the routes from Port of Geelong and Port of Melbourne have a low clearance of 4.8 metres and 5.4 metres, respectively. Noting that the estimated combined height of the vehicle and load exceeds the lowest overpasses on the Port of Geelong OSOM route, it is recommended that the transformer is delivered to the Port of Melbourne and smaller OSOM loads meeting the height constraint are delivered to either port.

It is also noted that the existing height clearances along the route need to be assessed at all critical locations, including overhead electrical cables that may require lifting, as part of a detailed TMP which is a requirement for any transport using a high risk OSOM vehicle.

Accordingly, the available height clearance along the proposed routes are considered appropriate to accommodate the high risk OSOM vehicle subject to further review as part of a detailed TMP.

6.4.3 Railway Level Crossings

A total of four railway level crossings have been identified along the OSOM route as outlined in Table 22, which includes summarised advice from the relevant rail authority for each crossing.

Table 22: Railway Level Crossing Assessment

Railway Crossing Location	Rail Authority	Authority Advice
St Georges Road, Norlane VIC (Port of Geelong route only)	V/Line	ODL Permit from DTP is required.
Somerville Road, Brooklyn VIC (Port of Melbourne route only)	ARTC	Approved with Conditions: For combinations in excess of 26m long or 4.9m high, permission is required to traverse all rail crossings. Apply to ODL Permits at DoT Heavy Vehicle Consent-Structural Engineering.
Northern Highway, Rochester VIC	V/Line	Approved with Conditions: For combinations in excess of 26m long or 4.9m high, permission is required to traverse all rail crossings. Apply to ODL Permits at DoT Heavy Vehicle Consent-Structural Engineering.
Cobb Highway, Moama NSW	V/Line	1707 - Cobb Highway Contact Rail Infrastructure Manager. Rail Infrastructure Manager contact details available at: Oversize and/or overmass (OSOM) vehicles & loads.
Cobb Highway, Deniliquin NSW	V/Line	1724 - Ochertyre Street Contact Rail Infrastructure Manager. Rail Infrastructure Manager contact details available at: Oversize and/or overmass (OSOM) vehicles & loads.

Written approval would be sought from the relevant rail authorities for all level crossings as part of the TMP. Accordingly, the OSOM traffic is expected to have no major impact on the operation or safety of the railway level crossings.

6.5 Summary

The route assessment prepared for the high risk OSOM vehicle (Appendix F) identifies that a number of minor road works are required in order to allow the vehicles to successfully access the Project Area from the Port of Geelong or Port of Melbourne, with a summary provided in Table 23. Escorts and spotters would be required at all locations to control traffic and ensure the vehicle and load are clear of infrastructure.

Table 23: Road Works Schedule - OSOM Vehicles

Origin	Pinch Point / Sheet	Location	Works Required
Geelong Metropolitan Area			
Geelong	01	Madden Avenue / Seabeach Parade (Bayside Road) (North Shore, Vic)	No road upgrades required
Geelong	02	Seabeach Parade (Bayside Road) / St Georges Road (Norlane, VIC)	No road upgrades required
Geelong	03	St Georges Road / Station Street (Norlane, VIC)	Temporary signage relocation
Geelong	04	St Georges Road / Princes Highway (Corio, VIC)	No road upgrades required
Melbourne Metropolitan Area			
Melbourne	01	Apple Dock Road / Footscray Road (Docklands Highway) (West Melbourne, VIC)	No road upgrades required
Melbourne	02	Footscray Road (Docklands Highway) / Moreland Street (West Melbourne, VIC)	No road upgrades required
Melbourne	03	Whitehall Street (Docklands Highway) / Somerville Road (Footscray, VIC)	Temporary traffic separator removal
Melbourne	04	Somerville Road / Geelong Road (Princes Highway) (Kingsville, VIC)	No road upgrades required
Melbourne	05	Somerville Road / Fairbairn Road (Sunshine West, VIC)	Sealed hardstand required and temporary signage relocation
Melbourne	06	Fairbairn Road / Boundary Road (Laverton North, VIC)	Sealed hardstand required and temporary signage relocation
Melbourne	07	Boundary Road / Western Ring Road On-Ramp (Derrimut, VIC)	No road upgrades required
Victoria Regional Area			
Geelong or Melbourne	05	Northern Highway / Broadford-Kilmore Road (Kilmore, VIC)	Sealed hardstand required
Geelong or Melbourne	06	High Street (Northern Highway) / Northern Highway (Heathcote, VIC)	No road upgrades required

Origin	Pinch Point / Sheet	Location	Works Required
Geelong or Melbourne	07	Northern Highway / Northern Highway/Midland Highway (Runnymede, VIC)	Temporary signage relocation
Geelong or Melbourne	08	Margaret Street (Northern Highway) / Northern Highway (Elmore, VIC)	No road upgrades required
Geelong or Melbourne	09	Moore Street (Northern Highway) / Northern Highway (Rochester, VIC)	Temporary signage relocation
Geelong or Melbourne	10	Northern Highway / Murray Valley Highway / Ogilvie Avenue (Echuca, VIC)	No road upgrades required
Geelong or Melbourne	11	Murray Valley Highway / Warren Street (Echuca, VIC)	Sealed hardstand required
Geelong or Melbourne	12	Warren Street / Cobb Highway (Echuca, VIC)	No road upgrades required
NSW Regional Area			
Geelong or Melbourne	13	Ochertyre Street (Cobb Highway) / Hardinge Street (Cobb Highway) (Deniliquin, NSW)	Temporary signage relocation
Geelong or Melbourne	14	Hardinge Street (Cobb Highway) / Cressy Street (Deniliquin, NSW)	Mountable kerbing required
Geelong or Melbourne	15	Hardinge Street (Cobb Highway) / Charlotte Street (Cobb Highway) (Deniliquin, NSW)	No road upgrades required
Geelong or Melbourne	16	Charlotte Street (Cobb Highway) / Davidson Street (Cobb Highway) (Deniliquin, NSW)	Temporary signage relocation
Geelong or Melbourne	17	Davidson Street (Cobb Highway) / Hay Road (Cobb Highway) (Deniliquin, NSW)	No road upgrades required
Geelong or Melbourne	18	Cobb Highway / Boorooban-Tchelery Road (Boorooban, NSW)	Road signage relocation and road widening required – Refer Turn Treatment Assessment in Section 7.1

Accordingly, it is concluded that the proposed route is suitable for use by OSOM vehicles associated with the Project with permits to be applied for as part of the TMP. It is recommended the transformer be delivered to the Port of Melbourne due to height restrictions along the Port of Geelong route, with other OSOM loads to be delivered to either port. It is recommended that OSOM movements be timed so they do not coincide with other OSOM vehicles within the surrounding area to limit the impact to the road network, which can be undertaken as part of the permit application.

7. Intersection Assessment

7.1 Turn Treatments

Austrroads Guide to Traffic Management Part 6: Intersections, Interchanges, and Crossings specifies the turning treatments required at intersections. Figure 3.25 of the guide specifies the required turn treatments on the major road at unsignalised intersections and has been utilised for the following turn treatment assessment.

The requirement to provide turn facilities at the State Road intersections is primarily generated during the morning peak hour when the workforce access the site, which occurs between 6:00am to 7:00am. An assessment has been undertaken for the Cobb Highway / Booroorban-Tchelery Road intersection to ensure vehicles are able to safely turn from the State Road network.

A turn treatment assessment of the Maude Road / Booroorban-Tchelery Road intersection has not been completed as the peak hour Project traffic through this intersection is very low (7 light vehicle movements in the peak hours) and the existing peak hour volumes on Maude Road is very low (two-way volume of approximately 10 vehicles in the morning construction peak hour).

The expected traffic volumes, as per Section 4.2.6, have been used to assess the turn treatment requirement at the Cobb Highway / Booroorban-Tchelery Road intersection. The through volumes on Cobb Highway include the cumulative impacts of nearby projects. The required turn treatments on Cobb Highway are based on a design speed of 100km/hr or greater.

The expected traffic volumes at this intersection (shown at Figure 15) have been plotted within Figure 21. Table 24 summarises the required turning treatments under the Austrroads Guide.

Figure 21: Turn Treatment Requirement for Cobb Highway / Booroorban-Tchelery Road

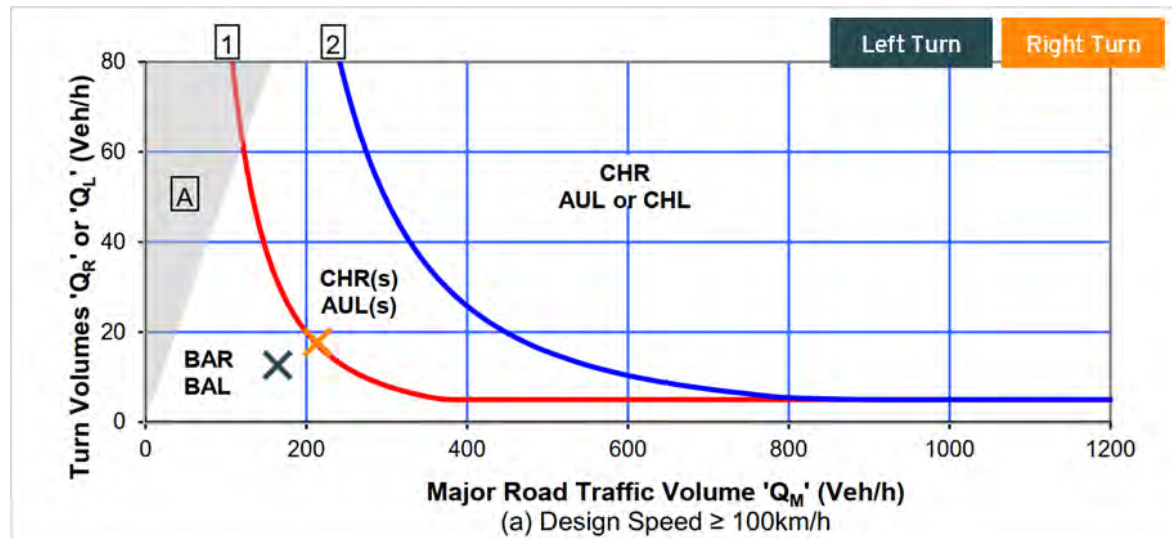


Table 24: Turn Treatment Calculations for Cobb Highway/Booroorban-Tchelery Road Intersection

Turning Treatment	Traffic Volume (vph)		Requirement
	Turn Volume	Major Road	
Right Turn	18	216	CHR(s)
Left Turn	13	166	BAL

Based on the above, the intersection would require a Short Channelised Right Turn (CHRs) and Basic Left Turn (BAL) treatment to meet the requirements of the Austroads Guide.

In order to confirm the intersection can accommodate B-Double vehicles, a swept path assessment has been provided within Appendix H using the Autodesk Vehicle Tracking software. The assessment demonstrates that the vehicle is able to suitably turn to/from Cobb Highway with the inclusion of the proposed turn treatments. Accordingly, it is concluded that the intersection has been suitably designed and is able to accommodate the vehicles expected to access the Project Area via Booroorban-Tchelery Road.

7.2 Sight Distance Assessment

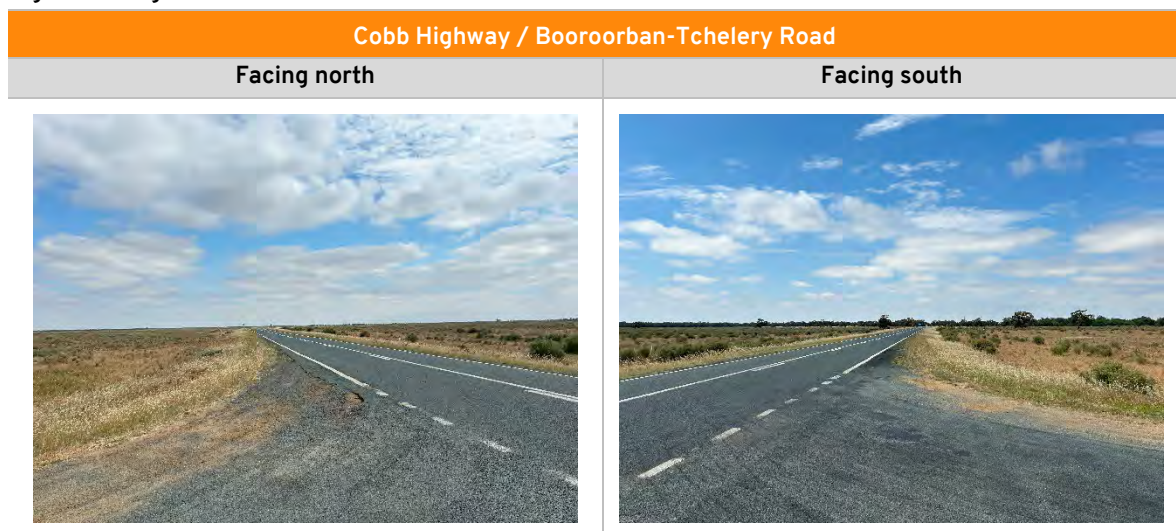
A review of the sight distance available at the nearest intersections traversed by Project traffic has been completed. *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* specifies the Safe Intersection Sight Distance (SISD) as the minimum sight distance which should be provided along the major road at any intersection. Table 3.1 of the guide specifies the SISD required for various design speeds based on a reaction time of 2.5 seconds as follows:

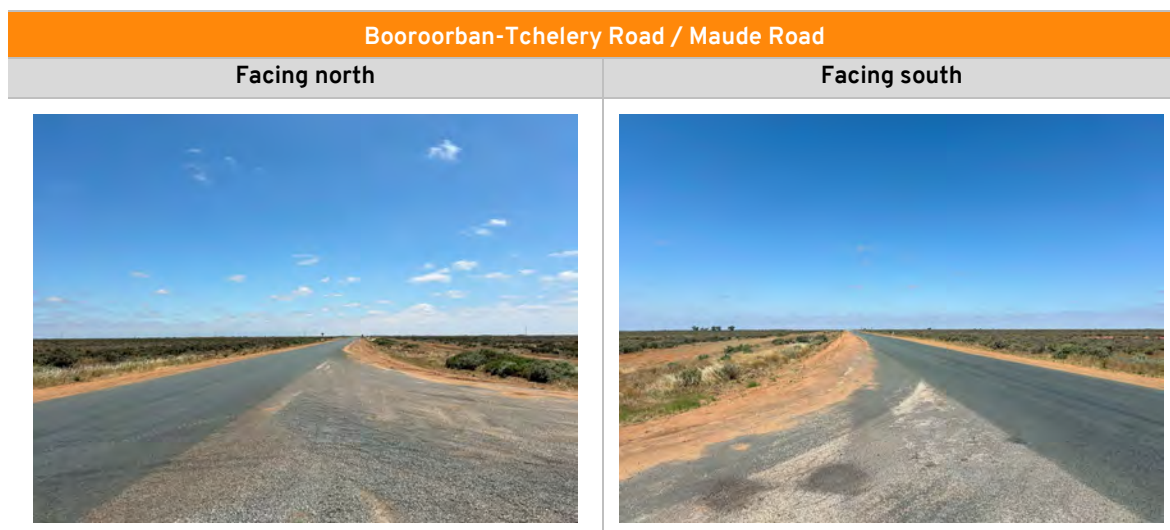
- Cobb Highway / Booroorban-Tchelery Road: 341m for a 120km/hr design speed.
- Booroorban-Tchelery Road / Maude Road: 300m for a 110km/hr design speed.

The available sight distance at each intersection exceeds the requirements of the Austroads Guide given the relatively flat and straight alignment of the road network with vegetation generally limited to low-level ground cover. The sight distance for each intersection is shown in Figure 22, with sight distance assessment for each of the above intersections presented at Appendix I.

Accordingly, vehicles are expected to be able to safely enter the State and Regional road network at each intersection.

Figure 22: Sight Distance Assessment





8. Site Access

8.1 Design

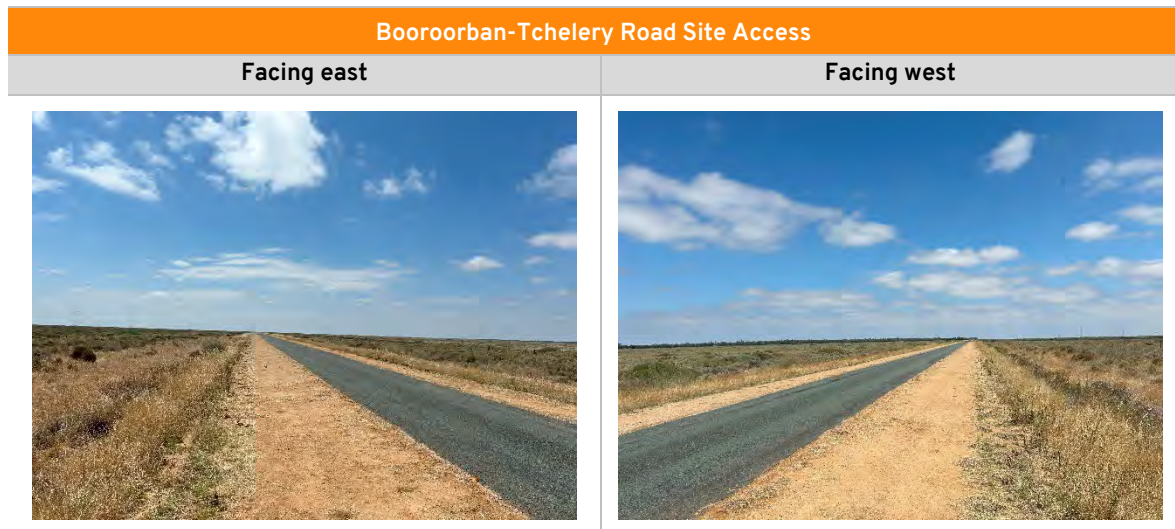
The layout of the Project Area and the proposed access location is shown within Figure 1. A swept path assessment has been undertaken for the site access which is provided within Appendix G and demonstrates the access has been designed for simultaneous B-Double movement to/from the east towards Cobb Highway, as well as the largest OSOM vehicle expected to access the site. Accordingly, it is concluded that the site access has been suitably designed and is able to accommodate the largest vehicles expected to access the Project Area.

8.2 Sight Distance Assessment

A sight distance assessment has been completed for the site access against the Austroads requirements for SISD. Given Booroorban-Tchelery Road has a speed limit of 100km/hr, a design speed of 110km/hr has been adopted which requires an SISD of 300 metres based on a reaction time of 2.5 seconds.

The available sight distance at the site access exceeds the requirements of the Austroads Guide as shown within Figure 23 and the sight distance assessment presented at Appendix I.

Figure 23: Sight Distance Photographs – Site Access



Accordingly, vehicles are expected to be able to safely enter and leave the road network from the proposed site access to Booroorban-Tchelery Road.

9. Traffic Management Plan

It is recommended that a TMP be prepared prior to commencement of construction of the development. The TMP would be prepared and implemented in accordance with Australian Standard 1742.3 and the Work Health and Safety Regulation 2017. The TMP would provide additional information regarding the traffic volumes and distribution of construction vehicles that are not available at this time including:

- Road transport volumes, distribution and vehicle types broken down into:
 - Hours and days of construction.
 - Schedules for phasing/staging of the Project.
- The origin, destination and routes for:
 - Employee and contractor light vehicles.
 - Heavy vehicle traffic.
 - Oversize/overmass vehicles.
- A map of the primary haulage routes highlighting critical locations.
- An induction process for vehicle operators and regular toolbox meetings.
- A complaint resolution and disciplinary procedure.
- Local climatic conditions that may impact road safety of employees throughout all Project phases (e.g. fog, wet and significant dry, dusty weather).

The following provides recommended measures that should be adopted within the TMP to minimise the impact of construction traffic along the road network.

9.1 Information and Communication

The implementation of a community information and awareness program would assist in managing the traffic impacts. Prior to construction commencing and during the construction period, a program of consultation should be initiated to ensure local residents are aware of construction traffic accessing the Project. This program may include elements of the following as appropriate to the phase of works:

- Press releases in local newspapers;
- Specific emails, newsletters and individual letter drops to neighbouring residents along the access route to the Project;
- Provision of a website providing details of the status of works and contact details for complaints or enquiries;
- Provision of key contact personnel and contact details, including out of hours contact information to residents, schools, public activities and business operating alongside the local route; and
- Consultation with and notification to neighbours of the Project regarding the timing of major deliveries which may require additional traffic control and disrupt access.

9.2 Signage

If deemed necessary, specific warning signs advising of the changed traffic operations and heavy vehicle movements are to be appropriately located on approaches to and from the transport routes on Council roads. These should warn existing road users of changed traffic conditions. The use of day warning notices where signs are activated on a specific day to warn local road users of construction activities may also be required.

9.3 Shuttle Buses

Shuttle buses would be used to transport workers to and from the Project Area from Hay and Deniliquin. Measures to ensure the shuttle bus program can be practically achieved and monitored would be included within the Construction Environmental Management Plan and/or TMP.

Recommended measures include:

- Limiting car parking for light vehicles on-site.
- Regular toolbox meeting sessions identifying method of travel to work and strongly encouraging use of the shuttle buses.
- Identifying the bus drop off/pick up locations and clearly communicating these locations with the workforce.
- Allocating a team member to be responsible for enforcement and management of the shuttle buses.
- Identifying mechanisms to be put in place if shuttle bus passenger numbers are not achieved.

9.4 On-Site Mitigation Measures

On-site mitigation measures targeted at safety and reducing the impact of on-site transport would include:

- On-site speed restrictions;
- Appropriate dust suppression measures;
- Maintenance program for on-site access tracks to ensure safe access;
- Loading and unloading is proposed to occur within the work area. No street or roads would be used for material storage at any time;
- Sufficient car parking is to be provided on-site to ensure vehicles do not park on the surrounding road network;
- All car parking and loading areas to be designed in accordance with the relevant Australian Standard (2890 series) and Council requirements; and
- Periodic dilapidation reports to be provided to Council and agreement to rectify any damage made to local roads attributed to the construction of the Project.

9.5 Driver Protocols

Management of vehicular access to and from the Project is essential in order to maintain the safety of the general public as well as the workforce. A Driver Code of Conduct is to be implemented as a measure to maintain safety within and around the Project Area as follows:

- All vehicles would enter and exit the site in a forward direction;
- Heavy vehicle movements should avoid peak school bus times to limit the interaction of larger vehicles and vulnerable road users;
- Safety initiatives for impacts to residential areas and/or school bus zones;
- Utilisation of the designated transport routes only;
- Construction vehicle movements are to abide by finalised schedules as agreed by the relevant authorities;
- All permits for working within the road reserve must be received from the relevant authority prior to works commencing; and
- Heavy vehicle drivers are to maintain radio contact on Booroorban-Tchelery Road to minimise the likelihood of two heavy vehicles passing on Booroorban-Tchelery Road.

The above recommendations would ensure the construction traffic would have a minimal impact to the capacity and safety of the surrounding road network. The TMP would be prepared in conjunction with consultation with Transport for NSW and Edward River Council.

10. Mitigation Measure Summary

The assessment has identified a number of traffic management measures that are to be implemented during construction and recommended to be included in the TMP. The key measures are summarised below:

- Neighbours of the Project are to be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.
- It is recommended that any OSOM vehicle movements be timed so they do not coincide with other OSOM vehicles within the surrounding area to limit the impact to the road network, which can be undertaken as part of the permit application.
- High risk OSOM vehicle movements to undergo comprehensive planning and execution focus to ensure movements are carried out in a safe and responsible manner with reduced impact on other road users.
- Heavy vehicle movements should avoid peak school bus times to limit the interaction of larger vehicles and vulnerable road users.
- The condition of Booroorban-Tchelery Road is to be monitored continuously throughout the duration of the construction period. Dilapidation surveys would be undertaken prior to the commencement of the Project and the road would be returned to its original condition at the completion of the construction period in consultation with Council.
- The unsealed verges of Booroorban-Tchelery Road should be maintained to a standard that supports sustained heavy vehicle usage to ensure safe passing manoeuvres can be undertaken during all weather conditions.
- Construction traffic management be put in place to slow the operating speed on Booroorban-Tchelery Road to be within the recommendations of the ARRB Guide.
-
- Management of potential impacts to the road network, including construction traffic control and measures to control dust generated by construction traffic.
- Project traffic is to maintain radio contact to manage heavy vehicle movements along Booroorban-Tchelery Road to minimise the likelihood of two heavy vehicles having to pass.

10.1 Schedule of Road Upgrades

In addition to the above traffic management measures, it is proposed to provide road upgrades as part of the Project which are to be constructed prior to construction commencing. A schedule of the road upgrades is provided below:

- Construction of a CHR(s)/BAL at the intersection of Cobb Highway / Booroorban-Tchelery Road. The turn treatment requirements at this intersection are discussed in Section 7.1 and a concept plans has been prepared at Appendix H.
- It is recommended to maintain Booroorban-Tchelery Road to its existing condition. Given the relatively straight and flat alignment of the road, there is good visibility to on-coming vehicles providing ample time for drivers to react and slow down. The existing carriageway width consisting of 4.0 metre wide seal and 2.0 metre wide unsealed shoulders is enough for heavy vehicles to pass at slower speeds in the unlikely event this occurs.

The surface and carriageway of the roads, with the inclusion of the proposed upgrades, are suitable to accommodate the future traffic volumes. The preferred access route for OSOM vehicles including the transformer transport vehicle has been identified within the Route Assessment (Appendix F) which identifies some minor road upgrades such as additional hardstand areas, mountable kerbing and temporary removal of traffic signs are required in order to allow OSOM vehicles to access the Project Area.

11. Conclusion

Amber Organisation has assessed the traffic impacts of the proposed Romani BESS for Samsung C&T Renewable Energy Australia. The BESS is proposed to have a storage capacity of up to 200MW/800MWh. The Project Area is located on the northern side of Booroorban-Tchelery Road in Booroorban, approximately 44 kilometres south-west of Hay. Access is proposed via a connection with Booroorban-Tchelery Road approximately 18 kilometres west of Cobb Highway.

On-site construction activities are expected to commence in mid-2026 and take approximately 20 months, with the peak construction period expected to take 10 months. A construction workforce of up to 100 FTE personnel would be on-site during the peak construction phase and would be drawn from the nearby towns of Hay, Deniliquin and Moulamein. The majority of plant is expected to be delivered to the Port of Geelong or Port of Melbourne.

The above assessment determined the following:

- The Project is expected to generate up to 110 vehicle trips per day during peak construction times, including 56 heavy vehicles and 54 light vehicles.
- The road network is able to accommodate the traffic generated by the development during the construction, operation and decommissioning stages.
- The majority of the proposed construction traffic access route from Port of Geelong and Port of Melbourne to the site is designated for B-Double vehicles and as such, the access route is able to accommodate the loads and type of vehicle movements to be generated during construction of the Project. Booroorban-Tchelery Road is not B-Double approved and would require approval from Edward River Council and continuous condition monitoring.
- It is noted that some OSOM vehicles would be required to deliver larger plant and equipment to the Project Area such as the substation transformer and earthmoving equipment. The preferred access route for OSOM vehicles including the transformer transport vehicle has been identified within a Route Assessment (Appendix F). Minor road upgrades such as additional hardstand areas, mountable kerbing and temporary removal of traffic signs are required in order to allow the vehicles to successfully access the Project Area. All OSOM vehicles would travel outside peak hours and are subject to specific road permits that would be applied for by the contractor during the construction period.
- Height restrictions on the OSOM route between the Port of Geelong may place limitations on the OSOM delivery location. The available height clearance on the Port of Melbourne OSOM route are considered appropriate for the transformer OSOM load.
- The intersection of Cobb Highway and Booroorban-Tchelery Road is proposed to be upgraded with CHR(s) and BAL turn treatments and is provided with adequate sight distance to allow vehicles to safely enter and exit Cobb Highway.
- The site access on Booroorban-Tchelery Road is designed to accommodate two-way heavy vehicle movement and is provided with adequate sight distance to allow vehicles to safely enter and exit the road network.
- In order to mitigate the impacts of the development during construction a TMP would be prepared which should include the recommendations provided within this document.

Accordingly, based on the assessment above, it is concluded that the proposed access arrangements are suitable to accommodate the expected construction vehicle types and traffic volumes during the construction and operation phase of the Project.

Appendix A

Response to Agency Advice – TFNSW

The Traffic Impact Assessment has also been prepared in response to the Agency Advice provided by TfNSW. A response to each of the comments provided within the Agency Advice is outlined in Table 25.

Table 25: Response to TfNSW Agency Advice

TfNSW Comment	Response
Identify the timeframe for the schedule of works (commencement year and completion year) overlapping timeframe of components of the construction process (to capture worst case scenario) and identify the hours of construction for the project.	The proposed construction hours and Project timeframe are provided within Section 3.2
Detailed plans identifying the proposed location of any: • Project-related infrastructure within and outside of the project boundary. • Transmission line infrastructure and associated access requirements, or any other project-related structures, within a road reserve. Include demarcation of local and classified road reserves. • Identify the key access roads with the classified road network required for the project (including any access required from classified road network for components being constructed outside of the project area) and justification of additional access required to a classified road in accordance with section 2.119 of State Environmental Planning Policy (Transport and Infrastructure) 2021. • The TIA should identify the source for input materials and quantify the traffic generation associated with the haulage of the source materials.	• Figure 1 shows the proposed layout of the Project in relation to the road network, access location and existing infrastructure. • An existing 220kV transmission line intersects the Project Area and external access to is not anticipated. • All vehicles would access the site via Boorooban-Tchelery Road. A CHR(s) and BAL turn treatment are proposed at the Cobb Highway / Boorooban-Tchelery Road intersection to allow suitable vehicle access. • An overview of the proposed vehicles and travel routes are provided within Sections 4, 5 and 6. Materials are proposed to be sourced from the local area where practical, including the towns of Hay and Deniliquin, and the transport of these materials has been considered in the assessment.
Cumulative impacts: • An assessment should be undertaken as a part of the EIS and TIA to identify the projects that will have overlapping construction periods and assess the cumulative traffic impacts with emphasis on the following: - The cumulative impacts from traffic generated from the construction workforces in terms of the origin-destination routes, access, AM/PM peaks where there is overlap with other projects. - The cumulative impacts of heavy vehicle movements in terms of AM/PM peaks and routes where there is an overlap with other projects. - Cumulative impacts and consideration in relation to the timing of movements of OSOMs where other projects will be utilising the same routes as proposed for this development.	The assessment presented within Section 4.2.5 provides a review of the cumulative impacts of the Project along with other major projects within the surrounding area. The assessment identifies some projects may generate additional vehicle movements within the surrounding area during the Project's construction period. The impacts would be on Sturt Highway and Cobb Highway as the review indicates that none of the assessed projects are expected to utilise Boorooban-Tchelery Road as part of their designated routes for construction traffic. Accordingly, any cumulative traffic impacts with surrounding projects are expected to be minimal.

TfNSW Comment	Response
OSOM routes: - It should be noted that NHVR permits do not cover the civil works required along any proposed OSOM route. Any works required along the OSOM route must be included within the scope of works for the SSD to ensure that the development is constructable. - Provide details on the number of OSOM movements, the intended time for OSOM movements to occur, and GPS coordinates along the proposed routes for pinch points, traffic management measures and pull-over bays / rest areas along the OSOM routes. - Strategic designs and swept paths are required where civil works are required on the state classified road network. - Provide bridge and culvert assessments for any at risk bridges or culverts on the classified road network due to the dimensions of the laden load. - Identify any TfNSW or rail projects that are located along the OSOM route. - Identify all the types of OSOM vehicles proposed to be used for the project. - Maximum component length, widths, heights and mass for the laden loads (vehicle combination +load). - Axle loads and axle group loads in terms of both tonnes and Equivalent Standard Axles (refer to Austroads Guide to Pavement Technology). - In relation to Port of Newcastle, OSOM (vehicles requiring escort) not exceeding 5.3m must incorporate the Inner-City Bypass as a part of the route assessment	- Minor works recommended along the OSOM route are detailed in Section 6. - Proposed routes, including pinch points and rest areas are detailed in Section 6.3. - OSOM vehicles and Swept Paths are provided in Section 6.2 and Appendix F. - Instructions/advice on rail, bridge and underpass crossings are provided in Section 6.4.
Project schedule: - The anticipated workforce at the peak of construction, - Construction hours, days of work and start and end times, - Phases and stages of the project, including construction, operation and decommissioning, - The construction schedule, stages and methodology for determining peak of construction traffic.	Details of the proposed hours of operation and staging are provided within Section 3.
Traffic volumes including: - Existing background traffic, - Project-related traffic for each phase or stage of the project, - Projected cumulative traffic at peak of construction.	Traffic data has been collected for Cobb Highway, Sturt Highway, Maude Road, Booroorban-Tchelery Road and Romani Road as presented within Section 2.3.2. The Project related traffic volumes are presented within Section 4 of this report. The traffic assessment within this report has subsequently focused on the traffic impacts during construction when the majority of vehicle movements are generated and considered potential cumulative traffic impacts of nearby projects during this period.

TfNSW Comment	Response
Traffic characteristics including: • Number and ratio of heavy vehicles to light vehicles, • Peak times for existing traffic, • Peak times for project-related traffic including commuter periods, Note: If there is a reliance on shuttle buses/carpooling proposed to mitigate peak traffic volumes for the AM/PM peak of construction then the TIA is required to detail how the shuttle busing/carpooling commitment will be achieved through strategies, protocols, and the like. • Proposed hours for transportation and haulage (i.e. will they be outside of the AM/PM construction hours, will they coincide with the network peak or will there be impacts with, • Traffic count surveys should be undertaken for a minimum of one full day (preference seven days for improved accuracy of data). The traffic count survey are required to be collected outside of public holidays, events and school holidays. The traffic counts should be collected at each key intersections with the state classified road network forming part of the construction routes and must be collected in accordance with Part 3 of Austroads Guide to Traffic Management. The data (i.e. tube counts) obtained from the traffic count survey should be provided as an appendix to the TIA for the project and used to inform the background traffic counts within the base case (existing background) scenario. • Provide a breakdown of the calculations and assumptions for light vehicles, heavy vehicles requiring escort, heavy vehicles and heavy vehicles requiring NHVR permit. All these vehicle types should be factored into the traffic generation during AM/PM peaks for the project. • Specify the design vehicles for the project (identifying the relevant types of heavy / OSOM / specialist vehicles and shuttle buses) • The AM/PM peaks are required to be measured based on a single trip from origin to destination as a one-way vehicular movement from one point to another excluding the return journey.	• The traffic volumes expected to be generated during construction are presented within Section 4.2.1 which identifies the various light and heavy vehicle movements and timing of movements. • Peak existing traffic times are presented in Section 2.3.2. Shuttle buses would be used to transport workers to and from the Project Area. Further details and measures to ensure the shuttle bus program can be practically achieved and monitored would be included within the Construction Environmental Management Plan and/or TMP as outlined in Section 9.3. • Construction peak traffic times are presented in Section 4.2.1. • Haulage times are presented in Section 6. • Traffic surveys of key intersections are presented in Section 2.3.1 and provided in Appendix C and Appendix D. • Details of the proposed vehicles utilised for construction of the Project are outlined in Section 4 to Section 6.
Capacity analysis using SIDRA or other relevant application, to identify an acceptable Level of Service (LOS) at intersections with the classified (State) road, and where relevant, analysis of any other intersections along the proposed transport route/s.	A SIDRA traffic modelling exercise has been undertaken at the intersection of Cobb Highway / Booroorban-Tchelery Road as outlined in Section 4.2.6. The assessment indicates the intersection is able to accommodate the Project traffic and is expected to continue to operate with a good level of service.
The origins, destinations and routes for: • Commuter (employee and contractor) light vehicles and pool vehicles, • Heavy (haulage) vehicles, • OSOM vehicles.	Section 4.2.4 identifies the distribution of commuter and construction traffic. Section 5 outlines the proposed heavy vehicle routes from the delivery ports. Section 6.3 provides an assessment of the OSOM travel route.

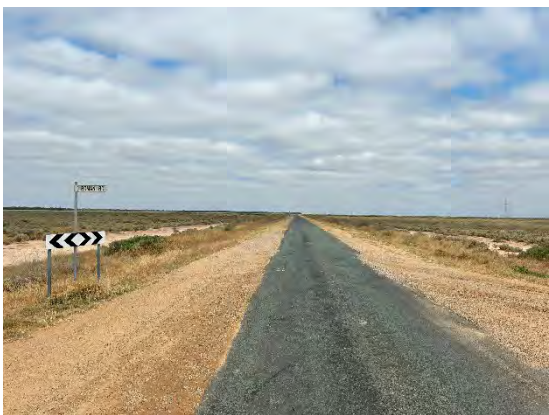
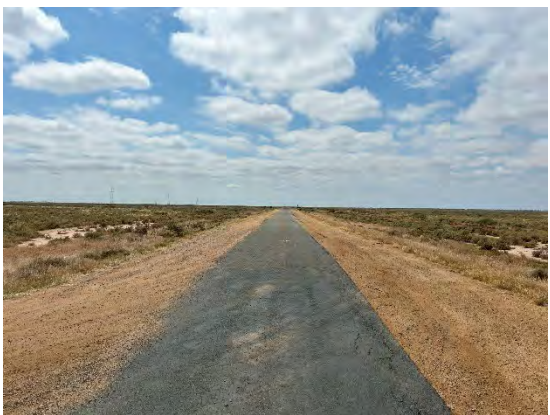
TfNSW Comment	Response
Road safety assessment of key haulage route/s: Where road safety concerns are identified at a specific location along the proposed haulage routes, TfNSW suggests that the TIA be supported by a targeted Road Safety Audit undertaken by suitably qualified persons in accordance with the Austroads Guidelines.	A review of the existing road safety data and casualty crash history is provided within Section 2.6, which indicates that the road network is operating in a relatively safe manner. A TMP is to be developed prior to construction of the Project which should include the recommendations provided within this document. The adoption of the mitigation measures outlined within the TMP would ensure construction traffic has a minimal impact to the capacity and safety of the surrounding road network. Heavy vehicles should avoid travel during peak school bus times to limit the interaction of larger vehicles and vulnerable road users. In addition to the traffic management measures, it is proposed to provide road upgrades which are to be constructed prior to construction commencing as set out at Section 10.1. Construction traffic is expected to be able to safely access the Project Area with the inclusion of the traffic management measures and road upgrades.
Identify the necessary road network infrastructure upgrades that are required to cater for and mitigate the impact of project related traffic for the intersections with the classified road network (as determined by the analysis of the turn warrants) and key pinch points requiring road upgrades identified within the route survey for the development). In this regard, preliminary concept drawings should be submitted with the SSD application for any identified road infrastructure upgrades. It should be noted that any identified road infrastructure upgrades will need to be to the satisfaction of TfNSW and Council.	An overview of the required road upgrades is provided in Section 10.1. The turn treatment upgrades are discussed at Section 10.1 and available sight distance at all locations complies with the requirements of the Austroads Guide.

TfNSW Comment	Response
Proposed road facilities, access and intersection treatments are to be identified and be in accordance with Austroads Guide to Road Design and Austroads Guide to Traffic Management. In particular: • Austroads Guide to Traffic Management Part 3- in relation to traffic count surveys and methodology. • Austroads Guide to Traffic Management Part 6- in particular section 3.3.6 Warrants for BA, AU and CH Turn Treatments for proposed and existing intersections that form part of the construction route that intersect with the state classified road network. The assessment of the turn warrants are required to be based on the worst case scenario, which is typically the construction traffic generated at the peak of construction applied to the AM/PM network peak+ growth rate applied linearly to the year of peak of construction+ cumulative traffic from surrounding Major Projects (that will contribute to the through or turning volumes at the intersections with the state classified road network that form part of the construction route or will be required to be used by concurrently by other major projects). Note projects at EIS stage or approved are required to form part of this assessment. • Part 3, Part 4 and Part 4A of Austroads Guide to Road Design Note: Speed zone reductions are not supported as a measure for managing the construction traffic during the construction period. Temporary speed zone reductions are reserved only for road works and works within the road reserve.	An assessment of the turn treatments at the nearest State Road intersection is provided in Section 7.1 in accordance with the Austroads Guide.
Proposed road facilities, access and intersection treatments are to be identified and be in accordance with Austroads Guide to Road Design including provision of Safe Intersection Sight Distance (SISD) in accordance with Part 4A, TfNSW supplements to Austroads Part 3, based on the accurate design speed (posted speed zone +10km/hr) and reaction time. Measures are required to be identified to ensure SISD is achieved in accordance with Austroads and TfNSW supplements. TfNSW requires compliance with SISD.	An assessment of the SISD has been carried out for the site access as well as the State Road intersections. All locations are provided with adequate sight distance due to the relatively flat and straight alignment of the road network.
Consideration of the local climate conditions that may affect road safety during the life of the project (e.g. fog, wet and dry weather, icy road conditions).	Recommendations have been provided for inclusion within the TMP which address the proposed operation measures during local climate events.
Impact on rail corridors and level crossings detailing any proposed interface treatments.	A review of the rail impacts is provided in Section 6.4.3.

TfNSW Comment	Response
Impact on public transport (public and school bus routes) and consideration for alternative transport modes such as carpooling and shuttle buses during construction.	It is recommended that heavy vehicle movements avoid peak school bus times to limit the interaction of larger vehicles and vulnerable road users. School buses operate along Cobb Highway and Sturt Highway as outlined in Section 2.3.2.5. Shuttle buses would be used to transport workers to and from the Project Area to/from Hay and Deniliquin. The Applicant has also advised that the workforce would be encouraged to carpool to reduce the number of light vehicles travelling to/from the Project.
Identification and assessment of potential environmental impacts of the project, such as blasting, lighting, visual, noise, dust and drainage on the function and integrity of all affected public roads.	Environmental impacts have been assessed by others as part of the Environmental Impact Statement.
Emergency access to a State classified road: • Must identify how the access will be managed (i.e. gates) to prevent the use of the access for other vehicles associated with the development during peak of construction and operation. • Identify the emergency design vehicle and provide a swept path analysis identifying concurrent movements can occur into and out of the access. • Provision of sufficient storage at the throat of the access to allow for the emergency vehicle to store within the access and not within the through lane or shoulder. • Identify compliance with SISD for the design speed (posted speed +10km/hr).	No emergency access locations are proposed to a State classified road.

Appendix B

Photographs – Road Network

Cobb Highway – Booroorban-Tchelery Road Intersection	
Facing north	Facing south
	
Maude Road – Booroorban-Tchelery Road Intersection	
Facing north	Facing south
	
Booroorban-Tchelery Road	
Facing west	Facing east
	



Appendix C

Intersection Turning Movement Surveys

TRANS TRAFFIC SURVEY

trafficsurvey.com.au



TURNING MOVEMENT SURVEY

Intersection of Boorooban-Tchelery Rd and Cobb Hwy, Boorooban

GPS -34.925178, 144.760230

Date:	Thu 31/10/24
Weather:	Fine
Suburban:	Boorooban
Customer:	N/A

North:	Cobb Hwy
East:	N/A
South:	Cobb Hwy
West:	Boorooban-Tchelery Rd

Survey	AM: 6:00 AM-10:00 AM
	PM: 3:00 PM-7:00 PM
Traffic	AM: 9:00 AM-10:00 AM
	PM: 3:00 PM-4:00 PM

All Vehicles

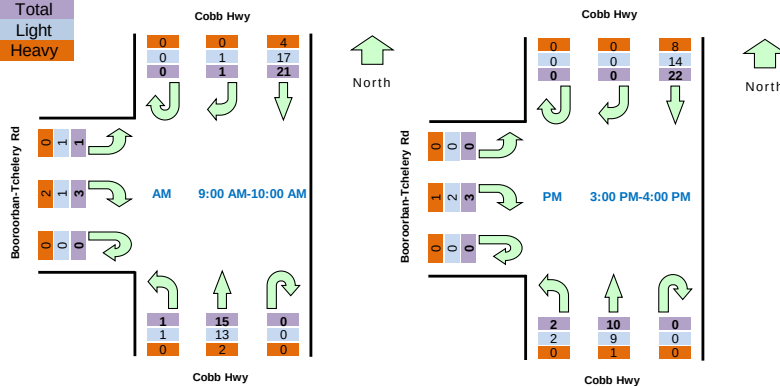
Time	North Approach Cobb Hwy	North Approach Cobb Hwy	North Approach Cobb Hwy	North Approach Cobb Hwy	North Approach Cobb Hwy	North Approach Cobb Hwy	North Approach Cobb Hwy	North Approach Cobb Hwy	North Approach Cobb Hwy	North Approach Cobb Hwy	Hourly Total	Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Hour	Peak
6:00	6:15	0	0	1	0	2	0	0	0	0	12	
6:15	6:30	0	0	0	0	2	2	0	0	0	16	
6:30	6:45	0	0	0	0	2	1	0	0	0	21	
6:45	7:00	0	2	0	0	0	0	0	0	0	24	
7:00	7:15	0	0	4	0	2	0	0	0	1	28	
7:15	7:30	0	0	3	0	5	0	0	1	0	31	
7:30	7:45	0	0	2	0	3	1	0	0	0	31	
7:45	8:00	0	0	1	0	3	0	0	2	0	31	
8:00	8:15	0	0	4	0	5	1	0	0	0	30	
8:15	8:30	0	0	2	0	6	0	0	1	0	27	
8:30	8:45	0	0	3	0	2	0	0	1	0	31	
8:45	9:00	0	0	3	0	2	0	0	0	0	37	
9:00	9:15	0	0	3	0	3	0	0	0	1	42	Peak
9:15	9:30	0	0	8	0	4	1	0	0	0		
9:30	9:45	0	1	5	0	6	0	0	0	0		
9:45	10:00	0	0	5	0	2	0	0	3	0		
15:00	15:15	0	0	5	0	4	0	0	0	0	37	Peak
15:15	15:30	0	0	6	0	2	0	0	2	0	34	
15:30	15:45	0	0	4	0	2	2	0	0	0	30	
15:45	16:00	0	0	7	0	2	0	0	1	0	31	
16:00	16:15	0	0	2	0	2	1	0	1	0	29	
16:15	16:30	0	0	3	0	3	0	0	0	0	28	
16:30	16:45	0	1	4	0	4	0	0	0	0	29	
16:45	17:00	0	0	4	0	4	0	0	0	0	30	
17:00	17:15	0	0	2	0	2	0	0	1	0	28	
17:15	17:30	0	1	3	0	3	0	0	0	0	27	
17:30	17:45	0	1	3	0	1	0	0	5	0	25	
17:45	18:00	0	0	2	0	4	0	0	0	0	17	
18:00	18:15	0	0	2	0	1	1	0	0	0	13	
18:15	18:30	0	0	1	0	2	2	0	0	0		
18:30	18:45	0	0	0	0	2	0	0	0	0		
18:45	19:00	0	0	2	0	0	0	0	0	0		

Peak Time	North Approach Cobb Hwy	North Approach Cobb Hwy	North Approach Cobb Hwy	North Approach Cobb Hwy	North Approach Cobb Hwy	North Approach Cobb Hwy	North Approach Cobb Hwy	North Approach Cobb Hwy	North Approach Cobb Hwy	North Approach Cobb Hwy	Peak total
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Peak total
9:00	10:00	0	1	21	0	15	1	0	3	1	42
15:00	16:00	0	0	22	0	10	2	0	3	0	37

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total
Light
Heavy



TRANS TRAFFIC SURVEY

traffic survey.com.au



TURNING MOVEMENT SURVEY

Intersection of Sturt Hwy and Romani Rd, Hay South

GPS -34.584504, 144.661950

Date:	Thu 31/10/24
Weather:	Fine
Suburban:	Hay South
Customer:	N/A

North:	Sturt Hwy
East:	Romani Rd
South:	Sturt Hwy
West:	N/A

Survey	AM: 6:00 AM-10:00 AM
	PM: 3:00 PM-7:00 PM
Traffic	AM: 9:00 AM-10:00 AM
	PM: 3:00 PM-4:00 PM

All Vehicles

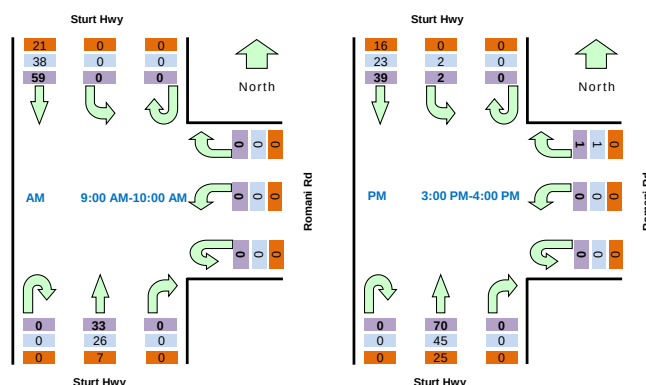
Time		North Approach Sturt Hwy			West Approach Romani Rd			North Approach Sturt Hwy			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
6:00	6:15	0	4	1	0	0	0	0	0	4	62	
6:15	6:30	0	10	0	0	0	0	0	0	4	70	
6:30	6:45	0	15	0	0	0	0	0	0	4	76	
6:45	7:00	0	15	0	0	0	0	0	0	5	83	
7:00	7:15	0	14	0	0	0	0	0	0	3	85	
7:15	7:30	0	14	0	0	0	0	0	0	6	81	
7:30	7:45	0	17	0	0	0	0	0	0	9	88	
7:45	8:00	0	15	0	0	0	0	0	0	7	83	
8:00	8:15	0	4	0	0	1	0	0	0	8	73	
8:15	8:30	0	15	0	0	0	0	0	0	12	80	
8:30	8:45	0	11	1	0	0	0	0	0	9	75	
8:45	9:00	0	7	0	0	0	0	0	0	5	76	
9:00	9:15	0	12	0	0	0	0	0	0	8	92	Peak
9:15	9:30	0	13	0	0	0	0	0	0	9		
9:30	9:45	0	15	0	0	0	0	0	0	7		
9:45	10:00	0	19	0	0	0	0	0	0	9		
15:00	15:15	0	15	0	0	0	0	0	0	21	112	Peak
15:15	15:30	0	9	1	0	0	0	0	0	12	98	
15:30	15:45	0	5	1	0	0	0	0	0	14	99	
15:45	16:00	0	10	0	0	1	0	0	0	23	101	
16:00	16:15	0	10	1	0	1	0	0	0	10	97	
16:15	16:30	0	7	0	0	0	0	0	0	16	96	
16:30	16:45	0	7	1	0	0	0	0	0	14	99	
16:45	17:00	0	13	0	0	0	0	0	0	17	93	
17:00	17:15	0	7	0	0	0	0	0	0	14	82	
17:15	17:30	0	8	1	0	0	0	0	0	17	80	
17:30	17:45	0	4	0	0	0	0	0	0	12	75	
17:45	18:00	0	10	0	0	0	0	0	0	9	70	
18:00	18:15	0	4	0	0	0	0	0	0	15	69	
18:15	18:30	0	5	0	0	0	0	0	0	16		
18:30	18:45	0	5	0	0	0	0	0	0	6		
18:45	19:00	0	5	0	0	0	0	0	0	13		

Peak Time		North Approach Sturt Hwy			West Approach Romani Rd			North Approach Sturt Hwy			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
9:00	10:00	0	59	0	0	0	0	0	0	33	92
15:00	16:00	0	39	2	0	1	0	0	0	70	112

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total
Light
Heavy



Appendix D

Tube Count Data

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

T. 1300 82 88 82 - F. 1300 83 88 83 - E. traffic@trafficsurvey.com.au - W. www.trafficsurvey.com.au

AUTOMATIC COUNT SUMMARY

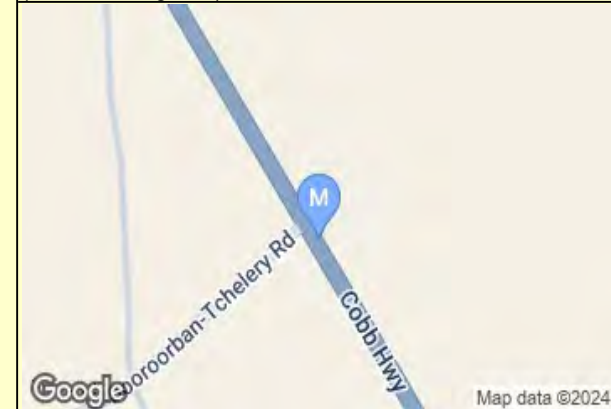
Street Name :	Cobb Hwy	Location :	Just South of Booroorban-Tchelery Rd
Suburb :	Booroorban	Start Date :	00:00 Wed 30/October/2024
Machine ID:	XQ20K35C	Finish Date :	00:00 Wed 06/November/2024
Site ID:	3538	Speed Zone :	100 km/h
Prepared By :	Vo Son Binh	Email:	binh@trafficsurvey.com.au

GPS information Lat 34° 55' 31.20 South Long 144° 45' 37.34 East		Direction of Travel		
		Both directions	Northbound	Southbound
Traffic Volume : (Vehicles/Day)	Weekdays Average	445	215	230
	7 Day Average	417	207	210
Weekday AM	11:00	42	19	24
Peak hour starts PM	12:00	38	16	23
Speeds : (Km/Hr)	85th Percentile	104.7	107.0	103.7
	Average	95.9	97.0	95.3
Classification % :	Light Vehicles up to 5.5m	74.5%	73.9%	75.0%

Location

GPS Information [Load Google Map \(internet required\)](#)

(Latitude, Longitude) -34.925334, 144.760371



[Speed Data](#) [Speed Graph](#) [Speed Bin](#)
[Volume Data](#) [Volume Graph](#) [Classification](#)



QUALITY ASSURED COMPANY BY ISO 9001:2015

OH&S SYSTEM CERTIFIED TO ISO 4801:2001

ENVIRONMENT MANAGEMENT SYSTEM CERTIFIED TO ISO14001:2015

Status of movement – Covid 19

"Traffic behaviour is not the same as pre-pandemic (traditional morning/afternoon peak is much less pronounced and school start/finish times are much more pronounced), the current patterns are close enough to what probably is going to be a 'COVID normal' situation for at least the next year or two. Workplaces are currently not all yet open. These results should be used for indicative assessment only."



Site Cobb Hwy

Direction Both directions ▼

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	4/11/2024	5/11/2024	30/10/2024	31/10/2024	1/11/2024	2/11/2024	3/11/2024	Total	Average	Total	Average	Total	Average
AM Peak	11:00	11:00	09:00	11:00	10:00	09:00	09:00	N/A	11:00	N/A	11:00	N/A	09:00
PM Peak	15:00	12:00	12:00	15:00	12:00	15:00	13:00	N/A	12:00	N/A	12:00	N/A	15:00
00:00	1	1	0	1	0	1	4	8	1	3	1	5	3
01:00	2	5	1	2	0	0	6	16	2	10	2	6	3
02:00	1	3	1	2	1	3	1	12	2	8	2	4	2
03:00	0	1	1	0	1	1	2	6	1	3	1	3	2
04:00	2	1	3	0	6	1	0	13	2	12	2	1	1
05:00	6	8	3	7	5	7	2	38	5	29	6	9	5
06:00	14	15	8	10	17	8	6	78	11	64	13	14	7
07:00	30	27	23	27	28	12	6	153	22	135	27	18	9
08:00	25	34	27	30	35	31	7	189	27	151	30	38	19
09:00	44	41	31	40	39	42	28	265	38	195	39	70	35
10:00	48	41	27	28	46	35	26	251	36	190	38	61	31
11:00	50	63	31	41	27	38	28	278	40	212	42	66	33
12:00	34	43	36	30	48	25	27	243	35	191	38	52	26
13:00	36	42	29	33	39	23	28	230	33	179	36	51	26
14:00	37	38	32	26	30	22	25	210	30	163	33	47	24
15:00	38	13	27	37	32	31	25	203	29	147	29	56	28
16:00	37	22	36	28	41	18	24	206	29	164	33	42	21
17:00	24	24	26	26	25	13	16	154	22	125	25	29	15
18:00	17	7	14	13	21	18	12	102	15	72	14	30	15
19:00	8	5	10	2	25	15	15	80	11	50	10	30	15
20:00	9	10	11	7	13	4	6	60	9	50	10	10	5
21:00	11	4	8	7	11	4	2	47	7	41	8	6	3
22:00	6	4	6	2	5	7	3	33	5	23	5	10	5
23:00	3	3	5	5	8	5	8	37	5	24	5	13	7
Total	483	455	396	404	503	364	307	2912	416	2241	448	671	336
% Heavy	23.60%	26.81%	32.83%	30.94%	26.24%	17.03%	20.52%	25.69%		27.80%		18.63%	

AUTOMATIC COUNTER SUMMARY AND DATA SHEET



Site Cobb Hwy

Direction Northbound ▼

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	4/11/2024	5/11/2024	30/10/2024	31/10/2024	1/11/2024	2/11/2024	3/11/2024	Total	Average	Total	Average	Total	Average
AM Peak	10:00	11:00	09:00	11:00	09:00	11:00	11:00	N/A	11:00	N/A	11:00	N/A	11:00
PM Peak	15:00	13:00	12:00	13:00	13:00	15:00	13:00	N/A	12:00	N/A	12:00	N/A	15:00
00:00	1	0	0	1	0	1	3	6	1	2	0	4	2
01:00	1	3	0	2	0	0	5	11	2	6	1	5	3
02:00	1	0	0	1	0	3	0	5	1	2	0	3	2
03:00	0	1	0	0	1	1	1	4	1	2	0	2	1
04:00	1	0	2	0	3	0	0	6	1	6	1	0	0
05:00	5	6	2	3	2	5	2	25	4	18	4	7	4
06:00	4	7	5	9	6	5	2	38	5	31	6	7	4
07:00	16	15	11	14	15	4	2	77	11	71	14	6	3
08:00	9	13	12	16	21	20	3	94	13	71	14	23	12
09:00	15	15	16	16	23	21	8	114	16	85	17	29	15
10:00	22	18	14	13	21	22	10	120	17	88	18	32	16
11:00	19	26	12	20	16	29	13	135	19	93	19	42	21
12:00	13	13	17	15	20	18	7	103	15	78	16	25	13
13:00	13	16	12	17	22	13	14	107	15	80	16	27	14
14:00	19	15	17	8	17	15	13	104	15	76	15	28	14
15:00	22	2	12	12	18	21	12	99	14	66	13	33	17
16:00	12	8	12	14	18	12	13	89	13	64	13	25	13
17:00	15	13	13	10	18	7	11	87	12	69	14	18	9
18:00	13	6	7	8	11	8	9	62	9	45	9	17	9
19:00	7	3	5	1	16	6	11	49	7	32	6	17	9
20:00	4	5	7	5	12	1	3	37	5	33	7	4	2
21:00	8	3	4	4	10	2	1	32	5	29	6	3	2
22:00	5	3	3	1	4	5	3	24	3	16	3	8	4
23:00	1	3	3	3	7	1	5	23	3	17	3	6	3
Total	226	194	186	193	281	220	151	1451	207	1080	216	371	186
% Heavy	25.66%	32.47%	33.33%	30.57%	26.33%	15.45%	17.22%	25.91%		29.26%		16.17%	

AUTOMATIC COUNTER SUMMARY AND DATA SHEET



Site Cobb Hwy

Direction

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	4/11/2024	5/11/2024	30/10/2024	31/10/2024	1/11/2024	2/11/2024	3/11/2024	Total	Average	Total	Average	Total	Average
AM Peak	11:00	11:00	11:00	09:00	10:00	09:00	09:00	N/A	09:00	N/A	11:00	N/A	09:00
PM Peak	16:00	12:00	16:00	15:00	12:00	13:00	12:00	N/A	12:00	N/A	12:00	N/A	12:00
00:00	0	1	0	0	0	0	1	2	0	1	0	1	1
01:00	1	2	1	0	0	0	1	5	1	4	1	1	1
02:00	0	3	1	1	1	0	1	7	1	6	1	1	1
03:00	0	0	1	0	0	0	1	2	0	1	0	1	1
04:00	1	1	1	0	3	1	0	7	1	6	1	1	1
05:00	1	2	1	4	3	2	0	13	2	11	2	2	1
06:00	10	8	3	1	11	3	4	40	6	33	7	7	4
07:00	14	12	12	13	13	8	4	76	11	64	13	12	6
08:00	16	21	15	14	14	11	4	95	14	80	16	15	8
09:00	29	26	15	24	16	21	20	151	22	110	22	41	21
10:00	26	23	13	15	25	13	16	131	19	102	20	29	15
11:00	31	37	19	21	11	9	15	143	20	119	24	24	12
12:00	21	30	19	15	28	7	20	140	20	113	23	27	14
13:00	23	26	17	16	17	10	14	123	18	99	20	24	12
14:00	18	23	15	18	13	7	12	106	15	87	17	19	10
15:00	16	11	15	25	14	10	13	104	15	81	16	23	12
16:00	25	14	24	14	23	6	11	117	17	100	20	17	9
17:00	9	11	13	16	7	6	5	67	10	56	11	11	6
18:00	4	1	7	5	10	10	3	40	6	27	5	13	7
19:00	1	2	5	1	9	9	4	31	4	18	4	13	7
20:00	5	5	4	2	1	3	3	23	3	17	3	6	3
21:00	3	1	4	3	1	2	1	15	2	12	2	3	2
22:00	1	1	3	1	1	2	0	9	1	7	1	2	1
23:00	2	0	2	2	1	4	3	14	2	7	1	7	4
Total	257	261	210	211	222	144	156	1461	209	1161	232	300	150
% Heavy	21.79%	22.61%	32.38%	31.28%	26.13%	19.44%	23.72%	25.46%		26.44%		21.67%	

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

T. 1300 82 88 82 - F. 1300 83 88 83 - E. traffic@trafficsurvey.com.au - W. www.trafficsurvey.com.au

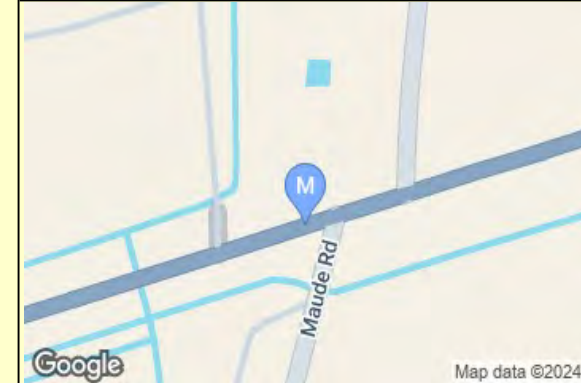
AUTOMATIC COUNT SUMMARY

Street Name :	Sturt Hwy	Location :	Just West of Maude Rd
Suburb :	Maude	Start Date :	00:00 Wed 30/October/2024
Machine ID:	XP78ET8V	Finish Date :	00:00 Wed 06/November/2024
Site ID:	3539	Speed Zone :	100 km/h
Prepared By :	Vo Son Binh	Email:	binh@trafficsurvey.com.au

GPS information		Direction of Travel		
Lat	34° 38' 2.01 South	Both directions	Westbound	Eastbound
Long	144° 17' 11.77 East			
Traffic Volume :				
(Vehicles/Day)				
Weekdays Average		1,618	829	789
7 Day Average		1,501	770	731
Weekday	AM	11:00	112	58
Peak hour start	PM	13:00	113	56
Speeds :		85th Percentile	104.2	104.6
(Km/Hr)		Average	96.2	96.3
Classification % :		Light Vehicles up to 5.5m	68.2%	68.0%
			68.5%	

Location

GPS Information [Load Google Map \(internet required\)](#)
(Latitude, Longitude) -34.633891, 144.286604



[Speed Data](#) [Speed Graph](#) [Speed Bin](#)
[Volume Data](#) [Volume Graph](#) [Classification](#)



QUALITY ASSURED COMPANY BY ISO 9001:2015
OH&S SYSTEM CERTIFIED TO ISO 4801:2001
ENVIRONMENT MANAGEMENT SYSTEM CERTIFIED TO ISO14001:2015

Status of movement – Covid 19

"Traffic behaviour is not the same as pre-pandemic (traditional morning/afternoon peak is much less pronounced and school start/finish times are much more pronounced), the current patterns are close enough to what probably is going to be a 'COVID normal' situation for at least the next year or two. Workplaces are currently not all yet open. These results should be used for indicative assessment only."



Site Sturt Hwy

Direction Both directions ▼

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	4/11/2024	5/11/2024	30/10/2024	31/10/2024	1/11/2024	2/11/2024	3/11/2024	Total	Average	Total	Average	Total	Average
AM Peak	11:00	11:00	09:00	10:00	11:00	10:00	11:00	N/A	11:00	N/A	11:00	N/A	11:00
PM Peak	17:00	13:00	14:00	12:00	13:00	12:00	12:00	N/A	12:00	N/A	13:00	N/A	12:00
00:00	17	35	26	28	19	19	4	148	21	125	25	23	12
01:00	14	28	33	16	25	5	7	128	18	116	23	12	6
02:00	7	19	35	51	24	20	5	161	23	136	27	25	13
03:00	11	23	21	25	28	10	4	122	17	108	22	14	7
04:00	7	13	37	15	10	20	6	108	15	82	16	26	13
05:00	16	33	25	34	27	26	7	168	24	135	27	33	17
06:00	36	45	48	52	67	33	19	300	43	248	50	52	26
07:00	46	89	71	83	90	45	34	458	65	379	76	79	40
08:00	72	103	87	79	91	63	56	551	79	432	86	119	60
09:00	96	101	123	88	95	87	86	676	97	503	101	173	87
10:00	93	92	110	126	104	92	67	684	98	525	105	159	80
11:00	102	104	117	116	122	83	101	745	106	561	112	184	92
12:00	93	119	100	125	102	88	115	742	106	539	108	203	102
13:00	98	120	126	111	110	78	95	738	105	565	113	173	87
14:00	94	103	127	111	84	69	110	698	100	519	104	179	90
15:00	99	93	89	106	71	86	105	649	93	458	92	191	96
16:00	112	93	100	96	105	67	66	639	91	506	101	133	67
17:00	114	81	84	75	75	73	42	544	78	429	86	115	58
18:00	70	68	70	59	57	70	82	476	68	324	65	152	76
19:00	57	61	59	54	35	32	62	360	51	266	53	94	47
20:00	82	84	97	93	62	38	68	524	75	418	84	106	53
21:00	97	44	76	48	32	36	32	365	52	297	59	68	34
22:00	63	28	40	68	28	36	25	288	41	227	45	61	31
23:00	23	42	31	60	29	28	18	231	33	185	37	46	23
Total	1519	1621	1732	1719	1492	1204	1216	10503	1500	8083	1617	2420	1210
% Heavy	27.32%	37.82%	36.84%	32.00%	28.62%	27.74%	29.85%	31.80%		32.70%		28.80%	



Site Sturt Hwy

Direction [Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	4/11/2024	5/11/2024	30/10/2024	31/10/2024	1/11/2024	2/11/2024	3/11/2024	Total	Average	Total	Average	Total	Average
AM Peak	09:00	09:00	09:00	11:00	11:00	10:00	09:00	N/A	11:00	N/A	11:00	N/A	11:00
PM Peak	16:00	12:00	14:00	14:00	13:00	15:00	15:00	N/A	14:00	N/A	14:00	N/A	15:00
00:00	5	15	13	15	13	10	3	74	11	61	12	13	7
01:00	6	14	19	8	11	4	3	65	9	58	12	7	4
02:00	3	7	13	23	11	10	2	69	10	57	11	12	6
03:00	6	12	9	15	15	6	2	65	9	57	11	8	4
04:00	4	10	20	7	4	8	2	55	8	45	9	10	5
05:00	10	21	18	19	15	18	6	107	15	83	17	24	12
06:00	16	32	33	31	34	25	10	181	26	146	29	35	18
07:00	25	53	52	48	53	31	19	281	40	231	46	50	25
08:00	44	60	51	40	46	38	31	310	44	241	48	69	35
09:00	50	63	68	45	52	40	44	362	52	278	56	84	42
10:00	44	50	66	58	57	56	31	362	52	275	55	87	44
11:00	50	57	63	59	59	47	44	379	54	288	58	91	46
12:00	43	74	45	64	48	41	53	368	53	274	55	94	47
13:00	51	57	61	46	65	41	35	356	51	280	56	76	38
14:00	46	55	66	69	49	38	58	381	54	285	57	96	48
15:00	51	44	50	53	32	45	62	337	48	230	46	107	54
16:00	56	55	46	36	55	34	31	313	45	248	50	65	33
17:00	40	35	35	30	29	38	20	227	32	169	34	58	29
18:00	27	29	35	21	28	34	36	210	30	140	28	70	35
19:00	28	39	27	26	14	13	36	183	26	134	27	49	25
20:00	36	37	48	46	29	15	32	243	35	196	39	47	24
21:00	46	25	38	25	19	18	16	187	27	153	31	34	17
22:00	32	13	23	37	17	21	15	158	23	122	24	36	18
23:00	8	23	14	31	13	15	11	115	16	89	18	26	13
Total	727	880	913	852	768	646	602	5388	770	4140	828	1248	624
% Heavy	24.07%	36.25%	39.65%	33.33%	31.38%	29.41%	26.25%	32.09%		33.36%		27.88%	

AUTOMATIC COUNTER SUMMARY AND DATA SHEET



Site Sturt Hwy

Direction Eastbound ▼

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	4/11/2024	5/11/2024	30/10/2024	31/10/2024	1/11/2024	2/11/2024	3/11/2024	Total	Average	Total	Average	Total	Average
AM Peak	11:00	11:00	09:00	10:00	11:00	09:00	11:00	N/A	11:00	N/A	11:00	N/A	11:00
PM Peak	17:00	13:00	13:00	13:00	12:00	12:00	12:00	N/A	13:00	N/A	13:00	N/A	12:00
00:00	12	20	13	13	6	9	1	74	11	64	13	10	5
01:00	8	14	14	8	14	1	4	63	9	58	12	5	3
02:00	4	12	22	28	13	10	3	92	13	79	16	13	7
03:00	5	11	12	10	13	4	2	57	8	51	10	6	3
04:00	3	3	17	8	6	12	4	53	8	37	7	16	8
05:00	6	12	7	15	12	8	1	61	9	52	10	9	5
06:00	20	13	15	21	33	8	9	119	17	102	20	17	9
07:00	21	36	19	35	37	14	15	177	25	148	30	29	15
08:00	28	43	36	39	45	25	25	241	34	191	38	50	25
09:00	46	38	55	43	43	47	42	314	45	225	45	89	45
10:00	49	42	44	68	47	36	36	322	46	250	50	72	36
11:00	52	47	54	57	63	36	57	366	52	273	55	93	47
12:00	50	45	55	61	54	47	62	374	53	265	53	109	55
13:00	47	63	65	65	45	37	60	382	55	285	57	97	49
14:00	48	48	61	42	35	31	52	317	45	234	47	83	42
15:00	48	49	39	53	39	41	43	312	45	228	46	84	42
16:00	56	38	54	60	50	33	35	326	47	258	52	68	34
17:00	74	46	49	45	46	35	22	317	45	260	52	57	29
18:00	43	39	35	38	29	36	46	266	38	184	37	82	41
19:00	29	22	32	28	21	19	26	177	25	132	26	45	23
20:00	46	47	49	47	33	23	36	281	40	222	44	59	30
21:00	51	19	38	23	13	18	16	178	25	144	29	34	17
22:00	31	15	17	31	11	15	10	130	19	105	21	25	13
23:00	15	19	17	29	16	13	7	116	17	96	19	20	10
Total	792	741	819	867	724	558	614	5115	731	3943	789	1172	586
% Heavy	30.30%	39.68%	33.70%	30.68%	25.69%	25.81%	33.39%	31.50%		32.01%		29.78%	

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

T. 1300 82 88 82 - F. 1300 83 88 83 - E. traffic@trafficsurvey.com.au - W. www.trafficsurvey.com.au

AUTOMATIC COUNT SUMMARY

Street Name :	Boooroban-Tchelery Rd	Location :	Approx. 1.66km East of Roman Rd
Suburb :	Boooroban	Start Date :	00:00 Wed 30/October/2024
Machine ID:	P799P74F	Finish Date :	00:00 Wed 06/November/2024
Site ID:	3537	Speed Zone :	100 km/h
Prepared By :	Vo Son Binh	Email:	binh@trafficsurvey.com.au

GPS information Lat 34° 53' 36.52 South		Direction of Travel		
Long 144° 34' 36.68 East		Both directions	Westbound	Eastbound
Traffic Volume : (Vehicles/Day)	Weekdays Average	15	6	9
	7 Day Average	16	8	8
Weekday AM	10:00	2	0	1
Peak hour start PM	13:00	2	1	1
Speeds : (Km/Hr)	85th Percentile	100.3	100.8	98.5
	Average	97.7	97.2	96.7
Classification % :	Light Vehicles up to 5.5m	87.5%	77.8%	77.8%

Location

GPS Information [Load Google Map \(internet required\)](#)

(Latitude, Longitude) -34.893479, 144.576855



[Speed Data](#)

[Speed Graph](#)

[Speed Bin](#)

[Volume Data](#)

[Volume Graph](#)

[Classification](#)



QUALITY ASSURED COMPANY BY ISO 9001:2015

OH&S SYSTEM CERTIFIED TO ISO 4801:2001

ENVIRONMENT MANAGEMENT SYSTEM CERTIFIED TO ISO14001:2015

Status of movement – Covid 19

"Traffic behaviour is not the same as pre-pandemic (traditional morning/afternoon peak is much less pronounced and school start/finish times are much more pronounced), the current patterns are close enough to what probably is going to be a 'COVID normal' situation for at least the next year or two. Workplaces are currently not all yet open. These results should be used for indicative assessment only."



Site Booroorban-Tchelery Rd

Direction

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	4/11/2024	5/11/2024	30/10/2024	31/10/2024	1/11/2024	2/11/2024	3/11/2024	Total	Average	Total	Average	Total	Average
AM Peak	11:00	10:00	09:00	10:00	07:00	09:00	11:00	N/A	06:00	N/A	10:00	N/A	09:00
PM Peak	15:00	16:00	13:00	17:00	13:00	12:00	12:00	N/A	12:00	N/A	13:00	N/A	12:00
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	1	1	0	0	0	1	1
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	0	0	3	1	0	1	5	1	4	1	1	1
07:00	0	0	0	0	3	1	0	4	1	3	1	1	1
08:00	0	1	0	3	3	0	1	8	1	7	1	1	1
09:00	0	1	1	2	0	2	1	7	1	4	1	3	2
10:00	0	3	1	4	0	1	1	10	1	8	2	2	1
11:00	3	2	0	3	0	0	2	10	1	8	2	2	1
12:00	0	1	0	1	2	6	2	12	2	4	1	8	4
13:00	1	1	2	2	3	0	1	10	1	9	2	1	1
14:00	0	1	0	4	1	0	1	7	1	6	1	1	1
15:00	2	2	0	1	0	1	0	6	1	5	1	1	1
16:00	1	4	0	1	1	1	0	8	1	7	1	1	1
17:00	1	0	1	5	0	1	2	10	1	7	1	3	2
18:00	0	1	1	2	1	1	2	8	1	5	1	3	2
19:00	2	0	0	0	1	0	2	5	1	3	1	2	1
20:00	1	0	1	0	0	0	0	2	0	2	0	0	0
21:00	1	0	1	0	2	0	0	4	1	4	1	0	0
22:00	0	0	2	0	0	2	0	4	1	2	0	2	1
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	12	17	10	31	18	16	17	121	17	88	18	33	17
% Heavy	16.67%	29.41%	20.00%	29.03%	16.67%	0.00%	0.00%	17.36%		23.86%		0.00%	



Site Booroorban-Tchelery Rd

Direction

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	4/11/2024	5/11/2024	30/10/2024	31/10/2024	1/11/2024	2/11/2024	3/11/2024	Total	Average	Total	Average	Total	Average
AM Peak	11:00	08:00	00:00	06:00	06:00	07:00	11:00	N/A	06:00	N/A	06:00	N/A	02:00
PM Peak	15:00	12:00	13:00	14:00	12:00	12:00	17:00	N/A	12:00	N/A	12:00	N/A	12:00
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	1	1	0	0	0	1	1
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	0	0	3	1	0	0	4	1	4	1	0	0
07:00	0	0	0	0	1	1	0	2	0	1	0	1	1
08:00	0	1	0	0	1	0	0	2	0	2	0	0	0
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	1	0	1	0	1	0	3	0	2	0	1	1
11:00	1	1	0	3	0	0	2	7	1	5	1	2	1
12:00	0	1	0	1	2	5	0	9	1	4	1	5	3
13:00	0	1	2	0	1	0	0	4	1	4	1	0	0
14:00	0	0	0	4	1	0	1	6	1	5	1	1	1
15:00	1	0	0	0	0	0	0	1	0	1	0	0	0
16:00	1	0	0	0	0	1	0	2	0	1	0	1	1
17:00	0	0	1	0	0	0	2	3	0	1	0	2	1
18:00	0	1	0	1	0	0	2	4	1	2	0	2	1
19:00	0	0	0	0	1	0	2	3	0	1	0	2	1
20:00	1	0	1	0	0	0	0	2	0	2	0	0	0
21:00	1	0	1	0	2	0	0	4	1	4	1	0	0
22:00	0	0	2	0	0	2	0	4	1	2	0	2	1
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	5	6	7	13	10	10	10	61	9	41	8	20	10
% Heavy	0.00%	50.00%	28.57%	30.77%	20.00%	0.00%	0.00%	18.03%		26.83%		0.00%	



Site Booroorban-Tchelery Rd

Direction

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	4/11/2024	5/11/2024	30/10/2024	31/10/2024	1/11/2024	2/11/2024	3/11/2024	Total	Average	Total	Average	Total	Average
AM Peak	11:00	10:00	09:00	08:00	07:00	09:00	06:00	N/A	08:00	N/A	08:00	N/A	09:00
PM Peak	19:00	16:00	18:00	17:00	13:00	12:00	12:00	N/A	13:00	N/A	13:00	N/A	12:00
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	1	1	0	0	0	1	1
07:00	0	0	0	0	2	0	0	2	0	2	0	0	0
08:00	0	0	0	3	2	0	1	6	1	5	1	1	1
09:00	0	1	1	2	0	2	1	7	1	4	1	3	2
10:00	0	2	1	3	0	0	1	7	1	6	1	1	1
11:00	2	1	0	0	0	0	0	3	0	3	1	0	0
12:00	0	0	0	0	0	1	2	3	0	0	0	3	2
13:00	1	0	0	2	2	0	1	6	1	5	1	1	1
14:00	0	1	0	0	0	0	0	1	0	1	0	0	0
15:00	1	2	0	1	0	1	0	5	1	4	1	1	1
16:00	0	4	0	1	1	0	0	6	1	6	1	0	0
17:00	1	0	0	5	0	1	0	7	1	6	1	1	1
18:00	0	0	1	1	1	1	0	4	1	3	1	1	1
19:00	2	0	0	0	0	0	0	2	0	2	0	0	0
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	7	11	3	18	8	6	7	60	9	47	9	13	7
% Heavy	28.57%	18.18%	0.00%	27.78%	12.50%	0.00%	0.00%	16.67%		21.28%		0.00%	

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

T. 1300 82 88 82 - F. 1300 83 88 83 - E. traffic@trafficsurvey.com.au - W. www.trafficsurvey.com.au

AUTOMATIC COUNT SUMMARY

Street Name :	Romani Rd	Location :	Approx. 2.0km North of Boorooban Tchelev Rd
Suburb :	Boorooban	Start Date :	00:00 Thu 31/October/2024
Machine ID:	YB47Q5GY	Finish Date :	00:00 Thu 07/November/2024
Site ID:	3536	Speed Zone :	90 km/h
Prepared By :	Vo Son Binh	Email:	binh@trafficsurvey.com.au

GPS information Lat 34° 52' 15.62 South Long 144° 36' 6.88 East		Direction of Travel		
		Both directions	Northbound	Southbound
Traffic Volume : (Vehicles/Day)	Weekdays Average	6	3	3
	7 Day Average	4	1	3
Weekday AM	07:00	1	0	1
Peak hour starts PM	12:00	1	1	0
Speeds : (Km/Hr)	85th Percentile	86.3	85.0	86.7
	Average	82.9	80.7	84.4
Classification % :	Light Vehicles up to 5.5m	80.0%	80.0%	80.0%

Location

GPS Information [Load Google Map \(internet required\)](#)
(Latitude, Longitude) -34.871005, 144.601910



[Speed Data](#) [Speed Graph](#) [Speed Bin](#)
[Volume Data](#) [Volume Graph](#) [Classification](#)



QUALITY ASSURED COMPANY BY ISO 9001:2015

OH&S SYSTEM CERTIFIED TO ISO 4801:2001

ENVIRONMENT MANAGEMENT SYSTEM CERTIFIED TO ISO14001:2015

Status of movement – Covid 19

"Traffic behaviour is not the same as pre-pandemic (traditional morning/afternoon peak is much less pronounced and school start/finish times are much more pronounced), the current patterns are close enough to what probably is going to be a 'COVID normal' situation for at least the next year or two. Workplaces are currently not all yet open. These results should be used for indicative assessment only."



Site Romani Rd

Direction

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	4/11/2024	5/11/2024	6/11/2024	31/10/2024	1/11/2024	2/11/2024	3/11/2024	Total	Average	Total	Average	Total	Average
AM Peak	07:00	07:00	11:00	07:00	08:00	00:00	02:00	N/A	07:00	N/A	07:00	N/A	02:00
PM Peak	16:00	14:00	14:00	15:00	12:00	17:00	12:00	N/A	12:00	N/A	12:00	N/A	12:00
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	1	1	0	0	0	1	1
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	1	1	0	0	0	1	1
07:00	2	2	0	2	1	0	0	7	1	7	1	0	0
08:00	0	0	0	0	2	0	0	2	0	2	0	0	0
09:00	0	2	0	2	0	0	1	5	1	4	1	1	1
10:00	1	1	0	0	1	0	1	4	1	3	1	1	1
11:00	0	2	1	0	0	0	0	3	0	3	1	0	0
12:00	0	1	0	0	3	0	1	5	1	4	1	1	1
13:00	0	0	0	2	0	0	0	2	0	2	0	0	0
14:00	0	3	1	2	1	0	0	7	1	7	1	0	0
15:00	0	1	0	3	1	0	1	6	1	5	1	1	1
16:00	2	0	1	0	0	0	0	3	0	3	1	0	0
17:00	0	0	1	0	1	1	0	3	0	2	0	1	1
18:00	0	3	0	3	1	1	1	9	1	7	1	2	1
19:00	1	0	0	0	0	0	0	1	0	1	0	0	0
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	0	0	0	3	0	0	3	0	3	1	0	0
22:00	0	0	0	0	0	1	0	1	0	0	0	1	1
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	6	15	4	14	14	3	7	63	9	53	11	10	5
% Heavy	50.00%	26.67%	0.00%	14.29%	7.14%	0.00%	42.86%	20.63%		18.87%		30.00%	



Site Romani Rd

Direction Northbound ▼

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	4/11/2024	5/11/2024	6/11/2024	31/10/2024	1/11/2024	2/11/2024	3/11/2024	Total	Average	Total	Average	Total	Average
AM Peak	10:00	07:00	00:00	07:00	08:00	00:00	02:00	N/A	00:00	N/A	00:00	N/A	02:00
PM Peak	19:00	18:00	14:00	18:00	12:00	17:00	15:00	N/A	18:00	N/A	12:00	N/A	15:00
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	1	1	0	0	0	1	1
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	1	1	0	0	0	1	1
07:00	0	1	0	1	0	0	0	2	0	2	0	0	0
08:00	0	0	0	0	1	0	0	1	0	1	0	0	0
09:00	0	1	0	1	0	0	1	3	0	2	0	1	1
10:00	1	0	0	0	0	0	1	2	0	1	0	1	1
11:00	0	1	0	0	0	0	0	1	0	1	0	0	0
12:00	0	0	0	0	3	0	0	3	0	3	1	0	0
13:00	0	0	0	1	0	0	0	1	0	1	0	0	0
14:00	0	1	1	0	0	0	0	2	0	2	0	0	0
15:00	0	1	0	1	0	0	1	3	0	2	0	1	1
16:00	0	0	1	0	0	0	0	1	0	1	0	0	0
17:00	0	0	0	0	0	1	0	1	0	0	0	1	1
18:00	0	2	0	3	0	0	0	5	1	5	1	0	0
19:00	1	0	0	0	0	0	0	1	0	1	0	0	0
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	0	0	0	3	0	0	3	0	3	1	0	0
22:00	0	0	0	0	0	1	0	1	0	0	0	1	1
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	7	2	7	7	2	5	32	5	25	5	7	4
% Heavy	50.00%	28.57%	0.00%	14.29%	14.29%	0.00%	40.00%	21.88%		20.00%		28.57%	



Site Romani Rd

Direction Southbound ▼

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	4/11/2024	5/11/2024	6/11/2024	31/10/2024	1/11/2024	2/11/2024	3/11/2024	Total	Average	Total	Average	Total	Average
AM Peak	07:00	07:00	11:00	07:00	07:00	00:00	00:00	N/A	07:00	N/A	07:00	N/A	00:00
PM Peak	16:00	14:00	17:00	14:00	14:00	18:00	12:00	N/A	14:00	N/A	14:00	N/A	12:00
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	2	1	0	1	1	0	0	5	1	5	1	0	0
08:00	0	0	0	0	1	0	0	1	0	1	0	0	0
09:00	0	1	0	1	0	0	0	2	0	2	0	0	0
10:00	0	1	0	0	1	0	0	2	0	2	0	0	0
11:00	0	1	1	0	0	0	0	2	0	2	0	0	0
12:00	0	1	0	0	0	0	1	2	0	1	0	1	1
13:00	0	0	0	1	0	0	0	1	0	1	0	0	0
14:00	0	2	0	2	1	0	0	5	1	5	1	0	0
15:00	0	0	0	2	1	0	0	3	0	3	1	0	0
16:00	2	0	0	0	0	0	0	2	0	2	0	0	0
17:00	0	0	1	0	1	0	0	2	0	2	0	0	0
18:00	0	1	0	0	1	1	1	4	1	2	0	2	1
19:00	0	0	0	0	0	0	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	4	8	2	7	7	1	2	31	4	28	6	3	2
% Heavy	50.00%	25.00%	0.00%	14.29%	0.00%	0.00%	50.00%	19.35%		17.86%		33.33%	

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

T. 1300 82 88 82 - F. 1300 83 88 83 - E. traffic@trafficsurvey.com.au - W. www.trafficsurvey.com.au

AUTOMATIC COUNT SUMMARY

Street Name :	Maude Rd	Location :	South of Sturt Hwy
Suburb :	Maude	Start Date :	00:00 Wed 30/October/2024
Machine ID:	XP74A7SX	Finish Date :	00:00 Wed 06/November/2024
Site ID:	3540	Speed Zone :	80 km/h
Prepared By :	Vo Son Binh	Email:	binh@trafficsurvey.com.au

GPS information Lat 34° 38' 15.50 South Long 144° 17' 8.92 East		Direction of Travel		
		Both directions	Northbound	Southbound
Traffic Volume : (Vehicles/Day)	Weekdays Average	195	88	107
	7 Day Average	187	92	95
Weekday AM	10:00	18	7	10
Peak hour starts PM	12:00	17	6	11
Speeds : (Km/Hr)	85th Percentile	83.5	82.5	85.9
	Average	74.8	74.0	76.4
Classification % :	Light Vehicles up to 5.5m	74.2%	73.9%	74.5%

Location

GPS Information [Load Google Map \(internet required\)](#)

(Latitude, Longitude) -34.637638, 144.285811



[Speed Data](#) [Speed Graph](#) [Speed Bin](#)
[Volume Data](#) [Volume Graph](#) [Classification](#)



QUALITY ASSURED COMPANY BY ISO 9001:2015

OH&S SYSTEM CERTIFIED TO ISO 4801:2001

ENVIRONMENT MANAGEMENT SYSTEM CERTIFIED TO ISO14001:2015

Status of movement – Covid 19

"Traffic behaviour is not the same as pre-pandemic (traditional morning/afternoon peak is much less pronounced and school start/finish times are much more pronounced), the current patterns are close enough to what probably is going to be a 'COVID normal' situation for at least the next year or two. Workplaces are currently not all yet open. These results should be used for indicative assessment only."

AUTOMATIC COUNTER SUMMARY AND DATA SHEET



Site Maude Rd

Direction Both directions ▼

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	4/11/2024	5/11/2024	30/10/2024	31/10/2024	1/11/2024	2/11/2024	3/11/2024	Total	Average	Total	Average	Total	Average
AM Peak	11:00	10:00	10:00	08:00	09:00	09:00	11:00	N/A	09:00	N/A	10:00	N/A	09:00
PM Peak	15:00	12:00	14:00	14:00	15:00	12:00	14:00	N/A	14:00	N/A	12:00	N/A	14:00
00:00	0	0	1	1	2	1	0	5	1	4	1	1	1
01:00	0	2	3	3	0	4	0	12	2	8	2	4	2
02:00	0	0	0	2	0	0	0	2	0	2	0	0	0
03:00	0	0	0	0	1	1	0	2	0	1	0	1	1
04:00	0	1	7	1	1	0	0	10	1	10	2	0	0
05:00	2	0	0	0	1	0	1	4	1	3	1	1	1
06:00	10	1	5	12	11	3	4	46	7	39	8	7	4
07:00	8	14	6	9	16	10	4	67	10	53	11	14	7
08:00	12	15	9	20	5	10	10	81	12	61	12	20	10
09:00	13	15	11	13	25	18	13	108	15	77	15	31	16
10:00	14	21	19	13	21	7	10	105	15	88	18	17	9
11:00	17	14	9	8	22	7	15	92	13	70	14	22	11
12:00	15	31	11	12	15	15	14	113	16	84	17	29	15
13:00	9	11	14	15	22	8	12	91	13	71	14	20	10
14:00	12	15	20	19	15	15	20	116	17	81	16	35	18
15:00	17	7	12	16	24	10	17	103	15	76	15	27	14
16:00	13	9	13	15	16	12	20	98	14	66	13	32	16
17:00	7	8	7	10	10	12	11	65	9	42	8	23	12
18:00	7	8	17	10	8	4	10	64	9	50	10	14	7
19:00	11	3	4	2	5	5	10	40	6	25	5	15	8
20:00	10	1	6	4	12	3	3	39	6	33	7	6	3
21:00	12	3	3	1	3	1	2	25	4	22	4	3	2
22:00	1	0	0	2	3	0	1	7	1	6	1	1	1
23:00	6	2	2	0	0	0	1	11	2	10	2	1	1
Total	196	181	179	188	238	146	178	1306	187	982	196	324	162
% Heavy	26.53%	27.62%	28.49%	30.85%	26.47%	22.60%	18.54%	26.03%		27.90%		20.37%	



Site Maude Rd

Direction Northbound ▼

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	4/11/2024	5/11/2024	30/10/2024	31/10/2024	1/11/2024	2/11/2024	3/11/2024	Total	Average	Total	Average	Total	Average
AM Peak	08:00	09:00	09:00	09:00	10:00	09:00	09:00	N/A	09:00	N/A	10:00	N/A	09:00
PM Peak	15:00	12:00	14:00	15:00	13:00	12:00	14:00	N/A	15:00	N/A	13:00	N/A	12:00
00:00	0	0	1	0	0	0	0	1	0	1	0	0	0
01:00	0	2	1	2	0	2	0	7	1	5	1	2	1
02:00	0	0	0	1	0	0	0	1	0	1	0	0	0
03:00	0	0	0	0	0	1	0	1	0	0	0	1	1
04:00	0	1	4	0	0	0	0	5	1	5	1	0	0
05:00	2	0	0	0	1	0	0	3	0	3	1	0	0
06:00	4	0	4	2	3	1	1	15	2	13	3	2	1
07:00	2	4	2	2	6	5	1	22	3	16	3	6	3
08:00	6	6	3	5	1	6	7	34	5	21	4	13	7
09:00	4	7	6	6	9	10	9	51	7	32	6	19	10
10:00	5	6	6	6	14	4	6	47	7	37	7	10	5
11:00	6	5	4	1	11	5	7	39	6	27	5	12	6
12:00	6	13	5	2	4	13	7	50	7	30	6	20	10
13:00	3	6	7	10	14	8	5	53	8	40	8	13	7
14:00	7	5	11	8	11	6	11	59	8	42	8	17	9
15:00	11	1	5	14	11	8	10	60	9	42	8	18	9
16:00	10	5	5	9	8	4	6	47	7	37	7	10	5
17:00	4	4	4	5	7	8	8	40	6	24	5	16	8
18:00	4	4	9	8	7	2	4	38	5	32	6	6	3
19:00	5	2	1	0	4	3	7	22	3	12	2	10	5
20:00	3	0	3	2	5	2	3	18	3	13	3	5	3
21:00	8	1	2	0	1	1	1	14	2	12	2	2	1
22:00	1	0	0	1	2	0	0	4	1	4	1	0	0
23:00	3	2	2	0	0	0	1	8	1	7	1	1	1
Total	94	74	85	84	119	89	94	639	91	456	91	183	92
% Heavy	29.79%	25.68%	27.06%	32.14%	25.21%	22.47%	20.21%	25.98%		27.85%		21.31%	



Site Maude Rd

Direction Southbound ▼

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	4/11/2024	5/11/2024	30/10/2024	31/10/2024	1/11/2024	2/11/2024	3/11/2024	Total	Average	Total	Average	Total	Average
AM Peak	11:00	10:00	10:00	08:00	09:00	09:00	11:00	N/A	09:00	N/A	10:00	N/A	09:00
PM Peak	12:00	12:00	14:00	14:00	15:00	14:00	16:00	N/A	12:00	N/A	12:00	N/A	16:00
00:00	0	0	0	1	2	1	0	4	1	3	1	1	1
01:00	0	0	2	1	0	2	0	5	1	3	1	2	1
02:00	0	0	0	1	0	0	0	1	0	1	0	0	0
03:00	0	0	0	0	1	0	0	1	0	1	0	0	0
04:00	0	0	3	1	1	0	0	5	1	5	1	0	0
05:00	0	0	0	0	0	0	1	1	0	0	0	1	1
06:00	6	1	1	10	8	2	3	31	4	26	5	5	3
07:00	6	10	4	7	10	5	3	45	6	37	7	8	4
08:00	6	9	6	15	4	4	3	47	7	40	8	7	4
09:00	9	8	5	7	16	8	4	57	8	45	9	12	6
10:00	9	15	13	7	7	3	4	58	8	51	10	7	4
11:00	11	9	5	7	11	2	8	53	8	43	9	10	5
12:00	9	18	6	10	11	2	7	63	9	54	11	9	5
13:00	6	5	7	5	8	0	7	38	5	31	6	7	4
14:00	5	10	9	11	4	9	9	57	8	39	8	18	9
15:00	6	6	7	2	13	2	7	43	6	34	7	9	5
16:00	3	4	8	6	8	8	14	51	7	29	6	22	11
17:00	3	4	3	5	3	4	3	25	4	18	4	7	4
18:00	3	4	8	2	1	2	6	26	4	18	4	8	4
19:00	6	1	3	2	1	2	3	18	3	13	3	5	3
20:00	7	1	3	2	7	1	0	21	3	20	4	1	1
21:00	4	2	1	1	2	0	1	11	2	10	2	1	1
22:00	0	0	0	1	1	0	1	3	0	2	0	1	1
23:00	3	0	0	0	0	0	0	3	0	3	1	0	0
Total	102	107	94	104	119	57	84	667	95	526	105	141	71
% Heavy	23.53%	28.97%	29.79%	29.81%	27.73%	22.81%	16.67%	26.09%		27.95%		19.15%	

Appendix E

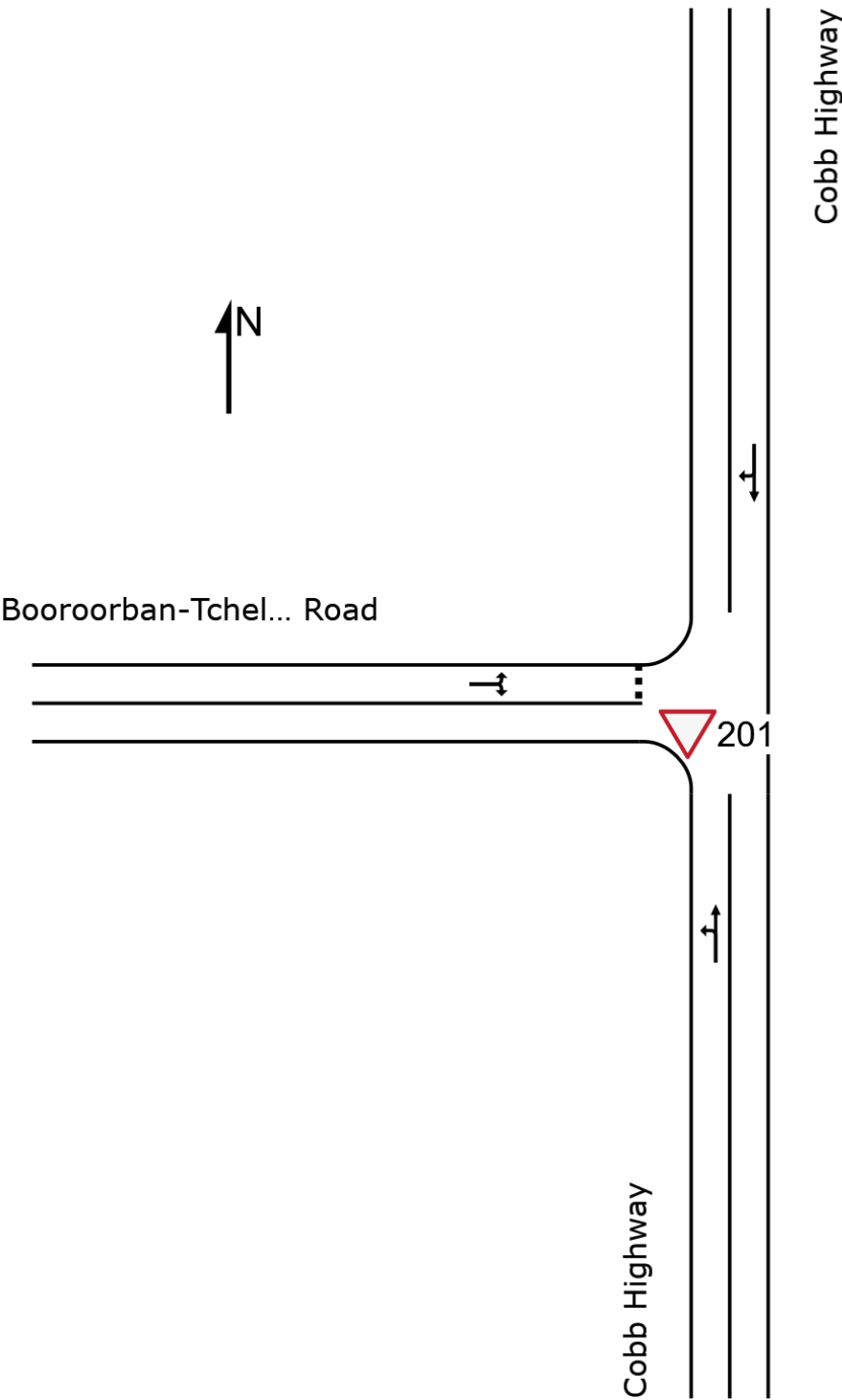
SIDRA Results

SITE LAYOUT

▽ Site: [201] AM Peak Construction - Booroorban (General)

Cobb Highway / Booroorban-Tchelery Road Intersection
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

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



MOVEMENT SUMMARY

Site: [202] PM Peak Construction - Booroorban (General)
Output produced by SIDRA INTERSECTION Version: 10.0.3.210

Cobb Highway / Booroorban-Tchelery Road Intersection
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %	Arrival Flows [Total HV] veh/h %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Cobb Highway													
1	L2	All MCs	3 100.0	3 100.0	0.031	10.8	LOS A	0.0	0.0	0.00	0.04	0.00	47.6
2	T1	All MCs	48 20.0	48 20.0	0.031	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	102.3
Approach			52 24.9	52 24.9	0.031	0.7	NA	0.0	0.0	0.00	0.04	0.00	95.5
North: Cobb Highway													
8	T1	All MCs	149 10.0	149 10.0	0.087	0.0	LOS A	0.0	0.4	0.02	0.03	0.02	107.7
9	R2	All MCs	5 60.0	5 60.0	0.087	6.3	LOS A	0.0	0.4	0.02	0.03	0.02	64.2
Approach			155 11.7	155 11.7	0.087	0.2	NA	0.0	0.4	0.02	0.03	0.02	105.3
West: Booroorban-Tchelery Road													
10	L2	All MCs	17 20.0	17 20.0	0.030	6.0	LOS A	0.1	0.9	0.18	0.55	0.18	53.9
12	R2	All MCs	17 20.0	17 20.0	0.030	6.7	LOS A	0.1	0.9	0.18	0.55	0.18	53.6
Approach			34 20.0	34 20.0	0.030	6.3	LOS A	0.1	0.9	0.18	0.55	0.18	53.7
All Vehicles			240 15.7	240 15.7	0.087	1.2	NA	0.1	0.9	0.04	0.10	0.04	91.0

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [201] AM Peak Construction - Booroorban (General)
Output produced by SIDRA INTERSECTION Version: 10.0.3.210

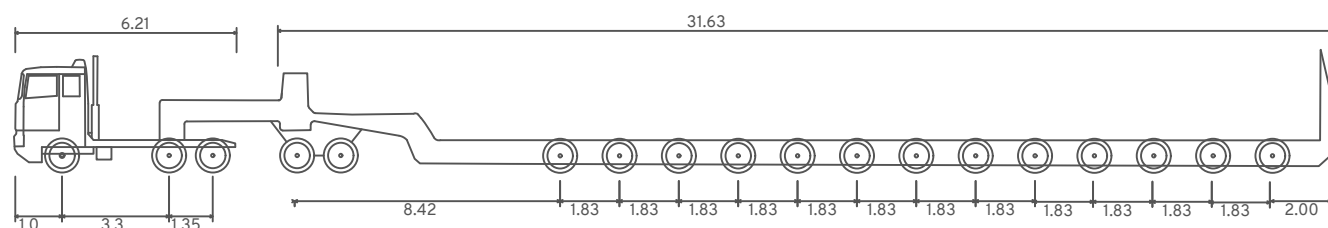
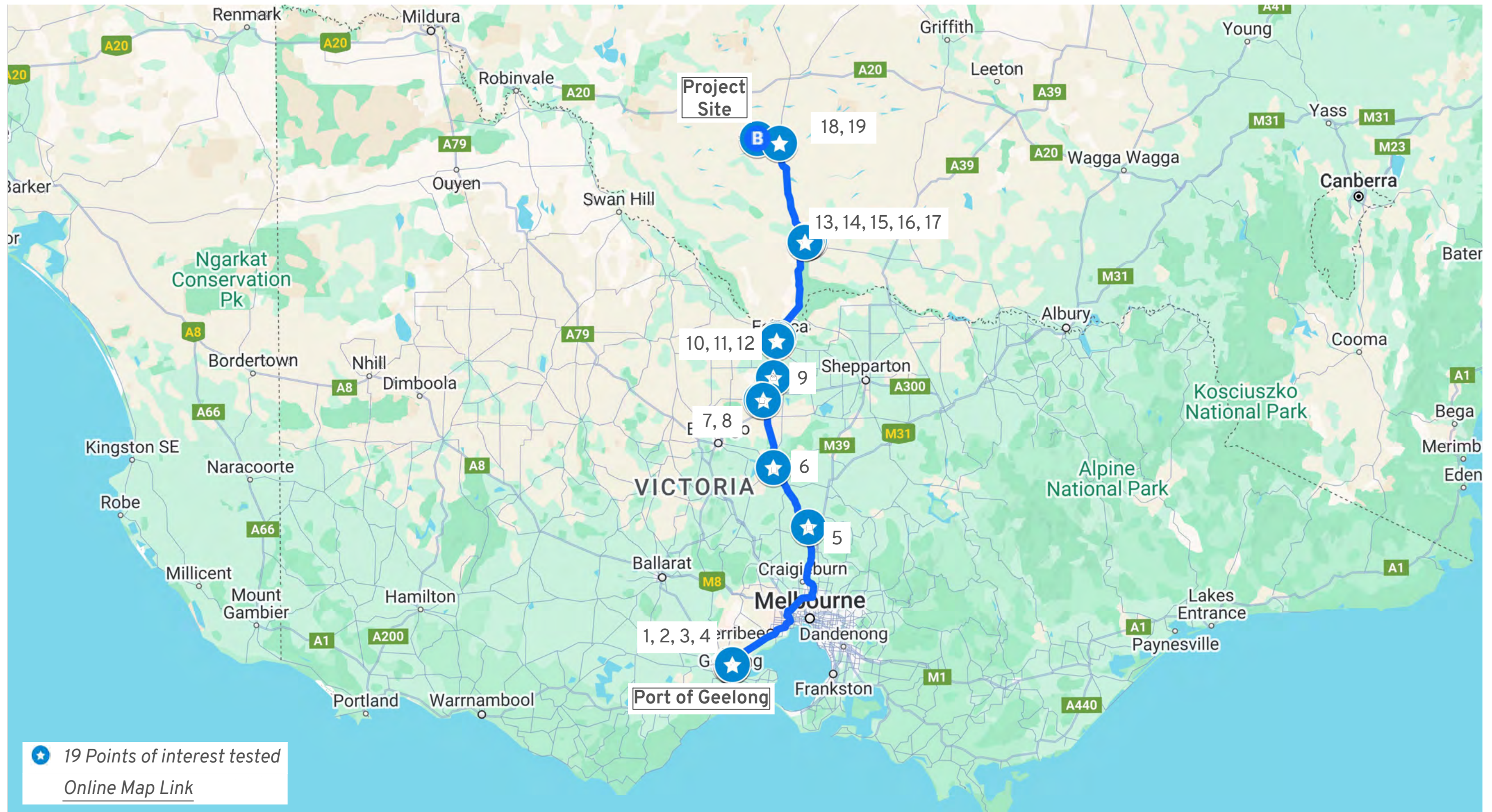
Cobb Highway / Booroorban-Tchelery Road Intersection
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Number of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh.	Dist]		Rate to Depart		
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Cobb Highway															
1	L2	All MCs	14	50.0	14	50.0	0.108	9.3	LOS A	0.0	0.0	0.00	0.05	0.00	69.0
2	T1	All MCs	175	15.0	175	15.0	0.108	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	102.6
Approach			188	17.5	188	17.5	0.108	0.7	NA	0.0	0.0	0.00	0.05	0.00	99.1
North: Cobb Highway															
8	T1	All MCs	39	0.0	39	0.0	0.036	0.4	LOS A	0.1	1.0	0.23	0.27	0.23	89.0
9	R2	All MCs	19	20.0	19	20.0	0.036	6.5	LOS A	0.1	1.0	0.23	0.27	0.23	68.5
Approach			58	6.5	58	6.5	0.036	2.4	NA	0.1	1.0	0.23	0.27	0.23	81.0
West: Booroorban-Tchelery Road															
10	L2	All MCs	3	100.0	3	100.0	0.009	7.9	LOS A	0.0	0.4	0.35	0.58	0.35	43.9
12	R2	All MCs	3	100.0	3	100.0	0.009	8.7	LOS A	0.0	0.4	0.35	0.58	0.35	43.0
Approach			6	100.0	6	100.0	0.009	8.3	LOS A	0.0	0.4	0.35	0.58	0.35	43.5
All Vehicles			253	17.1	253	17.1	0.108	1.3	NA	0.1	1.0	0.06	0.11	0.06	91.5

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Appendix F

OSOM Vehicle Route Assessment



OSOM Route Assessment

Romani BESS

Overall Route Summary and OSOM Details

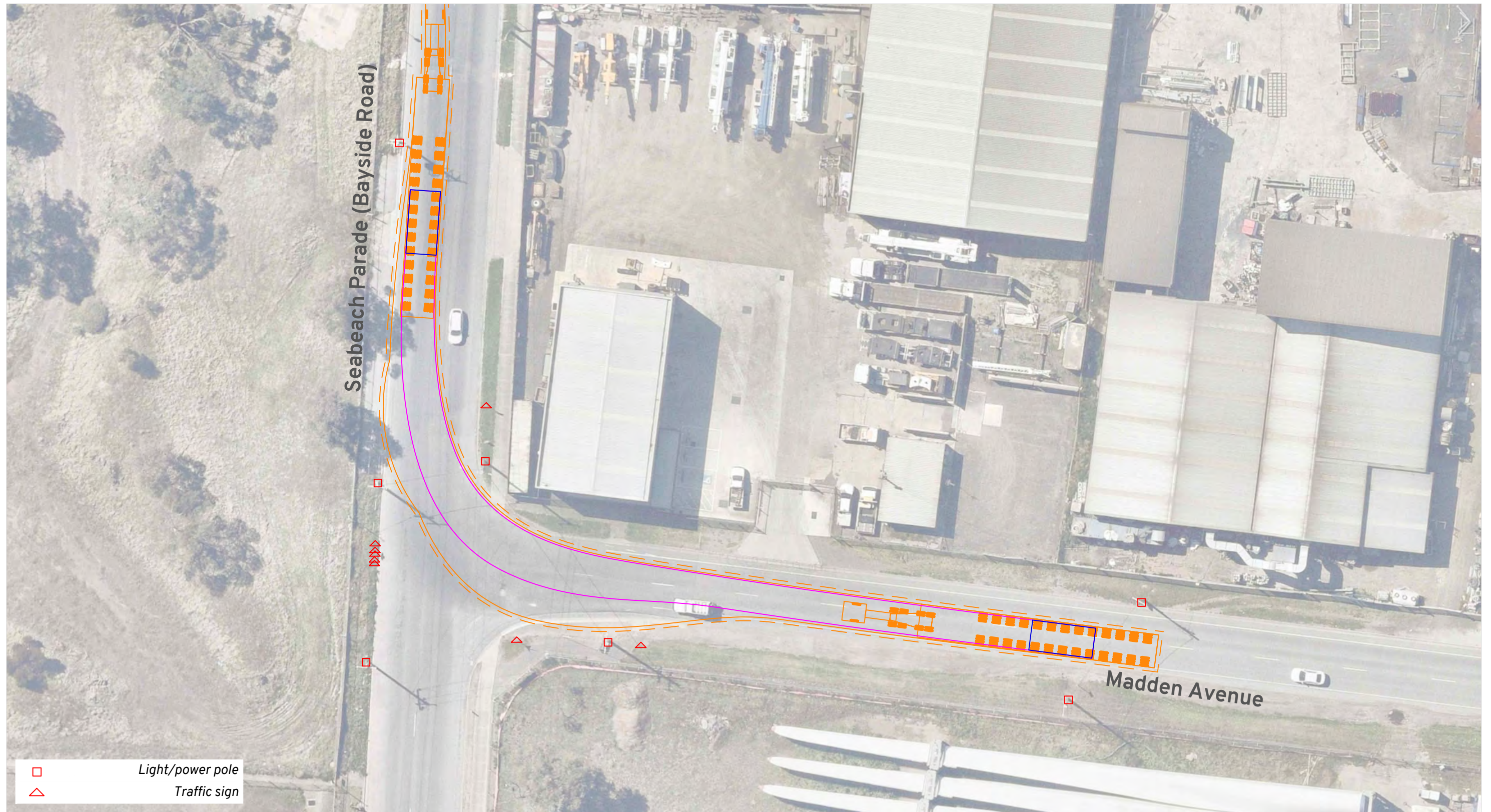
DRAWN: SE

DATE: 12/12/2024

DWG NO: 964 RA01B - Port Of Geelong

SCALE at A3: NTS





□ Light/power pole
△ Traffic sign

Vehicle Envelope
0.5m Clearance
Load Outlines
Load Path

Notes:

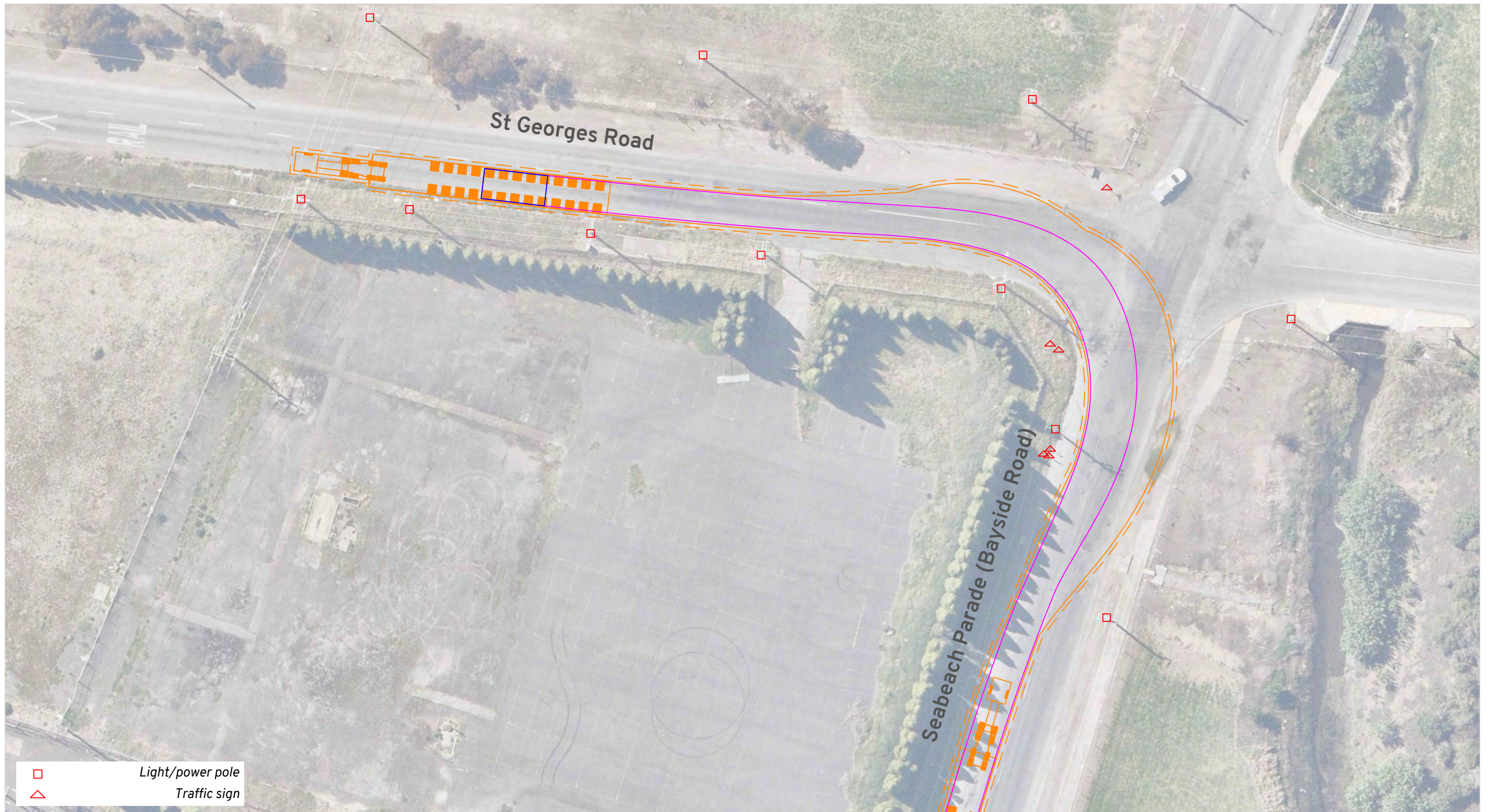
Escorts to control traffic as required and facilitate use of opposing lanes.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.
Kerbing is mountable where shown.
Intersection recently upgraded to include hardstand where shown.

Location:
North Shore VIC 3214
[Online Map Link](#)



OSOM Route Assessment
Romani BESS
Swept Path Assessment

DRAWN: SE
DATE: 12/12/2024
DWG NO: 964 RA01B - Port Of Geelong
SCALE at A3: 1:500



Vehicle Envelope
0.5m Clearance
Load Outlines
Load Path

Notes:

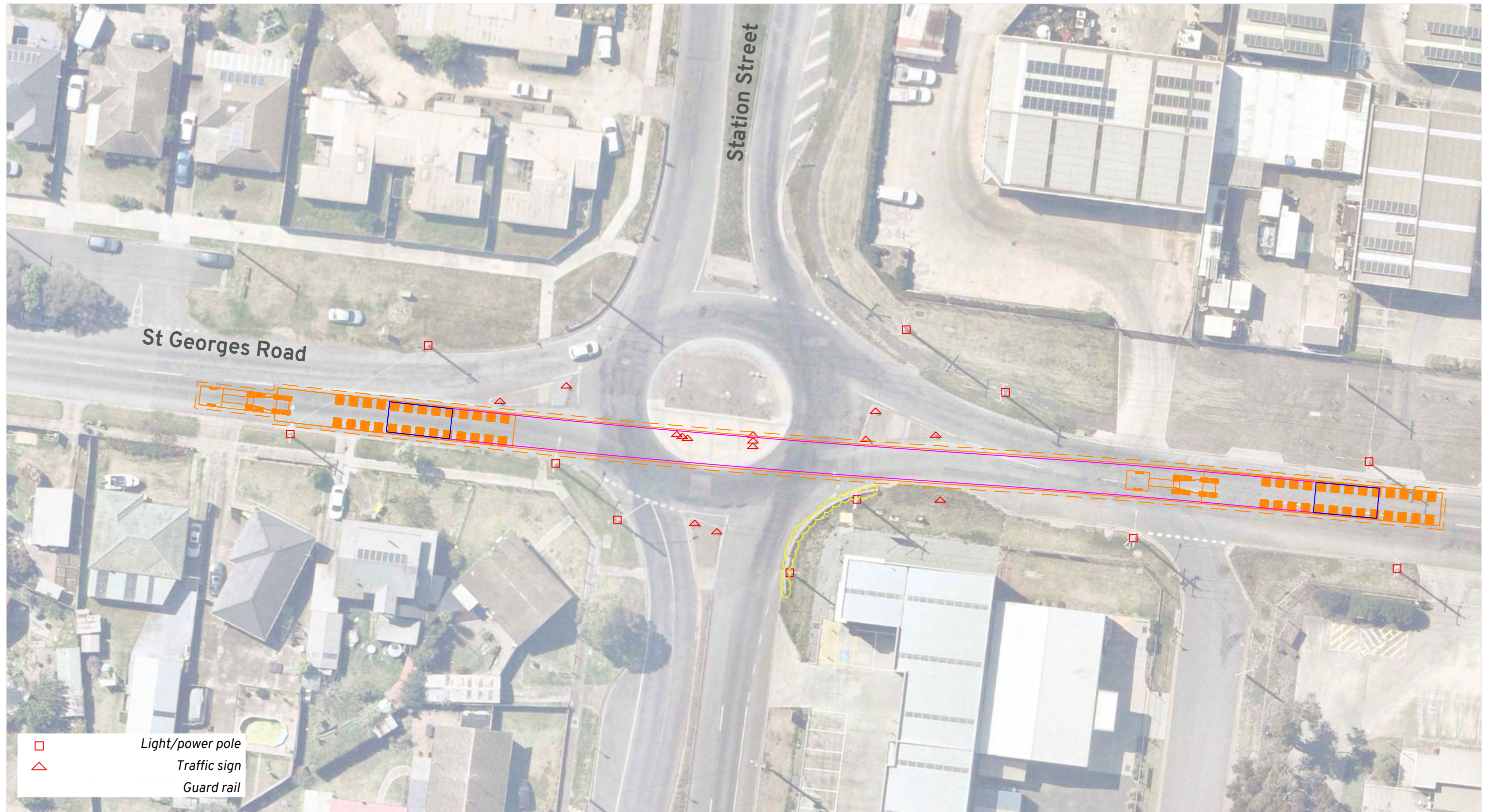
Escorts to control traffic as required and facilitate use of opposing traffic lane.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.
Intersection recently upgraded to include hardstand where shown.

Location:
Norlane VIC 3214
[Online Map Link](#)



OSOM Route Assessment
Romani BESS
Swept Path Assessment

DRAWN: SE
DATE: 12/12/2024
DWG NO: 964 RA01B - Port Of Geelong
SCALE at A3: 1:500



Vehicle Envelope
0.5m Clearance
Load Outlines
Load Path

Notes:

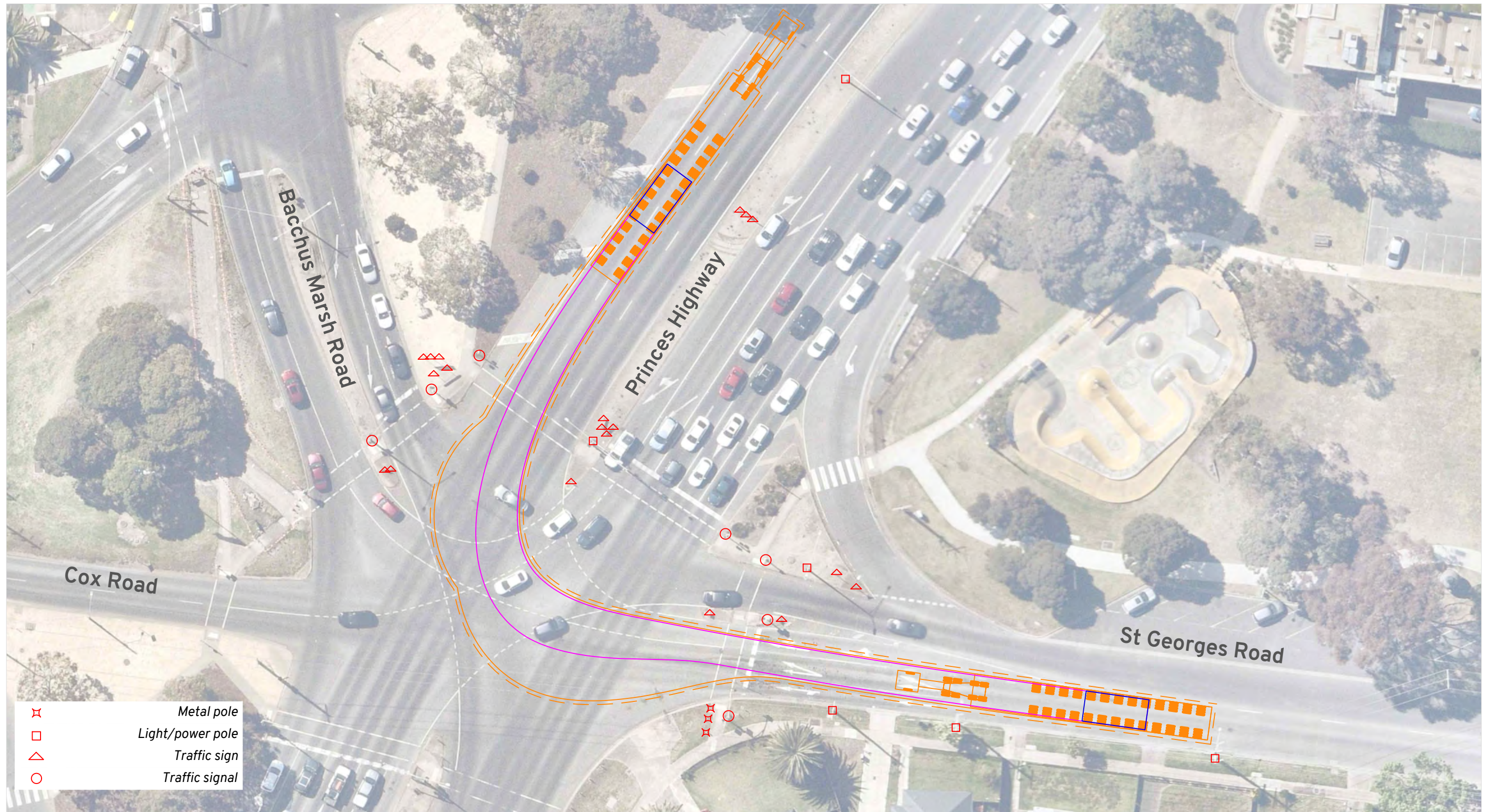
Escorts to control traffic as required and facilitate use of opposing traffic lane.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.
Kerbing is mountable where shown.
Temporary relocation of two removable traffic signs required.

Location:
Norlane VIC 3214
[Online Map Link](#)



OSOM Route Assessment
Romani BESS
Swept Path Assessment

DRAWN: SE
DATE: 12/12/2024
DWG NO: 964 RA01B - Port Of Geelong
SCALE at A3: 1:500



Vehicle Envelope
0.5m Clearance
Load Outlines
Load Path

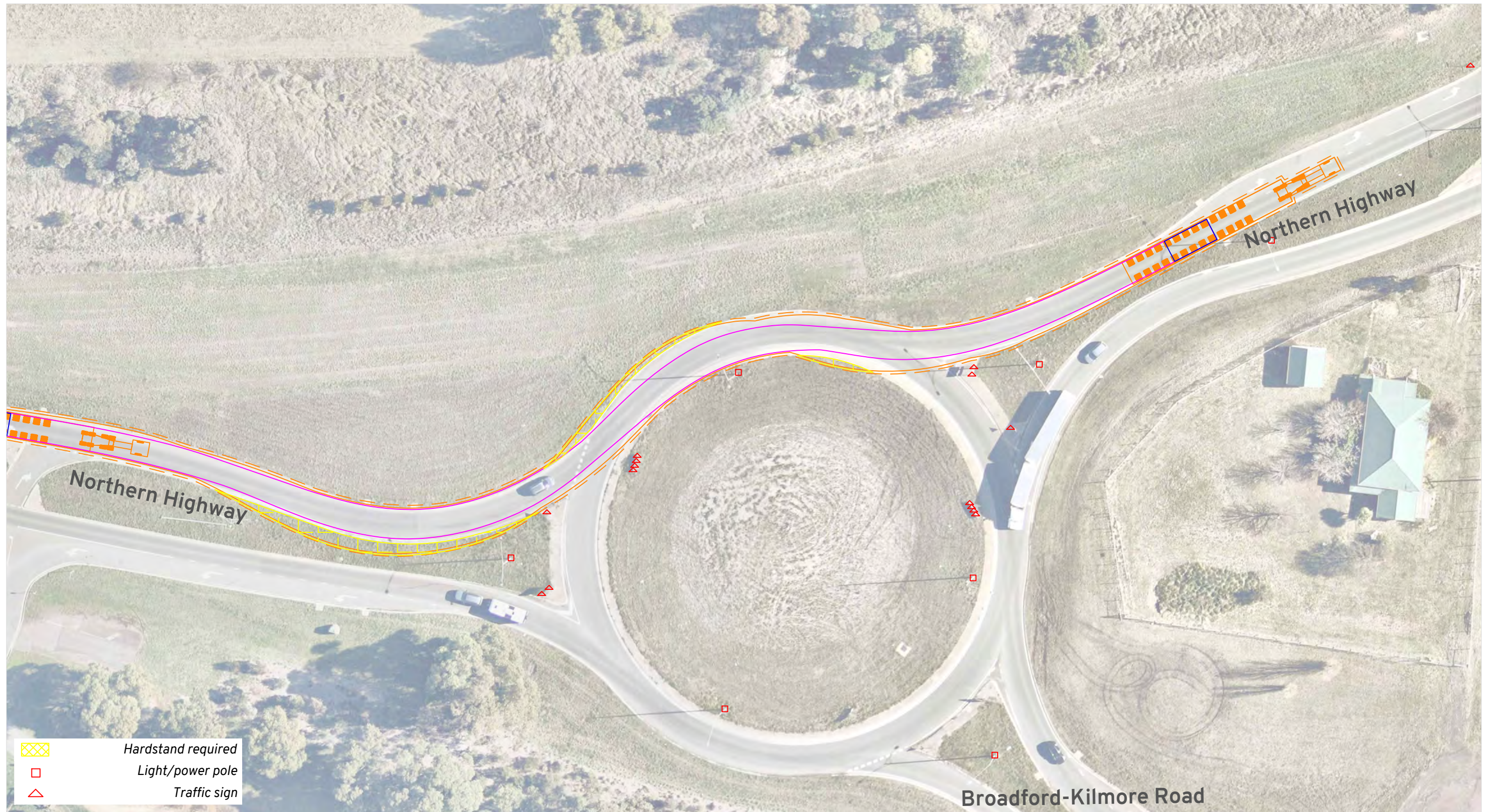
Notes:
Escorts to control traffic as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

Location:
Corio VIC 3214
[Online Map Link](#)



OSOM Route Assessment
Romani BESS
Swept Path Assessment

DRAWN: SE
DATE: 12/12/2024
DWG NO: 964 RA01B - Port Of Geelong
SCALE at A3: 1:500





Vehicle Envelope
0.5m Clearance
Load Outlines
Load Path

Notes:

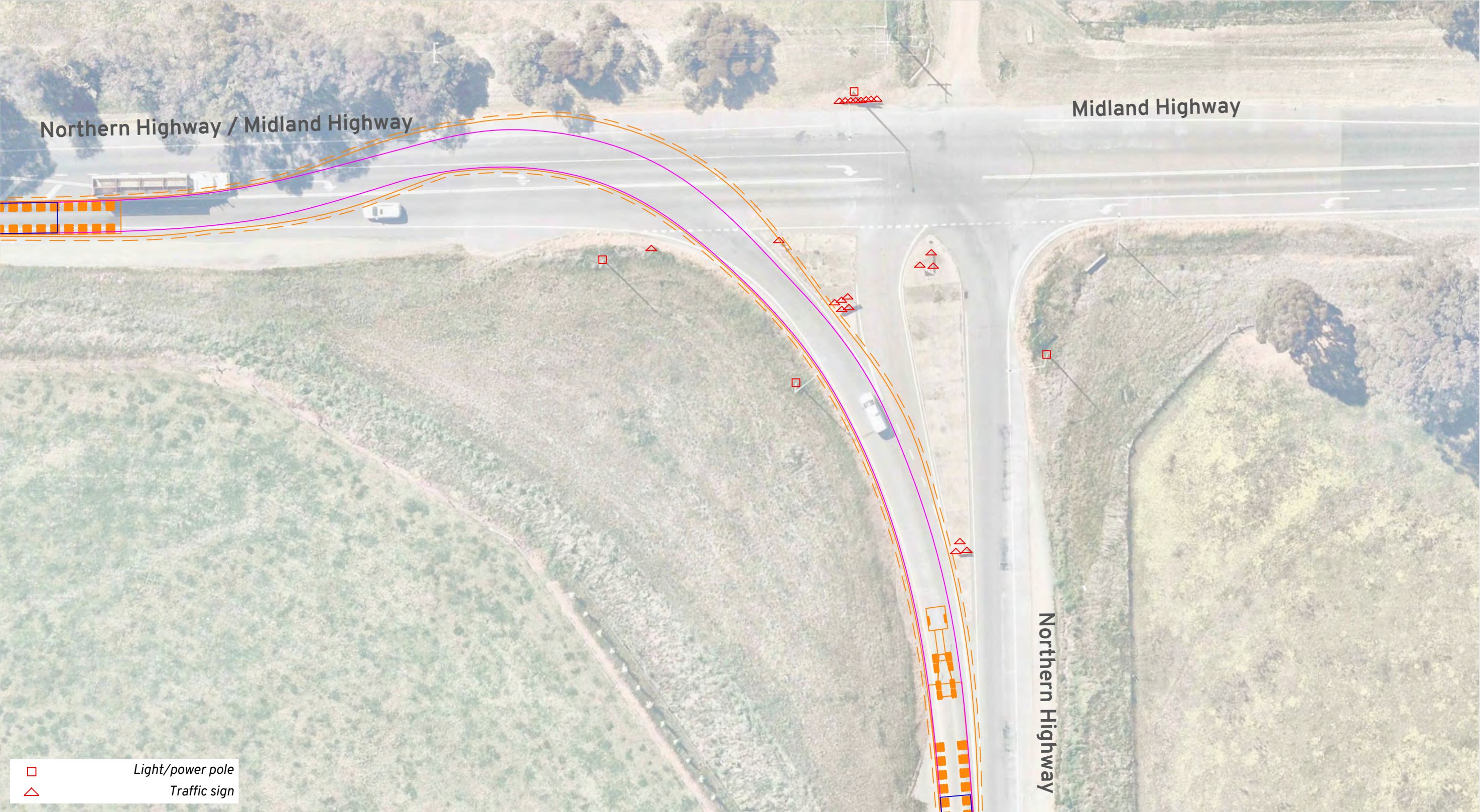
Escorts to control traffic as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

Location:
Heathcote VIC 3253
[Online Map Link](#)



OSOM Route Assessment
Romani BESS
Swept Path Assessment

DRAWN: SE
DATE: 12/12/2024
DWG NO: 964 RA01B - Port Of Geelong
SCALE at A3: 1:500



Vehicle Envelope
0.5m Clearance
Load Outlines
Load Path

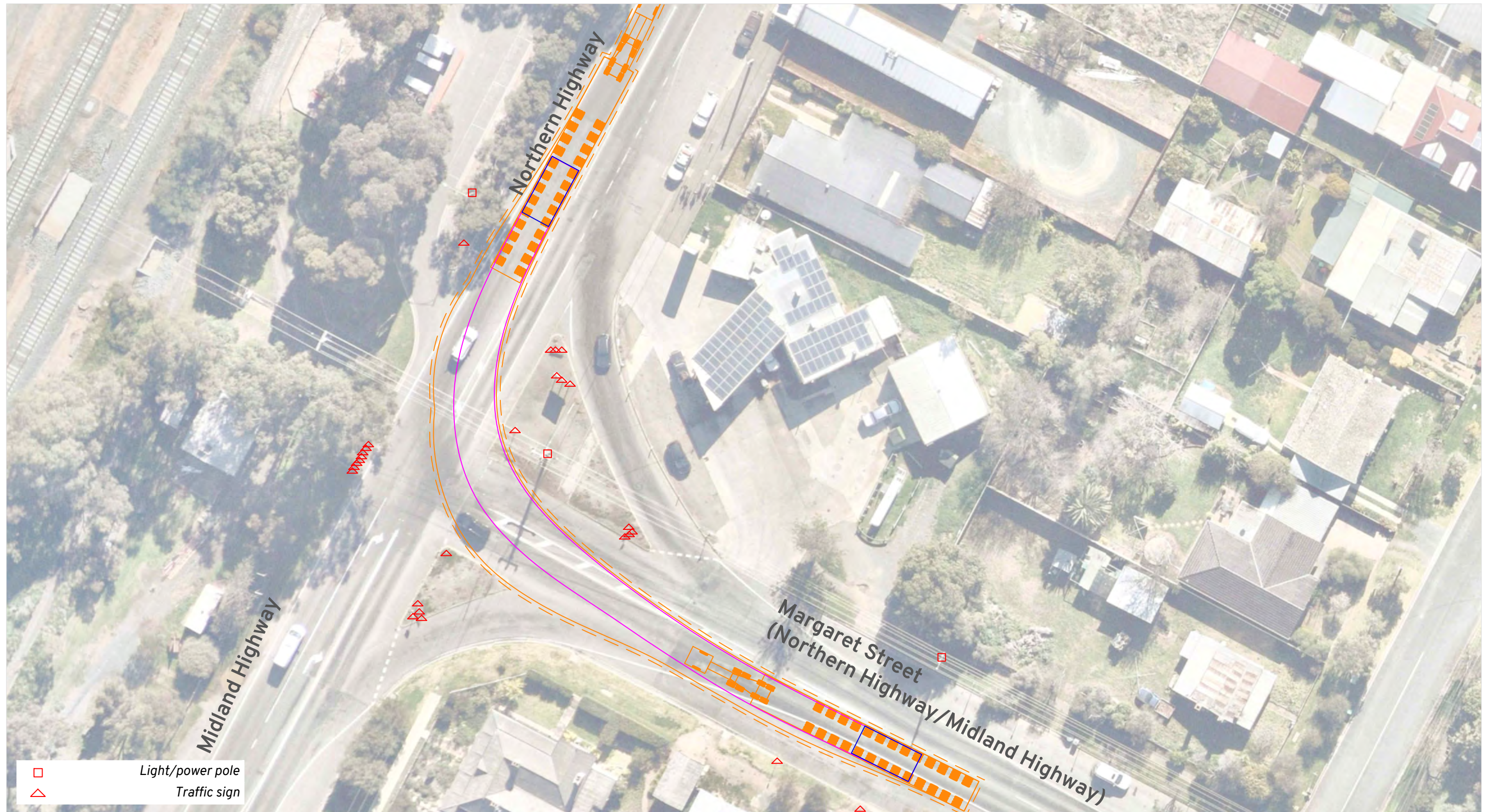
Notes:
Escorts to control traffic as required and facilitate use of opposing traffic lane.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.
Temporary relocation of one road sign required.

Location:
Runnymede VIC 3558
[Online Map Link](#)



OSOM Route Assessment
Romani BESS
Swept Path Assessment

DRAWN: SE
DATE: 12/12/2024
DWG NO: 964 RA01B - Port Of Geelong
SCALE at A3: 1:500



Vehicle Envelope
0.5m Clearance
Load Outlines
Load Path

Notes:

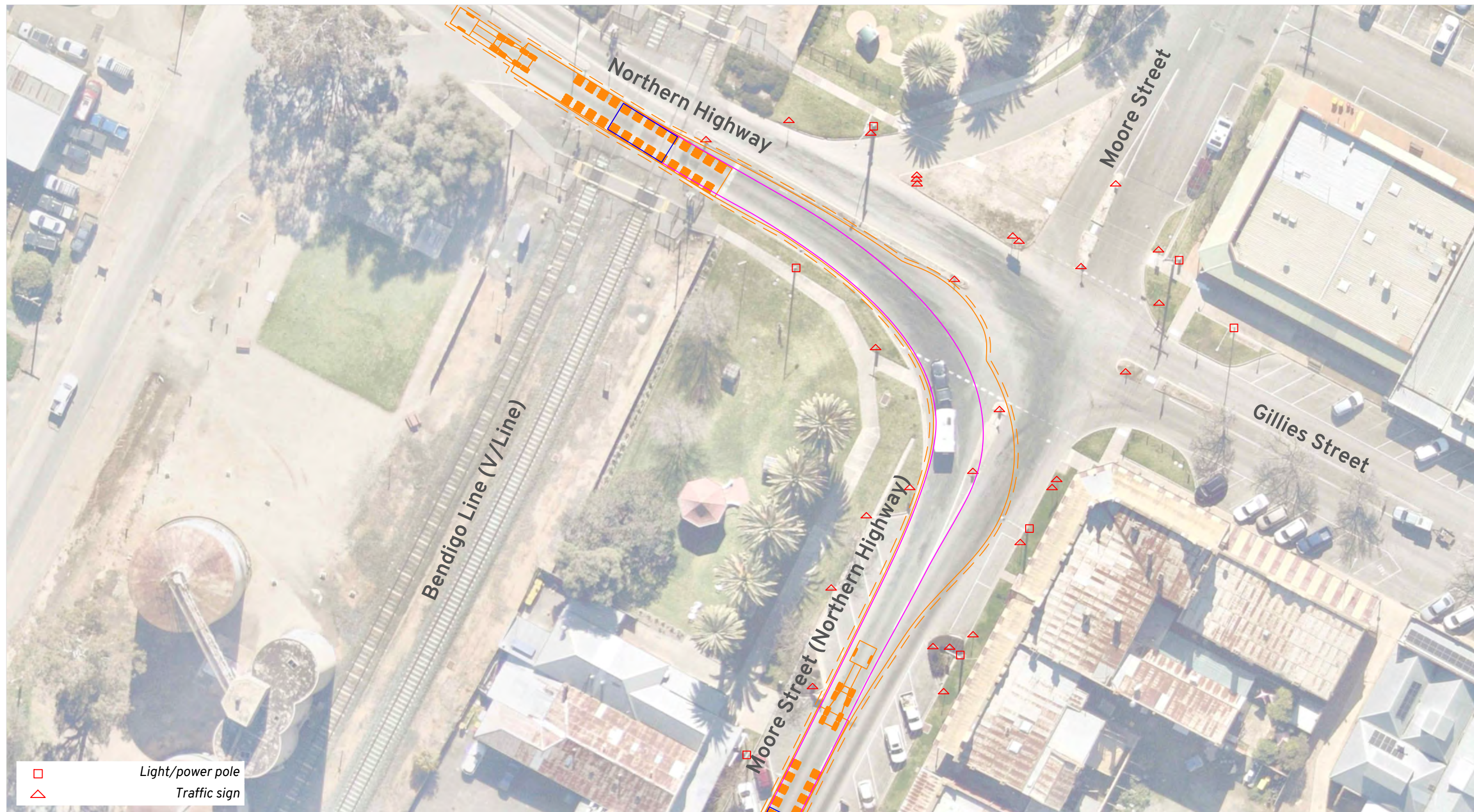
Escorts to control traffic as required and facilitate use of opposing lane.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.
Kerbing is mountable where shown.
Ensure parking spaces on Northern Highway are vacant prior to transit.

Location:
Elmore VIC 3558
[Online Map Link](#)



OSOM Route Assessment
Romani BESS
Swept Path Assessment

DRAWN: SE
DATE: 12/12/2024
DWG NO: 964 RA01B - Port Of Geelong
SCALE at A3: 1:500



Vehicle Envelope
 0.5m Clearance
 Load Outlines
 Load Path

Notes:

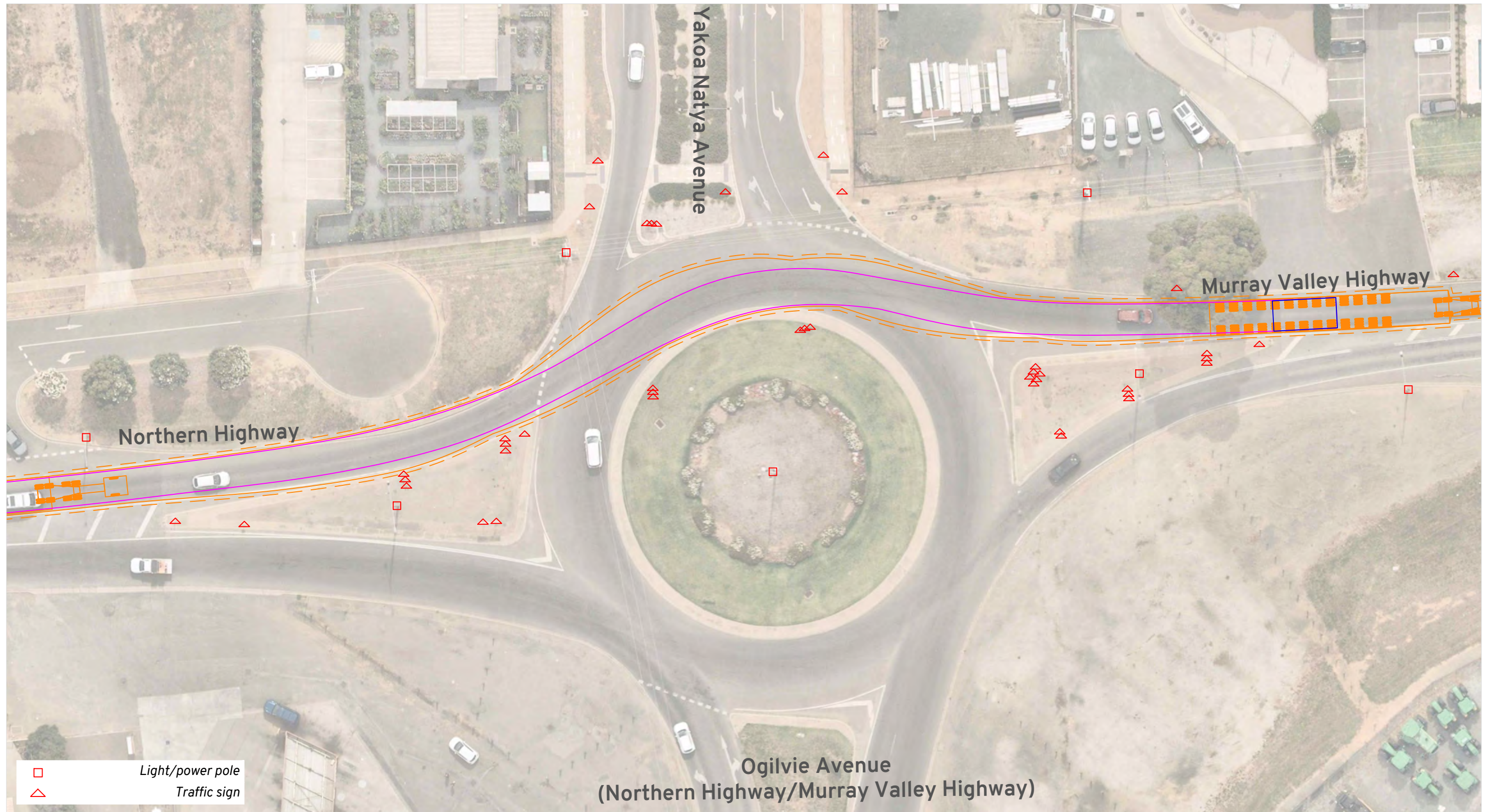
Escorts to control traffic as required and facilitate use of opposing traffic lane.
 Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.
 Temporary relocation of two removable traffic signs required.
 Kerbing is mountable where shown.

Location:
 Rochester VIC 3561
[Online Map Link](#)



OSOM Route Assessment
 Romani BESS
 Swept Path Assessment

DRAWN: SE
 DATE: 12/12/2024
 DWG NO: 964 RA01B - Port Of Geelong
 SCALE at A3: 1:500



Vehicle Envelope
0.5m Clearance
Load Outlines
Load Path

Notes:

Escorts to control traffic as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.
Kerbing is mountable where shown.

Location:
Echuca VIC 3564
[Online Map Link](#)



OSOM Route Assessment
Romani BESS
Swept Path Assessment

DRAWN: SE
DATE: 12/12/2024
DWG NO: 964 RA01B - Port Of Geelong
SCALE at A3: 1:500



Vehicle Envelope
0.5m Clearance
Load Outlines
Load Path

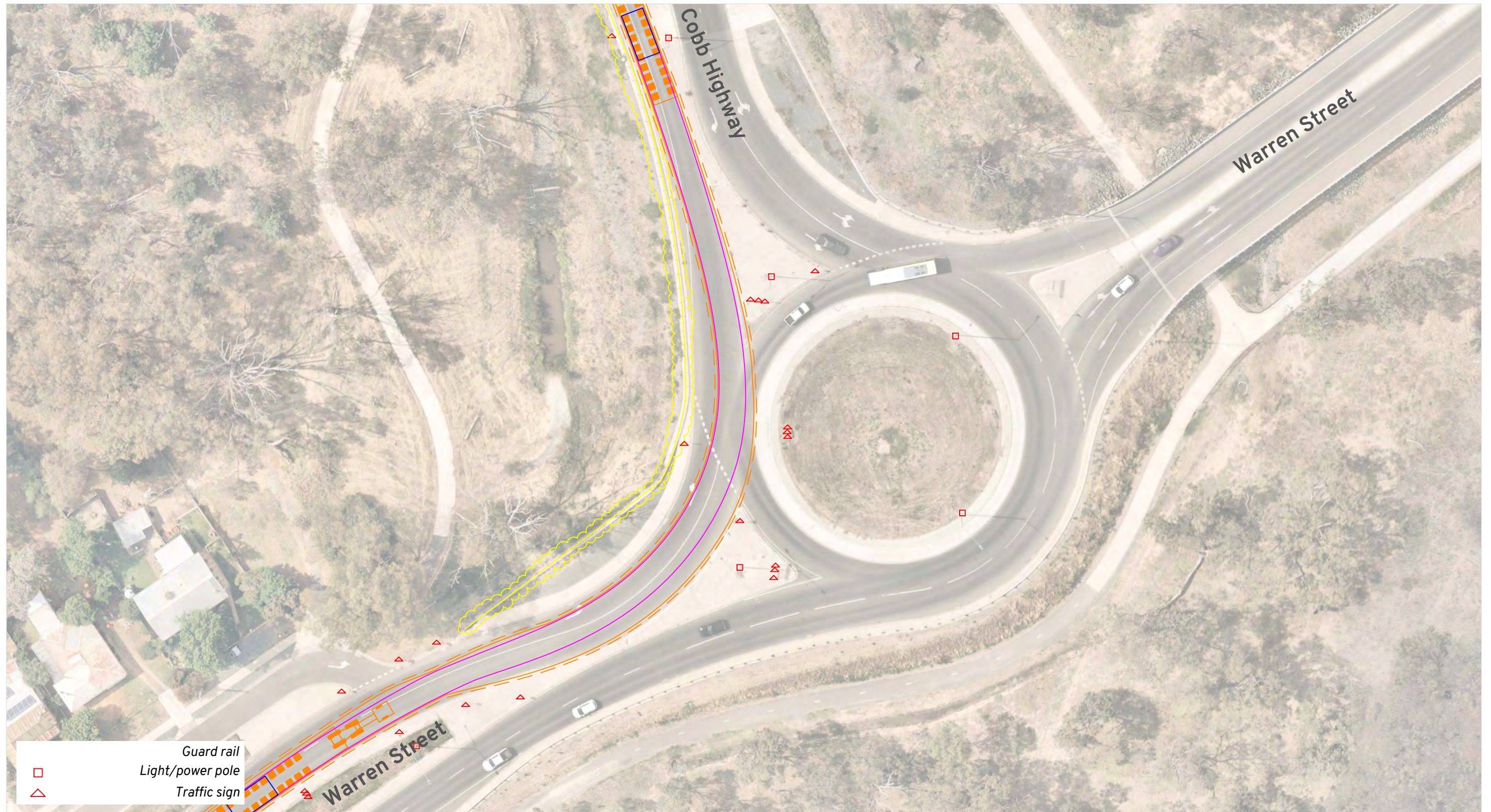
Notes:
Escorts to control traffic as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.
Kerbs are mountable where shown.
Sealed hardstand in the order of 98m² required where shown to make path trafficable.

Location:
Echuca VIC 3564
[Online Map Link](#)



OSOM Route Assessment
Romani BESS
Swept Path Assessment

DRAWN: SE
DATE: 12/12/2024
DWG NO: 964 RA01B - Port Of Geelong
SCALE at A3: 1:1000



- Vehicle Envelope
- 0.5m Clearance
- Load Outlines
- Load Path

Notes:

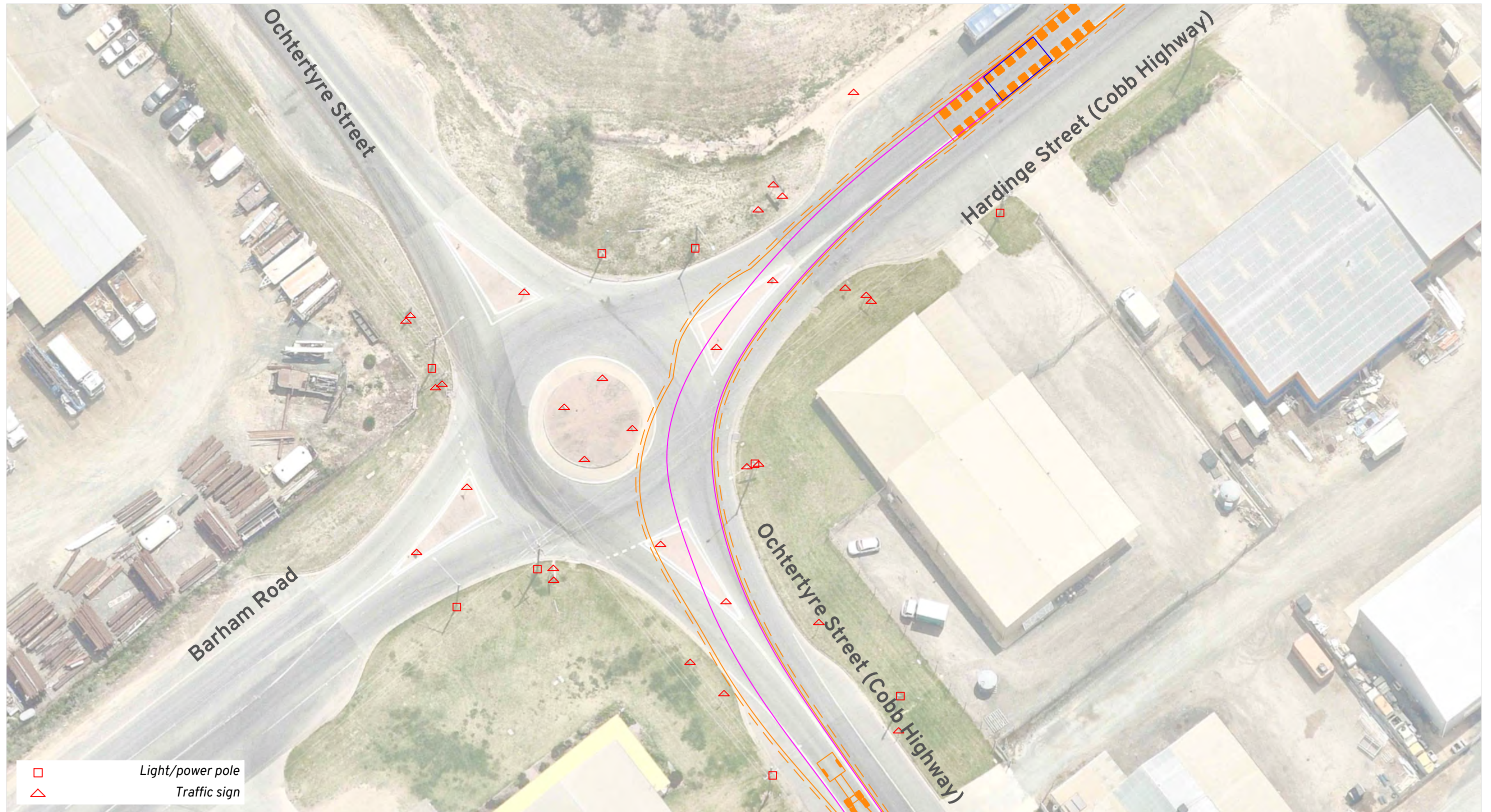
Escorts to control traffic as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

Location:
Echuca VIC 3564
[Online Map Link](#)



OSOM Route Assessment
Romani BESS
Swept Path Assessment

DRAWN: SE
DATE: 12/12/2024
DWG NO: 964 RA01B - Port Of Geelong
SCALE at A3: 1:750



Vehicle Envelope
 0.5m Clearance
 Load Outlines
 Load Path

Notes:

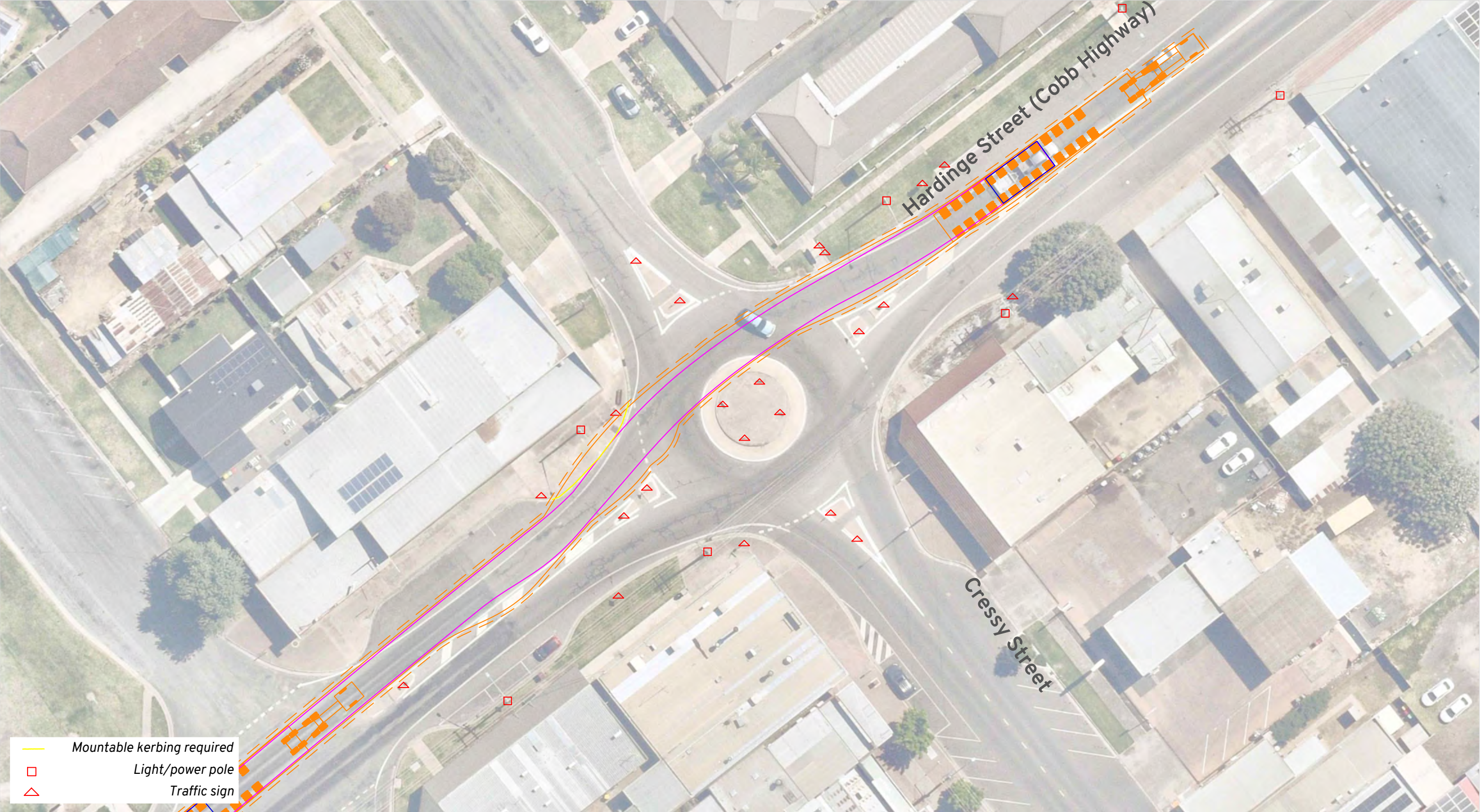
Escorts to control traffic as required and facilitate use of opposing traffic lane.
 Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.
 Kerbs are mountable where shown.
 Temporary relocation of four removable traffic signs required as shown.

Location:
 Deniliquin NSW 2710
[Online Map Link](#)



OSOM Route Assessment
 Romani BESS
 Swept Path Assessment

DRAWN: SE
 DATE: 12/12/2024
 DWG NO: 964 RA01B - Port Of Geelong
 SCALE at A3: 1:500



Vehicle Envelope
0.5m Clearance
Load Outlines
Load Path

Notes:
Escorts to control traffic as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.
Mountable kerbing is required where shown.

Location:
Deniliquin NSW 2710
[Online Map Link](#)



OSOM Route Assessment
Romani BESS
Swept Path Assessment

DRAWN: SE
DATE: 12/12/2024
DWG NO: 964 RA01B - Port Of Geelong
SCALE at A3: 1:500



Vehicle Envelope
 0.5m Clearance
 Load Outlines
 Load Path

Notes:

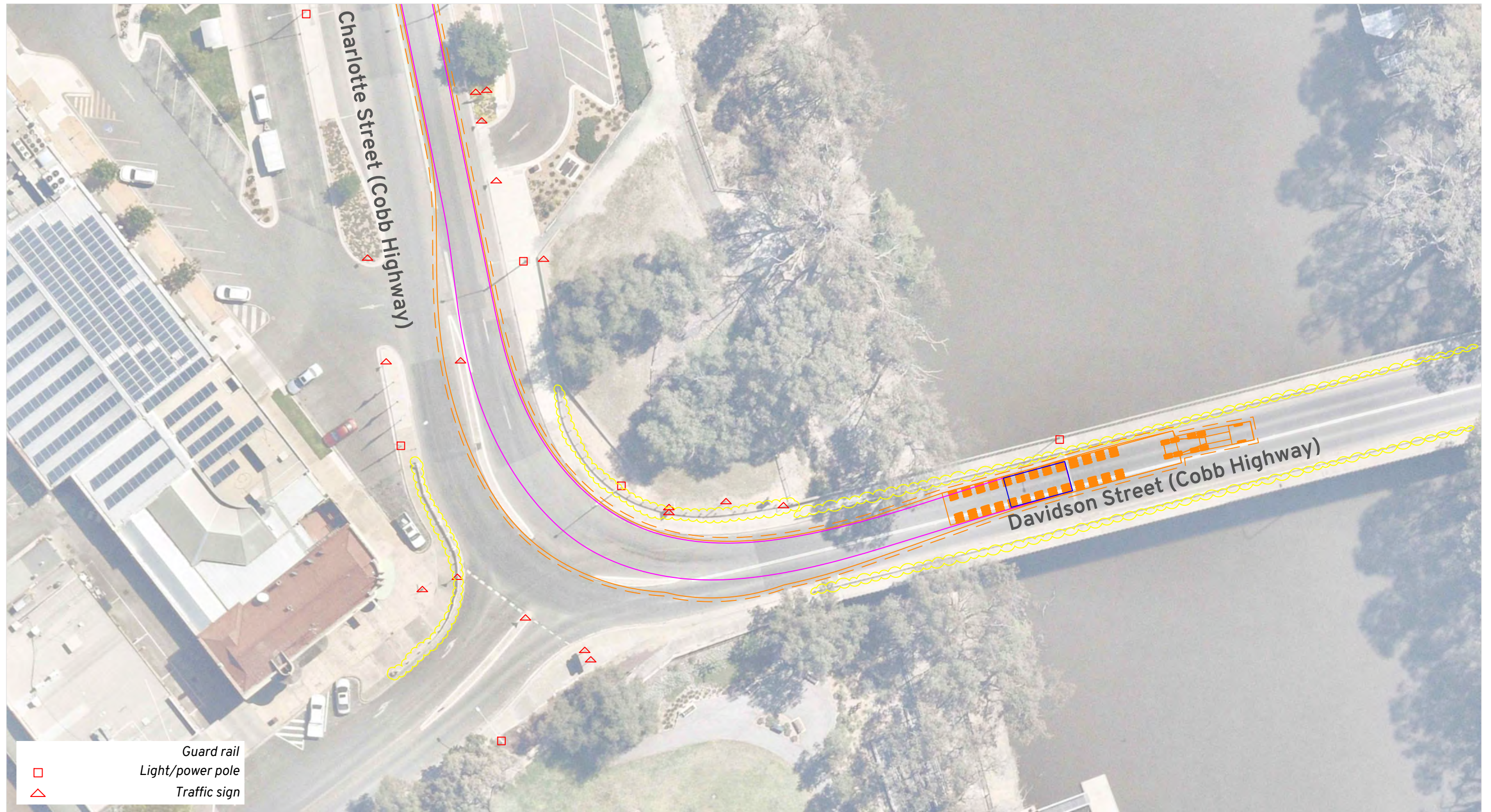
Escorts to control traffic as required and facilitate travel in opposing lanes.
 Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.
 Kerbs are mountable where shown.

Location:
 Deniliquin NSW 2710
[Online Map Link](#)



OSOM Route Assessment
 Romani BESS
 Swept Path Assessment

DRAWN: SE
 DATE: 12/12/2024
 DWG NO: 964 RA01B - Port Of Geelong
 SCALE at A3: 1:500



Vehicle Envelope
 0.5m Clearance
 Load Outlines
 Load Path

Notes:

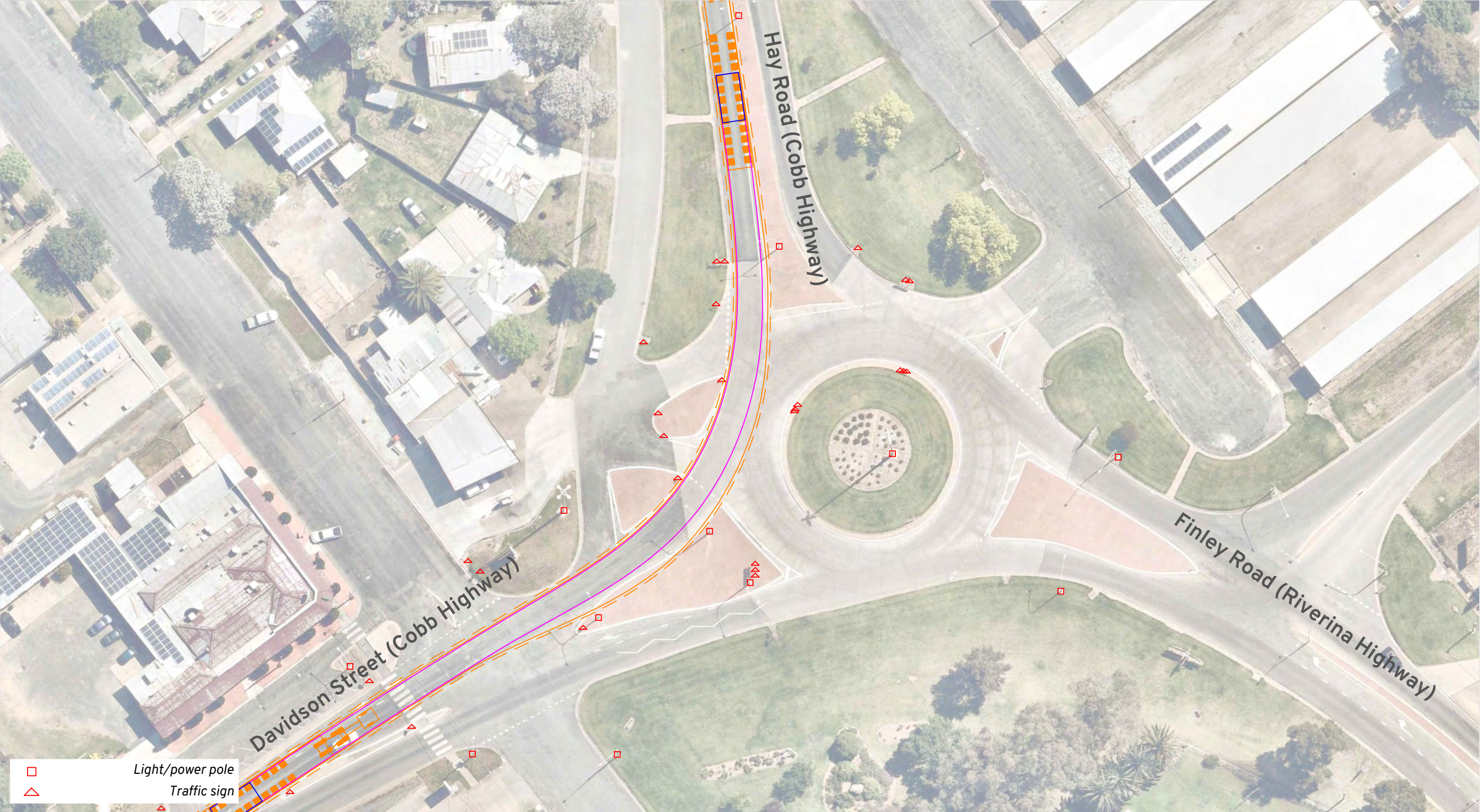
Escorts to control traffic as required and facilitate use of opposing traffic lane.
 Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.
 Kerbs are mountable where shown.
 Temporary relocation of one removable traffic sign required.

Location:
 Deniliquin NSW 2710
[Online Map Link](#)



OSOM Route Assessment
 Romani BESS
 Swept Path Assessment

DRAWN: SE
 DATE: 12/12/2024
 DWG NO: 964 RA01B - Port Of Geelong
 SCALE at A3: 1:500



Vehicle Envelope
0.5m Clearance
Load Outlines
Load Path

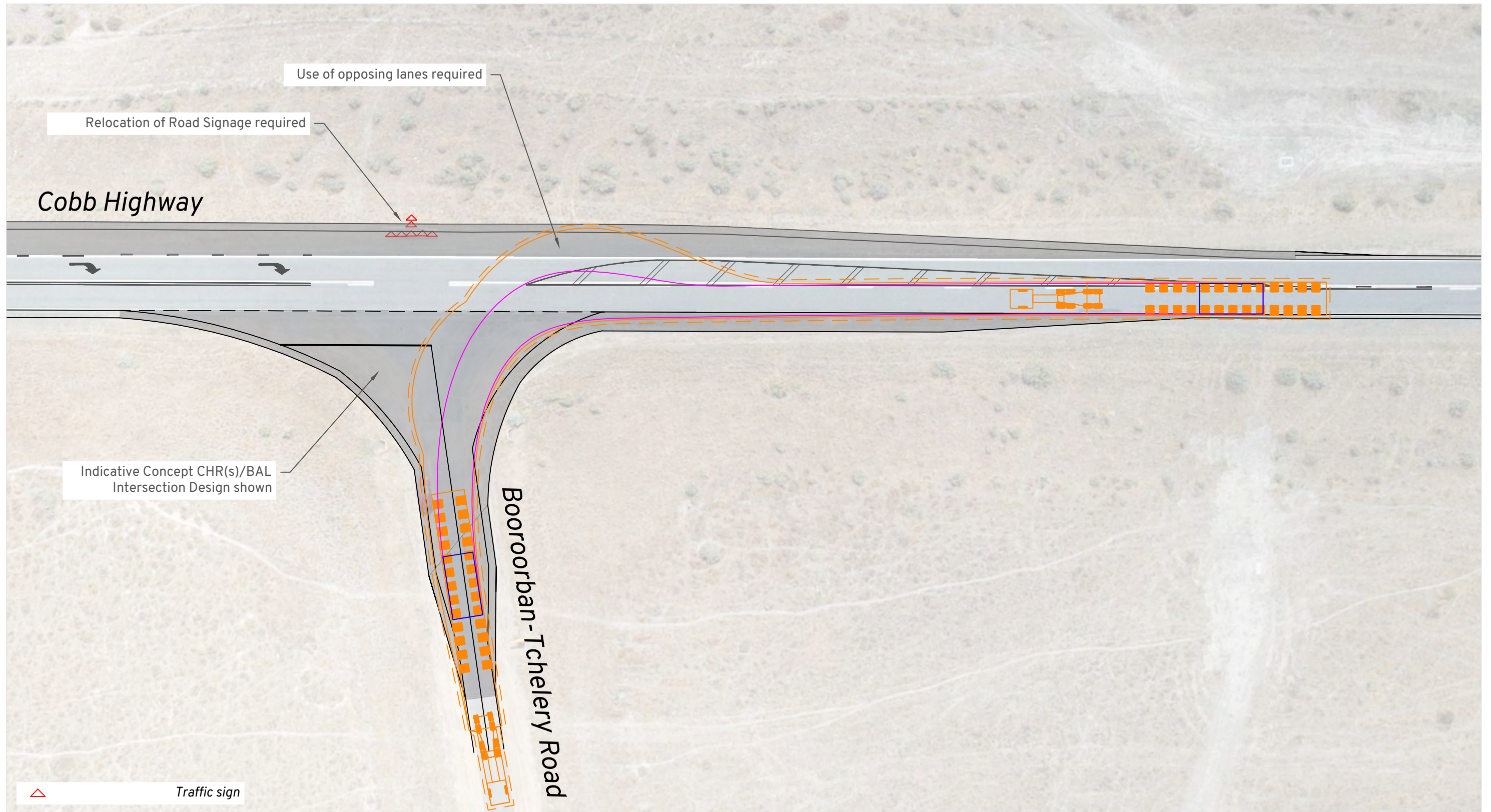
Notes:
Escorts to control traffic as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.
Kerbs are mountable where shown.

Location:
Deniliquin NSW 2710
[Online Map Link](#)



OSOM Route Assessment
Romani BESS
Swept Path Assessment

DRAWN: SE
DATE: 12/12/2024
DWG NO: 964 RA01B - Port Of Geelong
SCALE at A3: 1:750



- Vehicle Envelope
- 0.5m Clearance
- Load Outlines
- Load Path

Notes:

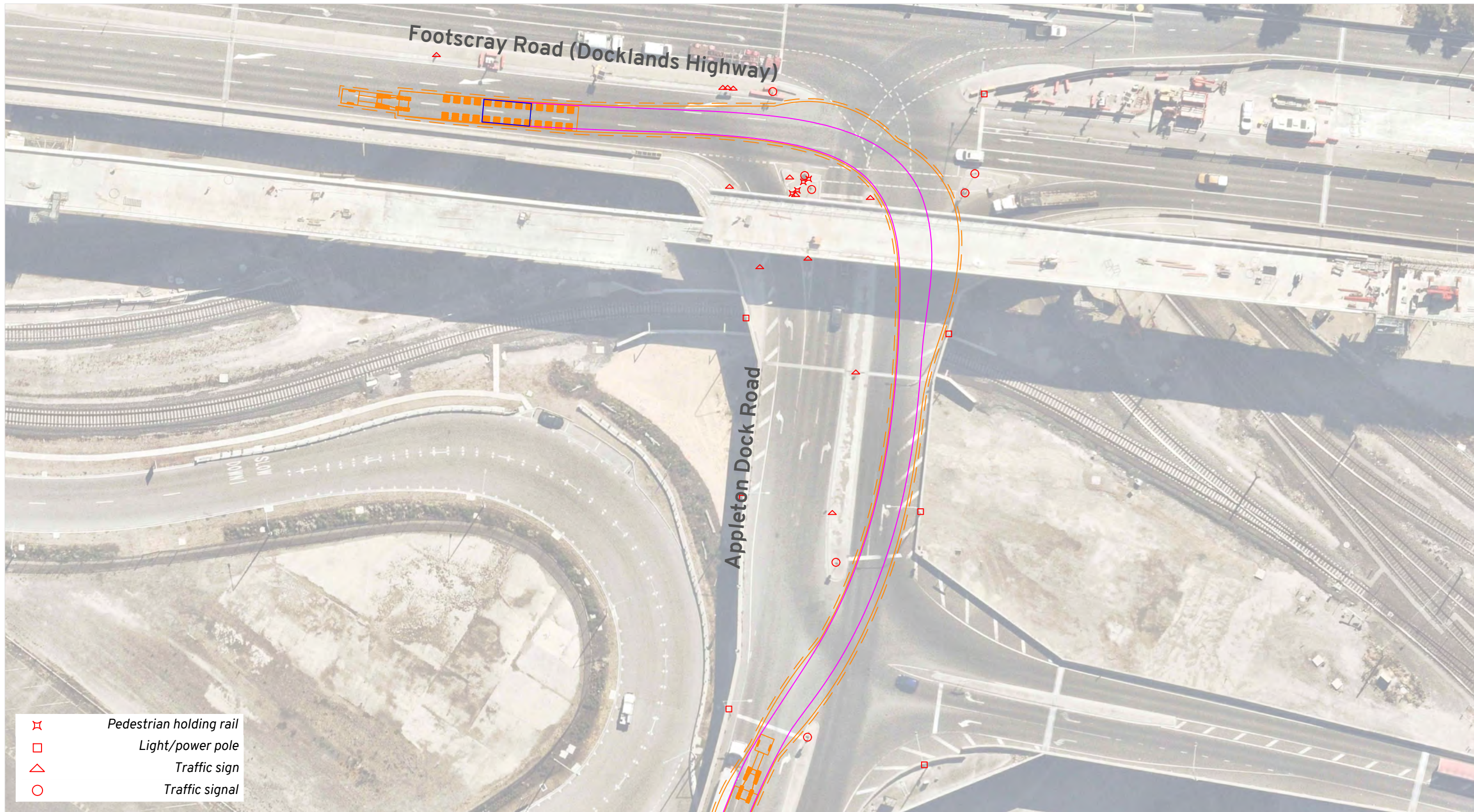
Refer 964 TT01B for Indicative Intersection Design Details.
 Escorts to control traffic as required and facilitate use of opposing traffic lanes.
 Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.
 Permanent relocation of road signage required where shown.

Location:
 Booroorban NSW 2710
[Online Map Link](#)



OSOM Route Assessment
 Romani BESS
 Swept Path Assessment

DRAWN: SE
 DATE: 27/05/2025
 DWG NO: 964 RA01B - Port of Geelong
 SCALE at A3: 1:500m



- Vehicle Envelope
- 0.5m Clearance
- Load Outlines
- Load Path

Notes:

Escorts to control traffic as required and facilitate use of opposing traffic lanes.
Footscray Road availability subject to demobilisation of roadworks occupation. Review of assessment to be undertaken at completion of roadworks.

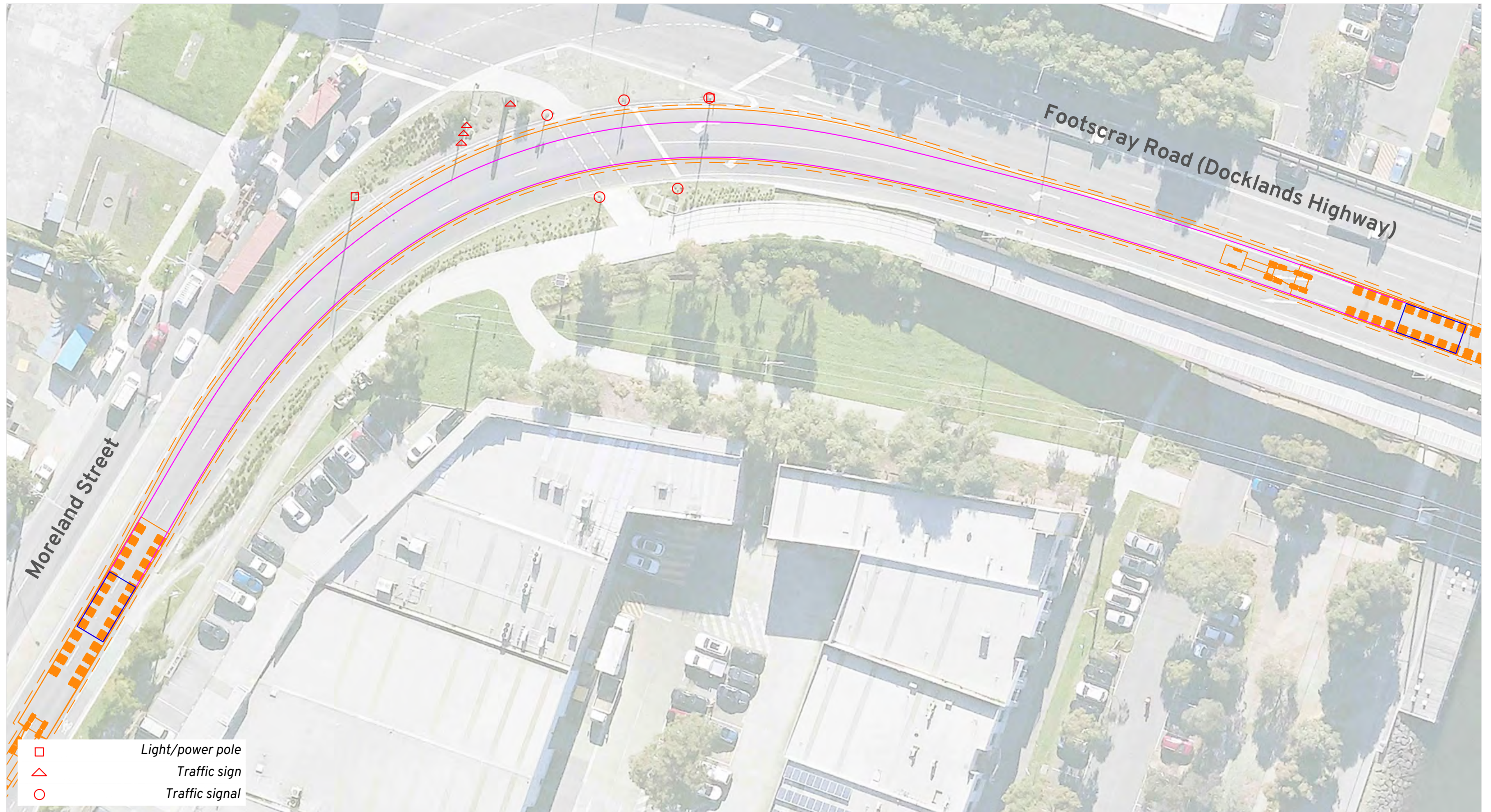
Location:

West Melbourne VIC 3003
[Online Map Link](#)



OSOM Route Assessment
Romani BESS
Swept Path Assessment

DRAWN: SE
DATE: 12/12/2024
DWG NO: 964 RA01B - Port Of Melbourne
SCALE at A3: 1:750



Vehicle Envelope
 0.5m Clearance
 Load Outlines
 Load Path

Notes:

Escorts to control traffic as required.
 Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

Location:
 Footscray VIC 3011
[Online Map Link](#)



OSOM Route Assessment
 Romani BESS
 Swept Path Assessment

DRAWN: SE
 DATE: 12/12/2024
 DWG NO: 964 RA01B - Port Of Melbourne
 SCALE at A3: 1:500



Vehicle Envelope
 0.5m Clearance
 Load Outlines
 Load Path

Notes:

Escorts to control traffic as required.
 Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.
 Temporary relocate flexible traffic separators and sockets.
 Ensure parking spaces on Somerville Road are vacant prior to transit.

Location:
 Footscray VIC 3011
[Online Map Link](#)



OSOM Route Assessment
 Romani BESS
 Swept Path Assessment

DRAWN: SE
 DATE: 12/12/2024
 DWG NO: 964 RA01B - Port Of Melbourne
 SCALE at A3: 1:500



- Vehicle Envelope
- 0.5m Clearance
- Load Outlines
- Load Path

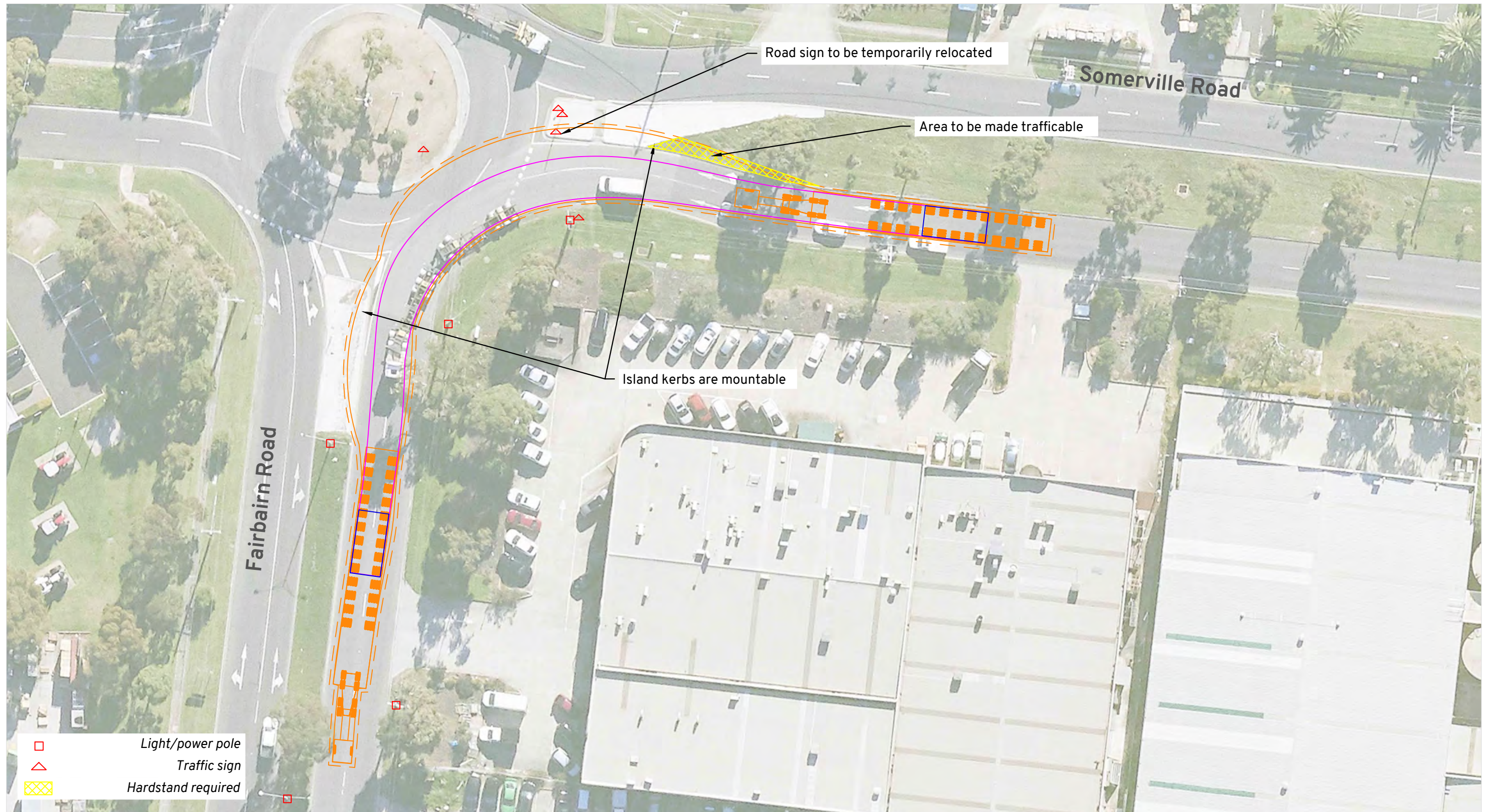
Notes:
Escorts to control traffic as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.
Ensure parking spaces on Somerville Road are vacant prior to transit.

Location:
Kingsville VIC 3012
[Online Map Link](#)



OSOM Route Assessment
Romani BESS
Swept Path Assessment

DRAWN: SE
DATE: 12/12/2024
DWG NO: 964 RA01B - Port Of Melbourne
SCALE at A3: 1:1000



Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

Notes:

Escorts to control traffic as required.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

Kerbs are mountable where shown.

Temporary relocation of road signs required as shown.

Hardstand required where shown to make path trafficable.

Location:

Sunshine West VIC 3020

[Online Map Link](#)



OSOM Route Assessment

Romani BESS

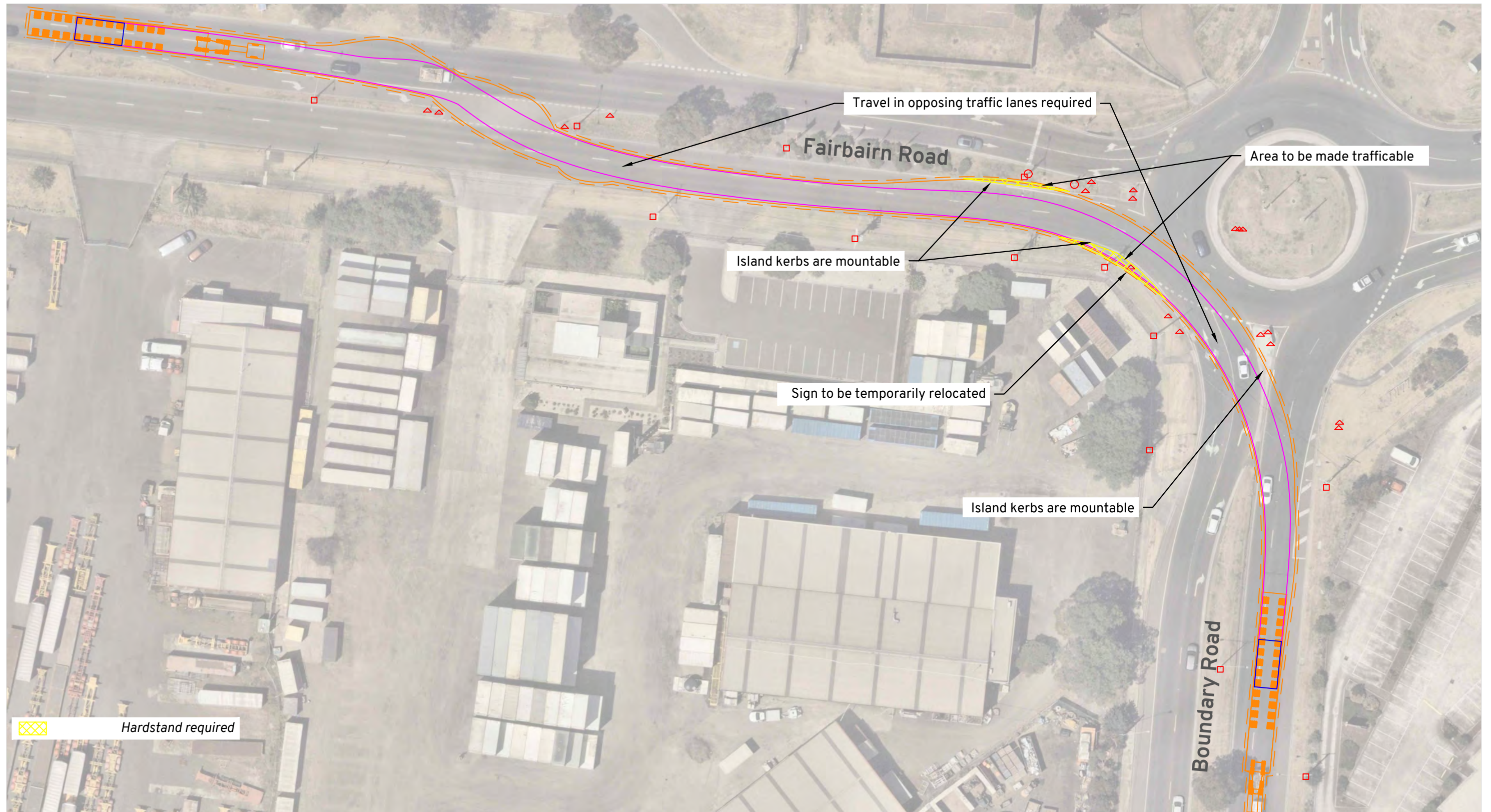
Swept Path Assessment

DRAWN: SE

DATE: 12/12/2024

DWG NO: 964 RA01B - Port Of Melbourne

SCALE at A3: 1:500



- Vehicle Envelope
- 0.5m Clearance
- Load Outlines
- Load Path

Notes:

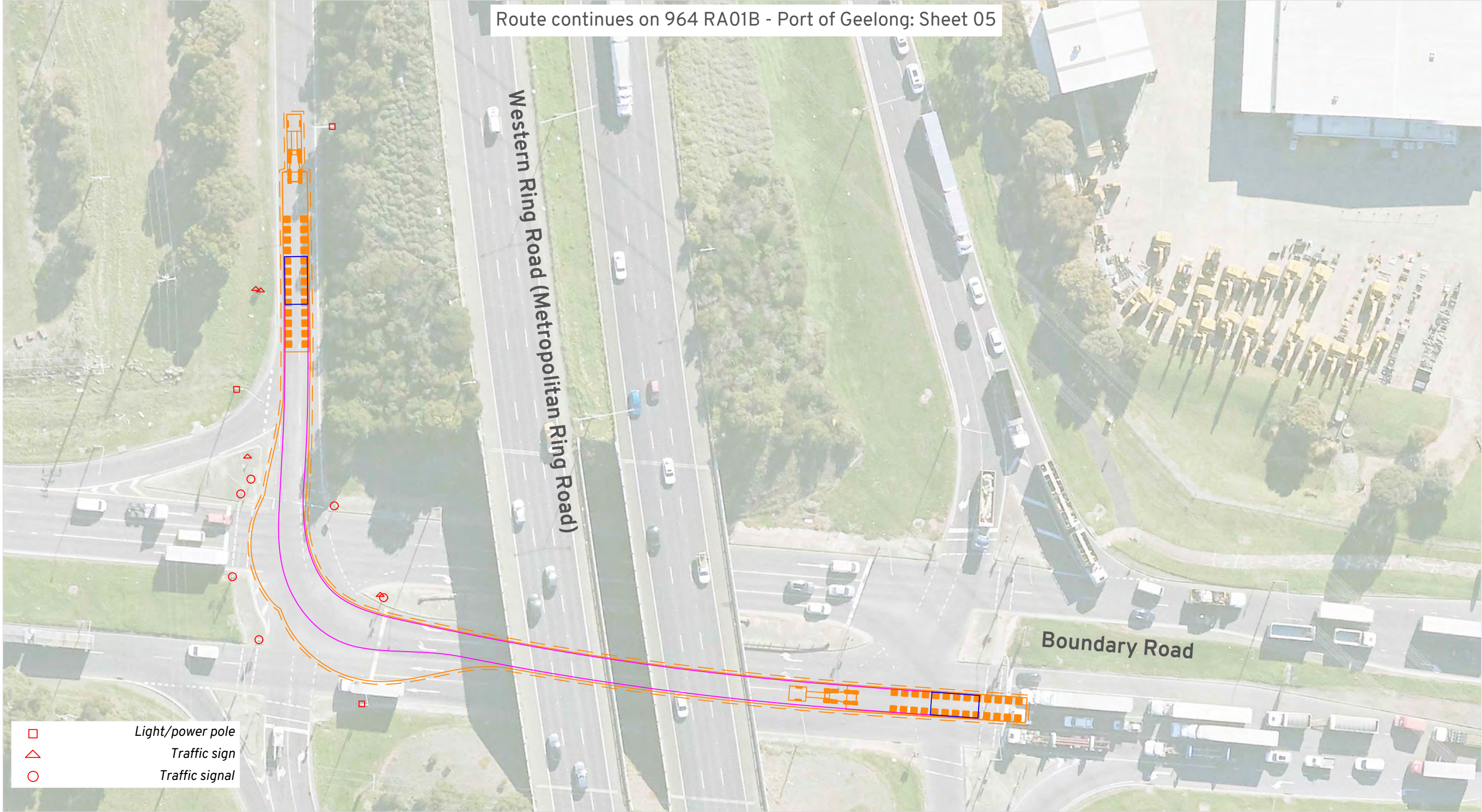
Escorts to control traffic as required and facilitate use of opposing lanes.
 Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.
 Road traffic sign in swept path to be temporarily relocated.
 Kerbs are mountable where shown.
 Hardstand required where shown to make path trafficable.

Location:
 Laverton North VIC 3026
[Online Map Link](#)



OSOM Route Assessment
 Romani BESS
 Swept Path Assessment

DRAWN: SE
 DATE: 12/12/2024
 DWG NO: 964 RA01B - Port Of Melbourne
 SCALE at A3: 1:750



Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

Notes:

Escorts to control traffic as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

Location:
Derrimut VIC 3030
[Online Map Link](#)

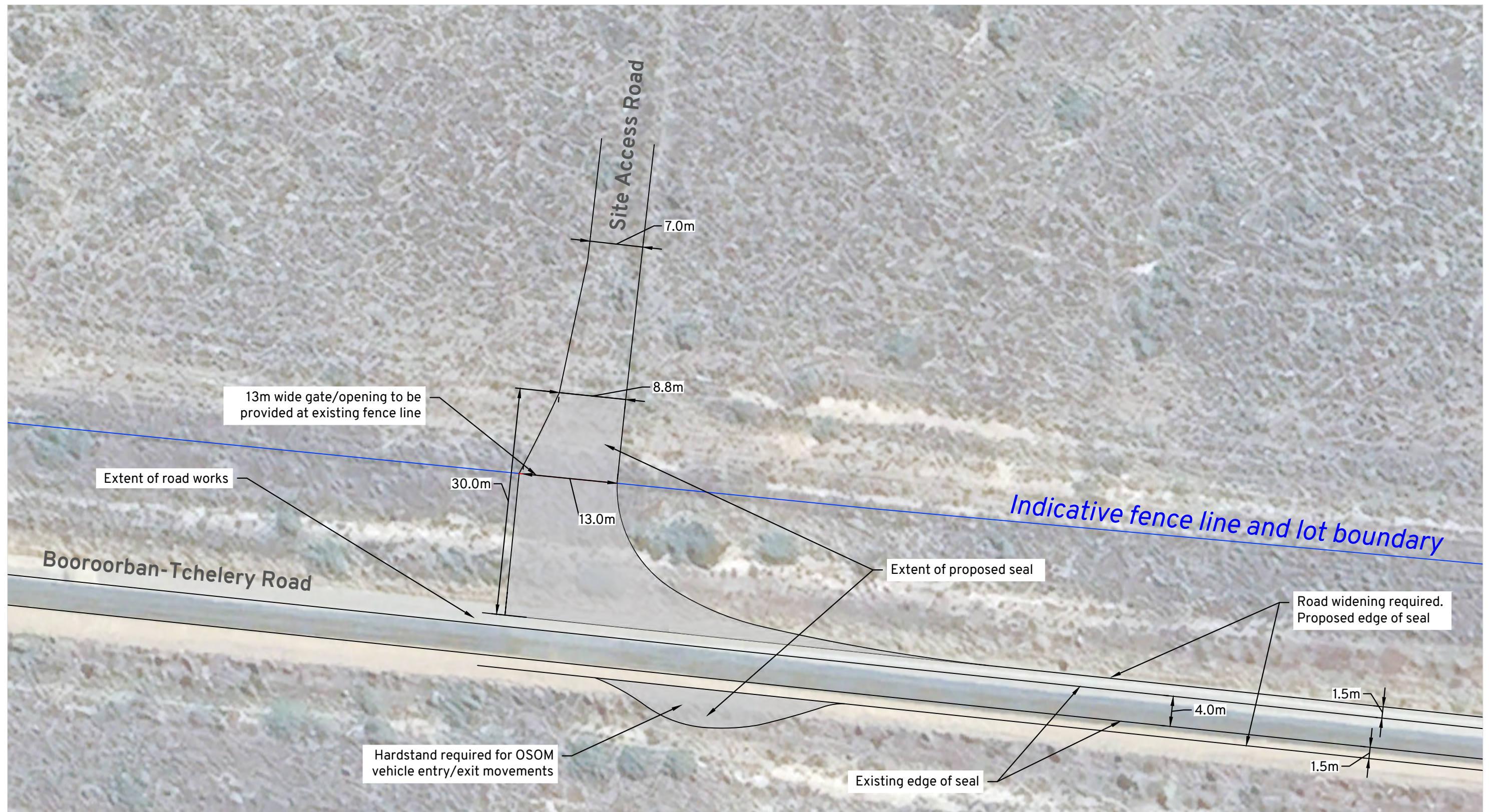


OSOM Route Assessment
Romani BESS
Swept Path Assessment

DRAWN: SE
DATE: 12/12/2024
DWG NO: 964 RA01B - Port Of Melbourne
SCALE at A3: 1:750

Appendix G

Site Access – Design and Swept Path Assessment



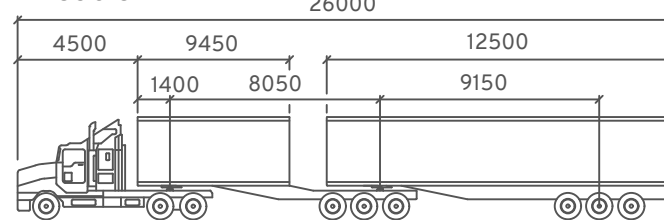
Romani BESS
Booororban-Tchelery Road, Booororban
Site Access Design

DRAWN: SE
DATE: 11/06/2025
DWG NO: 964 S01C
SCALE at A3: 1:500



Vehicle Envelope
 500mm Clearance
 Reverse Manoeuvre
 Min. Design Speed 5km/h

26.0m B-Double

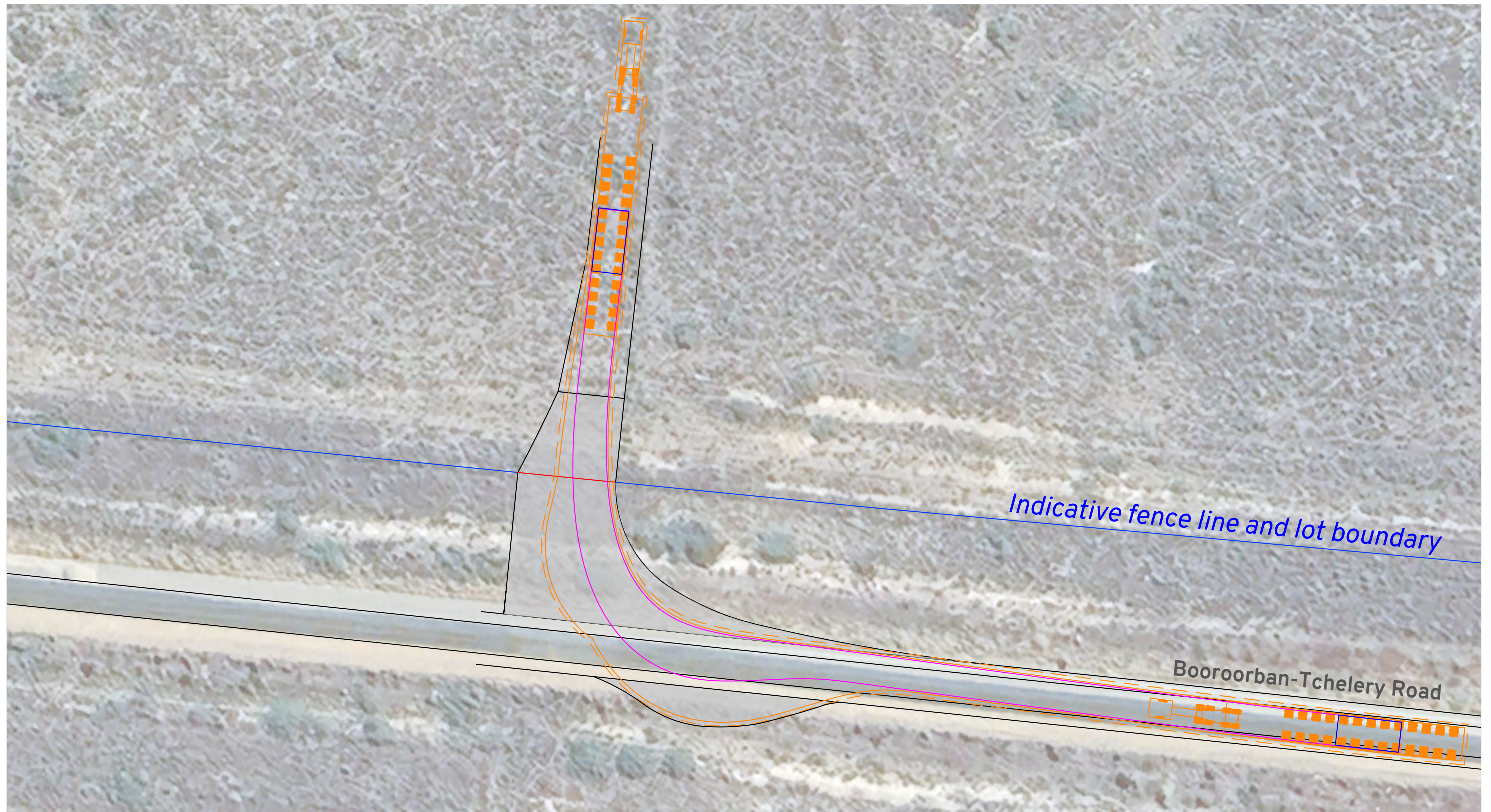


Tractor Width : 2500
 Trailer Width : 2500
 Tractor Track : 2500
 Trailer Track : 2500
 Lock to Lock : 6.0s
 Steering Angle : 22.2
 Articulating Angle : 70.0

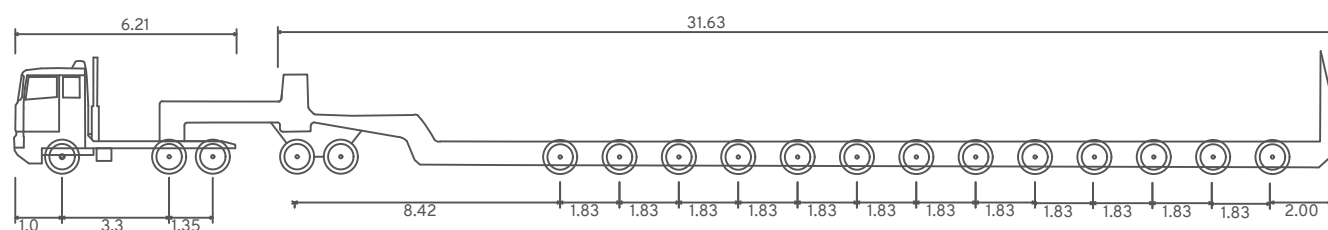


Romani BESS
 Booororban-Tchelery Road, Booororban
 Swept Path Assessment

DRAWN: SE
 DATE: 11/06/2025
 DWG NO: 964 S01C
 SCALE at A3: 1:500



Entry Manoeuvre



13 X 8 Platform Trailer with Dolly
Includes 8.4m long 4.0m wide load

Overall Length 41.789m
Overall Width 4.390m
Overall Body Height 4.300m
Lock-to-lock time 6.00s
Curb to Curb Turning Radius 15.000m

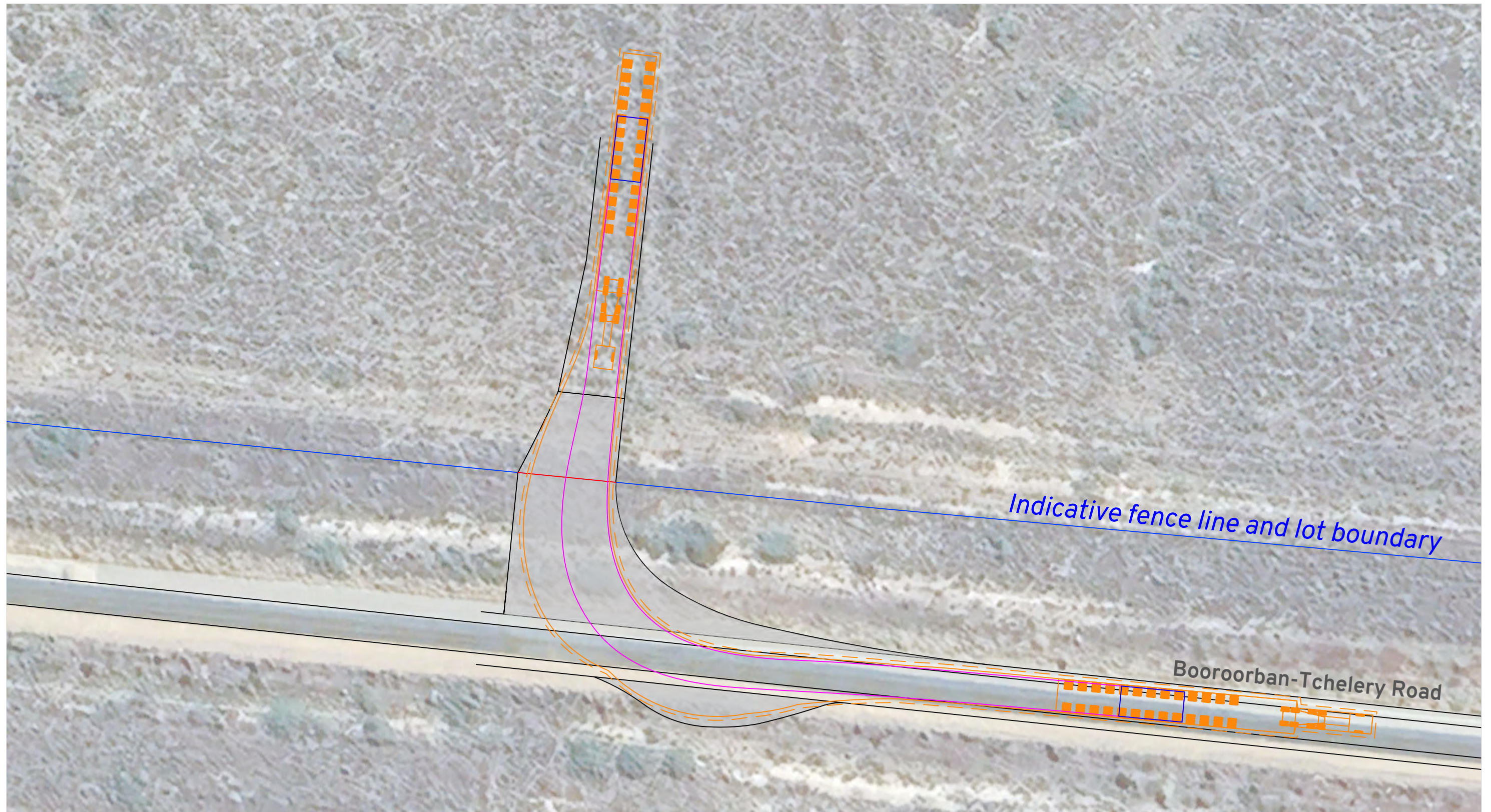


Romani BESS

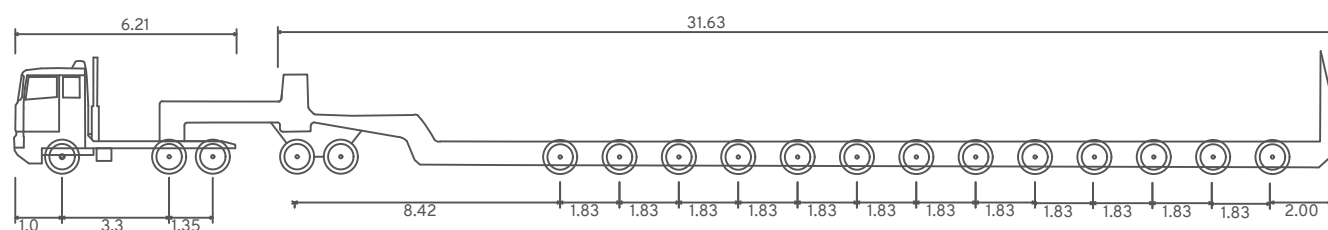
Booororban-Tchelery Road, Booororban

Swept Path Assessment

DRAWN: SE
DATE: 11/06/2025
DWG NO: 964 S01C
SCALE at A3: 1:500



Exit Manoeuvre



13 X 8 Platform Trailer with Dolly
Includes 8.4m long 4.0m wide load

Overall Length 41.789m
Overall Width 4.390m
Overall Body Height 4.300m
Lock-to-lock time 6.00s
Curb to Curb Turning Radius 15.000m



Romani BESS

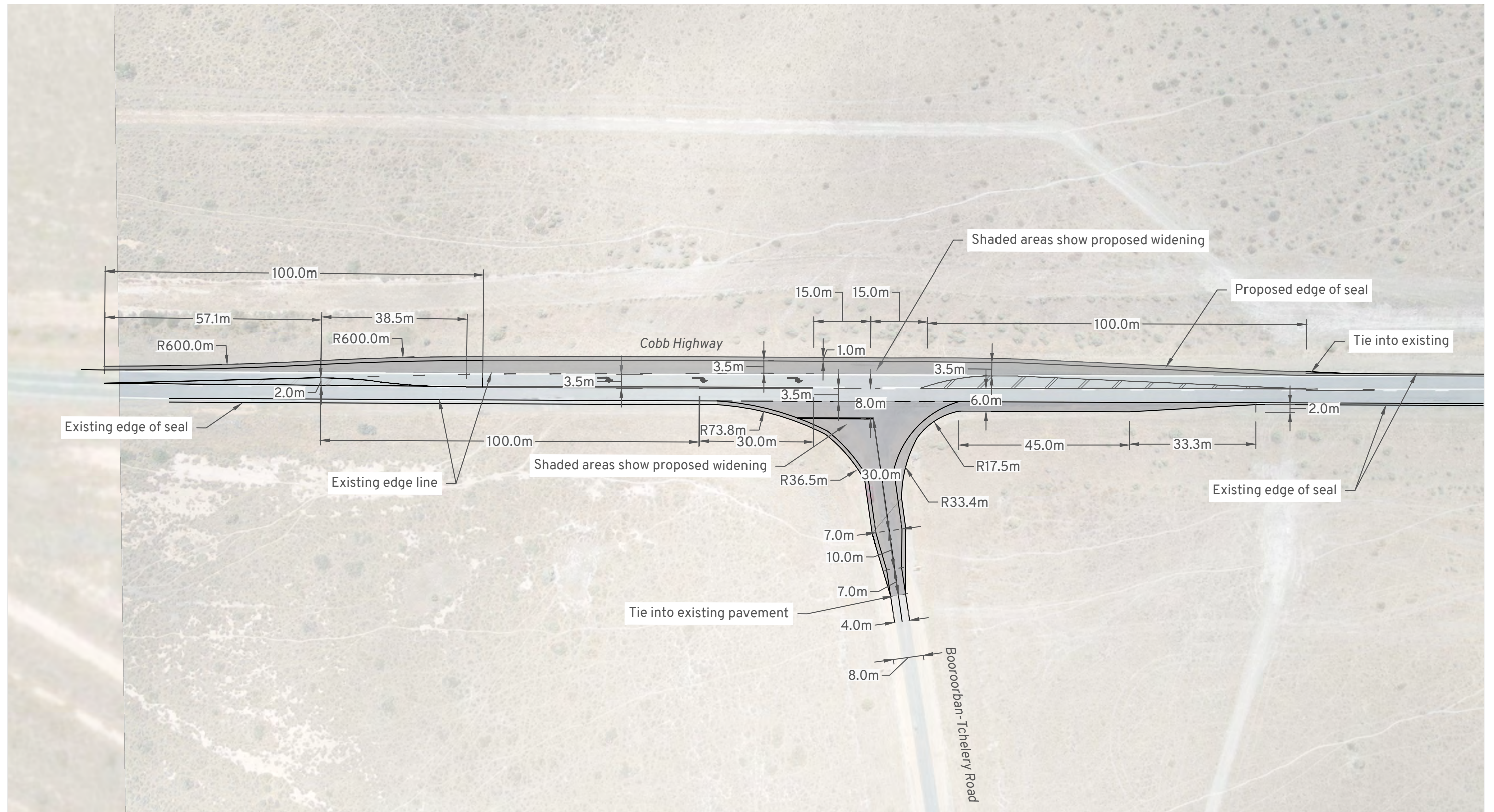
Booororban-Tchelery Road, Booororban

Swept Path Assessment

DRAWN: SE
DATE: 11/06/2025
DWG NO: 964 S01C
SCALE at A3: 1:500

Appendix H

Intersection Upgrade – Cobb Highway / Booroorban-Tchelery Road



The following design details have been taken from Austroads Guide to Road Design Part 4A

Rural Basic Right-turn Treatment [CHR(s)] - Section 7.2.3.

- 1: Design speed of 120km/h.
- 2: Lane widths: 3.5m.
- 3: Minimum lateral movement (A) is 100m.
- 4: Desirable radius of 600m has been used
- 5: Taper length used is 38.5m.
- 6: Storage length is 30m for one B-Double Vehicle.

Rural Left-turn Treatment (BAL) - Part 4A Section 8.2.1.

- 1: Design speed of 120km/h.
- 2: Nominal lane width of 3.5m.
- 3: Formation/carriageway widening is 2.0m, total width (C) is 6m.
- 4: Taper length calculates to 33.3m.
- 5: Minimum length of parallel widened shoulder used from Table 8.1 is 45m.



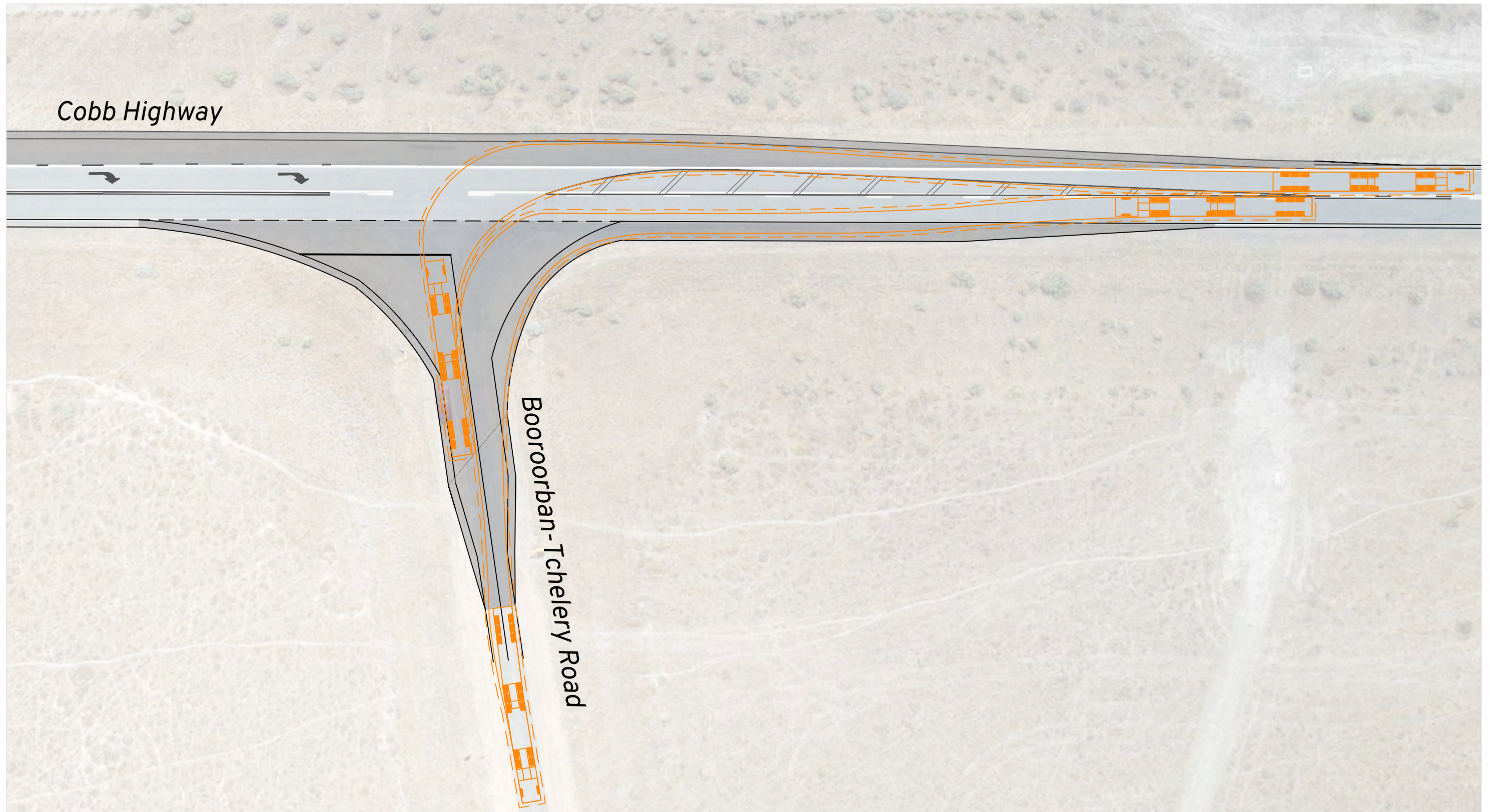
Concept Intersection Design

Romani BESS

Cobb Highway/Booroorban-Tchelery Road CHR(s) BAL Turn Treatments

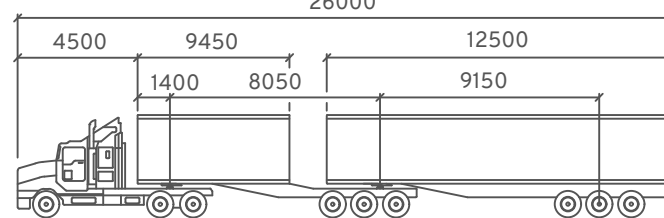
DRAWN: SE
DATE: 27/05/2025
DWG NO: 964 TT01C
SCALE at A3: 1:1000m

Amber 00



Vehicle Envelope
 500mm Clearance
 Reverse Manoeuvre
 Min. Design Speed 15km/h

26.0m B-Double



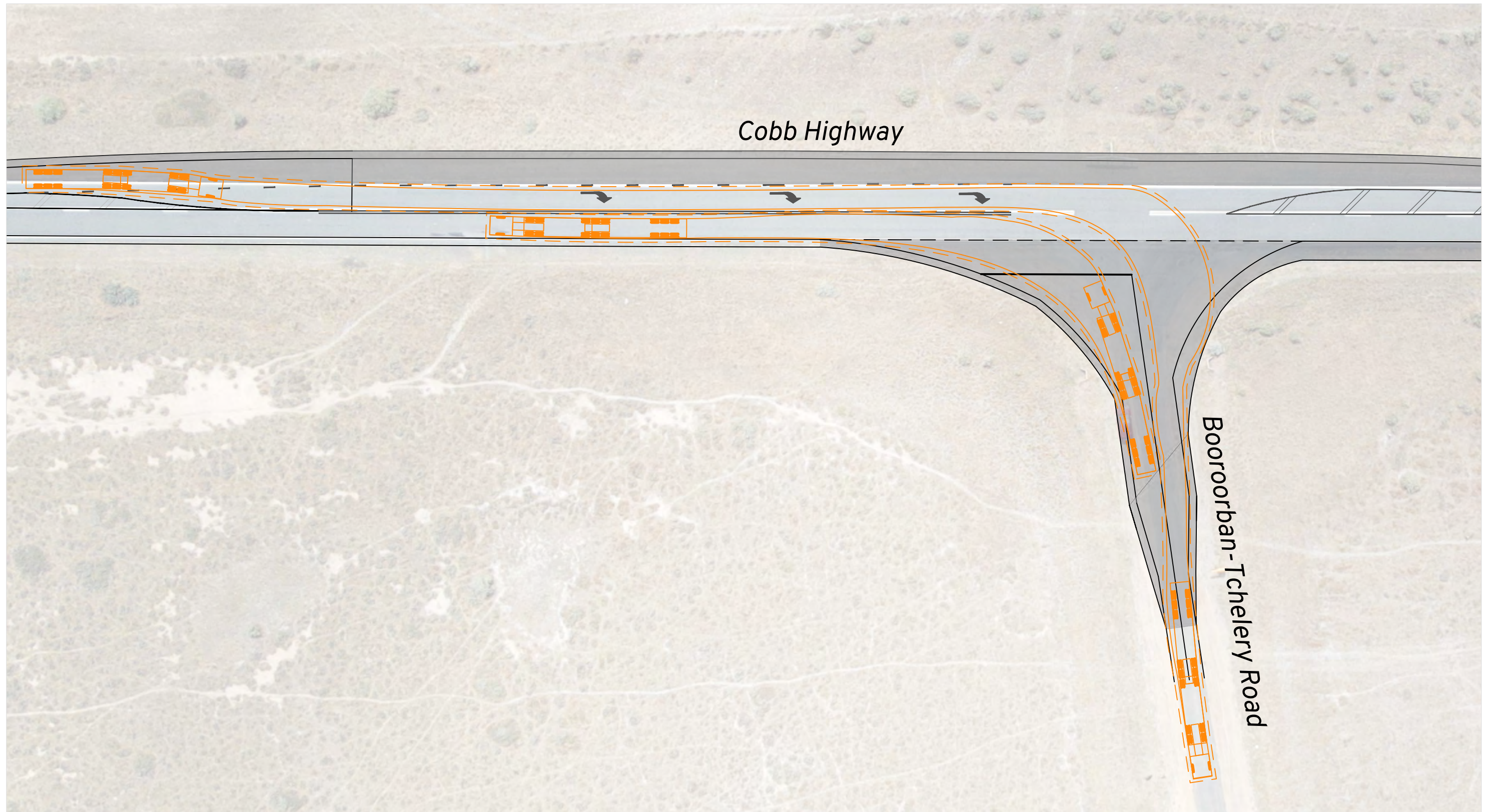
Tractor Width : 2500
 Trailer Width : 2500
 Tractor Track : 2500
 Trailer Track : 2500
 Lock to Lock : 6.0s
 Steering Angle : 22.2
 Articulating Angle 70.0



Concept Intersection Design
 Romani BESS
 Swept Path Assessment

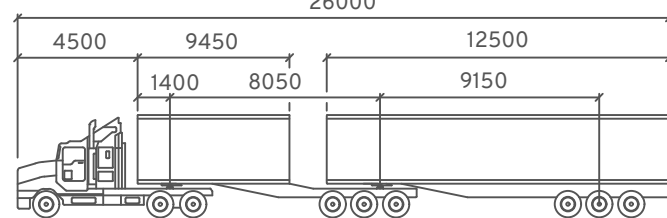
DRAWN: SE
 DATE: 27/05/2025
 DWG NO: 964 TT01C
 SCALE at A3: 1:500m

Amber 01



Vehicle Envelope
500mm Clearance
Reverse Manoeuvre
Min. Design Speed 15km/h

26.0m B-Double



Tractor Width : 2500
Trailer Width : 2500
Tractor Track : 2500
Trailer Track : 2500
Lock to Lock : 6.0s
Steering Angle : 22.2
Articulating Angle : 70.0



Concept Intersection Design
Romani BESS
Swept Path Assessment

DRAWN: SE
DATE: 27/05/2025
DWG NO: 964 TT01C
SCALE at A3: 1:500m

Appendix I

Sight Distance Assessments



Cobb Highway / Booroorban-Tchelery Road

Sight Distance

Sight Line

Romani BESS

Booroorban-Tchelery Road, Booroorban

Sight Distance Assessment

DRAWN: SE
DATE: 31/07/2025
DWG NO: 964 S01D
SCALE at A3: 1:2000m

Amber SD01



Site Access / Booroorban-Tchelery Road

Sight Distance

Sight Line



Romani BESS

Booroorban-Tchelery Road, Booroorban

Sight Distance Assessment

DRAWN: SE
DATE: 31/07/2025
DWG NO: 964 S01D
SCALE at A3: 1:2000m

Amber SD02



Maude Road / Booroorban-Tchelery Road

Sight Distance

Sight Line



Romani BESS

Booroorban-Tchelery Road, Booroorban

Sight Distance Assessment

DRAWN: SE
DATE: 31/07/2025
DWG NO: 964 S01D
SCALE at A3: 1:2000m

Amber SD03