Stubbo Solar - Stage 2a

Blue Springs Road, Stubbo

Traffic Management Plan

December 2023

Reference: 594 tmp 231221 final

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Traffic Management Plan

Prepared for: Accent Environmental Pty Ltd

Status: Final report

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Revision	Date	Description	Author	Reviewed	Approved
A	07/03/23	Draft 01	Callum Thomas	Michael Willson	Michael Willson
B	31/03/23	Final	Callum Thomas	Michael Willson	Michael Willson
C	07/06/23	Final – Respond to TfNSW comments	Michael Willson	Michael Willson	Michael Willson
D	27/06/23	Final – Respond to DPE and TfNSW comments	Tom Dwyer	Michael Willson	Michael Willson
E	7/07/23	Final – Respond to final DPE comments	Tom Dwyer	Michael Willson	Michael Willson
F	18/09/23	Final – Respond to final DPE comments. Inclusion of OSOM Route Assessment	Tom Dwyer	Michael Willson	Michael Willson
G	11/10/23	Final – Minor updates to respond to TfNSW comments	Tom Dwyer	Michael Willson	Michael Willson
H	8/11/23	Final – Inclusion of Bridge and Culvert Assessment	Tom Dwyer	Michael Willson	Michael Willson
I	12/12/23	Final – Inclusion of Route Assessment Detail	Tom Dwyer	Michael Willson	Michael Willson
J	21/12/23	Final – Updates to Route Assessment Detail	Tom Dwyer	Michael Willson	Michael Willson

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Amber

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1. Introduction

1.1 Project Background

The Stubbo Solar project (the Project) is a 400 megawatt (MW) alternating current development with an allowance for future battery storage of up to 200 MW/2 hour. The project is located between Blue Springs Road and Barneys Reef Road, approximately 10 km North of Gulgong and 85 km east of Dubbo in New South Wales (NSW).

ACEN is the project owner and has engaged PCL Construction Pacific Rim Pty Ltd (PCL) as the engineering, procurement and construction (EPC) contractor to manage the works for the 400 MW AC solar project, solar project substation and ancillary operational facilities.

ACEN has also engaged Transgrid to connect the Project to the transmission network used by Transgrid to provide transmission services, which includes certain works that need to be completed by Transgrid to enable Transgrid to connect the Project to the transmission network.

The Development Consent (DC) - Application Number: SSD-10452 – requires the preparation of a Traffic Management Plan (TMP). Commitments relevant to traffic management were also made by ACEN in the environmental impact statement (EIS) and the Amendment report for inclusion in the management plans.

ACEN is the Proponent and ultimately takes responsibility for compliance with SSD-10452. This responsibility is reflected in the management plans, programs and strategies developed for the project.

As both PCL and TransGrid have been contracted by ACEN to undertake construction of the Stubbo Solar Project, the PCL and TransGrid adopted environmental and related policies/standards will comply with, and where possible exceed, the minimum standards set by ACEN in the Environmental Management Strategy.

On 29 June 2021, the Executive Director, Energy, Resources and Industry Assessments granted consent to the development application for the Stubbo Solar Farm subject to conditions, under delegation from the Minister for Planning and Public Spaces and section 4.38 of the Environmental Planning and Assessment Act 1979 (the Act).

In a letter dated 24 August 2022, the Secretary approved the Applicant's proposal to develop the project in two stages, comprising:

- Stage 1: Road upgrades including construction of the main site access; and
- Stage 2: Construction of the solar farm.

In a subsequent letter dated 10 May 2023, the Secretary approved the Applicant's request dated 8 May 2023 seeking the Planning Secretary's approval to revise the staging of the Stubbo Solar Project under Condition 3 of Schedule 4 of SSD-10452, and to develop the project in four stages comprising:

- Stage 1: Road upgrades (Blue Springs Road) and construction of the main site access.
- Stage 2: Solar project construction and operation including:
    - Stage 2a: Construction and commissioning of the solar facilities including solar array, substation and all ancillary infrastructure, including the switchyard and transmission line connection to be constructed by Transgrid.

  - Stage 2b: Operation of the Stubbo Solar Project.
- Stage 3: Construction, commissioning and operation of the Battery Energy Storage System (BESS), including substation and switchyard expansion (within the development footprint).
- Stage 4: Decommissioning of the Stubbo Solar Project at end of life.

This management plan is for Stage 2a of Stubbo Solar.

Amber Organisation Pty Ltd has been engaged by Accent Environmental Pty Ltd, on behalf of PCL, to prepare this TMP to detail the proposed temporary traffic management measures to be implemented during the construction works for the Stubbo Solar project.

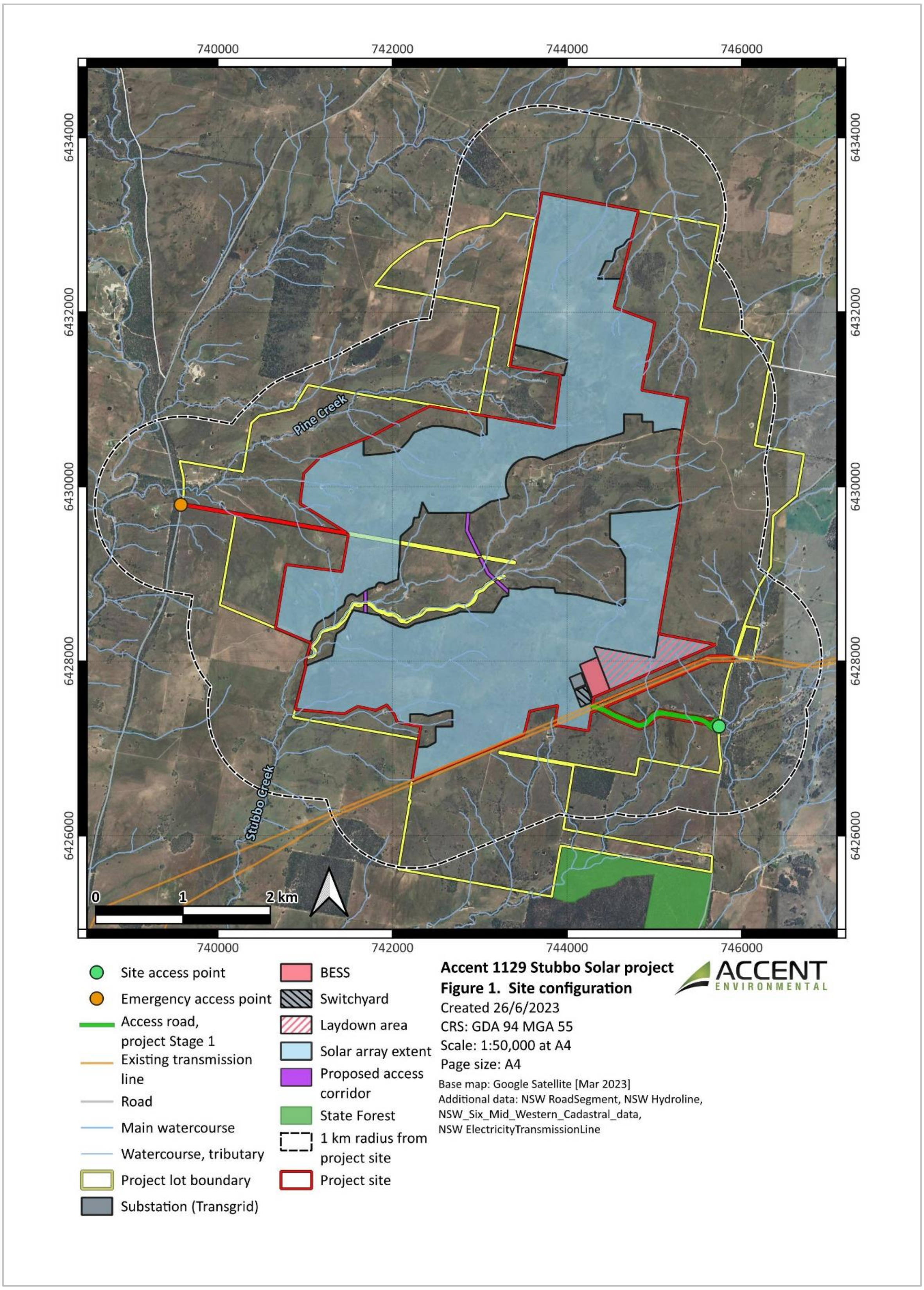
Figure 1 shows the proposed layout of the site in relation to the road network, access locations and existing infrastructure.

The project will require a workforce of approximately 520 full time equivalent employees which are expected to primarily be located in Mudgee and Gulgong, with all plant expected to be delivered from Port Botany. It is anticipated that the works will run for a period of approximately 24 months. The construction process is largely confined on-site, with no construction operations requiring the closure of, or limitation to, vehicle access along Blue Springs Road, Cope Road, or Barneys Reef Road.

The primary traffic impacts relate to the traffic generation associated with the transport of materials and the workforce to and from the site, with these effects able to be managed with minimal impact to the road network.

This TMP has been prepared based on the available construction information at this time however, it cannot be guaranteed that the specific methodology described will be that employed at the time of construction. In accordance with Condition 3, Schedule 4, Updating and Staging of Strategies, Plans or Programs, any future updates to the TMP will require approval by the Planning Secretary.

Figure 1: Site Layout



Source: Accent Environmental Pty Ltd

1.2 Objectives

The key objective of this TMP is to ensure safe and efficient movement of vehicles to/from the site, whilst minimising disruptions and impacts, and maintaining a safe environment for vehicular traffic external to the site. More specifically, the objectives of the TMP are to:

- Provide a safe environment for the travelling public and construction personnel;
- Cater for the needs of all traffic;
- Communicate the purpose of the proposed traffic management measures; and
- Communicate the arrangements for and impacts of any management measures affecting traffic.

To assist in meeting these objectives the TMP provides information on:

- The Scope of Works;
- Site conditions;
- Permissible working times; and
- Procedures and responsibilities.

The Applicant shall ensure that the requirements of the document and other relevant information will be monitored and the TMP adjusted to meet changing requirements where necessary. In accordance with Condition 11, Schedule 3, the Applicant will implement the TMP to the satisfaction of the Planning Secretary.

1.3 Statutory Requirements

This document fulfills Condition 11 of the Development Consent which requires the provision of a Traffic Management Plan and has been prepared with consideration to the other transport conditions outlined within the Development Consent. The matters relevant to transport outlined within Schedule 3 (Environmental Conditions – General) and Schedule 4 (Environmental Management and Reporting) have been summarised within Table 1 and Table 2 respectively.

Table 1: Development Consent Requirements – Schedule 3

CONDITION		REFERENCE LOCATION
Over-Dimensional and Heavy Vehicle Restrictions		
2.	The Applicant must ensure that the: a) development does not generate more than: ▪ 60 heavy vehicle movements a day during construction, upgrading and decommissioning; ▪ 20 over-dimensional vehicle movements during construction, upgrading and decommissioning; and ▪ 5 heavy vehicle movements a day during operations on the public road network; and b) length of any vehicles (excluding over-dimensional vehicles) used for the development does not exceed 26 metres, unless the Planning Secretary agrees otherwise.	**Complies:** Refer Section 3.5.1 for (a) Refer section 3.4 for (b) It is noted that these metrics include cumulative construction traffic of Transgrid and PCL.
3.	The Applicant must keep accurate records of the number of over-dimensional and heavy vehicles entering or leaving the site each day for the duration of the project.	**Complies:** Section 5.2 and 5.10

	Access Route	
4.	All over-dimensional and heavy vehicles associated with the development must travel to and from the site via Golden Highway, Ulan Road, Cope Road and Blue Springs Road as identified in Appendix 1 and Appendix 5.	**Complies:** Section 3.5.3 *Note: An exemption may be sought for Local Civil Suppliers to use alternative routes*
	Site Access	
5.	All vehicles associated with the development must enter and exit the site via the preferred site access point off Blue Springs Road, as identified in Appendix 1 and Appendix 5.	**Complies:** Section 3.5.1 Section 3.5.2
6.	If the applicant cannot secure access via the preferred site access point detailed in condition 5 of Schedule 3 of this consent, all vehicles associated with the development must enter and exit the site via the alternative site access point off Blue Springs Road, as identified in Appendix 1 and Appendix 5.	**Complies:** Section 3.5
7.	The site access point off Barneys Reef Road may only be used for emergency purposes.	**Complies:** Section 5.10
	Road Upgrades	
8.	Unless the Planning Secretary agrees otherwise, prior to commencing construction the Applicant must upgrade: a) the selected access point off Blue Springs Road, as identified in Appendix 1 and Appendix 5, in accordance with Council requirements; b) Blue Springs Road from the Cope Road up to a minimum 100 m beyond the selected site access point, as identified in Appendix 5; and c) the intersection of Cope Road and Blue Springs Road with BAR and BAL treatments to be sealed, designed and constructed for 100 km/h speed environment, able to accommodate the largest vehicle using the intersection, match existing road levels and not interfere with existing road drainage, identified in Appendix 5. Unless the relevant roads authority agrees otherwise, these upgrades must comply with the Austroads Guide to Road Design (as amended by TfNSW supplements), and be carried out to the satisfaction of the relevant roads authority.	**Complies:** Section 3.6 This condition was addressed in the TMP for Stage 1 for the upgrading of Blue Springs Road and construction of the site access road. The Blue Springs Road upgrade extended 200m beyond the site access point. The Road Upgrades were completed in May 2023 and signed off by Mid-Western Regional Council in May 2023.

	Road Maintenance	
9.	The Applicant must: a) undertake an independent dilapidation survey to assess the: ▪ existing condition of Ulan Road, Cope Road and Blue Springs Road on the transport route, prior to construction, upgrading or decommissioning works; and ▪ condition of Ulan Road, Cope Road and Blue Springs Road on the transport route, following construction, upgrading or decommissioning works; b) repair Ulan Road, Cope Road and Blue Springs Road on the transport route if dilapidation surveys identify that the road has been damaged during construction, upgrading or decommissioning works, in consultation with the relevant roads authority, to the satisfaction of the Planning Secretary. If there is a dispute about the repair of Ulan Road, Cope Road and Blue Springs Road between the applicant and the relevant roads authority, then either party may refer the matter to the Planning Secretary for resolution. The Planning Secretary's decision on the matter must be final and binding on both parties.	**Complies:** Section 6
	Operating Conditions	
10.	The Applicant must ensure: a) the internal roads are constructed as all-weather roads; b) there is sufficient parking on site for all vehicles, and no parking occurs on the public road network in the vicinity of the site; c) the capacity of the existing roadside drainage network is not reduced; d) all vehicles are loaded and unloaded on site, and enter and leave the site in a forward direction; and e) vehicles leaving the site are in a clean condition, with loads appropriately covered or contained, to minimise dirt being tracked onto the sealed public road network.	**Complies:** Section 5.4
	Traffic Management Plan	
11.	Prior to commencing road upgrades, the Applicant must prepare a Traffic Management Plan for the development in consultation with TfNSW and Council and to the satisfaction of the Planning Secretary. This plan must include:	**Complies:**
	a) details of the transport route to be used for all development-related traffic;	Section 3.5
	b) details of the road upgrade works required by condition 8 of Schedule 3 of this consent;	Section 3.6
	c) details of the measures that would be implemented to minimise traffic impacts during construction, upgrading or decommissioning works, including:	
	▪ details of the dilapidation surveys required by condition 7 of Schedule 3 of this consent;	Section 6
	▪ temporary traffic controls, including detours and signage;	Section 8.3
	▪ notifying the local community about development-related traffic impacts;	Section 5.3
	▪ procedures for receiving and addressing complaints from the community about development related traffic;	Section 10.4

	▪ minimising potential cumulative traffic impacts with other projects in the area, including during construction, upgrading or decommissioning works;	Section 5.1 and Section 5.8
	▪ minimising potential for conflict with school buses and other road users as far as practicable, including preventing queuing on the public road network (measures also required during operation of the project);	Section 2.5 and Appendix A Driver Code of Conduct
	▪ minimising dirt tracked onto the public road network from development-related traffic;	Section 5.4
	▪ details of the employee shuttle bus service, including pick-up and drop-off points and associated parking arrangements for construction workers, and measures to encourage employee use of this service;	Section 5.7
	▪ encouraging car-pooling or ride sharing by employees;	Section 5.7
	▪ scheduling of haulage vehicle movements to minimise convoy length or platoons;	Section 5.2
	▪ responding to local climate conditions that may affect road safety such as fog, dust, wet weather and flooding;	Section 5.10
	▪ monthly monitoring for, and responding to, any emergency repair and/or maintenance requirements; and	Section 6
	▪ a traffic management system for managing over-dimensional vehicles;	Section 5.5
	d) a driver's code of conduct that addresses:	Section 5.1 and Appendix A - Driver Code of Conduct Sections
	▪ travelling speeds;	Section 2 (Primary Driver Code) of Driver Code of Conduct
	▪ driver fatigue;	Appendix A – Driver Code of Conduct Section 5 (Driver Fatigue). Appendix B contains a copy NHVR Heavy Vehicle Driver Fatigue Requirements.
	▪ procedures to ensure that drivers adhere to the designated transport routes and speed limits; and	Section 2 (Primary Driver Code) of Driver Code of Conduct
	▪ procedures to ensure that drivers implement safe driving practices.	Section 5.1 and Appendix A - Driver Code of Conduct
	e) a program to ensure drivers working on the development receive suitable training on the code of conduct and any other relevant obligations under the Traffic Management Plan.	Section 9 and 10
	Following the Planning Secretary's approval, the Applicant must implement the Traffic Management Plan.	

Table 2: Development Consent Requirements – Schedule 4

	CONDITION	REFERENCE LOCATION
	Revision of Strategies, Plans and Programs	
2.	The Applicant must: a) update the strategies, plans or programs required under this consent to the satisfaction of the Planning Secretary prior to carrying out any upgrading or decommissioning activities on site; and	**Complies:** Refer Section 11.3
	b) review and, if necessary, revise the strategies, plans or programs required under this consent to the satisfaction of the Planning Secretary within 1 month of the: ▪ submission of an incident report under condition 7 of Schedule 4; ▪ submission of an audit report under condition 9 of Schedule 4; or ▪ any modification to the conditions of this consent.	**Complies:** Refer Section 11.3
	Updating and Staging of Strategies, Plans or Programs	
3.	With the approval of the Planning Secretary, the Applicant may submit any strategy, plan or program required by this consent on a progressive basis. To ensure the strategies, plans or programs under the conditions of this consent are updated on a regular basis, the Applicant may at any time submit revised strategies, plans or programs to the Planning Secretary for approval. With the agreement of the Planning Secretary, the Applicant may prepare any revised strategy, plan or program without undertaking consultation with all the parties referred to under the relevant condition of this consent.	**Complies:** Refer Section 11.3
	Notification of Department	
4.	Prior to commencing the construction, operations, upgrading or decommissioning of the development or the cessation of operations, the Applicant must notify the Department in writing via the Major Projects website portal of the date of commencement, or cessation, of the relevant phase. If any of these phases of the development are to be staged, then the Applicant must notify the Department in writing prior to commencing the relevant stage, and clearly identify the development that would be carried out during the relevant stage.	**Complies:** Refer Section 11.4
	Incident Notification	
7	The Planning Secretary must be notified in writing via the Major Projects website immediately after the Applicant becomes aware of an incident. The notification must identify the development (including the development application number and the name of the development if it has one) and set out the location and nature of the incident. Subsequent notification requirements must be given, and reports submitted in accordance with the requirements set out in Appendix 7.	**Complies:** Refer Section 10.3
	Non-Compliance Notification	
8.	The Planning Secretary must be notified in writing via the Major Projects website within seven days after the Applicant becomes aware of any non-compliance.	**Complies:** Refer Section 10.3

9.	A non-compliance notification must identify the development and the application number for it, set out the condition of consent that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.	**Complies:** Refer Section 10.3
10.	A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.	**Complies:** Refer Section 10.3
	Access to information	
17.	The Applicant must: a) make the following information publicly available on its website as relevant to the stage of the development: ▪ the EIS; ▪ the final layout plans for the development; ▪ current statutory approvals for the development; ▪ approved strategies, plans or programs required under the conditions of this consent; ▪ the proposed staging plans for the development if the construction, operation or decommissioning of the development is to be staged; ▪ how complaints about the development can be made; ▪ any independent environmental audit, and the Applicant's response to the recommendations in any audit; and ▪ any other matter required by the Planning Secretary; and	**Complies:** Refer Section 5.3
	b) keep this information up to date.	**Complies:** Refer Section 5.3

1.4 Road Authority Consultation

The TMP has been prepared in conjunction with consultation with Officers from Transport for NSW Development Services-Renewables team and Development Officers from Mid-Western Regional Council. Communication was undertaken via phone in early February 2023 with both road authorities requesting the TMP be submitted for review once completed.

Following submission of the TMP (Revision B), Council Officers provided the following comment via email on 5 April 2023:

> *'It is advised the plan as proposed meets Councils requirements for the development and Council does not need to make additional comment.'*

A review of the TMP was provided by Transport for NSW Officers, with comments provided within their letter dated 2 May 2023. A subsequent meeting was held with Transport for NSW Officers on 8 May 2023 to discuss the comments and seek clarification and a revised TMP was submitted on 16 May 2023 (Revision C). Additional comments were received from TfNSW on 14 June 2023.

The correspondence from Mid-Western Regional Council and Transport for NSW is provided within Appendix E and F. A response to the comments from TfNSW is provided within Appendix F.

1.5 Management and Mitigation Measures

The following provides the relevant consolidated summary of the amended management and mitigation measures that will be implemented during the construction and operation of the project as presented in Table 7-3 of the *Stubbo Solar Farm Amendment Report*, along with how the relevant matters have been addressed with the TMP.

Table 3: Management and Mitigation Measures – TMP Comments

ID	Measures	Reference
T1	UPC\AC will continue to consult with Mid-Western Regional Council to agree the appropriate treatment or upgrade requirements for the safe use of Blue Springs Road during construction and the process for undertaking any treatment or upgrade works in accordance with Development Consent conditions	Completed as part of Stage 1.
T2	A construction traffic management plan will be prepared in consultation with TfNSW and Mid-Western Regional Council, to the satisfaction of the Secretary. The plan will include:	TfNSW and MWRC consulted during preparation of TMP.
	details of:	
	▪ the transport route to be used for all project-related traffic	Refer Section 3.5.2 and 3.5.3
	▪ the origin, number, size, frequency and final destination of vehicles accessing/exiting the site	Refer Section 3.5
	▪ loads, weights and lengths of haulage and construction related vehicles and the number of movements of such vehicles	Refer Section 3.5.1 Over-dimensional vehicle movement forecasts and specifications will be provided in a subsequent submission of the TMP in Q3 2023, once these details are confirmed by the Project team.
	▪ existing and projected background traffic, peak hour volumes and types and their interaction with projected development related traffic	Refer Section 2 for background information. Refer Section 3.5 for traffic assessment.
	▪ local climate conditions that may affect road safety for vehicles used during construction, operation and decommissioning of the facility (e.g. fog, dust, wet weather).	Refer Section 8.3.3
	details of any road upgrade works required by Development Consent	Refer Section 3.6
	identification of the routes which are to be used to access the site	Refer Section 3.5.2 and 3.5.3
	a protocol for undertaking independent dilapidation surveys to assess the existing condition of the proposed construction routes prior to construction, upgrading or decommissioning activities and the condition of the proposed construction routes following construction, upgrading or decommissioning activities	Refer Section 6
	a protocol for the repair of the construction routes if dilapidation surveys identify these roads to be damaged during construction, upgrading or decommissioning works	Refer Section 6

ID	Measures	Reference
	details of the measures that will be implemented to minimise traffic impacts during construction, upgrading or decommissioning works, including:	
	▪ temporary traffic controls, including detours, temporary reduced speed limits and signage	Refer Section 8.2 and Section 8.3
	▪ notifying the local community about project-related traffic impacts	Refer Section 5.3
	▪ procedures for receiving and addressing complaints from the community about project related traffic	Refer Section 10.4
	▪ minimising potential for conflict with school buses, other road users during peak hours and rail services as far as practicable (measures also required during operation of the project)	Refer Section 2.5 and Section 5.6
	▪ minimising dirt tracked onto the public road network from project-related traffic	Refer Section 5.12
	▪ scheduling of haulage vehicle movements to minimise convoy length or platoons	Refer Section 5.2
	▪ responding to local climate conditions that may affect road safety such as fog, dust and wet weather	Refer Section 5.10 and 8.3.3
	▪ responding to any emergency repair or maintenance requirements	Refer Section 5.5
	▪ a traffic management system for managing over-dimensional vehicle trips to and from the project	Refer Section 5.5 and Section 3.5.1
	a program to ensure drivers associated with the project receive suitable training on the Driver Code of Conduct and any other relevant obligations under the CTMP	Refer Appendix A
	a flood response plan detailing procedures and options for safe access to and from the site in the event of flooding	Refer Section 5.11
	controls for transport and use of dangerous goods in accordance with State Environmental Planning Policy No. 33 – Hazardous and Offensive Development, Australian Dangerous Goods Code and Australian Standard 4452 Storage and Handling of Toxic Substances.	Refer Section 5.9
T3	The safe sight distance analysis undertaken at the Cope Road / Blue Springs Road intersection and at the proposed site access point options from Blue Springs Road will be ground-truthed to determine if vegetation trimming or speed limit reductions need to be applied to provide the required safe sight distance for all vehicle types expected to access the project. Ground-truthing of the analysis undertaken for the emergency-only access point proposed from Barneys Reef Road will also be undertaken, with appropriate measures to be put in place for the (unlikely) event of this access point being utilised.	Completed as part of Stage 1. Refer to Section 3.6
T4	Parking requirements for the project construction and operation workforce will be provide onsite and parking will not be provided on public roads adjacent to the site.	Refer Section 5.4
T5	A full and detailed assessment will be undertaken by a suitably qualified bridge Engineer of the structural and load capacity of all bridges and culverts on any and all proposed access routes to be used by oversize/over mass vehicles. The assessment reports will be provided to Mid-Western Regional Council for approval prior to commencement of construction.	Refer Section 4.3. A Bridge and Culvert Assessment has been undertaken which is provided in Appendix L.

ID	Measures	Reference
T6	Pre and post dilapidation reports, with the exception where road upgrades are being undertaken by UPC\AC as part of the project, will be prepared for existing road assets along the proposed transport routes in consultation with Council for each phase of the development (construction, operation, decommissioning). Damage to existing road assets caused by the project would be repaired at the full cost of the proponent.	Refer Section 6
T7	Prior to the commencement of the relevant construction work involving heavy vehicle movements to site, 'Advance truck warning signs' (W5-22 Size B) with distance plates (W8-5 Size B), will be erected adjacent to Cope Road, 250 metres from its intersection with Blue Springs Road. The signs will be removed at completion of construction.	Refer Section 8.3.1
T8	Relevant approvals from the National Heavy Vehicle Regulator and TfNSW will be obtained by the proponent prior to the transportation of any oversize/over mass loads on public roads.	Refer Section 3.5.3.
T9	UPC\AC and/or its selected Engineer Procure and Construct (EPC) contractor will work towards a full detailed design for the proposed Blue Springs Road upgrade prior to commencing construction. The full detailed design will be prepared in consultation with Mid-Western Regional Council and Transport for NSW and any other relevant public agencies as part of a Traffic Management Plan and relevant Development Consent conditions.	Completed as part of Stage 1.
T10	The following traffic management measures will be implemented during construction of the Blue Springs Road upgrade to improve safety of road users along the section of road: ▪ implement a temporary lowered sign posted speed limit from 100 kilometres per hour (existing) to 80 kilometres per hour during construction ▪ restrict heavy vehicle operation on Blue Springs Road during school bus operation times where possible.	Completed as part of Stage 1.
T11	Consultation with Mid-Western Regional Council will be ongoing regarding the use of the existing cleared area located at the north-western corner of the Cope Road and Blue Springs Road intersection as a potential laydown area/stockpile location during construction of the Blue Springs Road upgrade.	Completed as part of Stage 1.
T12	PC\AC will apply for a s138(2) application (under the Roads Act) for the Blue Springs road upgrade with Mid-Western Regional Council, who will refer to Transport for NSW to obtain concurrence prior to the commencement of works.	Completed as part of Stage 1.
T13	UPC\AC would undertake consultation with landholders affected by the Blue Springs Road upgrade where proposed upgrades impact on land outside of the road reserve. Affected landholders' consent would also be required to continue with the SSD process.	Completed as part of Stage 1.
T14	UPC\AC commits to preparing a Concept Design for the Blue Springs Road upgrade on the basis of a topographic survey (April/May 2021).	Completed as part of Stage 1.
T15	UPC\AC will work in consultation with Mid-Western Regional Council and affected landholders to re-align the road reserve where it does not match the proposed upgrade section.	Completed as part of Stage 1.

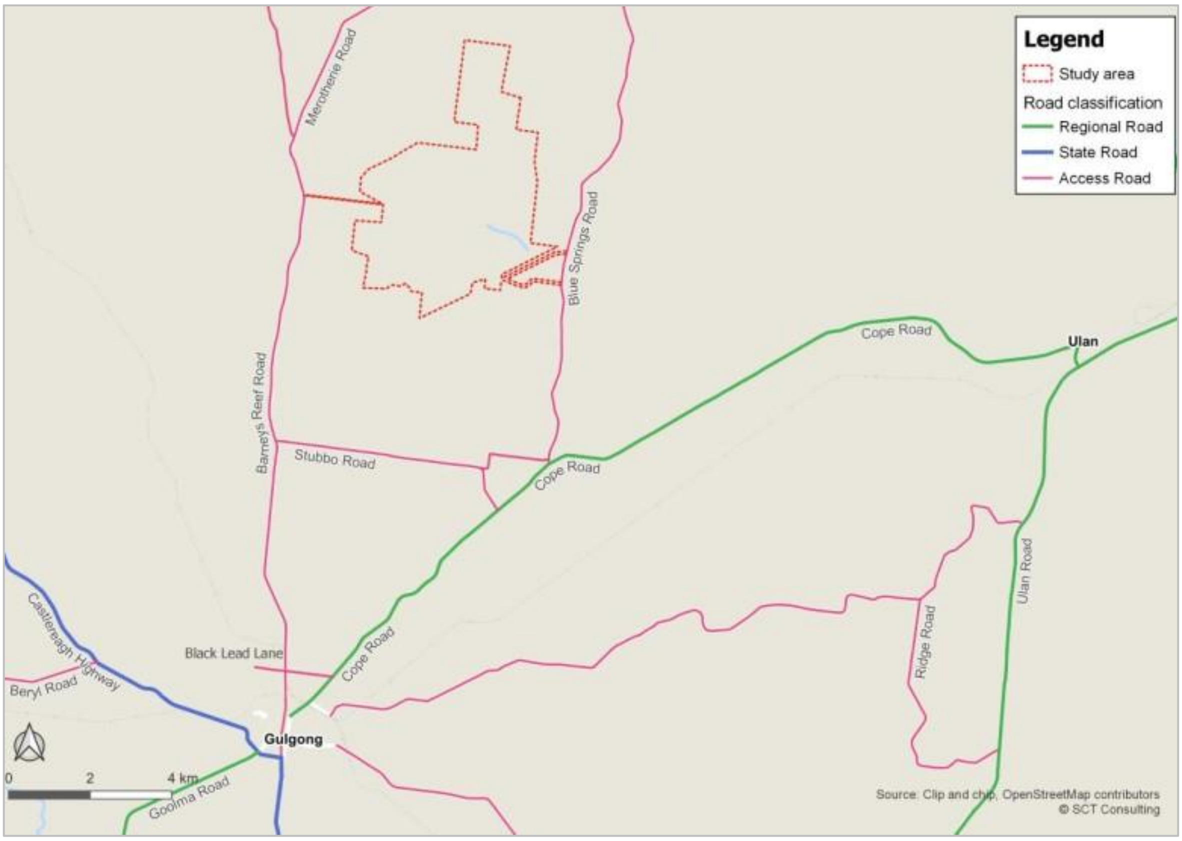
ID	Measures	Reference
T16	UPC\AC will continue to consult with State Forestry Commission of NSW throughout development of the proposed Blue Springs Road upgrade. All works in the State Forest area for the proposed Blue Springs Road upgrade would be undertaken in accordance with a forest permit issue by Forestry Corporation of NSW as per section 60 Forestry Act 2012. State Forestry Corporation of NSW has provided its consent to lodge the application.	Completed as part of Stage 1.

2. Existing Road Environment

2.1 Site Location

The site is located on the western side of Blue Springs Road, in Stubbo, approximately 10km north of Gulgong in the Mid-Western Regional Council local government area. Figure 2 shows the location of the site in relation to the surrounding transport network.

Figure 2: Site Location



Source: SCT Consulting – Stubbo Solar Farm Traffic Impact Assessment, 2020

The site and the surrounding area are zoned RU1 - Primary Production and are primarily occupied by agricultural or vegetated land. Some R5 - Large Lot Residential land is located further south of the site. In addition to the agricultural and vegetated land a number of coal mines are situated to the east of Ulan.

2.2 Road Network

Blue Springs Road is a municipal local road which extends in a general north-south alignment between Golden Highway and Cope Road. It has a sealed carriageway with a width of approximately 8 metres extending north from Cope Road for approximately 8 kilometres before continuing with an unsealed surface.

Cope Road/Main Street is a Regional road which runs in a general east-west alignment between Ulan and Gulgong. Adjacent to the site it has a sealed carriageway width of approximately 7 metres which accommodates one lane of traffic in each direction and wide unsealed shoulders are provided on both sides of the road. It also has a speed limit of 100km/hr. Within Ulan, Cope Road continues as Robinson Street and Main Street, and subsequently connects with Ulan Road. Within Gulgong it continues as Station Street and Herbert Street which subsequently connects with Castlereagh Highway and Goolma Road. Within Ulan and Gulgong it has a speed limit of 60km/hr and 50km/hr, respectively, with a 40km/hr school zone provided on Main Road within Ulan.

The intersection of Blue Springs Road and Cope Road is a priority controlled intersection with vehicles exiting Blue Springs Road provided with Give Way signage and linemarking.

Ulan Road is a Regional Road which runs in a general north-south alignment between Golden Highway and Church Street in Mudgee. Within the vicinity of the site, it has a sealed carriageway width of approximately 7 metres which accommodates two-way vehicle movement and wide unsealed shoulders are provided on both sides of the road. It has a speed limit of 100km/hr.

The intersection of Ulan Road and Main Street is priority controlled with vehicles exiting Main Street provided with Give Way signage and linemarking. Turn facilities are provided on Ulan Road which reflect the general layout for basic right and left turn treatments based on the Austroads Guide.

Golden Highway is a State road under the care and management of Transport for NSW. It runs in a general southeast-northwest alignment between New England Highway near Belford and Newell Highway in Dubbo. Within the vicinity of the site, it has a carriageway width of approximately 8 metres which accommodates one lane of traffic in each direction.

Castlereagh Highway is a State road which extends northwest from its connection with Great Western Highway near Marrangaroo to the NSW border near Hebel where it continues within Queensland. Within the vicinity of the site, it has a carriageway width of approximately 8 metres which accommodates one lane of traffic in each direction and has a speed limit of 100km/hr, excluding within Gulgong where it has a speed limit of 50km/hr.

Barneys Reef Road is a municipal local road which extends in a general north-south alignment between Castlereagh Highway and its continuation as Medley Street south of Tallawang Street in Gulgong. It has a sealed carriageway width of approximately 6 metres which accommodates two-way vehicle movement and is not provided within a centreline. A railway level crossing is provided to the south of Racecourse Road.

2.3 Traffic Volumes

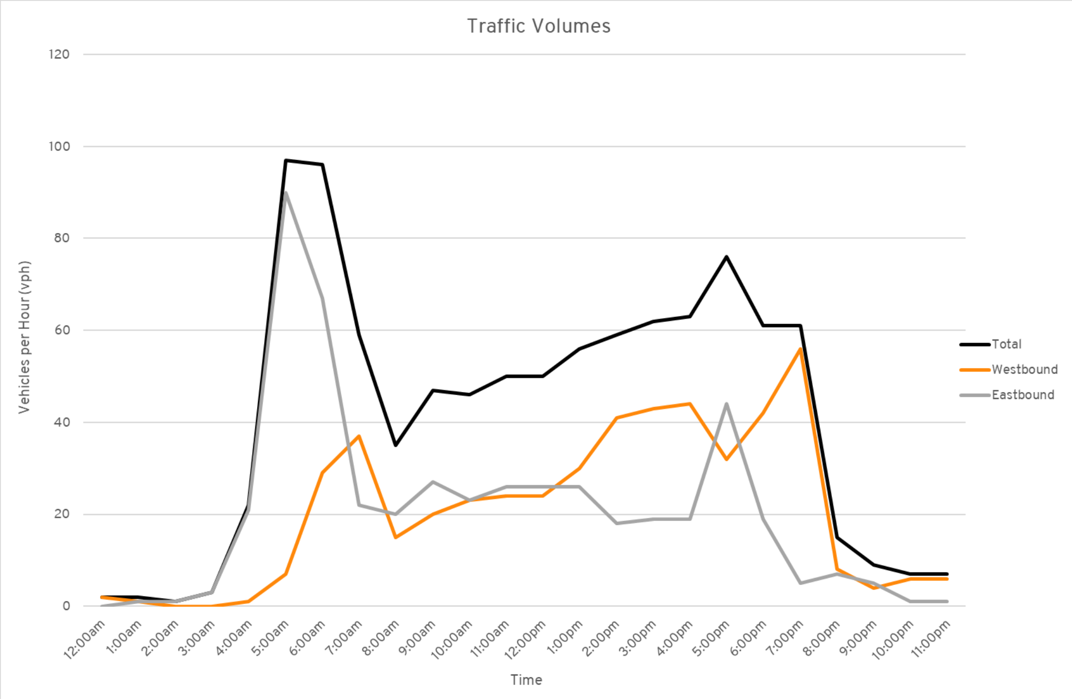
Amber commissioned a tube count on Cope Road approximately 7 kilometres west of the site in order to determine the existing road environment. The tube count was undertaken from Monday 12 September to Monday 19 September 2022. The survey results are summarised in Table 4.

Table 4: Cope Road Traffic Volumes 2022

	Traffic Volumes (vpd)	Weekday AM (vph)	Weekday PM (vph)	85th Percentile Speed	Heavy Vehicle Percentage
Westbound	495	9	36	102km/hr	10%
Eastbound	491	105	47	100km/hr	
Both Directions	986	114	84	101km/hr	

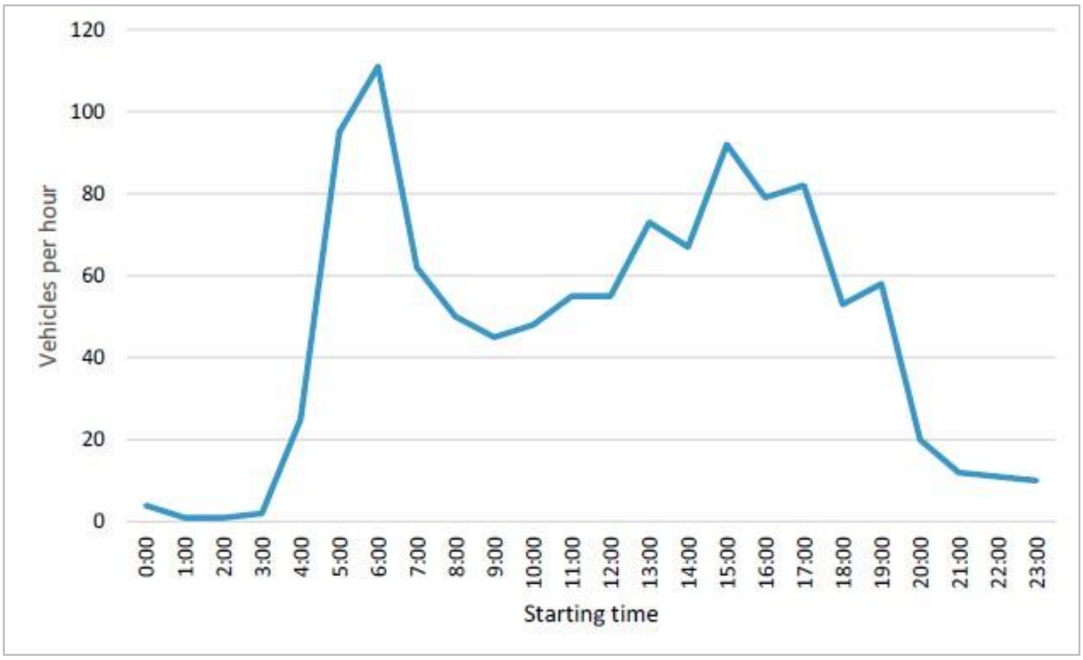
The 7-Day average traffic volumes for Cope Road for each hour have been separated into east and westbound movements and are shown in Figure 3. The survey results indicate the morning peak hour was recorded at 5:00am when there was a short increase in vehicle movements on Cope Road.

Figure 3: Cope Road Traffic Volume Data 2022



Traffic volume data for the surrounding area is provided within the Traffic Impact Assessment for the Stubbo Solar Farm which was prepared by SCT. The data for Cope Road provided within the report is shown within Figure 4 based on data collected in 2020.

Figure 4: Cope Road Traffic Volume Profile 2020



Source: SCT Stubbo Solar Farm Traffic Impact Assessment

The data reflects the 2022 tube count data whereby Cope Road experiences a peak in vehicle movements at 5:00am. It also indicates the morning peak hour occurs at 7:00am and the evening peak hour occurs at 3:00pm.

The traffic volumes from both the 2022 and the 2020 surveys suggest the data collected as part of the Traffic Impact Assessment was not significantly impacted by the change in travel behaviour generated by the COVID-19 pandemic.

Survey data was also provided within the Traffic Impact Assessment for other roads within the surrounding area as follows:

- Ulan Road carries in the order of 490 and 345 vehicle movements in the morning and evening peak hour, which represents a moderate level of traffic. The road accommodated in the order of 3-6% heavy vehicles.
- Blue Springs Road accommodates 8 vehicle movements in the morning peak and 9 vehicle movements in the evening peak (including 2 heavy vehicle movements) which represents a low level of traffic.

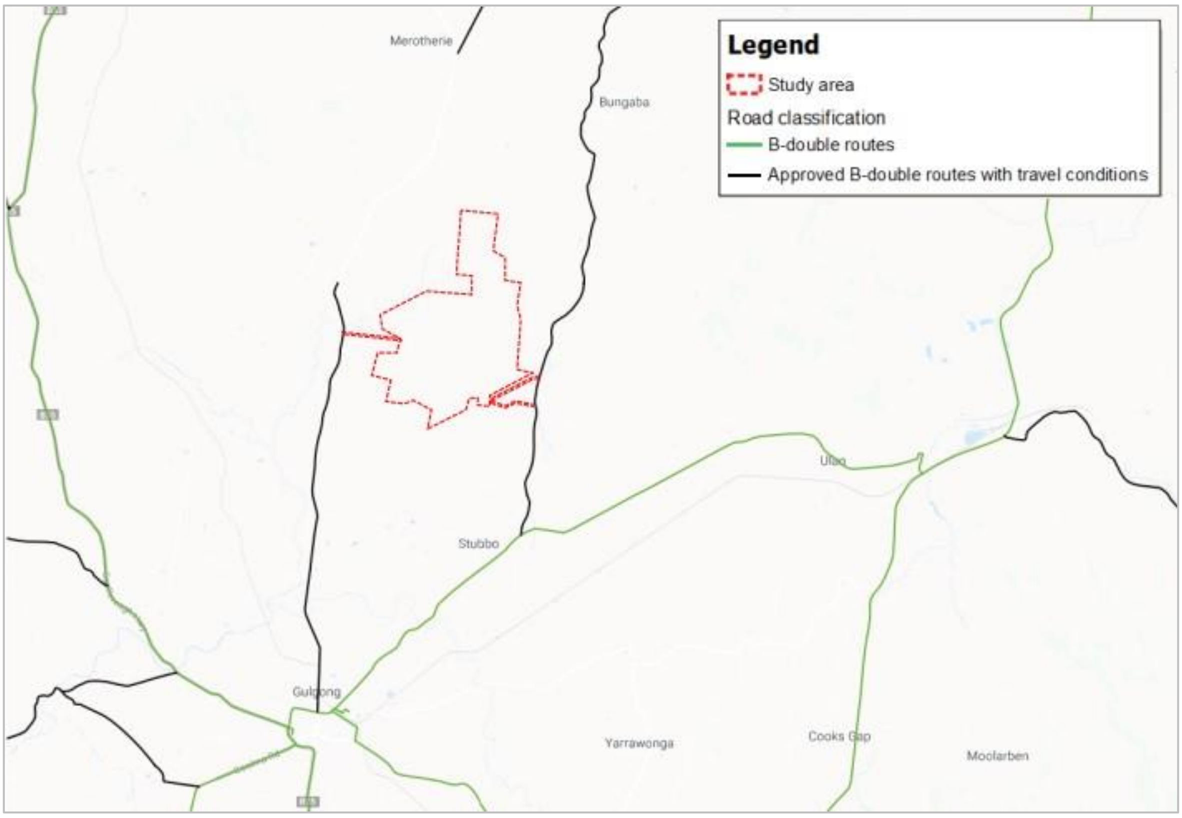
Overall, the survey results indicate the surrounding road network currently accommodates a low to moderate level of traffic.

2.4 Restricted Vehicle Access

The TfNSW Restricted Vehicle Access Map for the surrounding area is provided within Figure 5. The green lines indicate approved B-Double routes while the black lines represent approved routes with travel conditions. Figure 5 indicates:

- Cope Road and Ulan Road are B-Double routes that feed into the wider State road network.
- Blue Springs Road is subject to the following travel conditions - Access to Cope Road restricted to right in, right out and left in only. 80km/hr B-Double speed limit on sealed section. 60km/hr B-Double speed limit on unsealed section. Outside school bus operation hours.
- Barneys Reef Road is subject to the following travel conditions - *80km/hr B-Double speed limit. Outside school bus operation times.*

Figure 5: TfNSW Restricted Access Vehicle Map



Source: SCT Consulting – Stubbo Solar Farm Traffic Impact Assessment, 2020

2.5 Public Transport Services

No public transport or alternative transport modes are provided within the vicinity of the site.

Ogden Coaches operate several school bus services in the surrounding area, including one service which travels in a loop along Cope Road, Blue Springs Road, Merotherie Road and Barneys Reef Road, with associated school bus stops located along the route.

The route operates on a weekly alternating loop system whereby the route is traversed in one direction on one week (Week A) and then the opposite direction the following week (Week B). The timetables for the routes are provided below based on information from Ogden Coaches. It is noted that there are no school bus stops located on Blue Springs Road.

Table 5: Ogden Coaches School Bus Routes

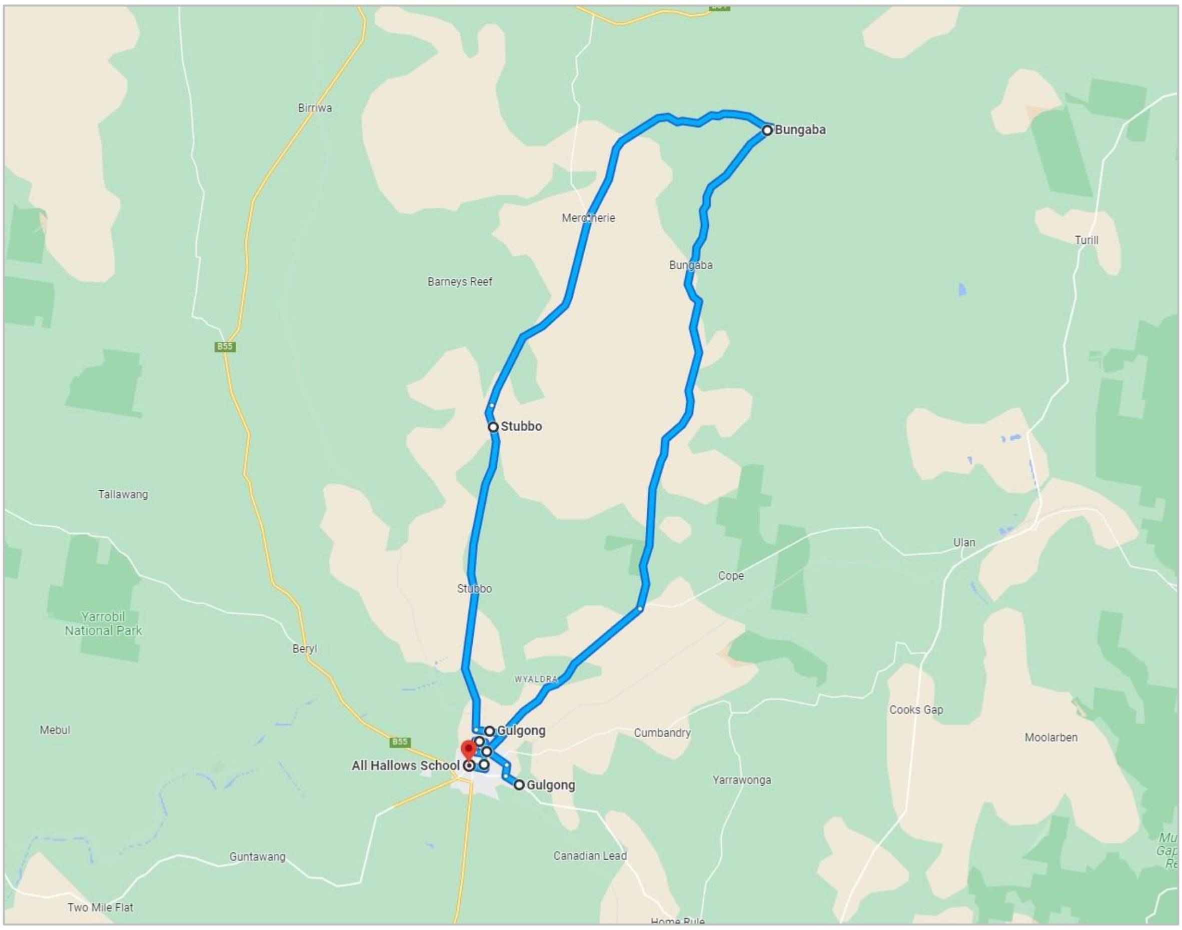
TIME	WEEK A	TIME	WEEK B
AM Peak			
7:10am	Depart Depot	7:10am	Depart Depot
7:30am	Blue Springs Road at Cope Road	7:30am	Barneys Reef Road at Black Lead Lane
7:45am	Blue Springs Road at Wonga Roo Road	7:45am	Merotherie Road at Birkalla Road
7:58am	Blue Springs Road at Birkalla Road	8:05am	Barneys Reef Road at Stubbo Road
8:20am	Merotherie Road at Birkalla Road	8:20am	Blue Springs Road at Birkalla Road
8:32am	Barneys Reef Road at Stubbo Road	8:32am	Blue Springs Road at Wonga Roo Roa
8:40am	Barneys Reef Road at Black Lead Lane	8:40am	Blue Springs Road at Cope Road
8:50am	Gulgong High and Public Schools	8:50am	Gulgong High and Public Schools
8:55am	All Hallows Catholic School	8:55am	All Hallows Catholic School
9:00am	Arrive Depot	9:00am	Arrive Depot
PM Peak			
3:15pm	Depart Depot	3:15pm	Depart Depot
3:35pm	All Hallows Catholic School	3:35pm	All Hallows Catholic School
3:40pm	Gulgong High and Public Schools	3:40pm	Gulgong High and Public Schools
3:50pm	Barneys Reef Road at Black Lead Lane	3:50pm	Blue Springs Road at Cope Road
3:58pm	Barneys Reef Road at Stubbo Road	3:58pm	Blue Springs Road at Wonga Roo Road
4:10pm	Merotherie Road at Birkalla Road	4:10pm	Blue Springs Road at Birkalla Road
4:32pm	Blue Springs Road at Birkalla Road	4:32pm	Merotherie Road at Birkalla Road
4:45pm	Blue Springs Road at Wonga Roo Road	4:45pm	Barneys Reef Road at Stubbo Road
5:00pm	Blue Springs Road at Cope Road	5:00pm	Barneys Reef Road at Black Lead Lane
5:20pm	Arrive Depot	5:20pm	Arrive Depot

A map of the route is shown within Figure 6 which has been provided by Ogden Coaches.

Ogden Coaches have advised that they have recently taken over the school bus route and as such, are still formulating detailed maps and timetables. Ogden Coaches are to be contacted prior to construction to confirm the school bus information is still accurate. Contact details are provided below:

- Name: Phillip Cooper
- Phone: 02 6372 2489
- Email: phillip@ogdenscoaches.com.au

Figure 6: Ogden Coaches School Bus Route



Source: Ogden Coaches - https://goo.gl/maps/J8DSMj84vKCGqN339

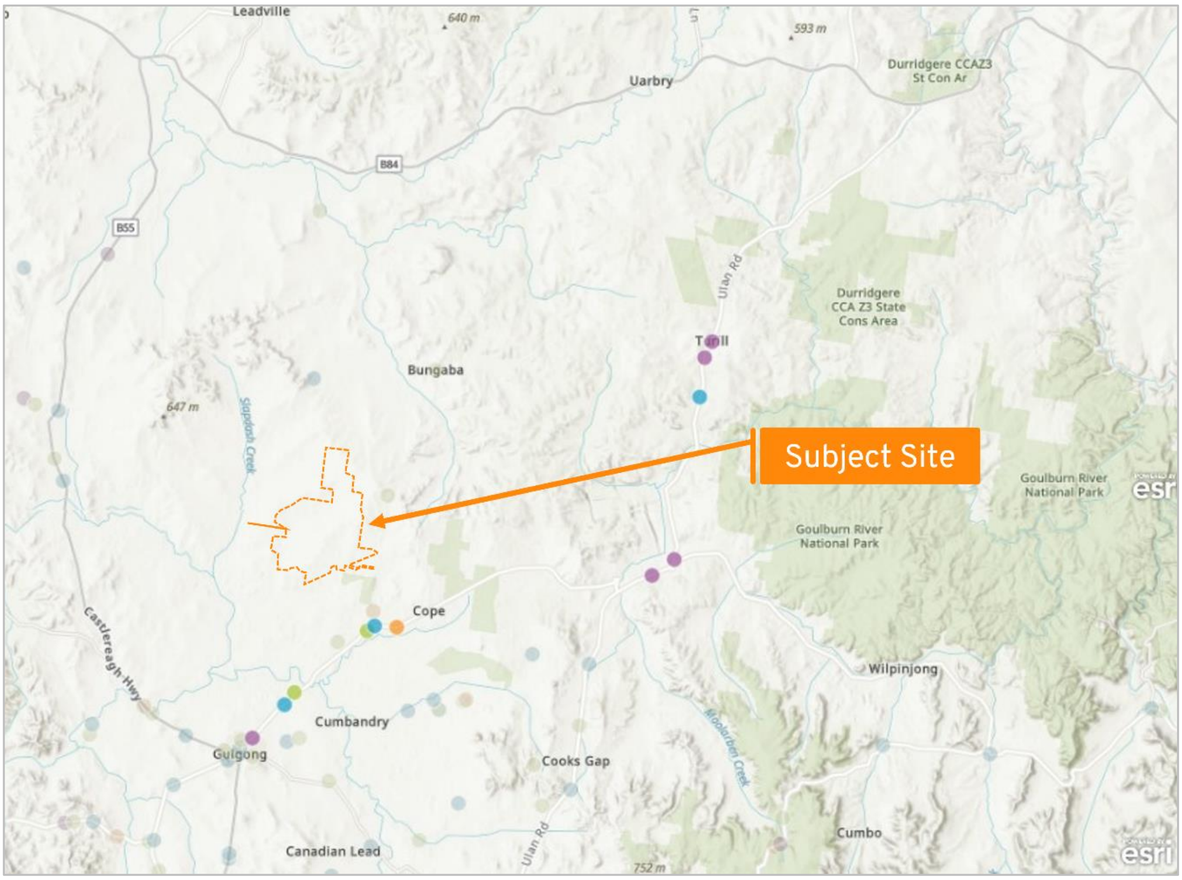
2.6 Crash History

Amber has conducted a review of the TfNSW Centre for Road Safety Crash and Casualty Statistics database for all injury crashes within the following search area:

- The full length of Cope Road, Robinson Street and Main Street;
- Ulan Road between Castlereagh Highway and Cope Road; and
- The respective intersections.

The crash database provides the location and severity of all injury and fatal crashes for the five-year period from 2017 to 2021. The search revealed the crashes shown within Figure 7.

Figure 7: Crash Search



Source: TfNSW Centre for Road Safety Crash and Casualty Statistics Database

The crashes are summarised below:

- Three minor and one moderate injury crash was recorded midblock on Ulan Road when a vehicle struck an animal, and one minor injury crash was recorded when an object struck a vehicle;
- Five midblock crashes were recorded on Cope Road to the west of the site, including the following:
  - One serious and one fatal injury crash when a vehicle left the road to the left and hit an object;
  - One serious injury crash when a vehicle left the road to the left on a right bend and hit an object;
  - One moderate injury crash when a vehicle left the road to the right and hit an object;
  - One off road to the left hitting an object crash resulting in serious injuries; and
  - One moderate injury when a vehicle struck an animal.

Given the road classification and associated traffic volumes, it is concluded that the road network is currently operating in a relatively safe manner. However, it is noted that there are a high proportion of crashes involving animals or a vehicle leaving the road.

3. Construction Overview

3.1 Project Description

The project as described in the EIS would include the construction, operation and decommissioning of a 400-megawatt solar project that would supply electricity to the National Electricity Market. Key infrastructure for the project would include:

- photovoltaic modules (solar panels) installed on a single axis tracking system in a series of rows aligned north – south across the development footprint;
- power conversion units designed to convert the direct current (DC) electricity generated by the photovoltaic modules into alternating current (AC) form, compatible with the electricity network;
- onsite substation containing, indicatively, two main transformers and associated switchgear;
- transmission infrastructure including up to 33 kilovolt overhead and/or underground electrical reticulation; and connection from the substation to the existing 330 kilovolt transmission line (Line 79) operated by TransGrid;
- operational and maintenance ancillary infrastructure including staff office and amenities, car parking, spare parts storage and maintenance facilities; and supervisory control and data acquisition (SCADA) facilities;
- internal access roads;
- temporary facilities required during the construction and decommissioning phases, such as construction compounds and laydown areas, site office and amenities; and access tracks and associated infrastructure, including gates and fencing.

The permanent and temporary components associated with construction and operation would be located within the development footprint for the project, which would cover an area of approximately 1,772 hectares. Designated environmental exclusion zones would be included within the study area, intended to minimise impacts of the development in the areas of highest environmental value. Key activities for Stage 2a, which are the subject of this TMP, include:

- Site compound
- Fencing works, including security fencing
- Access roads including drainage and rehabilitation
- Solar arrays
- General site wide cut to fill earthworks
- Piling installation
- Tracker installation
- Above ground and below ground cable installation and termination
- Module installation
- Substation, Switchyard and control buildings works
- Earthworks
- Structures and Footings
- Gantries and HV Switchgear

- Transformer installation and connection (Substation only)
- Control building installations (both Substation and Switchyard)
- Operations and maintenance building, including warehouse facility
- Cold Commissioning works
- Hot Commissioning works including Hold Point testing for compliance to AEMO requirements
- Site wide rehabilitation
- All other associated infrastructure.

3.2 Duration of Construction Works and Schedule

The solar project construction is expected to take approximately 24 months, with a maximum of 520 staff expected to be on-site during peak construction periods. Construction activities shall be undertaken during standard daytime construction hours in one shift, as follows:

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

No construction is permitted outside of these standard daytime construction hours without the approval of the Planning Secretary, excluding the following:

- the delivery of materials as requested by the NSW Police Force or other authorities for safety reasons; or
- emergency work to avoid the loss of life, property and/or material harm to the environment.

The proposed construction schedule for Stage 2a is summarised in Table 6. Construction will be undertaken in three overlapping sections:

- Section 1 comprises construction of the Connection Assets by Transgrid and a substation build by PCL;
- Section 2 comprises the construction of the first area of solar arrays by PCL;
- Section 3 comprises the construction of the second area of solar arrays by PCL.

Construction will be followed by validation testing and a project closeout period.

As part of the project closeout period, the approved contractor will manage ongoing operation and maintenance services during the defects liability period which extends over the first two years of operations.

Table 6: Stage 2 Construction Schedule

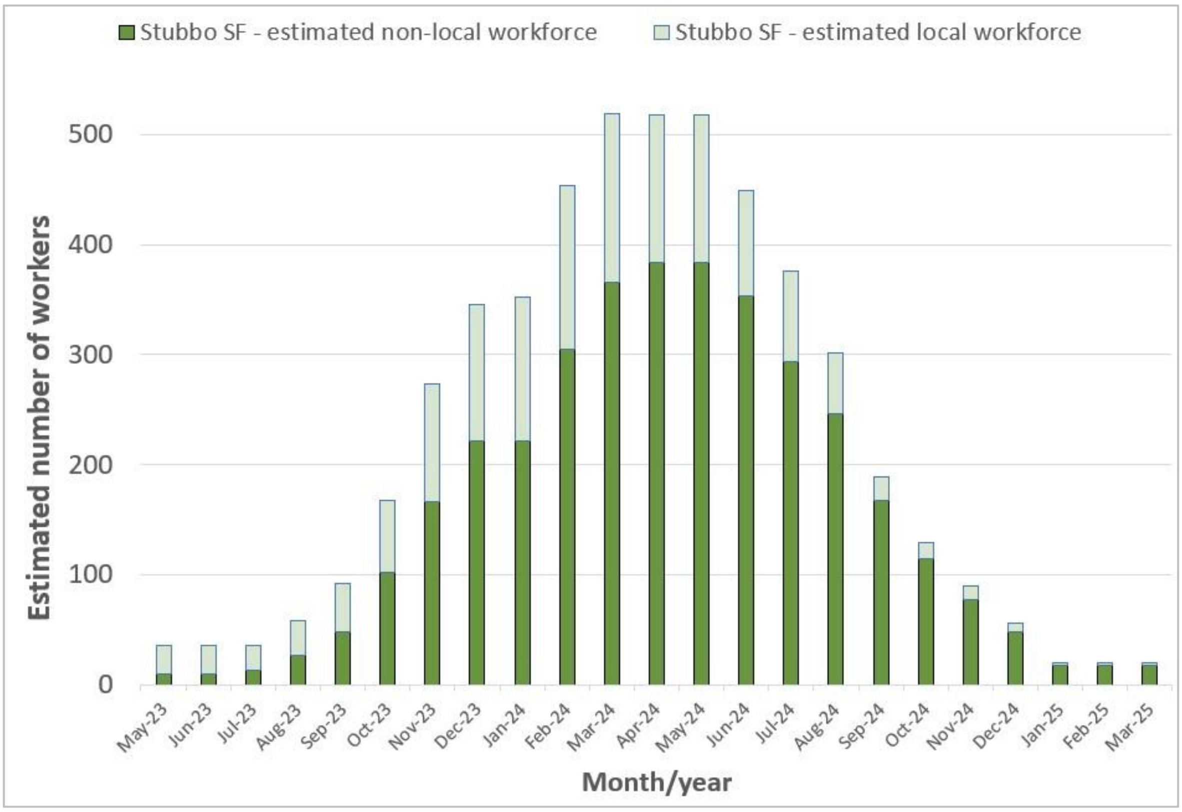
Activity	Start	Finish
Public Road Upgrades Completion by Mid-Western Regional Council	-	11-May-23
Section 1		
Substation Construction (Transgrid) – Notice to Proceed	21-Oct-22	21-Oct-22
Substation Construction – Civil and Electrical Works	12-May-23	7-May-24
Section 2 (Generating System #1)		
Material Procurement	22-Dec-22	26-Feb-24
Civil Works	15-May-23	27-Sep-24
Solar Array Construction	4-Jul-23	27-Sep-24
Section 3 (Generating System #2)		
Material Procurement	22-Dec-22	22-Apr-24
Civil Works	15-May-23	07-Nov-24
Solar Array Construction	11-Jul-23	07-Nov-24
R2 Validation Testing		
Section 2 Generating System #1	26-Jun-24	06-Jan-25
Section 3 Generating System #2	26-Jun-24	19-Mar-25
Project Closeout		
Practical Completion – All Sections	-	06-May-25
Defects Liability Period (24 Months)	07-May-25	06-May-27

3.3 Workforce Transport

The *Accommodation and Employment Strategy* for the Solar Project details the workforce numbers and where the workforce is proposed to be located. The estimated number of local and non-local workers are shown within Figure 8.

The Accommodation and Employment Strategy states that a 90-minute commute is considered a reasonable travel time to and from the site for the workforce. For some individuals, the acceptable daily travel time may vary (either greater or less than 90 minutes). The townships of Casillis, Dunedoo, Gulgong, Mudgee, Wollar and Ulan Village are within a one-hour commute of the Project site. Commutes to the Stubbo Solar site from Dubbo, Geurie, Kandos and Rylstone exceed one hour.

Figure 8: Stubbo Solar Project Estimate Construction Workforce



Source: Accommodation and Employment Strategy Stubbo Solar Project

3.4 Construction Vehicles and Equipment

Construction traffic generated by the solar project can broadly be separated into the following categories:

- Light vehicles associated with transporting staff to/from the site;
- 50 seater shuttle bus and/or 12-14 seater mini-buses are proposed to transport some staff between the site and nearby towns;
- Medium and Heavy Rigid Trucks (MRV and HRV as defined within AS 2890.2:2018) will be used to deliver raw materials and smaller plant;
- Truck and Dog vehicles will be used to transport earthwork material to/from the site; and
- 19.0 metre long Articulated Vehicles and 26 metre long B-Doubles will be used to transport larger plant and for waste removal.

Other plant to be used during construction would include:

- cranes
- drum rollers
- dump truck
- road truck
- concrete truck
- excavators

- forklifts
- grader
- compactor
- small pile driving rig
- water truck
- cable trenching and laying equipment

Restricted Access Vehicle / oversized and overmass (OSOM) vehicles will be required for the delivery of larger plant to the site such as the substation transformer and are subject to separate permit applications and regulations. They OSOM vehicles expected are discussed in Section 4.

Condition 2 of the Development Consent requires the length of any vehicles (excluding oversized and overmass vehicles) used for the development to not exceed 26 metres, unless the Planning Secretary agrees otherwise. As such, the proposed vehicles to be used during construction comply with the requirements of the condition. Any variation to the maximum length of heavy vehicles (excluding OSOM vehicles) must be sought in writing to the Planning Secretary.

3.5 Traffic Movements

3.5.1 Traffic Generation

The construction traffic volumes for the project have been provided by the Applicant and are also provided within the Stubbo Solar Farm Traffic Impact Assessment. The anticipated special purpose vehicle (SPV) and heavy vehicle movements over the construction phases of the solar farm is summarised in Table 7. The table shows how the SPV and heavy vehicle movements are to be staged across the construction period.

It is noted that the maximum number of movements associated with each vehicle may not coincide with the movements for other vehicles (i.e. the maximum daily movements is not the sum of all of the vehicle movements).

Table 7: Special Purpose and Heavy Vehicle Movements

Load Type	Load Vehicle	No. of Movements (Daily Maximum)	Estimated Total No. of Movements and Frequency	Estimated Total No. of Movements (SPV or Class 1 Heavy Vehicles)	Construction Phase for Solar Farm and Substation
Mobilisation / Demobilisation phase					
1 20T Mobile Crane	Special Purpose Vehicle	2	1 crane. 2 movement within 1 day	2	Jul 2023 Mobilise and May 2025 Demobilise
1 20T Mobile Crane	Special Purpose Vehicle	2	1 crane. 2 movement within 1 day	2	Jul 2023 Mobilise and May 2025 Demobilise

Load Type	Load Vehicle	No. of Movements (Daily Maximum)	Estimated Total No. of Movements and Frequency	Estimated Total No. of Movements (SPV or Class 1 Heavy Vehicles)	Construction Phase for Solar Farm and Substation
Portable site buildings	Semi-Trailer/Tilt Tray	8	Up to 10 buildings in one day. 2 movements within 1 day from mobilisation / demobilisation.	16	Jul 2023 Mobilise and May 2025 Demobilise
General Plant/ Machinery/ Equipment	Low loader/Semi -trailer/SPV	10	1-2 non-regular movements on any day	20	Jul 2023 Mobilise and May 2025 Demobilise
Substation Temporary site facilities	Open flat top trailers, tilt trucks	4	Up to 4 buildings in one day. 2 movements within 1 day from mobilisation.	8	Sep 2023 Mobilise and July 2024 Demobilise
Detailed Civil and Concrete Works Phase					
Earthmoving Plant/ Machinery	Low loader	20	1-2 regular movements on any day	40	Sep 2023 to Jun 2024. 1 mob & 1 demob delivery to site
General Plant/ Machinery/ Equipment	Low loader/Semi -trailer/SPV	10	1-2 regular movements on any day	40	Sep 2023 to Jun 2024. 1 mob & 1 demob delivery to site
Concrete Boom Pump	Special Purpose Vehicle	6	1-2 regular movements on any day	18	Oct 2023 - Nov 2024
Earthmoving Plant/ Machinery	Low loader	20	1-2 regular movements on any day	200	Oct 2023 - Nov 2024
Non- slewing mobile crane	Special purpose Vehicle	2	2 cranes daily for duration of structural/mechanical /electrical works	30	Oct 2023 - Nov 2024
Slewing Mobile Crane	Special purpose Vehicle	10	2 cranes daily for duration of structural/mechanical /electrical works	200	Oct 2023 - Dec 2024

Load Type	Load Vehicle	No. of Movements (Daily Maximum)	Estimated Total No. of Movements and Frequency	Estimated Total No. of Movements (SPV or Class 1 Heavy Vehicles)	Construction Phase for Solar Farm and Substation
General Plant/ Machinery /Equipment	Low loader/Semi -trailer/SPV	20	1-2 non-regular movements on any day 1 movement for Auxiliary Transformer 16 movements for MegaPack 2XL (estimated 4 units daily) 35 movements for Step-up Transformers (estimated 4 units daily in 3 lots)	400	Oct 2023 - Dec 2024
PCU Pads	Concrete truck	7	Average of 4 truck deliveries per day	50	Oct 2023 - May 2024
Gravel delivery for roads	truck and dog	6	Average of 6 delivery per day	200	Aug 2023 to Jul 2024
Structural/Mechanical/Electrical Installation Phase					
Non- slewing mobile crane	Special purpose Vehicle	10	2 cranes daily for duration of structural/mechanical /electrical works	40	Oct 2023 - Nov 2024
Slewing Mobile Crane	Special purpose Vehicle	10	2 cranes daily for duration of structural/mechanical /electrical works	40	Oct 2023 - Nov 2024
General Plant/ Machinery/ Equipment	Low loader/Semi -trailer/SPV	20	1-2 non-regular movements on any day 1 movement for Auxiliary Transformer 16 movements for MegaPack 2XL (estimated 4 units daily) 35 movements for Step-up Transformers (estimated 4 units daily in 3 lots)	400	Oct 2023 - Nov 2024
PCU Pads	Concrete truck	7	Average of 4 truck deliveries per day	120	Oct 2023 - May 2024
Gravel delivery for roads	truck and dog	8	Average of 6 delivery per day	200	Aug 2023 to Jul 2024

Load Type	Load Vehicle	No. of Movements (Daily Maximum)	Estimated Total No. of Movements and Frequency	Estimated Total No. of Movements (SPV or Class 1 Heavy Vehicles)	Construction Phase for Solar Farm and Substation
Equipment & Fabricated Materials	Medium Rigid Truck, Semi-Trailer/Tilt Tray	20	Average of 5 deliveries per day	300	Nov 2023 - Aug 2024
PCU	Semi-trailer	10	Average of 3 deliveries per day	77	Dec 2023 - May 2024
PV Modules	Taughtliner	11	Average of 5 deliveries per day	1300	Oct 2023 - May 2024
Mechanical Equipment (Tracker and Piles)	Taughtliner	20	Average of 4 deliveries per day	3000	Aug 2023 - May 2024
Concrete & steel	Open flat top trailers and concrete delivery trucks	6	Average of 4 deliveries per day	250	Dec 2023 - Mar 2024
Disconnector	Open flat top trailers	4	2 movement within one day	4	Dec 2023 - Mar 2024
Insulators & Surge arresters	Open flat top trailers	1	1 movement within one day	2	Dec 2023 - Mar 2024
Radiators, fans, conservators, bushings, etc	ISO containers	8	8 movement within one day	16	Dec 2023 - Mar 2024
Main transformer Oil	(20ft shipping container size)	2	2 movement within one day	4	Dec 2023 - Feb 2024
Earthing Tx's & Aux/earthing Tx's	Open flat top trailers	2	2 movement within one day	4	Dec 2023 - Feb 2024
Plant support structures	Open flat top trailers	2	2 movement within one day	4	Dec 2023 - Feb 2024
Busbar, conductors and fittings	Open flat top trailers	1	1 movement within one day	2	Jan 2023 - Feb 2024
MV Cable, LV and control cable	Open flat top trailers	1	1 movement within one day	2	Jan 2023 - Feb 2024
Substation building	Open flat top trailers	1	1 movement within one day	2	Jan 2023 - Feb 2024

Load Type	Load Vehicle	No. of Movements (Daily Maximum)	Estimated Total No. of Movements and Frequency	Estimated Total No. of Movements (SPV or Class 1 Heavy Vehicles)	Construction Phase for Solar Farm and Substation
Gantry structures	Open flat top trailers	2	2 movement within one day	4	Dec 2023 - Feb 2024

Condition 2 of Schedule 3 of the Development Consent requires the development to not generate more than 60 heavy vehicle movements a day during construction, unless the Planning Secretary agrees otherwise. A vehicle movement is defined as *one vehicle entering and leaving the site*. The proposed traffic volumes during construction must comply with the requirements of the condition.

In accordance with Condition 2, Schedule 3, in November 2023, ACEN sought approval from the Planning Secretary to increase the maximum number of daily heavy vehicle movements from 60 heavy vehicle movements a day during construction to 80 heavy vehicle movements a day during construction. A copy of the Planning Secretary's approval is shown in Appendix M.

Of the 80 heavy vehicle movements a day, Transgrid will generate the following during construction:

- Months 0-4 – up to 25/day
- Months 4-7 – up to 20/day
- Months 7 to completion – up to 10/day

PCL will generate the balance of allowable heavy vehicle movements over the period of Transgrid's construction works, and will then generate up to 80 heavy vehicle movements a day for the remainder of the construction period.

Condition 2 of Schedule 3 of the Development Consent also requires the development to not generate more than a total of 20 over-dimensional vehicle movements during construction, upgrading and decommissioning.

In accordance with Condition 5, Schedule 3, all vehicles will enter the site via the internal access road off Blue Springs Road that was constructed in Stage 1.

3.5.2 Light Vehicle Traffic Distribution

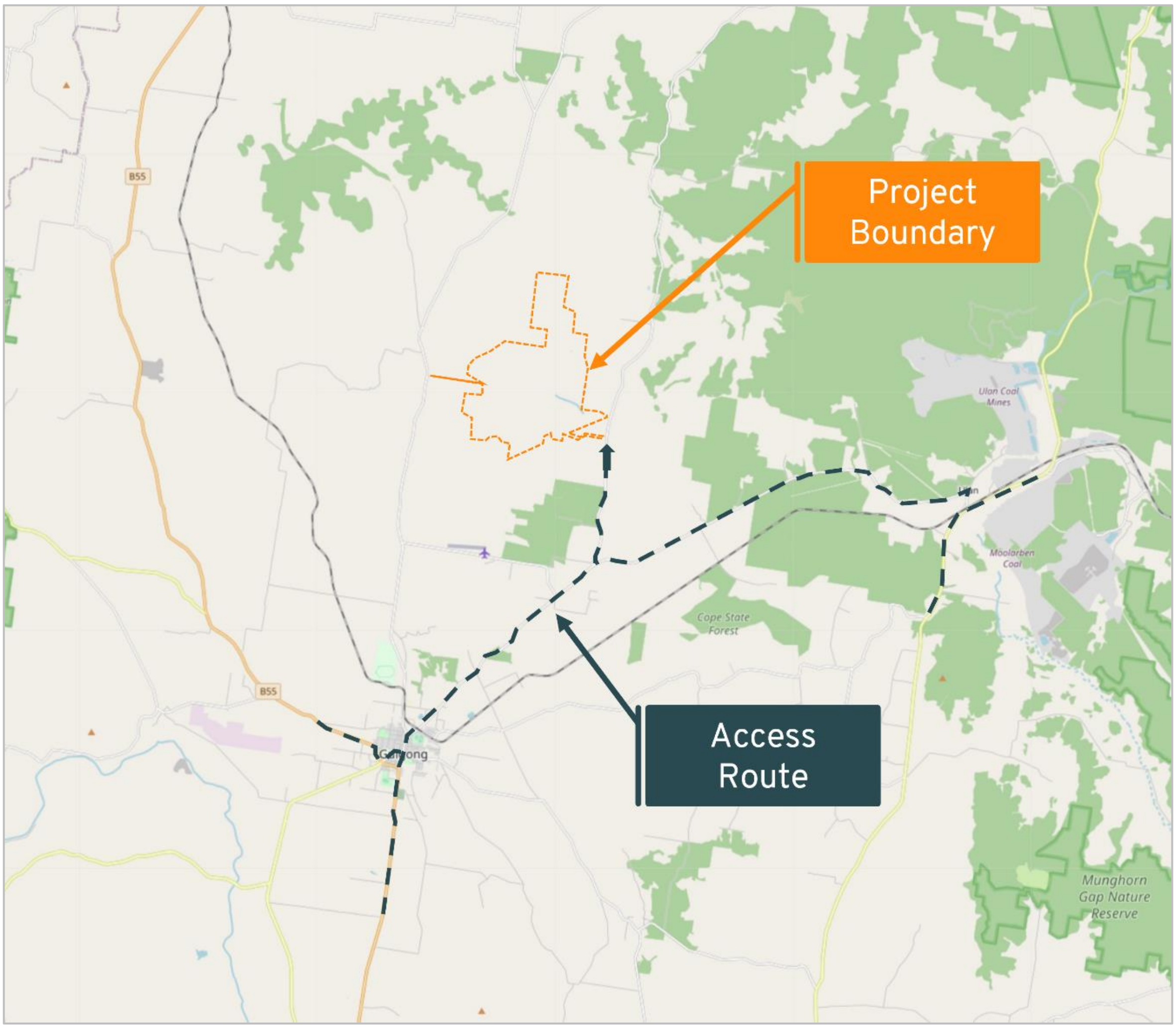
The workforce is expected to primarily be located in Mudgee and Gulgong and other nearby towns.

All vehicles will enter the site via the internal access road off Blue Springs Road that was constructed in Stage 1. Blue Springs Road connects with the regional road network via Cope Road to the south. All vehicles will travel along Cope Road through Gulgong to the southwest or Ulan to the east. The access routes for light vehicles are described below:

- Vehicles travelling from the east will access Cope Road (Main Street) via Ulan Road which connects with Golden Highway to the north and would be the preferred route for vehicles coming from the east;
- Vehicles travelling from Mudgee will utilise Castlereagh Highway to access Gulgong, and would then use Herbert Street and Station Street to access Cope Road; and
- Vehicles travelling from the north will utilise Castlereagh Highway to access Gulgong. They will then utilise Mayne Street, Herbert Street, and Station Street to access Cope Road.

The access routes for light vehicles are shown within Figure 9.

Figure 9: Light Vehicle Access Route



The generation and distribution of light vehicle traffic (including shuttle buses) as a result of the anticipated workforce locations is consistent with that included and considered in the Traffic Impact Assessment (TIA) prepared by SCT Consulting.

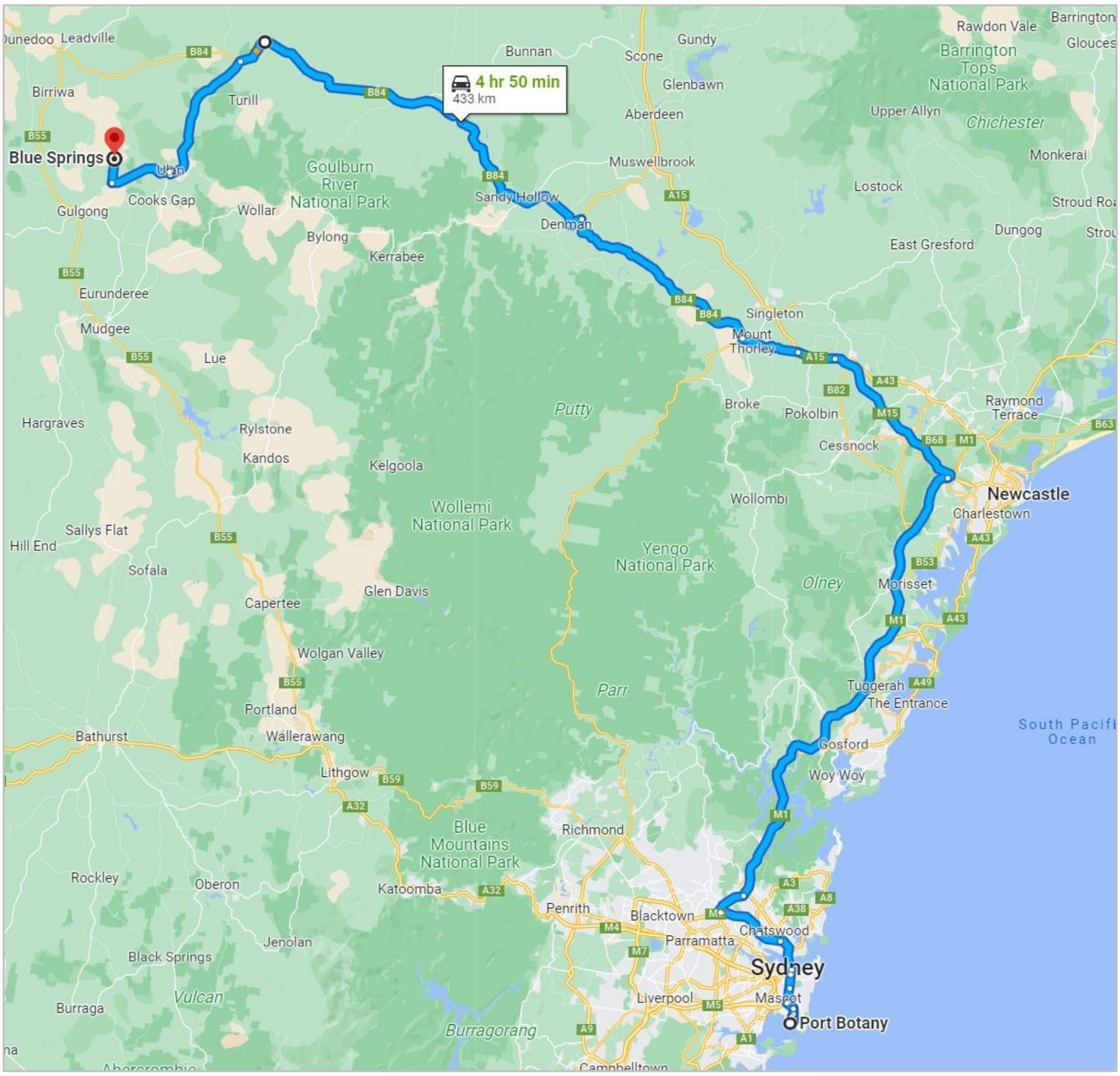
The TIA did not assess the traffic impacts associated with vehicles accessing the site from Ulan Road given the minimal level of traffic expected to access the site from the east. The report provided traffic data for Ulan Road which indicates it accommodates 5,304 vehicles per day. Assuming 10% of all vehicle movements are generated in the peak hour, Ulan Road is estimated to be accommodating in the order of 530 vehicles in the morning and evening peak hour.

PCL has advised that there is expected to be less than 5% (12) light vehicles travelling via Ulan Road which is expected to have a minimal impact to the operation of Ulan Road and would be within the daily variation in traffic volumes. It is also noted that construction vehicle movements typically occur outside of peak times.

3.5.3 Heavy Vehicle Access Route

Figure 10 shows the access route from the Port Botany to the site.

Figure 10: Access Route from Port Botany to Site



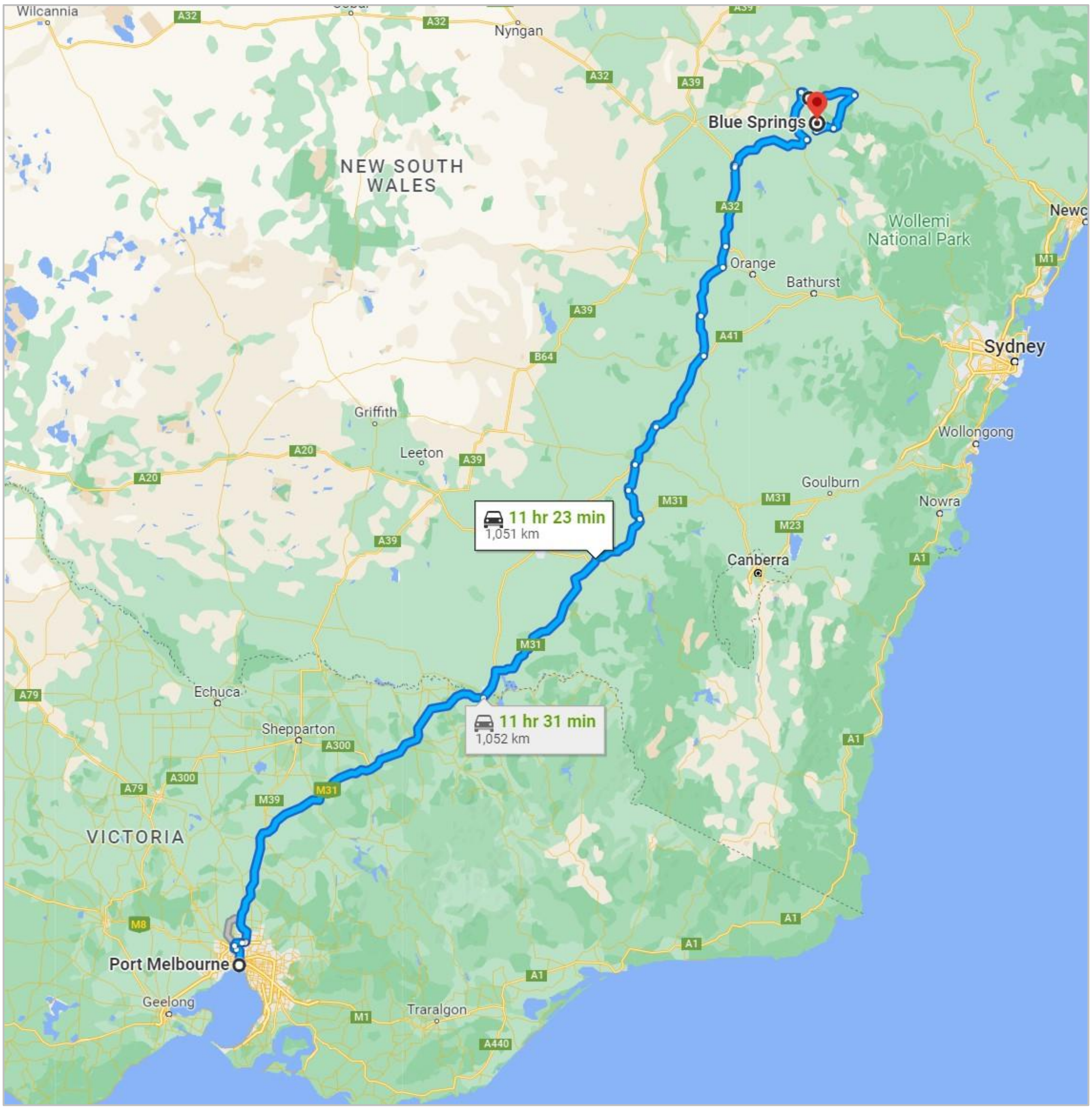
Source: Google Maps - https://goo.gl/maps/oMaNL7qHCgWmthe48

The construction traffic access route from Port Botany to the site is as follows:

- Foreshore Road,
- M1, M2, M1, M15
- New England Highway,
- Golden Highway,
- Ulan Road,
- Cope Road,
- Blue Springs Road, and.
- All vehicles will enter the site via the internal access road off Blue Springs Road that was constructed in Stage 1.

Figure 11 shows the access route from Port Melbourne to the site.

Figure 11: Access Route from Port Melbourne to Site



Source: Google Maps - https://goo.gl/maps/StgsrC2fXepFu5Ed8

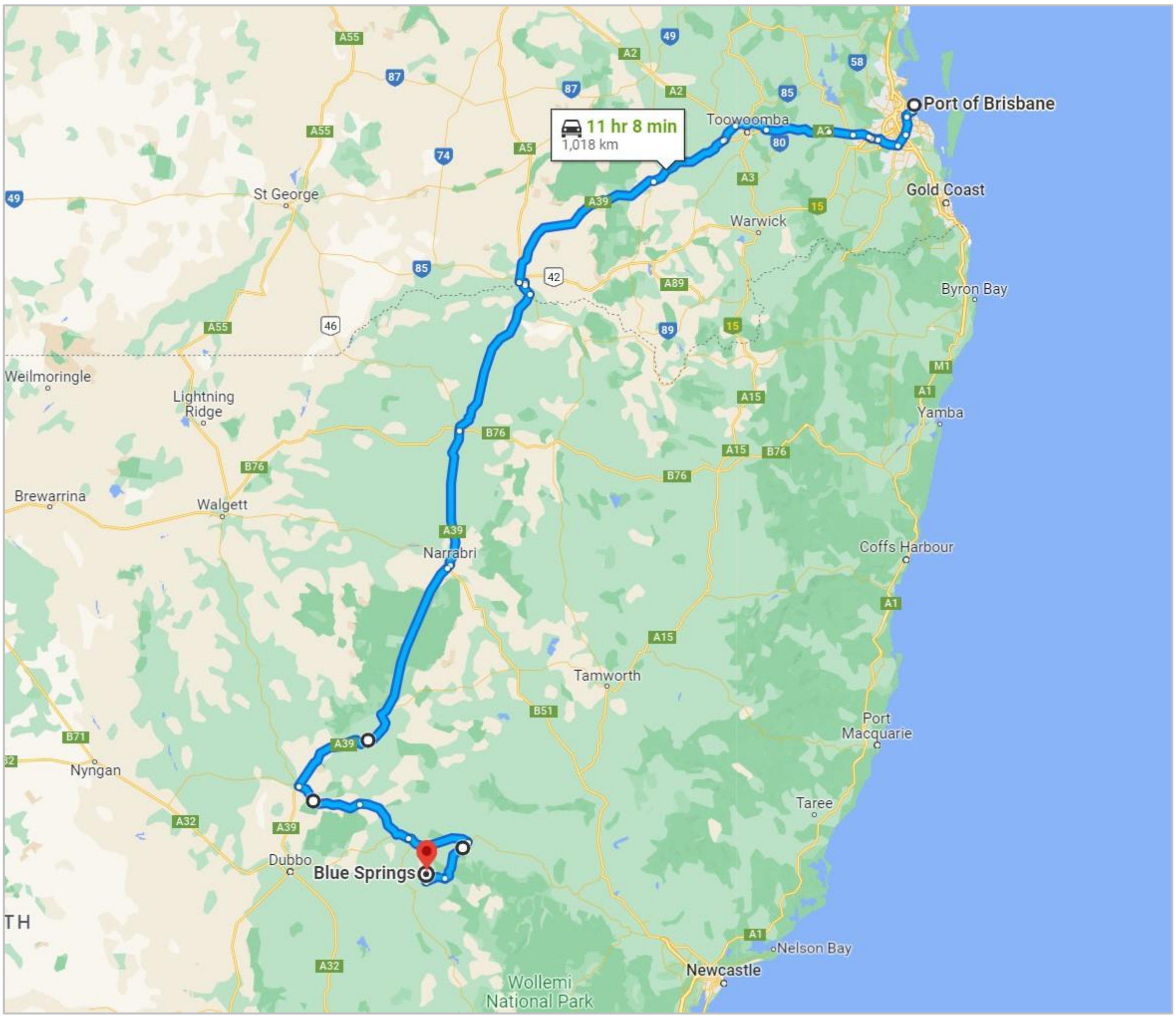
The construction traffic access route from Port Melbourne to the site is as follows:

- Docklands Highway,
- M2, M31, A41, B81
- Mitchell Highway,
- Goolma Road,
- Castlereagh Highway,
- Golden Highway,
- Ulan Road,
- Cope Road,
- Blue Springs Road, and

- All vehicles will enter the site via the internal access road off Blue Springs Road that was constructed in Stage 1.

Figure 12 shows the access route from the Port of Brisbane to the site.

Figure 12: Access Route from Port of Brisbane to Site



Source: Google Maps - https://goo.gl/maps/BFwhYLprgjvv5K6F8

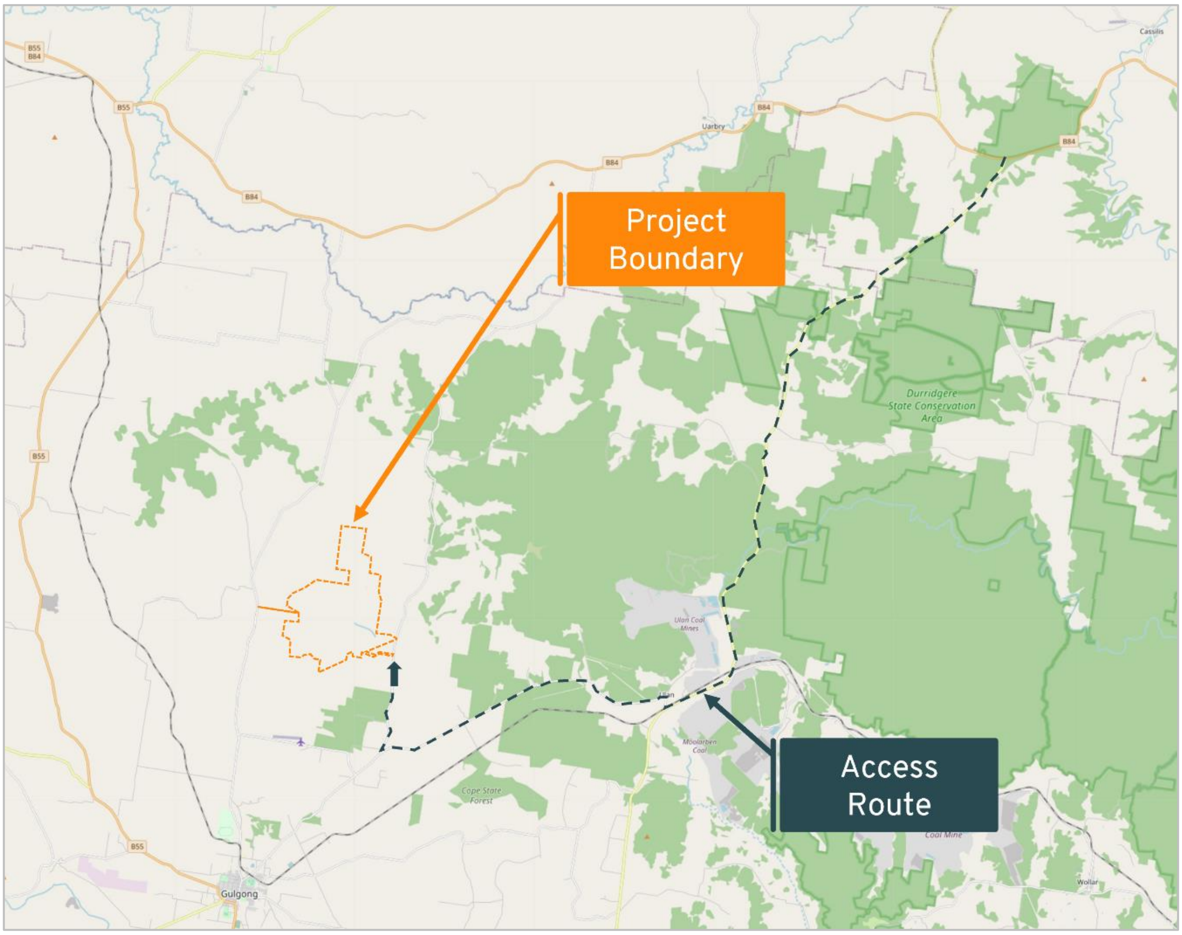
The construction traffic access route from Port of Brisbane to the site is as follows:

- Port Drive,
- M4, M1, M2, A2, A39
- Castlereagh Highway,
- Golden Highway,
- Ulan Road,
- Blue Springs Road, and
- All vehicles will enter the site via the internal access road off Blue Springs Road that was constructed in Stage 1.

The access routes utilise roads that are designated for B-Double vehicles as outlined within the TfNSW Restricted Access Vehicle Map. Accordingly, the State roads along the access route are able to accommodate the loads and type of vehicle movement to be generated during construction of the solar project.

Condition 4 of the Development Consent requires all over-dimensional and heavy vehicles associated with the development must travel to and from the site via Golden Highway, Ulan Road, Cope Road and Blue Springs Road. The access route will be complied with at all times and is shown within Figure 13.

Figure 13: Heavy Vehicle / OSOM Access Route



If secure access is unavailable via the above access routes, all vehicles associated with the development must enter and exit the site via the alternative site access point off Blue Springs Road, as identified in Appendix 1 and Appendix 5 of the Development Consent. It is noted that the preferred site access point has been constructed as part of Stage 1.

Local suppliers of civil material have been identified, as follows:

- Holcim Ulan Concrete: 10 Toole Road, Ulan
- Holcim Dubbo Quarry: 22L Sheraton Road, Dubbo
- Regional Quarries Dubbo: 20L Sheraton Road, Dubbo
- Mudgee Concrete: 25 Depot Road, Mudgee

The use of the Heavy Vehicle Access route lengthens the total distance travelled from these suppliers, with more direct routes available via other safe state and local roads shown in Figure 14 to Figure 16.

Figure 14: Holcim Ulan Concrete to Site

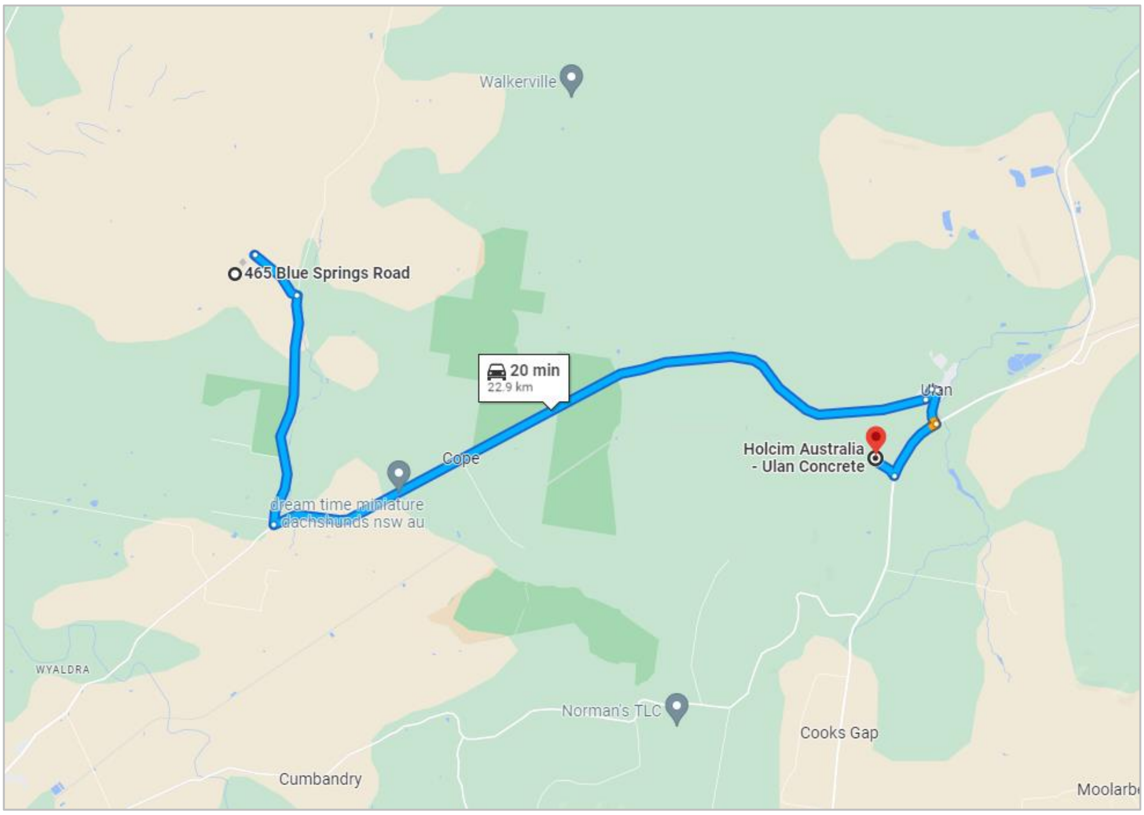


Figure 15: Holcim Dubbo Quarry / Regional Quarries Dubbo to Site

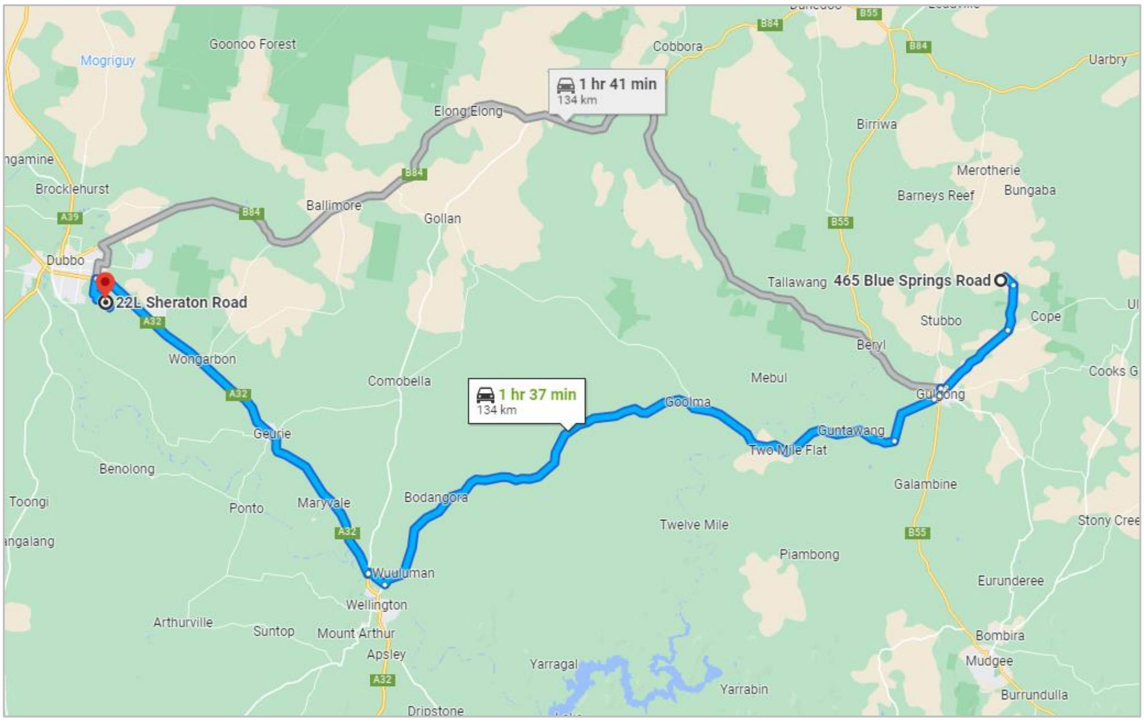
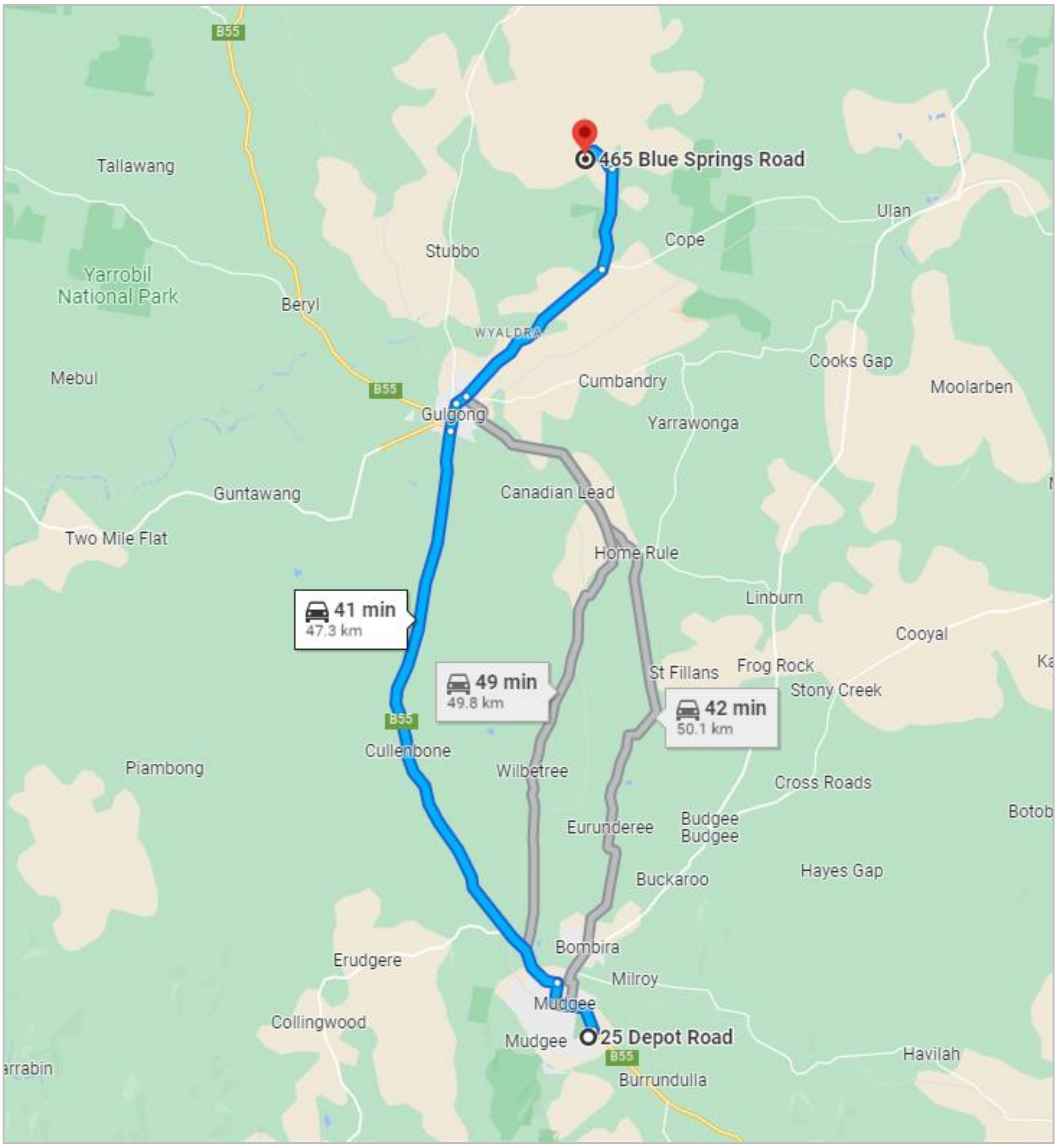


Figure 16: Mudgee Concrete to Site



In accordance with Condition 4, Schedule 3, an exemption will be sought in writing from the Planning Secretary to enable heavy vehicle movements from local suppliers on different access roads.

Prior to any exemption all heavy vehicle access to be via the access route in accordance with Condition 4, Schedule 3.

3.5.4 Traffic Impacts

The traffic impacts associated with the construction traffic for the project have previously been assessed within the Traffic Impact Assessment (TIA) prepared by SCT Consulting. The report concluded the following:

- The project would have the most traffic and transport impact during the construction peak period, when 12 heavy vehicle trips and 230 light vehicle trips are forecast to be generated during the peak hours, i.e. six heavy vehicles entering and six heavy vehicles leaving the study area in each peak hour, and 230 light vehicles entering the study area in the AM peak hour and 230 light vehicles leaving in the PM peak hour.

- Given the low volume of background traffic in the vicinity of the study area, these additional trips are forecast to have minimal impact on the surrounding road network. The additional construction traffic does not trigger any road or intersection treatments. Should a B-double or larger vehicle need to make a left turn from Blue Springs Road onto Cope Road, this should be included in the construction traffic management plan, which would detail if traffic marshalling, alternative routing, etc., would be required for those specific occasions.
- The project is anticipated to have minimal public transport, rail crossing and pedestrian and cycle impacts. Construction workforce trips would typically occur before and after school bus movements.
- The cumulative traffic impact from other developments in the area, including the construction of the Wollar Solar Farm and Dunedoo Solar Farm, is considered to be minimal due to the low traffic volumes generated and the alternative routing used by the other developments.

Any change associated with a proportional increase in shuttle buses would not result in an increase in light vehicle traffic above that previously considered. The distribution of traffic to and from the site is consistent with that considered and assessed in the TIA.

In relation to the use of Ulan Road, PCL has advised that there is expected to be less than 5% (12) light vehicles travelling via Ulan Road which is expected to have a minimal impact to the operation of Ulan Road and would be within the daily variation in traffic volumes. It is also noted that construction vehicle movements typically occur outside of peak times.

Accordingly, the proposed construction vehicle movements are expected to be able to be accommodated on the road network.

3.6 Proposed Mitigation Measures

Several mitigation measures were proposed as part of EIS and subsequent Amendment report which were completed as part of Stage 1 prior to construction of Stage 2a. The mitigation measures were completed by Mid-Western Regional Council and included the following works:

- An upgrade of the intersection of Blue Springs Road and Cope Road to allow maintenance of the existing basic right-turn (BAR) and provide a basic left-turn (BAL) intersection treatment for a 100 km/h speed environment for the design vehicle (26 metre B-double).
- A safe sight distance analysis was undertaken at the Cope Road / Blue Springs Road intersection and at the site access points from Blue Springs Road and Barneys Reef Road and associated site inspections to determine vegetation trimming extents and speed limit reductions to provide the required safe sight distance for all vehicle types expected to access the project. Vegetation trimming will be ongoing and undertaken during Stage 2a as required and will be reviewed monthly by PCL.
- An upgrade the full 5.4-kilometre length of Blue Springs Road from the intersection of Cope Road and Blue Springs Road, to 200 metres north of the northern site access (to allow tie-in back to the existing alignment), which complied with the required minimum 100 metres beyond the site access point.
- Upgrades of the intersections with existing driveways within the Blue Springs Road reserve as per relevant standards.

- An upgrade of the road geometry including improvement of superelevation and pavement widening on curves.
- Widening of road pavement in other areas where needed.
- A review of existing roadside drainage along Blue Springs Road to suit the revised road design.
- Adjustment and extension of existing culverts and improving existing drainage.
- Provision of safety barriers where required.
- Blue Spring Road access treatment to the satisfaction of Council.

The mitigation measures were completed in May 2023 and are expected to ensure safe and efficient vehicle access is provided during construction.

These upgrades were designed and constructed as part of the Stage 1 scope of works, and comply with the Austroads Guide to Road Design (as amended by TfNSW supplements), and were carried out to the satisfaction of the relevant roads authority, Mid-Western Regional Council.

4. OSOM Vehicle Movements

OSOM vehicles are subject to separate permit applications and regulations and the relevant permits will be applied for by the transport company prior to transportation once the transport company and associated vehicle arrangements are known. This approach aligns with Item 8 of Table 7-3 of the *Stubbo Solar Farm Amendment Report.*

The expected OSOM vehicles and the associated specifications expected to access the site during construction are provided within Table 8

Table 8: Over-Dimensional Vehicle Movements

Load Type	Load Vehicle	No. of Movements (Daily Maximum)	Estimated Total No. of Movements and Frequency	Estimated Mass	Construction Phase for Solar Farm and Substation
Main transformers (main tank) (EPEC)	Prime mover and Beam set Trailer/Platform Trailer	2	2 movements within one day	195T	Q1 2024
Substation building (EPEC)	Prime mover and Beam set Trailer/Platform Trailer	1	1 movement within one day	133T	Q1 2024
Switchgear building (TransGrid)	Prime mover and platform trailer	1	1 movement within one day	33T	Q1 2024

4.1 OSOM Specifications

In order to determine whether any civil works are required to accommodate the OSOM vehicles described above on the road network, a route assessment has been undertaken for the critical components/delivery vehicles. The Applicant has advised that infrastructure required to transported to the site is from the following origins:

- Switchgear building, to be transported from a specialist contractor in the Sydney Metropolitan region (JBM Power Pty).
- Main transformers, to be transported to site from the Port of Newcastle.
- Substation building, to be transported to site from the Port of Adelaide.

The vehicle specifications and associated load details used for assessment are provided are outlined in Table 9.

Table 9: OSOM Specifications

Route	Material	Truck Type	Truck Size		Load Details		
			Width	Length	Width	Length	Height
Sydney	Switchgear building (TransGrid)	5-Axel Platform Trailer	3.09m	25.55m	3.814m	19.59m	4.085m
Newcastle	Main transformers (main tank) (EPEC)	2 x 12-Axel Platforms with Beamset	4.88m	104.2m	3.24m	10.01m	5.36m
Adelaide	Substation building (EPEC)	10-Axel Low Loader with Dolly	4.39m	34.0m	5.5m	26.8m, 5.0m rear overhang	4.3m

The OSOM vehicles will be provided with escort and pilot vehicles in accordance with relevant authority requirements.

4.2 OSOM Routes

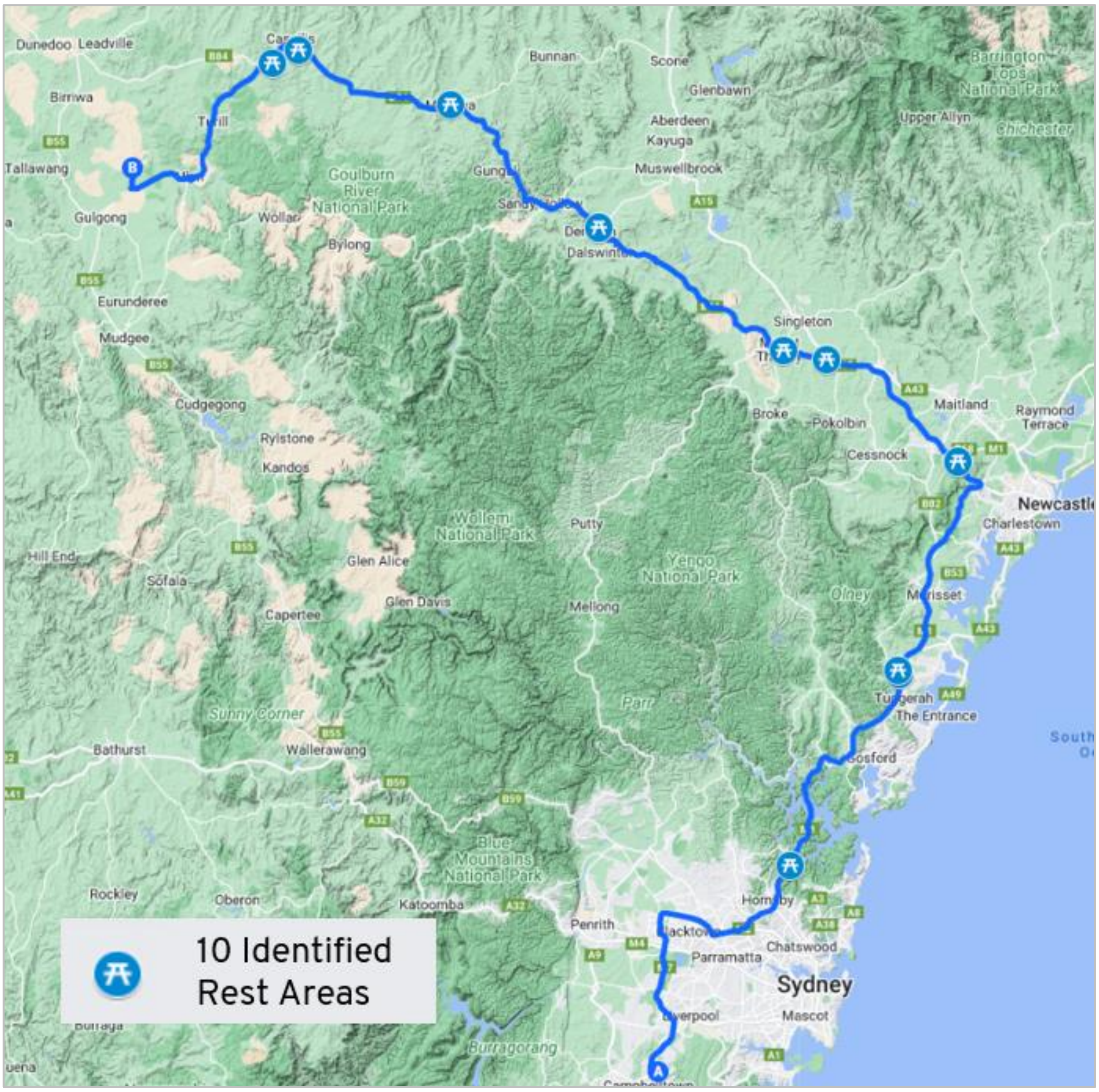
4.2.1 Sydney

The proposed OSOM route between JBM Power in Minto to the site has a total length of 456 kilometres. The route would utilise the following roads to access the site.

- Reaghs Farm Road, Pembroke Road, Campbelltown Road, Hume Motorway, Western Freeway, M2, M11, M1, Hunter Expressway, New England Highway, Golden Highway, Ulan Road, Main Street, McKay Street, Robinson Street, Cope Road, Blue Springs Road to Site Access.

The access route, along with the 10 identified truck rest areas that could be used along the route, are shown in Figure 17. A total of 23 points of interest for further assessment were identified as part of the assessment of the access route. The points of interest have been assessed in further detail, along with the site access with the full assessment provided within Appendix I.

Figure 17: Sydney OSOM Route



Source: https://www.google.com/maps/d/edit?mid=1Qsf92HEEAHWigsOMUdoPjeeLZkEdesg&usp=sharing

The assessment of the access route identified that there were no civil works required and the vehicle is able to access the site with suitable traffic management measures.

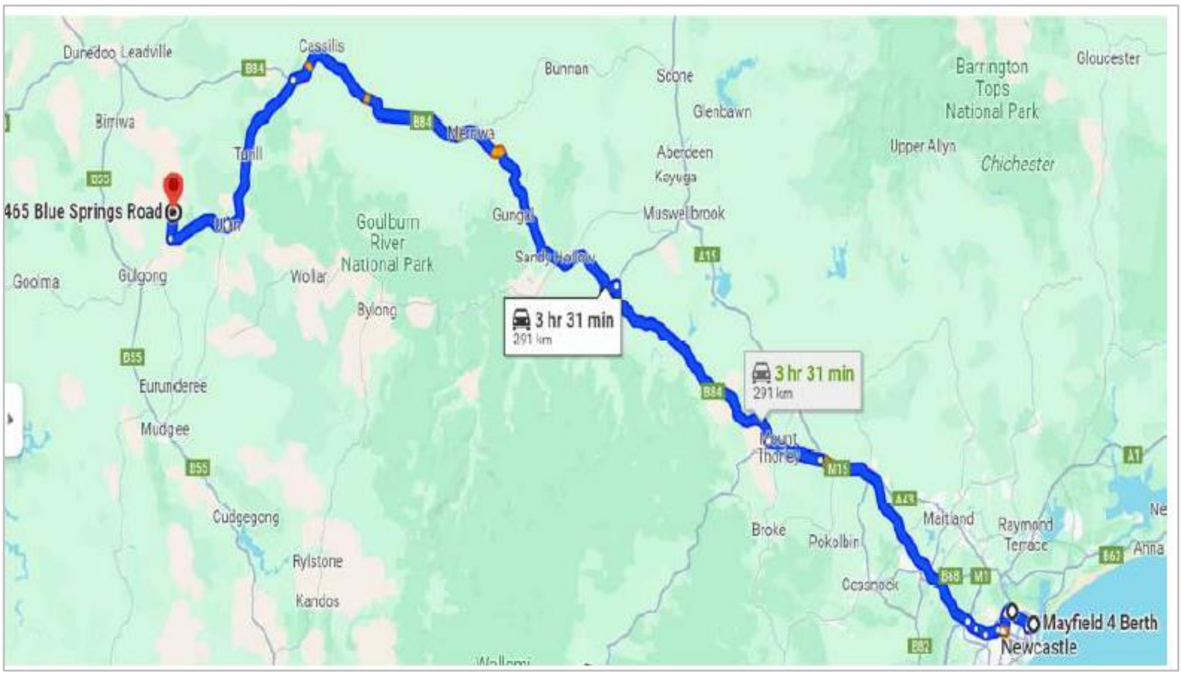
4.2.2 Newcastle

A route survey has been undertaken for the route to site from Newcastle by Lampson Pty Ltd. The proposed OSOM route from the Port of Newcastle has a total length of approximately 291 kilometres. The route would utilise the following roads to access the site.

- Selwyn Street, George Street, Industrial Drive, Maitland Road, Wallsend Road, Sandgate Road, Newcastle Inner City Bypass, Newcastle Road, Thomas Street, Newcastle Link Road, Hunter Expressway, New England Highway, Golden Highway, Ulan Road, Main Street, McKay Street, Robinson Street, Cope Road, Blue Springs Road to Site Access.

Figure 18 displays the proposed route.

Figure 18: Newcastle OSOM Route



Source: Lampson Pty Ltd Route Survey

The route survey identified a range of options for truck rest locations along the journey. The route survey also showed that no civil construction or upgrades were necessary for the OSOM vehicle combination tested, and the vehicle can reach the site with appropriate traffic and infrastructure management measures in place.

The route survey is attached for reference in Appendix J.

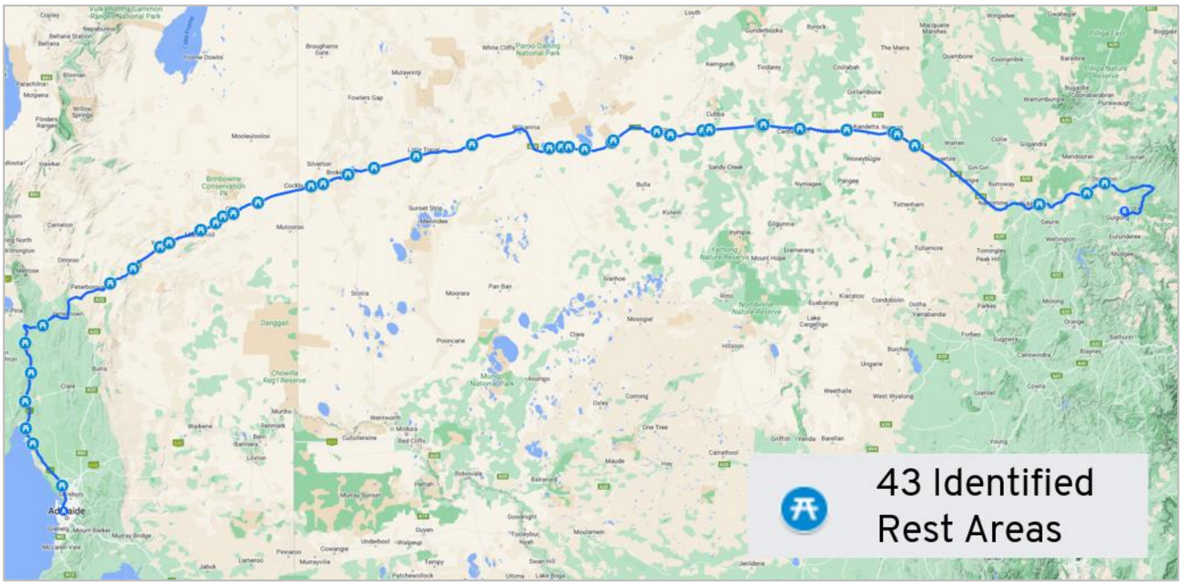
4.2.3 Adelaide

The proposed OSOM route from the Port of Adelaide has a total length of 1,526 kilometres across South Australia and NSW. The route would utilise the following roads to access the site.

- In South Australia: Days Road, Regency Road, South Road, M2, A1, Wilkins Highway, R M Williams Way, Beniah Road, Main Street, Barrier Highway into NSW.
- In NSW: Barrier Highway, Creedon Street, Gaffney Street, Silver City Highway, Iodide Street, Argent Street, Mitchell Highway, Culling Street, Manildra Street, Mitchell Highway, Thompson Street,-Golden Highway, Ulan Road, Main Street, McKay Street, Robinson Street, Cope Road, Blue Springs Road to Site Access.

Figure 19 shows the route along with the 43 identified truck rest areas that could be adopted along the route. A total of 38 points of interest for further assessment were identified which have been tested (along with the site access) in further detail by way of the full assessment provided within Appendix K.

Figure 19: Adelaide OSOM Route



Source: https://www.google.com/maps/d/edit?mid=1hDReFrkTJU4Ff20ALJOfOFaZnq4GUh0&usp=sharing

The assessment of the Adelaide route indicated that there was no need for any civil works for the tested OSOM vehicle combination with the implementation of suitable traffic management measures.

4.2.4 Summary – Local Road Access

The swept paths and route survey shown in Appendices I, J and K confirm that Main Street, Mackay Street and Robinson Street in Ulan can be safely used by the OSOM vehicle combinations with suitable traffic control by escorts.

4.3 Bridge and Culvert Assessment

A Bridge and Culvert Assessment report has been prepared for the main route of access to site. The report is attached for reference in Appendix L.

The following actions are to be implemented:

- The vehicle load shall be controlled to ensure every axle is not greater than nominated in Section 2 of the Bridge and Culvert Assessment report.
- All OSOM vehicles must travel along the centreline of the carriageway.
- Speed limits in Table 5-1 from the Bridge and Culvert Assessment report shall not be exceeded at each structure site.
- All structures shall be inspected after OSOM travelling to ensure any defects can be identified and rectified. A copy of each inspection report must be submitted to Council.

An extract of Table 5-1 from the assessment report is provided below in Table 10.

Table 10: Extract of Table 5-1: Rating factors and speed limit, Bridge and Culvert Assessment

#	Km	Name	Speed Limit (km/h)	RF
1	9+500	Murrumbline Creek Turill Bridge	-	1.05
2	12+600	Curryal Creek, Two Cells Concrete Bridge/Culvert	-	1.02
3	16+600	Single Cell Concrete Culvert 4.0m(h) x 2.5(w)	-	1.48
4	18+600	Three Cell Culvert/Bridge	-	1.28
5	22+700	Bridge over Goulburn River	-	1.25
6	24+300	Single Cell Concrete Culvert 4.0m(h) x 3.0m(w)	-	1.33
7	29+400	Bridge over Sandy Hollow-Ulan Railway	-	1.04
8	30+400	Five Box Culverts 2.0m(h) x 1.2m(w)	-	1.34
9	32+500	Bridge over Moolarben Creek	30	1.01
10	33+300	Bridge over Sportsman's Hollow Creek	10	1.03
11	37+200	Three Box Culverts 1.0m(h) x 0.6m(w)	-	1.07
12	37+900	Four Box Culverts at Sportsman Hollow	30	1.01
13	39+700	Three Box Culverts 1.2(h) x 0.6m(w)	-	1.38
14	42+400	Four Concrete Pipes at Deadmans Creek	-	1.54

5. Traffic Management Strategy

5.1 Driver Protocols

Management of vehicular access to and from the site is essential to maintain the safety of the general public as well as the labour force. A Drive Code of Conduct is provided within Appendix A. All light and heavy vehicle drivers that daily/weekly access the site and all OSOM drivers, are required to read, agree to and sign the Driver's Code of Conduct. A copy of NHVR's Heavy vehicle driver fatigue requirements bulletin is attached in Appendix B.

5.2 Delivery Logistics

The Applicant will employ a full-time logistics person who will be responsible for closely monitoring the delivery schedules. Examples of the milestones that will be monitored and level of communication include:

- Keeping records of the number of heavy vehicles accessing the site each day;
- Ensuring that the maximum number of heavy vehicle movements per day is adhered to;
- Ensure the maximum number of over dimensional vehicles entering or leaving the site is adhered to;
- Schedule of next day and 2-day forecast of all deliveries, including inventory and timing;
- Expected ship date;
- Number of containers from each supplier;
- Transit time;
- Estimated time of arrival;
- Online access available for up to date reporting of each shipment;
- Daily reports sent to site;
- Maintain accurate records of the number of over-dimensional vehicles entering or leaving the site each day for the duration of the project noting Condition 2 of Schedule 3 of the Development Consent also requires the development to not generate more than 20 over-dimensional vehicle movements; and
- Maintain daily communication with transport company.

The logistics manager will coordinate trucks to arrive at the site at a specific time of day in order to satisfy community and safety concerns, including the use of police escorts when necessary, although unlikely. Haulage of materials and equipment to the site will be scheduled to arrive and depart from the site at different times coinciding with the construction program.

Delivery schedules will be checked daily to ensure delivery are spread such that at no time more than 5 deliveries are made within a 2 hour window. If at any time more than 3 trucks are expected to arrive, notification shall be sent to TfNSW for coordination with other projects to ensure a convoy is not formed during the specific day.

Vehicles will be scheduled to avoid conflict with local traffic and rail services and any school zones during peak school times. Furthermore, the varying origins of the haulage movements and limited number of deliveries to site each day will limit the potential for haulage vehicles to form convoys or platoons.

The logistics manager is required to check the Live Traffic website to identify any roadwork sites that may impact their journey and contact on-site representative or the Customer & Network Operations Coordinator for the South (cnc.south@transport.nsw.gov.au) prior to OSOM movement and development.west@transport.nsw.gov.au.

In addition, a weekly movement / delivery schedule via email is to be sent to CNC.South@transport.nsw.gov.au and development.western@transport.nsw.gov.au.

5.3 Information and Communications

The implementation of a community information and awareness program will assist in managing the traffic impacts. Prior to construction commencing and during the construction period, a program of consultation will be initiated to ensure the local residents are fully aware of the construction activities, with particular regard being given to construction traffic accessing the site. This program will include elements of the following as appropriate to the phase of works:

- Press releases in the local newspapers;
- Updates on the Project website (https://stubbosolar.com.au/) providing details of the status of works and contact details for any complaints or enquiries will be updated monthly to reflect the current status of the project, in accordance with Condition 17 (Schedule 4);
- Provide key contact personnel and contact details, including out of hours contact information to residents, schools, and public activities operating alongside the local route;
- Neighbours of the project will be consulted by PCL and Transgrid and notified in writing regarding the timing of major deliveries which require additional traffic control and disrupt access. PCL and Transgrid will drop/send letters to neighbours of the project one week in advance of any traffic impacts; and
- ACEN will maintain a Complaints Register document and PCL and Transgrid will manage and maintain registers for their relevant works.
- ACEN has published its Complaints Procedure on the Contact Us page of the project website (https://stubbosolar.com.au/contact-us/), which is publicly available, in accordance with Condition 17 (Schedule 4).
- Complaints are to be managed in accordance with section 10.4 Complaints Management.

Consultation is to be undertaken with the surrounding mines at Ulan and the Wollar Solar Farm by PCL to coordinate vehicle movements to limit the cumulative impacts of heavy and OSOM vehicles as far as practical. The PCL Community Engagement Coordinator is responsible for reviewing all the information and communications and communicating with the mines at Ulan and Wollar Solar Farm which will occur biweekly.

5.4 On-site Mitigation Measures

The following on-site traffic management measures will be implemented:

- All vehicles will enter the site through the designated access point and all vehicles will stop at security.

- Signs will be installed on the roads to warn road users of turning trucks and to provide directions to the Project as well as speed limit signs on Blue Springs Road and throughout the Project site;
- On-site speed restrictions (40 km/hr maximum limit);
- Transport access control to and from the Project using designated roads to access the site which are provided within Section 3.5;
- On-site transport movement communication protocols which are communicated daily at pre-start;
- OSOM vehicle movement plans which will be provided as part of the permits for the individual vehicle movements including a delivery schedule, which will be communicated with the PCL logistics coordinator;
- Construction of access track routes in proximity to any environmentally sensitive areas to be guided by relevant specialists;
- Appropriate dust suppression measures be implemented, including:
    - Vehicles will drive at slower speeds when travelling on unsealed roads. This can reduce the amount of dust created and the amount of dirt tracked onto the public road network. Standard mitigation measures, such as a water trucks to dampen the roads and reduce the amount of dust in the air, shall be considered to reduce dust levels.
    - Vehicles entering/exiting the project loaded with materials shall be covered.
- All internal roads are constructed as all-weather roads as required by Condition 10 of Schedule 3 of the Development Consent;
- Maintenance program for on-site access tracks to ensure safe access;
- Implementation of a proactive erosion and sediment control plan for on-site roads, hardstands and laydown areas as outlined in the Erosion and Sediment Control Plan appended to the Soil and Water Management Plan Section 2 of the Erosion and Sediment Control Plan;
- Loading and unloading will occur within the site. No street or roads will be used for material storage at any time;
- As part of Stage 1 works, all existing culverts were reviewed and extended/replaced as required to suit the road upgrades and to ensure capacity of the existing roadside drainage network is not reduced. Where required, additional culverts were installed during Stage 1 to drain isolated low points in the roadside table drains;
- PCL will undertake weekly inspections of the road network during Stage 2a to ensure the capacity of the existing roadside drainage network is not reduced;
- Sufficient car parking will be provided on-site to ensure vehicles do not park on the surrounding road network. The amount of car parking on-site will be amended, if required;
- All car parking and loading areas to be designed to accommodate the associated design vehicle requirements;
- Construction equipment will be parked in designated laydown areas and work areas, and will not use the parking designated for project staff and visitors;
- Security guards will monitor Blue Springs Road in the vicinity of the project entrance to ensure that no project-related vehicles are parked outside of the site area; and
- At the conclusion of the Stage 2a construction phase, any access tracks not required for subsequent operation and maintenance of the project will be restored and revegetated.

On-site mitigation measures targeted at reducing the risk of fauna strike will be detailed within a site specific TMP and include:

- On-site speed restrictions (40 km/hr maximum limit);
- Speeds are to be further reduced at dusk and dawn;
- Site personnel will be made aware of site speed limits and the need to reduce further at dawn and dusk during site inductions;
- Site personnel to report fauna strikes to the PCL Health and Safety and Environmental Advisor. The Project Ecologist is to undertake any fauna handling;
- Site personnel will be made aware of the requirement to report fauna strikes during site inductions;
- PCL will maintain a log of fauna strikes.

5.5 Oversize/Overmass Operating Protocols

Management of vehicular access to and from the site is essential to maintain the safety of the general public as well as the labour force. Exemplar driver protocols for delivery of larger plant will be implemented, including the following:

- The arrangements for the delivery of OSOM loads to the site will be scheduled to avoid peak periods of traffic on the network and minimise, as far as practicable, disruption and disturbance to residents;
- OSOM load permits shall be appended to the TMP;
- Pilots shall be in radio contact with other trucks to ensure passing occurs at safe and convenient locations;
- In the event of a breakdown, accident or road failure, the transporter crew will do the following:
    - Park the pilot vehicles in locations where they maximise safety, considering overhanging components, and blind bends on approaches;
    - Contact emergency services (including Police) as is appropriate in the case of an accident;
    - Contact the project manager;
    - Contact Mid-Western Regional Council, or other road controlling authority, as may be appropriate in the case of the incident;
    - Contact the site manager to advise all other project traffic, and local traffic via CB radio as appropriate in the case of the incident; and
    - Follow all instructions from Police and the road controlling authority.
- In the case of an accident, the vehicles involved should not be moved until instructed by Police;
- Utilisation of only the designated transport routes; and
- Construction vehicle movements are to abide by finalised schedules as agreed by the relevant authorities.

5.6 Public Transport

The Traffic Impact Assessment states the following in relation to the impacts to public transport.

> *'The low volume of project-generated traffic is not forecast to impact on any public transport services.*
>
> *Given the proposed weekday construction hours are from 7am to 6pm, the construction workforce trips would typically occur before 7am and after 6pm, which would generally not coincide with school bus services.*
>
> *Heavy vehicles would arrive and depart throughout the day, however, given the low forecast heavy vehicle demand (about six heavy vehicles arriving and six heavy vehicles departing the site per hour), minimal impact is expected on the school bus services. Any potential interaction with school bus operations and stops would be considered in the CTMP to minimise any delays, disruptions, and safety risks.'*

Notwithstanding this, delivery of larger plant is to occur outside of school bus service times to prevent larger vehicles interacting with the school bus. It is noted that the school bus times do not coincide with the morning and evening peak of construction when staff arrive/depart the site with shift times from 7am to 6pm.

Ogden Coaches have advised that they have recently taken over the school bus route (as discussed in Section 2.5) and as such, are still formulating detailed maps and timetables. Ogden Coaches will be contacted prior to the next update of the TMP to confirm the school bus information is still accurate. The TMP will be amended once the timetable updates are received and strategies will be provided to ensure that there will be no conflicts between school buses, vulnerable road users and the project generated traffic.

5.7 Shuttle Bus Pick-up / Drop-off Locations

Shuttle buses will be used to transport the workforce to and from the site during construction. Mid-Western Regional Council has advised that park and ride type facilities are not to be used. As such, shuttle busses will only pick-up and drop-off personnel at their accommodation.

The maximum workforce on-site during peak construction has increased from 400 to 520 compared to the workforce assessed within the Traffic Impact Assessment. To ensure there is no increase to the traffic volumes assessed within the Traffic Impact Assessment, 120 personnel will be transported via 12-seater shuttle buses. The subsequent light vehicle movements during the morning and evening peak hour will be as follows:

- 12 shuttle bus movements; and
- 217 light vehicle movements (based on a vehicle occupancy of 1.75 from the Traffic Impact Assessment).

Construction personnel will be encouraged at induction and toolbox meetings to increase the vehicle occupancy of light vehicles and reduce the number of private vehicles travelling to and from the Project.

Approximate pick up times in the morning are expected to be between 5:30am and 6:30am. Approximate drop off times in the afternoon are expected to be between 5:30pm and 6:30pm. The morning and evening pick up and drop off times will not coincide with school bus services.

Should any personnel seek to use their own vehicle, justification would need to be provided. The number of employees using their own vehicles to access the site will be recorded. This recorded data will be made available to the Planning Secretary if requested. The number of personnel using light vehicles to access and leave the site in place of the shuttle bus will be regularly monitored. It will be the EPC Lead Construction Manager's responsibility to ensure that the correct staff travel by shuttle bus.

PCL HSE Manager is monitoring number of vehicles (light vehicle, shuttle buses, trucks, et al.) on daily basis via the PCL front gate. PCL front gate is being monitored by full time security guard who is responsible to manually update a vehicle movement register and share with PCL at the end of each day. Transgrid vehicle movements will be tracked by Transgrid site manager on daily basis.

Weekly construction coordination meeting scheduled between Transgrid, PCL, and ACEN to review traffic management update and monitor number of vehicles on site.

5.8 Special Events and Other Works

Special events scheduled in the Mid-Western Regional Council area in 2023 are listed in Appendix C. Updated versions of the special events schedule will be obtained from Council by the PCL Community Engagement Coordinator in the final quarter of each calendar year. It is not anticipated that the events will be affected by the proposed works at the specified contract time.

The contractor is to consult with all other surrounding renewable and major projects to minimise cumulative traffic impacts and to ensure deliveries associated with OSOM vehicles do not coincide. The PCL Community Engagement Coordinator is responsible for reviewing all the information and communications and communicating with the mines at Ulan and Wollar Solar Farm which will occur bi-weekly.

5.9 Hazardous Goods and Dangerous Materials

All transport vehicles will be required to operate in accordance with State Environmental Planning Policy No. 33 – Hazardous and Offensive Development, Australian Dangerous Goods Code and Australian Standard 4452 Storage and Handling of Toxic Substances, including consideration of:

- classification of loads;
- packaging and performance testing;
- use of bulk containers and unit loads;
- marking and placarding;
- vehicle requirements;
- segregation and stowage;
- transfer of bulk dangerous goods;
- documentation;
- safety equipment;
- procedures during transport; and
- operations in emergencies.

The process for the safe transport and use of dangerous goods will be provided to drivers as a part of the training and induction processes as required.

The types of hazardous goods and controls typical for a solar farm are listed below:

- All chemical usage, Personal Protective Equipment (PPE), storage and first aid as per Safety Data Sheets.
- Chemicals are stored on 110% containment (bunds) or in Chem 2 cabinets - aerosols such as spray paint.
- During the summer months, spray cans are to be transported on site via a cooling container such as an esky to keep them cool.
- Chem 3 cabinets for liquids – eg. Blue glue. Cabinets are inspected and signed off as well as earthed.
- Transport of diesel is conducted by fuel suppliers who hold dangerous goods licenses and appropriate vehicles.
- SF6 Gas is transported via approved vehicle and distributed by professional person(s) – not stored on site.
- Unleaded fuel is used for small motors and stored on 110% bunds, with generally no more than 20 litres in approved containers.
- Diesel stored on site in self-bunded fuel pods.
- Self-bunded fuel trailers used for field operations – spill kits, fire extinguishers, etc.
- MAP gas to be stored in Chem 2 cabinets.

5.10 Other Considerations

- All vehicles will enter and exit the site access locations in a forward direction.
- All permits for working within the road reserve must be received from the relevant authority prior to works commencing.
- Due to the location of the site, there is an inherent risk that adverse conditions may impact on the movement of transportation vehicles and transport of staff. Consideration for driving in the rain, fog, frost, icy conditions, bright sunlight, flood conditions, and within/near a bush fire is required, especially during the transportation of OSOM vehicles. Weather forecasts will be checked and posted daily in the PCL site office by the PCL Construction Manager. If adverse weather conditions are expected for the following day or days, staff will be informed through daily toolbox talks conducted by supervisors. The following mitigation measures will be implemented when travelling in adverse conditions:
  - Inspection of roads prior to using them to ensure that the road is safe. If there is black ice on the road, depending on the location, signage shall be installed and/or transportation movements will be stopped until it is safe to proceed;
  - Ban or restrict vehicle movements during periods where adverse conditions may impact on the operation of the road and the safety of workers and other road users;
  - Reduce the speed along the transportation route;
  - Provide additional warning for drivers on the road network;
  - Staff will be informed as part of the site induction and at daily toolbox talks, as required, on how to drive in adverse conditions relevant to the time of year, prevailing weather conditions and Project location;
  - Ensure that vehicles are fitted with equipment to assist them during adverse conditions (first aid kit, fire extinguisher, chains if required) and that drivers

are able to communicate to one another with radio devices or via phone to either warn each other or call for assistance; and

- Chains will not be permitted to be used on local roads for the commencement of a journey, for emergency use only.

- The Applicant will keep accurate records of the number of over-dimensional and heavy vehicles entering or leaving the site each day for the duration of the project (as outlined in Section 4.2 and 4.5).
- The capacity of the existing roadside drainage network will be monitored weekly and not reduced or changed by Project works.

5.11 Emergencies

The site access point off Barneys Reef Road must only be used for emergency purposes. In the event of an emergency drivers must follow designated roads to evacuate the site, which can include Barneys Reef Road. An Emergency Plan (EP) has been prepared setting out the actions to be followed by PCL and Transgrid in the event of an emergency, covering:

- details and communication
- emergency equipment
- emergency preparedness and response
- training
- raising the emergency alarm
- emergency evacuation procedures
- testing and recording drills
- fire water supply/fire response trailers
- fire surveillance

5.12 Traffic Environment Management

The following operational environmental measures will be implemented as part of the proposed traffic operations:

- Vehicles leaving the site will be in a clean condition prior to leaving the site to minimise dirt being tracked onto the public road network. It will be the driver's responsibility to ensure vehicles are in a clean condition prior to leaving the site. Vehicles will be inspected by site security during construction and by individual drivers at other times;
- All excavated material is to be covered prior to leaving the site to prevent aerial dispersal onto the road network; and
- A bund is to be installed around the site to prevent the run-off of exposed material and vehicle oils / fuels from the site roads and parking areas into the stormwater system.

6. Road Maintenance

An independent dilapidation survey of Ulan Road, Cope Road and Blue Springs Road on the transport route was completed prior to the commencement of the Stage 1 works.

A follow up independent dilapidation survey of the Cope Road/Blue Springs Road intersection and of Blue Springs Road on the transport route was completed following the Road Upgrades completed in Stage 1, and prior to the commencement of the Stage 2a works, to reflect the updated baseline road conditions.

Prior to commencement of Stage 2a construction, upgrading and decommissioning works of the solar project an independent pre-construction dilapidation survey will be undertaken by an appropriately qualified person to document the existing condition along Ulan Road, Cope Road and Blue Springs Road on the transport route.

Additional surveys will be prepared for the following intervals as a minimum, and will apply separately to PCL's and Transgrid's scopes of work, as relevant:

- Prior to the commencement of upgrades;
- Within 3 months following the completion of construction or upgrades;
- Within one month prior to the commencement of decommissioning; and
- Within 3 months following completion of decommissioning

The surveys will involve a visual inspection of any existing damage on the above roads. The inspection will focus on structural and drainage aspects, such as potholes, visible rutting at wheel paths, cracking and surface deformation or depression. Recent maintenance activity, photos and location referencing of existing damage will be converted into a pre-construction dilapidation report which will be used as a baseline for future surveys.

Full and detailed assessments will be undertaken as part of the permit application process for OSOM vehicles. The assessment will be in accordance with all requirements of the commitment (ID T5 of Table 3), including the PCL Lead Construction Manager providing reports to ACEN who would provide the reports to Mid-Western Regional Council. A Bridge and Culvert Assessment report has been completed and is attached in Appendix L.

If the dilapidation surveys identify that the road has been damaged during construction and/or upgrading the road will be repaired by PCL, in consultation with the relevant roads authority, to the satisfaction of the Planning Secretary.

If there is a dispute about the repair of Ulan Road, Cope Road and Blue Springs Road between the Applicant and the relevant roads authority, then either party may refer the matter to the Planning Secretary for resolution. The Planning Secretary's decision on the matter will be final and binding on both parties.

Roads will be monitored daily and the PCL Lead Construction Manager is responsible for determining whether road upgrades are required. The roads will be repaired, where required, to meet road safety requirements during the construction phase. PCL will provide resources to respond to emergency road repairs for damage caused by the Project. If road damage due to the Project has been identified the PCL will dispatch resources to repair the road as required.

7. Traffic Management Responsibilities

7.1 PCL Lead Project Manager

The PCL Lead Project Manager will be responsible for:

- Ensuring all traffic control measures for this TMP are implemented and maintained in accordance with this plan and the relevant Acts, Codes, Standards and Guidelines;
- Ensuring suitable communication and consultation with the affected stakeholders is maintained;
- Ensuring inspections of the Traffic Controls are undertaken in accordance with the TMP, and results recorded. Any variations shall be actioned and documented;
- Reviewing feedback from field inspections, worksite personnel and members of the public, and take action to amend the traffic control measures as appropriate following approval from the Responsible Authority; and
- Arranging and/or undertaking any necessary audits and incident investigations.

7.2 PCL Lead Construction Manager

The PCL Lead Construction is responsible for overseeing the day-to-day activities, and is therefore responsible for the practical application of the TMP, and shall:

- Instruct workers on the relevant safety standards, including the correct use of PPE;
- Ensure traffic control measures are implemented and maintained in accordance with the TMP;
- Undertake and submit the required inspection and evaluation reports to the PCL Lead Project Manager;
- Render assistance to road users and stakeholders when incidents arising out of the works affect the network performance or the safety of road users and workers; and
- Take appropriate action to correct unsafe conditions, including any necessary modifications to the TMP.

7.3 Workers and Subcontractors

Workers and Subcontractors shall:

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

8. Implementation

8.1 Hazard Identification, Risk Assessment and Control

In establishing adequate controls for the hazards, a structured approach shall be adopted via the use of the hierarchy of control as outlined below:

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

Traffic management practices require that the PCL Lead Construction Manager evaluate all traffic arrangements before they are open to traffic and immediately following the opening to traffic. Adjustments are to be made as required and recorded, including reasons for the changes. The Supervisor is also required to evaluate the traffic arrangements when site conditions change, and new hazards that arise throughout the works will be subject to a risk assessment and incorporated onto the Risk Register.

8.2 Traffic Guidance Scheme

A Traffic Guidance Scheme (TGS), previously known as a Traffic Control Plan, is an important safety document for any work which might impact a public road or footpath. The TGS is a visual guide showing critical site information and how traffic control devices will be implemented.

Traffic Guidance Schemes will be prepared specifically for the major construction activities, if required. Each TGS will be designed in accordance with the Australian Standards and the TfNSW Traffic Control at Work Sites Guidelines.

8.3 Traffic Control Devices

In the event traffic control devices are required, they will be erected in accordance with the TGS. Work will not commence or continue until all signs, devices and barricades are in place and operational in accordance with the requirements of the TMP.

A vehicle displaying a vehicle mounted warning device shall be used in advance of the signs and traffic control devices to protect workers setting out the signs or traffic cones associated with the taper.

The signs and traffic control devices are to be removed in the reverse order of installation.

The number, type and location of signs, devices and barricades shall be to a standard not less than the requirements of AS 1742.3:2019 (except where specifically detailed in this TMP with reasons for the variations). Devices no longer required shall be promptly and completely removed from road user's lines of sight.

8.3.1 Signs

Prior to the installation, all signs shall be checked for damage and cleanliness and repaired, replaced or cleaned as necessary. Signs and devices shall be erected in accordance with the locations and spacings shown on the drawings such that:

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

All existing speed limit signs on the carriageway within the work site shall be covered for the duration of the works whilst temporary speed limit signs are in place.

Prior to the commencement of the relevant construction work involving heavy vehicle movements to site, 'Advance truck warning signs' (W5-22 Size B) with distance plates (W8-5 Size B), will be erected adjacent to Cope Road, 250 metres from its intersection with Blue Springs Road. The signs will be removed at completion of construction.

8.3.2 Pavement Marking

There is no requirement to alter any pavement markings as part of the project.

8.3.3 Environmental Considerations

Weather forecasts are checked and posted daily in the PCL site office. If adverse weather conditions are expected for the following day or days, staff will be informed through daily toolbox talks conducted by supervisors. Should traffic control be adversely affected by conditions, appropriate changes to the Traffic Control Devices are to be conducted to maintain safe conditions for workers, road users and pedestrians. Any changes are to be noted and implemented by a Traffic Controller, or a suitably qualified person, and the TMP is to be reviewed as soon as practical.

In the event of heavy fog, sun glare, or other weather conditions that may affect the visibility of road signage, repeater signage is to be placed throughout the Work Zone.

9. Communicating TMP Requirements

9.1 Site induction

All personnel entering the site are to attend a Site Induction that details the requirements of the TMP, PPE, Occupational Health and Safety (OHS), and risk management procedures. All personnel wishing to enter the works zone are to be inducted before access is allowed.

The requirements of the TMP will be communicated to all personnel entering the site through the online induction prior to workers and visitors coming to the site, including a delivery drivers' online induction.

9.2 Toolbox Meetings

A prestart meeting is to be conducted at the start of works, on a daily basis, and if unforeseen changes are required. Progress, hazard assessment and any new issues, information or changes are to be discussed. Safe Work Method Statements (SWMS) documentation is to be read and signed by construction personnel during prestart meetings which are managed by PCL.

9.3 Safe Work Method Statements

A site-specific SWMS is to be produced for the set up and shutdown of control of traffic on-site and is to be read through, discussed, and signed by all personnel working on site.

10. Monitoring and Measurement

10.1 Site Inspections and Record Keeping

The PCL Lead Project Manager will ensure that the TMP is implemented and evaluated for effectiveness. The Supervisor shall inspect and monitor traffic movements around the site in conjunction with the personnel who have erected the control measures. The outcomes of the inspection will be recorded for the information of the PCL Lead Project Manager.

A record of the inspections should be kept indicating:

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

Where significant changes to the work or traffic environment or adverse impacts are observed, the controls should be reviewed as a matter of urgency. Inspection Sheets shall be completed by the person undertaking the inspections and reviewed by the PCL Lead Construction Manager. All variations to the TMP/TGS, non-conformances, incidents and accidents shall be recorded. Copies of the completed report shall be forwarded to the PCL Lead Project Manager.

10.2 TMP Auditing

One internal compliance audit shall be conducted following setting-up of the traffic management and prior to commencement of the works. Audit findings, recommendations and actions taken shall be documented and copies forwarded to the Project Site Manager.

10.3 Incidents and Non-Compliances

10.3.1 Incident Notification and Response

Any incident that results in harm to the environment and/or off-site receptors is to be regarded as an environmental incident. It is a mandatory requirement for any personnel working for or on behalf of ACEN, PCL or Transgrid to respond to all hazards and events that have affected or have the potential to adversely affect the environment.

As defined in the Development Consent, an incident is a set of circumstances that causes or threatens to cause material harm to the environment. Material harm is defined in the Development Consent as harm that:

- Involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial; or
- Results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or makegood harm to the environment.

In accordance with Condition 7, Schedule 4, the Planning Secretary will be notified in writing via the Major Projects website. After ACEN becomes aware of an incident, the ACEN Project Manager will immediately notify the Department via the Major Projects website. Accordingly, the PCL or Transgrid Lead Project Manager will notify the ACEN Project Manager immediately after a reportable incident occurs to enable prompt reporting by ACEN to the Planning Secretary. The notification from ACEN will identify the development (including the development application number and the name of the development if it has one) and set out the location and nature of the incident.

Incident reporting requirements and responsibilities are set out in Table 10. The table identifies reportable based on the definition in the Development Consent. It is the ACEN Project Manager's responsibility to ensure that notifications are undertaken in accordance with the consent.

Note that safety incidents are defined in site safety documentation separate to the Environmental Management Strategy.

Table 11: Incident Notification Requirements and Responsibilities

Incident Level	Definition	Notification	Responsibility
Reportable	Causes or threatens to cause material harm to the environment (see definition in DC): ▪ involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial; or ▪ results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or makegood harm to the environment.	▪ Internal: to PCL/Transgrid HSE Manager, Lead Manager (immediately) ▪ External: to ACEN Project Manager, (immediately) ▪ DPE: to the Planning Secretary, (immediately after the ACEN Project Manager becomes aware of an incident)	▪ PCL/Transgrid Lead Project Manager ▪ ACEN Project Manager to report to DPE, Planning Secretary

Subsequent notification requirements will be given, and reports submitted in accordance with the requirements set out in Appendix 7 of the Development Consent. This includes submission of a written incident notification addressing the requirements set out below to the Planning Secretary via the Major Projects website within seven days after ACEN becomes aware of an incident. Notification is required to be given under this condition even if the Applicant fails to give the notification required under Condition 7 of Schedule 4 or, having given such notification, subsequently forms the view that an incident has not occurred.

The written incident notification will address the following requirements:

- identify the development and application number;
- provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);
- identify how the incident was detected;
- identify when the applicant became aware of the incident;

- identify any actual or potential non-compliance with conditions of consent;
- describe what immediate steps were taken in relation to the incident;
- identify further action(s) that will be taken in relation to the incident; and
- identify a contact for further communication regarding the incident.

Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Planning Secretary, ACEN will provide the Planning Secretary and any relevant public authorities (as determined by the Planning Secretary) with a detailed report on the incident addressing all requirements below, and such further reports as may be requested. The written incident notification will include:

- a summary of the incident;
- outcomes of an incident investigation, including identification of the cause of the incident;
- details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and
- details of any communication with other stakeholders regarding the incident.

Response agencies need to be informed of pollution incidents quickly, so action can be coordinated to prevent or limit harm to the environment and human health generally. These are listed in Table 11.

Incidents will be recorded in an Incident Register.

10.3.2 Non-Compliance Notification and Response

A project non-compliance is defined in the Development Consent as an occurrence, set of circumstances or development that is a breach of the consent but is not an incident.

Non-compliances will be reported and actioned through the incident management procedures detailed above.

In accordance with Condition 8 (Schedule 4), ACEN will notify the Department in writing via the Major Projects website within 7 days after becoming aware of any non-compliance with the conditions of this consent. Accordingly, the PCL or Transgrid Lead Project Manager will notify the ACEN Project Manager no greater than 24 hours after a non-compliance is identified to enable prompt reporting by ACEN to the Planning Secretary.

In accordance with Conditions 8 and 9 (Schedule 4) the non-compliance notification to the Planning Secretary will set out the condition of consent that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance. A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

Table 12: Response Agency Contact Details

Response Agency	Contact Details
Environment Protection Authority NSW (EPA NSW)	131 555 or (02) 9995 5555
Ministry of Health NSW	(02) 9391 9000
SafeWork NSW	131 050
The local authority, Mid-Western Regional Council	(02) 6378 2850

Response Agency	Contact Details
Fire and Rescue NSW (Gulgong Local Station)	(02) 6374 1049
Rural Fire Service	1800 679 737
Rural Fire Service (Cudgegong Office)	(02) 6372 4434
Heritage NSW (for Aboriginal finds, as per HMP)	(02) 9873 8500
NSW Police (for human remains, as per HMP)	131 444

10.4 Complaints Management

ACEN will maintain a Complaints Register document and PCL and Transgrid will manage and maintain registers for their relevant works. ACEN will ensure that the Complaints Register is made available on the project website and it is updated regularly, in accordance with Condition of Consent 17 (Schedule 4), with personal details kept private.

Members of the community can make complaints about the project via the following channels, and will be responded within two business days:

- The Contact Us page at www.stubbosolar.com.au (website has been established)
- Telephone at 1800 434 062 (available 24 hours)
- Email at info@stubbsolar.com.au
- In person at the Site Compound office reception

To help investigate and resolve complaints effectively, the following information is to be collected and managed in the Complaints Register:

- Date received
- Time received
- Method received
- Stakeholder group (if known)
- Name of complainant
- Address of complainant
- Phone number of complainant
- Nature of complaint
- Complaint summary
- Response and resolution
- Date complaint resolved

All complaints will initially be received by the ACEN Project Manager. On receipt of a complaint, the ACEN Project Manager will:

- Contact the complainant within two business days.
- Coordinate with appointed transport contractor and/or relevant contractors on potential corrective actions.
- Advise the complainant of the corrective actions and record these on the Complaints Register.

- Complete the Complaints Register.
- If corrective actions cannot be implemented immediately, an incident report will be raised to manage the process.
- If appropriate, follow up with the complainant to review outcome of the implemented corrective actions.
- Log all details of the complaint in the Complaints Register and share on public website on monthly basis.

10.5 Management and Monitoring Summary

A summary of the management and minoring measures is provided within Table 12.

Table 13: Management and Monitoring Summary

Aspect	Potential Problems	Performance Criteria	Mitigation and Control Measures	Monitoring Requirements	Responsibility	Timing	Frequency
Heavy vehicle movements	Number of vehicles exceed DC approval	Maximum limit of 80 heavy vehicle movements a day	Heavy vehicles will be denied site entry if limit has been exceeded	Count and record number of vehicle movements	ACEN	Duration of construction	Daily
Over-dimensional (OD) vehicle movements	Number of vehicles exceed DC approval	Maximum limit of 20 OD vehicle movements during construction, operations and decommissioning	OD vehicles planned for Stage 2a will be scheduled at commencement of Stage 2a	Count and record number of vehicle movements	ACEN	Duration of construction	Monthly
	Number of vehicles exceed DC approval	Maximum length of any vehicles (excluding OD vehicles) is 26m	Vehicles (excluding OD vehicles) will be denied site entry their length exceeds 26m	Measure vehicle length	ACEN	Duration of construction	Daily
Soil and/or debris on public road	Roads have excess build up of dirt	Minimise exposed soil areas	Where practicable, vegetation clearing activities should be staged, so that areas of exposed soil are minimised	Check cleared areas for evidence of erosion	PCL	Duration of construction	Daily
Condition of road	Traffic use causes damage to road	Damaged road is left unrepaired	Emergency repair and/or maintenance is required	Check for evidence of damage	PCL	Duration of construction	Monthly
Weather conditions	Conditions make driving hazardous	Vehicles should not be travelling in unsafe conditions	Consider options to reduce driver risk such as temporarily halting vehicle movements, re-routing, etc.	Check weather forecast and on-site conditions	PCL and Transgrid	Duration of construction	Daily
Driver behaviour	Poor driver behaviour leads to incidents, accidents or near misses	No accidents	Encouraging good driver practice and reinforcing those messages during project meetings	Count and record number of incidents, accidents and near misses	PCL and Transgrid	Duration of construction	Daily
	Vehicles have excessive mud or dirt	Dirt transferred from the site onto the external road network to be minimised	Vehicles exiting the site are to be cleaned so that excessive mud and dirt is not transferred to external roads	Vehicles exiting the site are to be inspected (and cleaned as required)	Vehicle driver	Duration of construction	Daily
Access tracks and laydown areas	Dust	Dust should not impact off-site receptors	Pave haul roads and other areas with gravel or impervious sealant, wet down tracks on windy days	Inspect the site for dust generation	PCL and Transgrid	Duration of construction	At least daily
	Soil on paved roads	No off-site roads to be contaminated with tracked mud and or dirt	Install wheel wash and rumble grid	Inspect off-site roads for tracked mud and dirt	PCL		
			Manually wash vehicle wheels				
			Increase road cleaning frequency				
Stockpiles and bare slopes	Erosion	No sediment-laden stormwater discharged off-site	Minimise exposure to run-off and action of wind and ensure stabilisation measures are effective	Check effectiveness of stabilisation measures	PCL	Duration of construction	Weekly
Drains and waterways	New drainage lines not controlled	No sediment-laden stormwater discharged off-site	Install appropriate sediment controls on new drainage lines	Check drainage lines for sediment controls	PCL	Duration of construction	At least once every two days in areas where earth-moving is occurring. Weekly elsewhere

Aspect	Potential Problems	Performance Criteria	Mitigation and Control Measures	Monitoring Requirements	Responsibility	Timing	Frequency
	Sediment-laden stormwater contamination of waterways	No sediment-laden stormwater discharged off-site	Avoid or control erosion on the site as per the procedures in Section 7	Check for localised erosion on site and rectify as soon as is practicable. Monitor erosion and sediment control measures to ensure they are functioning adequately	PCL	Duration of construction	Once a week (as a minimum) Immediately following rainfall events that cause run-off
			Replace or repair damaged drains, redesign ineffective drains, relocate incorrectly placed drains	Check integrity and effectiveness of drains	PCL	Duration of construction	Weekly
Stream crossings and culverts	Unstable	No unstable crossings	Stop use until installation has been redesigned	Check integrity and stability of stream crossings	PCL	Duration of construction	When in use, but no less than weekly
Settlement basins, bunds, sediment fences, filters and screens	Sediments not effectively removed	No sediment-laden stormwater discharged off-site	Maintain the effectiveness of control measures as per the procedures in Section 6	Monitor sediment levels in water holding areas and sediment fencing, check for integrity of bunds and other control structures	PCL	Duration of construction	Once a week (as a minimum) Immediately following rainfall events that cause run-off
			Sediment and erosion controls take many forms and one or a combination of controls may be appropriate for a given circumstance. The management controls should be in accordance with the measures described in *Managing Urban Stormwater: Soils and Construction*				
			Any excess contaminated stormwater and process waste water that cannot be reused on-site will be disposed of in accordance with the *Managing Urban Stormwater: Soils and Construction*	Undertake visual inspections for turbidity downstream of any discharge points	PCL	Duration of construction	Hourly when discharging
Chemical storage areas	Spills and contamination	No release of fuels or chemicals to land or water	Locate storage and refuelling areas 50m from sensitive area such as waterways, wetlands and native vegetation	Check location for distances	PCL	Prior to construction	As necessary
			In the event of discovery of contaminants, stop work, remediate and dispose of contaminants as necessary	Inspect the site for contamination	PCL	Duration of construction	Continual
			Maintenance and refuelling areas adequately bunded	Check integrity and adequacy of bunding	PCL	Duration of construction	Weekly
Placement of infrastructure	Infrastructure impacts stream	No infrastructure to be placed within 20 m of any Strahler 3 or above order streams	Ensure infrastructure is placed at 20 m or greater from any Strahler 3 or above order streams	Check location for distances	PCL	Prior to construction	Continual

11. Management and Reporting

11.1 TMP Review and Improvement

As this project is of a long-term nature, a review of the effectiveness of the TMP will be undertaken by the PCL Lead Project Manager on a weekly basis.. Any updates to the TMP that are required to improve the effectiveness of the TMP as identified in the weekly effectiveness reviews will be undertaken by the PCL Lead Project Manager in accordance with Section 10.3.

11.2 Variations to Standards and Plans

There are no departures from the requirements of AS 1742.3:2019 or TfNSW Traffic Control at Work Sites Guidelines.

On-site variations, if required, will only be made following approval by the PCL Lead Project Manager. In emergency situations, on-site variations shall be made and recorded and the PCL Lead Project Manager notified as soon as practicable.

Any updates to the TMP that are required as a result of updates to AS 1742.3:2019 or TfNSW Traffic Control at Work Sites Guidelines will be undertaken by the PCL Lead Project Manager in accordance with Section 10.3

11.3 Update of Strategies, Plans or Programs

As this project is of a long-term nature, a review of the effectiveness of the TMP will be undertaken by the PCL Lead Project Manager on a weekly basis.

In accordance with Condition 2, Schedule 4, ACEN, with the support of PCL and Transgrid, will:

- Update the strategies, plans or programs required under the Development Consent to the satisfaction of the Planning Secretary prior to carrying out any upgrading or decommissioning activities on site.
- Review and, if necessary, revise the strategies, plans or programs required under the DC to the satisfaction of the Planning Secretary within 1 month of the:
  - submission of an incident report under condition 7 of Schedule 4;
  - submission of an audit report under condition 9 of Schedule 4; or
  - any modification to the conditions of this consent.

As stated in Condition 3, Schedule 4, with the approval of the Planning Secretary, the Applicant (ACEN) may submit any strategy, plan or program required by this consent on a progressive basis. To ensure the strategies, plans or programs under the conditions of this consent are updated on a regular basis, the Applicant may at any time submit revised strategies, plans or programs to the Planning Secretary for approval. With the agreement of the Planning Secretary, the Applicant may prepare any revised strategy, plan or program without undertaking consultation with all the parties referred to under the relevant condition of this consent.

ACEN will ensure that all development being carried out on site is covered by suitable strategies, plans or programs at all times.

If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program will clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program.

ACEN will seek the approval of the Planning Secretary, ACEN when submitting any strategy, plan or program required by this consent on a progressive basis.

To ensure the strategies, plans or programs under the conditions of this consent are updated on a regular basis, the Applicant may at any time submit revised strategies, plans or programs to the Planning Secretary for approval.

ACEN will obtain the agreement of the Planning Secretary, when preparing any revised strategy, plan or program without undertaking consultation with all the parties referred to under the relevant condition of this consent.

ACEN notes that while any strategy, plan or program may be submitted on a progressive basis, the ACEN will ensure that all development being carried out on site is covered by suitable strategies, plans or programs at all times.

ACEN also notes that if the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program will clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program.

11.4 Notification of Department

Prior to commencing the construction, operations, upgrading or decommissioning of the development or the cessation of operations, the Applicant will notify the Department in writing via the Major Projects website portal of the date of commencement, or cessation, of the relevant phase.

If any of these phases of the development are to be staged, then the Applicant will notify the Department in writing prior to commencing the relevant stage, and clearly identify the development that would be carried out during the relevant stage.

Appendix A

Driver Code of Conduct

Driver Code of Conduct

This code of conduct applies to all light and heavy vehicle drivers, and OSOM drivers, that regularly visit the site. They are required to read, agree to, and sign the Driver Code of Conduct.

This code of conduct will be communicated to all site workers during the site induction process. Workers will be reminded of the requirements of the code of conduct weekly in toolbox meetings.

The Driver Code of Conduct is to be enforced by the Applicant, and records of the code are to be stored and maintained by the Applicant. PCL will share code of conduct with all logistic companies, and suppliers prior to all deliveries to site.

1. Safe Driving Principles

The operators of all vehicles associated with the site shall respect all other road users. All on-site staff will receive a site induction, which will include:

- Details regarding the TMP and this code of conduct;
- Confirmation of Blood Alcohol Concentration (BAC) testing at the gate;
- Details of speed limit signs;
- Information on fatigue management;
- Reinforcement that they must drive to conditions;
- Details of vehicle inspections including maintenance records and risk assessments; and
- Details of inspections, and audits.

Regular toolbox meetings will be held to maintain awareness of required controls. Details of the traffic and access training and induction will focus on:

- Objectives of the TMP;
- Performance goals, which include:
  - To complete the solar farm with no Injuries,
  - Safety Key Performance Indicators (KPI's) to be completed including inspections, audits, and training.
- Access routes that are to be adopted as outlined within the TMP;
- Mitigation measures required to be implemented;
- Traffic and access monitoring and reporting requirements; and
- Incident investigation and response protocols.

Training is to be provided prior to start-up of any traffic and access related management tasks and updated if task, equipment or procedures are expected to, or have changed.

2. Primary Driver Code

The following requirements shall be adhered to at all times:

- Obey all laws and regulations.

- Do not drive whilst under the influence of alcohol, drugs, nor any medication which may affect ability to drive.
- Be medically fit to drive and must inform site coordinators if they have any medical condition which may affect their ability to drive.
- Drive in a considerate manner and respect the rights of others to use and share the road space.
- Report all vehicle defects to their employer. Serious defects (e.g. e.g. brakes, steering) must be corrected immediately, or an alternative vehicle supplied.
- Any vehicle incident resulting in injury or significant damage to property must be reported to the police.
- Report any near misses.
- Always adhere to the site working hours.
- Securely fasten and cover load with the appropriate use of ratchets straps, tarpaulins or covers (loose material), chains and load binders, for example. Relevant vehicular load limits are not to be exceeded and all loads are to be suitably balanced. The maximum rear overhang shall not exceed limits under by relevant road rules for respective vehicle types.
- Keep their vehicle clean and in good mechanical condition to reduce the environmental impact.
- Extra care should be taken when driving at dawn or dusk, being particularly watchful for wildlife and/or livestock.
- Vehicles must give way to pedestrians, cranes, forklifts, mobile plant, emergency vehicles and livestock.
- Drivers must adhere to the required access routes outlined within the TMP (Section 3.5.2 and 3.5.3 of the TMP).

The following provides further guidance as the required safety procedures for specific incidences:

- Drivers travelling to or from the site must do so safely, in full compliance with the law, including in respect of speed limits, following distances, forward sight when overtaking, being able to stop within the length of road visible (or half the length on roads without centrelines), and not driving carelessly or dangerously;
- Timing of deliveries are to be coordinated by the Applicant in order to prevent heavy vehicles travelling through school zones during peak times;
- When aware of any emergency vehicles, approaching from in front or behind, drivers must pull over well in advance to provide unimpeded movement;
- Drivers must reduce their speed and or stop in accordance with the law when passing a school bus which is slowing down, stopped, or accelerating in relation to picking up or setting down children;
- Drivers must reduce their speed in accordance with the law when:
    - Passing children walking, cycling or waiting on the side of the road;
    - Passing an oncoming school bus;
    - Passing someone riding or leading a horse along the road;
    - Approaching an area where a stock shift is known to be occurring.

- Truck drivers must not use engine brakes in built up areas, except where the load being carried and the grade of the road make use of such braking absolutely necessary for safe driving;
- Truck drivers travelling on school bus routes at the same time as an oncoming school bus to use their CB radio to identify the location of the bus and pull over in a safe location before the school bus reaches and passes them;
- Truck drivers are to let traffic behind them pass at regular locations including those opportunities that occur at intersections, wide driveways, sections of road with adequate forward sight distance, gravel pits etc; and
- Dedicated rest stops are to be established and utilised by drivers to reduce driver fatigue.

3. Chain of Responsibility

Corporate entities, directors, partners, and managers are accountable for the actions of individuals under their supervision, even if not directly involved in driving or operating a heavy vehicle under the Heavy Vehicle National Law (HVNL). This is referred to as the "chain of responsibility" (COR).

All entities on the CoR will be made aware of the Driver Code of Conduct, along with the responsibilities associated with safe loading practices and fatigue management.

4. Emergency Procedures

In the event of a breakdown, accident or road failure, the transporter crew shall do the following:

- Park the truck in locations where they maximise safety, considering overhanging components, and blind bends on approaches;
- Contact emergency services (including Police) as is appropriate in the case of an accident;
- Contact the project manager;
- Contact the Council or other road controlling authority as may be appropriate in the case of the incident;
- Contact the site manager to advise all other project traffic, and local traffic via CB radio as appropriate in the case of the incident; and
- Follow all instructions from Police and the road controlling authority.

In the case of an accident, the vehicles involved should not be moved until instructed by Police.

5. Driver Fatigue

<u>Journey Management Plans</u>

If a person travels more than 100 kilometres because of construction activities in a single trip, then a Journey Management Plan will be required. The person that the Journey Management Plan is for will be required to have breaks every two hours and contact a nominated person and once they have reached their destination contact the nominated person to let them know they have reached their destination.

Journey Management Plans are also to be completed for workers driving journeys where there are significant risks with the project overall or the planned tasks (i.e. adverse weather conditions, driving following a work shift over 12hrs) Travel between the hours of 11pm and 5am is to be avoided. Where unavoidable, the applicable Project Manager must be made aware of the reason for travel and must review The Journey Management Plan that has been developed.

The follow factors will be considered by PCL when Journey Management Plans are being developed:

- PCL assesses if it is safe for workers to drive themselves home after particularly long or taxing shifts.
- The weather and time of year are taken into account.
- Making accommodation arrangements or providing alternative transport for crews should be considered in fatigue management planning
- For those travelling long distances, a Journey Management Plan shall be completed by project management. This plan shall include, as applicable:
  - Assessment of total travel time.
  - Requirement for driver to take a break every two hours and call into the office or to the nominated person to confirm they are all right.
  - Transportation type (driving themselves, carpool with shared driving, other modes of transport).
  - Identified rest breaks and locations.
  - Worker Alertness – consider activities prior to travel (workers just coming off a night shift should have rest time prior to commencing longer journeys).
  - Lone travellers communication and check in points.
  - Weather/ road condition assessments.
  - Night driving

<u>Fatigue Risk Assessment</u>

PCL will identify areas where there is a higher risk of workers becoming fatigued and implement control measures to mitigate the risk some of which may be to:

- Rotate workers between tasks.
- Review staffing to ensure workload expectations is in line with staff numbers.
- Add additional breaks.
- Add additional resources to provide a more comfortable work environment.

<u>Heavy Vehicle Fatigue Management</u>

In addition to the measure outlines above, there are regulations that apply to heavy vehicles that come from the HVNL which is maintained and improved by the National Transport Commission (NTC) and administered and enforced by the National Heavy Vehicle Regulator (NHVR). The HVNL applies in all states and territories except Western Australia and the Northern Territory and commenced in 2014.

One of the five regulations is the Heavy Vehicle (Fatigue Management) National Regulation, which recognises that fatigue is a key risk and one of the biggest causes of crashes for heavy vehicle drivers.

The fatigue management regulations have four key requirements that apply not just to drivers and all other partied in the Chain of Responsibility (CoR):

- Drivers must not drive a fatigue regulated heavy vehicle on a road while impaired by fatigue. Other parties in the CoR must ensure they prevent a driver from doing this.
- Drivers must work within set limits and have minimum rest requirements. Other parties must not ask or allow drivers to exceed these limits.
- Drivers (or in some cases a driver's record keeper) must make an accurate and complete record of their work and rest time in either a National Driver Work Diary or, if driving within an area with a radius of 100km of the driver's base, alternative work records.
- Drivers must provide their work and rest records to their record keeper within set time frames. A record keeper must retain these records for three years.

Failure to comply with these requirements can result in enforcement action from the NHVR.

A copy of NHVR's Heavy vehicle driver fatigue requirements bulletin is attached in Appendix B. This document outlines the relevant requirements and includes links to further information related to work diaries, CoR, accreditation, trip plans, and safety management systems. This information is to be used and followed when applicable.

6. Maintenance Requirements

The operators of all vehicles associated with the site shall maintain a high level of maintenance. The following requirements shall be adhered to at all times:

- Ensure their vehicle complies with relevant State legislation in relation to roadworthiness and modifications;
- Undergo regular vehicle checks and maintenance; and
- Ensure their vehicles have correctly fitted mufflers to minimise noise disturbance.

7. Complaint Resolution and Disciplinary Procedure

All traffic related complaints will be managed in accordance with Section 10.4 of this TMP. All complaints will be collated via the following means and be responded within two business days:

- The Contact Us page at www.stubbosolar.com.au (website has been established)
- Telephone at 1800 434 062 (available 24 hours)
- Email at info@stubbsolar.com.au
- In person at the Site Compound office reception

Failure to comply with these complaint management procedures for safe transport may result in disciplinary action. Any subsequent breaches identified by the system shall result in disciplinary action.

Appendix B

NHVR Heavy Vehicle Driver Fatigue Requirements

Heavy vehicle driver fatigue requirements

Compliance and Enforcement bulletin 7

This bulletin provides practical advice to help heavy vehicle drivers and other parties to comply with the requirements of the Heavy Vehicle National Law (HVNL) as they relate to heavy vehicle driver fatigue.

What are my obligations under the HVNL?

Amendments to the HVNL in 2018 will introduce 'safety duties' that must be met by all parties in the Chain of Responsibility (CoR). This requirement means that all parties have a duty to ensure the safety of their transport activities, so far as is reasonably practicable.

Responsible parties in the chain include: employers, prime contractors, operators, schedulers, consignors, consignees, packers, loading managers, loaders, and unloaders.

In addition, the executive officers of each party in the chain must exercise 'due diligence' to ensure the safety of their business's transport activities. The law will require executive officers to:

- keep up-to-date with the safe conduct of transport activities in their business
- fully understand the hazards and risks associated with their transport activities and how these are being managed
- provide appropriate resources–including people, systems and equipment–to manage their safety hazards and risks effectively.

In terms of heavy vehicle driver fatigue, the safety duties provision of the HVNL places a requirement on responsible parties to prevent a driver from driving any heavy vehicle whilst fatigued, not just fatigue-regulated heavy vehicles.

These safety duties extend to identifying any fatigue risks to prevent or reduce potential harm or loss, to yourself and others.

What are the HVNL fatigue requirements?

Driver fatigue is a leading contributor to heavy vehicle crashes in Australia, with some studies showing fatigue involved in one eighth of Australian heavy vehicle crashes.

To assist drivers and operators of heavy vehicles to avoid driver fatigue, the HVNL sets four key requirements.

Four key HVNL requirements to avoid driver fatigue

Requirement	Description
1. Don't drive a heavy vehicle while fatigued	Drivers must not drive a fatigue-regulated heavy vehicle on a road while impaired by fatigue. Other parties in the CoR must ensure they prevent a driver from doing this.
2. Work within set limits	Drivers must work within set limits and have minimum rest requirements. Other parties must not ask or allow drivers to exceed these limits.
3. Keep work and rest records	Drivers (or in some cases a driver's record keeper) must make an accurate and complete record of their work and rest time in either a National Driver Work Diary or, if driving within an area with a radius of 100 km of the driver's base, alternative work records.
4. Provide records to record keeper	Drivers must provide their work and rest records to their record keeper within set time frames. A record keeper must retain these records for three years.

Understanding the HVNL fatigue requirements

1. Don't drive a heavy vehicle while fatigued

Under the HVNL, the safety duty for all heavy vehicle drivers is to not drive a fatigue-related heavy vehicle on a road while impaired by fatigue. A driver is impaired by fatigue when their ability to drive a heavy vehicle safely is affected by fatigue.

The HVNL defines fatigue as including (but not limited to) the following feelings and behaviours:

- feeling sleepy
- feeling physically or mentally tired, weary or drowsy
- feeling exhausted or lacking energy
- behaving in a way consistent with the above.

If a heavy vehicle driver is driving and experiences any of these symptoms, they must stop work immediately (as soon as it is safe to do so). The driver must not work again until they are no longer affected by fatigue.

Tip: Getting plenty of good quality rest and/or sleep are the most effective ways to prevent and recover from fatigue.

A driver can be impaired by fatigue at any time, even when they comply with work and rest hour limits. Regardless of how many hours they may have worked or rested, they must never drive if they are impaired by fatigue.

2. Work within set limits

The scientific evidence shows that fatigue increases the longer a person is awake and or the less sleep they have. To assist heavy vehicle drivers get enough time to sleep and to not work too long, the HVNL requires all heavy vehicle drivers to comply with set work and rest limits.

What is work and rest?

While driving is the most common type of work, it is important to note that any other task relating to the operation of a fatigue-regulated heavy vehicle is regarded as work, including for example:

- instructing/supervising another person driving a fatigue-regulated heavy vehicle
- loading or unloading a fatigue-regulated heavy vehicle
- inspecting, repairing or servicing a fatigue-regulated heavy vehicle
- inspecting or attending to a load (adjusting/securing load) of a fatigue-regulated heavy vehicle (a load includes passengers)
- cleaning and refuelling a fatigue-regulated heavy vehicle
- completing paperwork in relation to a fatigue-regulated heavy vehicle (organising loads/work)
- recording information or completing a document that is required under the HVNL
- helping another person or supervising any of the above
- occupying the driver seat of a fatigue-regulated heavy vehicle while its engine is running
  Note: Exemptions may apply.

These tasks have been limited because they extend the time a person is awake, increasing the risk of being fatigued.

Rest in relation to the operation of a fatigue-regulated heavy vehicle is not doing any of the above.

What work and rest options are available?

The HVNL provides heavy vehicle drivers and operators with various work and rest hours options, each with their own work and rest limits. There are four options available:

1. Standard hours
2. Basic Fatigue Management (BFM) hours
3. Advanced Fatigue Management (AFM) hours
4. Exemption hours.

Note: The following link to the NHVR website provides the work and rest requirements for each of the work and rest hours options.
www.nhvr.gov.au/safety-accreditation-compliance/fatigue-management/work-and-rest-requirements

BFM and AFM provide increased levels of flexibility by managing fatigue risks through the National Heavy Vehicle Accreditation Scheme (NHVAS). Heavy vehicle drivers can only work under these hours if they have been inducted into an accredited operators system.

Exemptions enable operators and drivers to apply for work and rest hours not possible under any of the other work and rest options. Strict constraints apply.

3. Keep work and rest records

When does a driver need to carry a Work Diary?

A driver of a fatigue-regulated heavy vehicle is required to carry a Work Diary when they are, or if they have in the last 28 days, been:

- driving outside a radius of 100km from their driver base (100+km work)
- working under BFM or AFM
- working under an exemption.

At the request of an Authorised Officer, drivers must produce their Work Diary records for the previous 28 days. An Authorised Officer is a police officer, state or territory road agency officer or an NHVR officer.

Note: Some specific state and territory exemptions exist.

Completing a Work Diary (100+km work)

Drivers of a fatigue-regulated vehicle undertaking or planning to undertake a 100+km journey in a day must complete their Work Diary (including all work and rest) for that day. Detailed instructions on how to complete your Work Diary, including examples, are located at the beginning of your Work Diary.

Counting time

There are detailed instructions on pages 21–25 of the Work Diary explaining how to count time. It is important to remember when counting time that:

- each 24-hour period starts at the end of a major rest break relevant to the work/rest hours arrangement under which the driver is working (e.g. standard hours solo (at least) seven hours continuous rest).
- each 24-hour period ends exactly 24 hours after commencement.
- it is possible that you could have more than one 24-hour period running at the same time. This can occur when there are two major rest breaks within a 24-hour period.

Tip: A major rest break does not reset your 24-hour period; it commences another 24-hour period.

Recording work/rest in non-participating jurisdictions

If you are the driver of a fatigue-regulated heavy vehicle travelling into WA or NT for a period of seven days or less, you are required to comply with both the HVNL fatigue requirements and any relevant local laws. To demonstrate your compliance, you should complete your Work Diary as you would if you were working in a participating jurisdiction.

For periods of work longer than seven days carried out in a non-participating jurisdiction, the driver will need to comply with the local heavy vehicle driver fatigue, work rest and record keeping requirements. When driving a fatigue-regulated heavy vehicle and returning from a non-participating jurisdiction to a participating jurisdiction, the driver must complete their Work Diary from the beginning of the last major rest break taken prior to re-entering the participating jurisdiction.

Further information can be found on page 9 of the Work Diary instructions.

4. Provide records to record keeper within set time frames

Record keepers must keep a record of specific information for drivers of fatigue regulated heavy vehicles. A record keeper may be the:

- employer, if the driver is employed
- accredited operator, if the driver is working under BFM or AFM accreditation
- driver (as a self-employed or owner driver).

Drivers must provide their record keeper with their relevant work and rest hours totals and any other relevant vehicle information the record keeper may not reasonably have access to (registration numbers, dates the driver worked, etc.).

The record keeper determines the record location and notifies the driver. The record location is usually the driver's base.

All records must be:

- kept for three years after they are created
- kept at a location accessible to an Authorised Officer for audit or investigation purposes
- in a format that is readable and reasonably assumed it will be readable in at least three years from the date of its creation.

When do HVNL fatigue requirements apply?

The heavy vehicle driver fatigue requirements found in chapter 6 of the HVNL apply to drivers and other parties operating a fatigue-regulated heavy vehicle.

A fatigue-regulated heavy vehicle is defined as a:

- motor vehicle with a Gross Vehicle Mass (GVM) of more than 12t
- combination with a GVM of more than 12t
- fatigue-regulated bus (GVM greater than 4.5t and built or fitted to carry more than 12 adults including the driver).

Some vehicles have been specifically excluded from this definition, these include motor vehicles that are:

- built to operate primarily as a machine or implement off-road and are not capable of carrying goods or passengers by road

or

- motorhomes.

For example, a truck with a GVM of 8.7t towing a trailer with a GVM of 3.4t (8.7t + 3.4t = 12.1t) would be classed as a fatigue-regulated heavy vehicle.

Tip: The manufacturer specifies the GVM and it can be located on the vehicle identification plate, registration label or papers.

What can I do to manage fatigue?

The implementation of a safety management system (SMS) that addresses the risks associated with fatigue will assist in satisfying the requirements of the HVNL as they relate to heavy vehicle driver fatigue.

While this bulletin is not intended to provide an exhaustive list, here are some examples of systems that can be established as part of an effective SMS:

- Reviewing driving or work schedules and work records of relevant drivers
- Regularly assessing fitness for duty of relevant drivers
- Reviewing contractual arrangements and documentation relating to the consignment and delivery of goods
- Reviewing loading and unloading times and delays at loading and unloading places
- Developing and adhering to trip plans
- Implementing formalised processes to engage and consult with other parties in the chain.

What actions can Authorised Officer's take?

Authorised Officers have powers relating to heavy vehicle driver fatigue requirements, including inspecting heavy vehicle driver's work and rest records.

Enforcement action for any breach of fatigue, work/rest hours or Work Diary requirements will depend on the nature and severity of the breach. Options available to Authorised Officers include (but are not limited to) formal warnings, infringement notices and court imposed penalties.

Drivers of fatigue-regulated heavy vehicles that are deemed to be driving while impaired by fatigue may face penalties and be prevented from working, even if they are complying with work and rest requirements.

Drivers of fatigue-regulated heavy vehicles may be directed to immediately stop work and not work again for a stated period if:

- the driver is impaired by fatigue
- the driver has committed a severe or critical work/rest hours breach
- the driver is unable to produce a Work Diary without a reasonable excuse
- the Work Diary produced cannot be relied on as an accurate record of the time the driver recently spent working or resting.

Where can I get more information?

Heavy vehicle driver fatigue or Work Diary requirements

This bulletin summarises the key obligations set out in the HVNL and is not exhaustive. Visit our website for more information about heavy vehicle driver fatigue or Work Diary requirements or contact us on 1300 MYNHVR (1300 696 487). www.nhvr.gov.au/safety-accreditation-compliance/fatigue-management

Chain of Responsibility (CoR)

More information is available on the NHVR website at: www.nhvr.gov.au/safety-accreditation-compliance/chain-of-responsibility

NHVAS

More information is available on the NHVR website at: www.nhvr.gov.au/safety-accreditation-compliance/national-heavy-vehicle-accreditation-scheme

Fatigue management exemptions

More information is available on the NHVR website at: www.nhvr.gov.au/safety-accreditation-compliance/fatigue-management/fatigue-management-exemptions

Safety Management Systems (SMS)

More information is available on the NHVR website at: www.nhvr.gov.au/safety-accreditation-compliance/safety-management-systems

For more information

Subscribe:	www.nhvr.gov.au/subscribe
Visit:	www.nhvr.gov.au
Email:	info@nhvr.gov.au
Telephone:	1300 MYNHVR (1300 696 487)*

*Standard 1300 call charges apply. Please check with your phone provider.
Image source: Volvo Trucks Australia

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Appendix C

Scheduled Events in the Mid-Western Regional Council area 2023

Scheduled events in the Mid-Western Regional Council area 2023.

Event	Location	Timing/date
Mudgee Farmers Markets	Mudgee	Monthly, 28/1/2023, 18/2/2023 etc.
Lawson Park Markets	Mudgee	Monthly, 14/1/2023, 11/2/2023 etc.
Mudgee Makers' Market	Mudgee	Monthly, last Saturday of the month
Dunedoo Show	Dunedoo	10/2/2023 to 11/2/2023, annual event
NRL Telstra Premiership round 4 – Dragons v Rabbitohs	Mudgee	18/2/2023
Gulgong Show	Gulgong	18/2/2023
Mudgee Races – Country Championships	Mudgee	19/2/2023
Rylstone-Kandos Show and Bull-a-Rama	Rylstone/ Kandos	24/2/2023 to 25/2/2023, annual event
Mudgee Show	Mudgee	3/3/2023 to 4/3/2023, annual event
Mudgee Craft Beer and Cider Festival	Mudgee	4/3/2023, annual event
ALM Central Coast Mariners v Macarthur FC	Mudgee	11/3/2023
Putta Bucca Carp Muster	Putta Bucca	11/3/2023
Dunedoo Carp Muster	Dunedoo	11/3/2023
Robert Stein Annual Foot crush Feast	Mudgee	12/3/2023, annual event
Mudgee Region Food and Drink Trail	Mudgee	18/3/2023 to 19/3/2023
Can Cruise event	Mudgee	18/3/2023, annual event
Mudgee Glow	Mudgee	31/3/2023
NRL Telstra Premiership Round 5 Sea Eagles v Knight	Mudgee	1/4/2023
Gulgong Gold Cup (horse race at Gulgong Racecourse)	Gulgong	4/6/2023
Easter		7/4/2023 to 10/4/2023
School autumn break		10/4/2023 to 21/4/2023
18th National Historical Machinery Association Rally	Bombira	14/4/2023 to 15/4/2023
Mudgee Classic (cycling event)	Mudgee	29/4/2023 to 30/4/2023, annual event

<table>
<tr><th>Event</th><th>Location</th><th>Timing/date</th></tr>
<tr><td>Angus Breeders Sale</td><td>Mudgee</td><td>12/5/2023, annual event</td></tr>
<tr><td>Henry Lawson Heritage Festival (Gulgong)</td><td>Gulgong</td><td>3/6/2023 to 5/6/2023, annual event</td></tr>
<tr><td>UneARThed</td><td>Gulgong</td><td>3/6/2023</td></tr>
<tr><td>School winter break</td><td></td><td>3/7/2023 to 14/7/2023</td></tr>
<tr><td>Mudgee Small Farm Field Days</td><td>Mudgee</td><td>7/7/2023 to 8/7/2023</td></tr>
<tr><td>Mudgee Running Festival</td><td>Mudgee</td><td>20/8/2023</td></tr>
<tr><td>Mudgee Wine and Food Month</td><td>Mudgee</td><td>2/9/2023 to 29/9/2023, annual event</td></tr>
<tr><td>Flavours of Mudgee</td><td>Mudgee</td><td>23/09/2023</td></tr>
<tr><td>School spring break</td><td></td><td>25/9/2023 to 6/10/2023</td></tr>
<tr><td>Sculptures in the Garden</td><td>Mudgee</td><td>7/10/2023 to 9/10/2023, annual event</td></tr>
<tr><td>Rugby 7s Tournament</td><td></td><td>8/10/2023</td></tr>
<tr><td>Wildflower Music Festival, Mudgee</td><td>Mudgee</td><td>29/10/2023</td></tr>
<tr><td>Tunes on the turf</td><td>Dunedoo</td><td>10/11/2023 to 12/11/2023</td></tr>
<tr><td>School summer break</td><td colspan="2">Eastern division – 20/12/2023 to 29/1/2024
Western division – 20/12/2023 to 5/2/2024</td></tr>
<tr><td colspan="3">Other potential events not yet scheduled for 2023 (but which have been held previously include) Mudgee Masters, Rylstone and Kandos Family Fun Day, Rylstone Street Feast and Gardens of Mudgee. Note there may be events missing from this snapshot survey.</td></tr>
</table>

Appendix D

Consultation with Mid-Western Regional Council

Mike Willson

From:	David McKay <david.mckay@acenrenewables.com.au>
Sent:	Friday, 12 May 2023 3:09 PM
To:	Mike Willson
Cc:	Michael Cramer; Michael Yeo
Subject:	SSD-10452: Stubbo Solar Farm (Stage 2) - Traffic Management Plan

From: Don Cottee <Don.Cottee@midwestern.nsw.gov.au>
Sent: Wednesday, April 5, 2023 4:27 PM
To: David McKay <david.mckay@acenrenewables.com.au>; Bethany Palmer <Bethany.Palmer@midwestern.nsw.gov.au>
Subject: RE: For review: SSD-10452: Stubbo Solar Farm (Stage 2) - Traffic Management Plan

Hi David,

I have reviewed the Traffic Management Plan prepared for the Stubbo Solar farm.

It is advised the plan as proposed meets Councils requirements for the development and Council does not need to make additional comment.

Regards

Don Cottee

Development Engineer Coordinator

From: David McKay <david.mckay@acenrenewables.com.au>
Sent: Wednesday, 5 April 2023 1:46 PM
To: Bethany Palmer <Bethany.Palmer@midwestern.nsw.gov.au>
Cc: Don Cottee <Don.Cottee@midwestern.nsw.gov.au>
Subject: Re: For review: SSD-10452: Stubbo Solar Farm (Stage 2) - Traffic Management Plan

Hi Bethany,

Thank you for your email.

I appreciate your help, and Don's support in reviewing the plan as well.

Best wishes for Easter.

Kind regards

David McKay
Project Controls Manager
ACEN Australia
M: +61 417 214 342
E: david.mckay@acenrenewables.com.au

Hobart: Suite 2, Level 2, 15 Castray Esplanade, Battery Point, TAS 7004

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From: Bethany Palmer <Bethany.Palmer@midwestern.nsw.gov.au>
Sent: Wednesday, April 5, 2023 1:21 PM
To: David McKay <david.mckay@acenrenewables.com.au>
Cc: Don Cottee <Don.Cottee@midwestern.nsw.gov.au>
Subject: RE: For review: SSD-10452: Stubbo Solar Farm (Stage 2) - Traffic Management Plan

CAUTION: This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi David,

I have discussed with Don Cottee and added to his task list for review.

Due to Easter please allow additional time for a response.

Don't hesitate to contact me if you have any questions,

Bethany Palmer
Administrative Assistant, Infrastructure Planning
Mid-Western Regional Council

t 02 6378 2799 |
f 02 6378 2813 | **e** bethany.palmer@midwestern.nsw.gov.au
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From: David McKay <david.mckay@acenrenewables.com.au>
Sent: Tuesday, 4 April 2023 4:44 PM
To: Andrew.McIntyre@transport.nsw.gov.au; Don Cottee <Don.Cottee@midwestern.nsw.gov.au>
Cc: Ray.Kearns@midwestern.nsw.gov.a; development.west@transport.nsw.gov.au; Bethany Palmer <Bethany.Palmer@midwestern.nsw.gov.au>; Tim Greenaway <tim.greenaway@acenrenewables.com.au>; Cédric Bergé <cedric.berge@acenrenewables.com.au>; Michael Yeo <Michael.yeo@acenrenewables.com.au>; Promit Roy

<PRoy@pcl.com>; Behzad Farzipour <bfarzipour@pcl.com>; Michael Cramer <michael.cramer@accentenvironmental.com.au>; mike@amberorg.com.au
Subject: For review: SSD-10452: Stubbo Solar Farm (Stage 2) - Traffic Management Plan

Hi Andrew and Don,

I was given your respective names by my colleague, Cédric Bergé of ACEN Australia (ACEN), in relation to requesting your review of the attached Traffic Management Plan (TMP) for Stage 2 of the Stubbo Solar project near Gulgong and seeking confirmation that the TMS meets your TMP requirements.

I would be grateful if you could review the attached TMP, and let me know if you have any comments or require any additional information prior to obtaining your respective support for the TMP.

By way of background,the Stubbo Solar project (the Project) is a 400 megawatt (MW) alternating current development with an allowance for future battery storage of up to 200 MW/2 hour. The project is located between Blue Springs Road and Barneys Reef Road, approximately 10 km North of Gulgong and 85 km east of Dubbo in New South Wales (NSW).

ACEN is the project owner and has engaged PCL Construction Pacific Rim Pty Ltd (PCL) as the engineering, procurement and construction (EPC) contractor to manage the works for the 400 MW AC solar project, solar project substation, ancillary operational facilities and earthworks bench for the future battery storage. ACEN has also engaged Transgrid to connect the Project to the transmission network.

The Development Consent (DC) - Application Number: SSD-10452 – requires the preparation of a TMP. Commitments relevant to traffic management were also made by ACEN in the environmental impact statement (EIS) and the Amendment report for inclusion in the management plans.

Development Consent Condition No. 11 of states that 'Prior to commencing road upgrades, the Applicant must prepare a TMP for the development in consultation with TfNSW and Council and to the satisfaction of the Planning Secretary.'

The Stubbo Solar project is being developed in stages, as set out in a Staging request letter from ACEN (then UPC Renewables Australia Pty Ltd) to the Department of Planning and Environment (DPE) (dated 13/04/2022 and accepted by DPE on 24/08/2022). The two Stages agreed to by DPE are:

- Stage 1: Road upgrades including construction of the main site access
- Stage 2: Construction of the solar farm site.

Stage 1 was the subject of a separate TMP. This TMP covers Stage 2.

Amber Organisation Pty Ltd has been engaged by Accent Environmental Pty Ltd, on behalf of PCL, to prepare this TMP to detail the proposed temporary traffic management measures to be implemented during the construction works for the Stubbo Solar project.

Please don't hesitate to contact me should you have any queries or require any additional information as part of your TMP review.

Kind regards

David McKay
Project Controls Manager
ACEN Australia
M: +61 417 214 342
E: david.mckay@acenrenewables.com.au

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T 1300 765 002 or 02 6378 2850 | F 02 6378 2815
E council@midwestern.nsw.gov.au

Office of the General Manager

LP | LAN900112

5 June 2023

Michael Yeo
Suite 2, Level 2
15 Castray Esplanade
Battery Point TAS 7004

Dear Michael,

SUBJECT: STUBBO SOLAR FARM (SSD-10452) ACCOMMODATION AND EMPLOYMENT STRATEGY

Thank you for the opportunity to provide feedback on the revised Accommodation and Employment Strategy.

Referring to Stubbo Solar Stage 2a updated Accommodation and Employment Strategy v5 (dated 19 May 2023) and additional supporting documentation (dated 26 May 2023), Council is pleased to offer its support and approval of the Accommodation and Employment Strategy. It is important to note that our endorsement is with the expectation that ACEN Australia diligently adheres to the strategy in all aspects. Should any modifications or adjustments be required to the strategy in the future, Council requests ACEN Australia to communicate with Council promptly.

We specifically note that ACEN Australia is committed to not booking tourist hotels or motels in the Mid-Western Regional Local Government Area, and that ACEN Australia will continue to liaise with Council and accommodation providers regarding major events and other key activities where accommodation is required for visitors.

In accordance with the strategy, Council acknowledges that the anticipated peak number of construction workers on-site will be approximately 520 individuals. These workers will comprise both local and non-local workers classified as follows;

Local Workers	Up to 154
Non-Local EPC Contractors/Managers	Up to 21
Other Non-Local Workers	Up to 363

Works are scheduled to commence immediately and are expected to be completed in March 2025.

To ensure minimal impact on tourism accommodation needs in Mid-Western Regional Council Local Government Area Stubbo Solar workers will seek accommodation as follows:

% of workers	Accommodation	Notes
Up to 9% of workers housed in a private room in a local home	Up to 31 workers in private rooms in local homes	If more property owners are willing to rent rooms during the construction period, this number could increase
Up to 65% of workers housed in a managed property in the Mudgee-Gulgong area	237 workers in up to 88 dwellings	Assuming 3 bedrooms per rental and 1 person per room
Up to 5% of workers are housed in Mudgee-Gulgong caravan and holiday parks	Up to 18 workers in cabins/caravans	Assuming 1 person per cabin/caravans
Up to 15% of workers housed in short-stay rentals such as Airbnb in the Mudgee-Gulgong area	Up to 53 workers in short stay accommodation	Assuming each venue has 3 bedrooms per property and 1 person per room, 18 dwellings in total

To preserve short-term accommodation stock for tourism demand, Stubbo Solar workers will reserve accommodation up to six weeks before it is required.

Please note that the project's intention is to allow 6% of the workers to be located at Frog Rock (24 workers in total). At this point in time, the development consent for this property only permits accommodation for up to 7 individuals.

Council note, if accommodation availability levels in the Mudgee-Gulgong district during peak construction periods are significantly lower than currently being reported and forecast in version 5 of the Accommodation and Employment Strategy, ACEN Australia will work with Mid-Western Regional Council and local landholders to consider temporary accommodation options, such as caravan sites, on local private properties (subject to compliance with relevant planning conditions).

As a further option, if required, ACEN Australia will work with PCL Construction and TransGrid to source accommodation options in Wellington, Dunedoo and Dubbo. Council advises ACEN Australia needs to discuss this accommodation strategy with Warrumbungle Shire Council and Dubbo Regional Council, as there are major SSD projects and tourism related activities in Dubbo Local Government Area.

Mid-Western Regional Council does not support "park and ride" type purposes on public land due to insufficient car parking available in the region, and no public car parks or public roads infrastructure are to be used for park and ride.

Quarterly review meetings will be held between ACEN Australia and Mid-Western Regional Council to review the Accommodation and Employment Strategy. Council requests ACEN Australia supply Council with information reporting current accommodation types utilised and projections at these meetings commencing July 2023. The following meetings will be held in September 2023, December 2023, March 2024 and June 2024, and ongoing until the completion of the project.

Council appreciate your attention to these recommendations and look forward to further discussions to ensure the successful implementation of the Stubbo Solar Project, while mitigating any adverse impacts on the region.

It is important to note that the Council's approval for the project depends on the implementation and adherence to the Accommodation and Employment Strategy.

Should you have any further enquiries regarding this matter, please contact Council on (02) 6378 2850.

Kind regards,

BRAD CAM

GENERAL MANAGER

Appendix E

Consultation with Transport for NSW

Transport for NSW

WST20/00116/05 | SF2020/069117

David McKay
ACEN Australia
Suite 2, Level 2
15 Castray Esplanade
Battery Point, Tasmania

Attention: David McKay

Review of Traffic Management Plan (Stage 2 - Construction of Solar Farm) for Stubbo Solar Farm

2 May 2023

Dear David,

Reference is made to the Traffic Management Plan (TMP) submitted via email for Transport for NSW (TfNSW) consideration in accordance with the consent condition 11 of Notice of Determination for SSD-10452 issued 29 June 2021.

TfNSW has reviewed the TMP prepared by Amber, dated March 2023, for the management of traffic associated with stage 2 involving construction of the solar farm. TfNSW require the TMP to be revised in light of the following comments (below) and provided to TfNSW for further consultation, after the TMP is revised.

- The Traffic Management Plan, Section 1.3 includes Table 1: Development Consent Requirements, the reference locations for multiple sections do not match, this needs to be updated (refer to Appendix 1).
- The Traffic Management Plan, Section 4.2 should include a comment to ensure the maximum number of over dimensional vehicles entering or leaving the site is adhered to and complies with condition 2.
- The Traffic Management Plan, Section 3.5 should address condition 6 'If the applicant cannot secure access via the preferred site access point detailed in condition 5 of Schedule 3 of this consent, all vehicles associated with the development must enter and exit the site via the alternative site access point off Blue Springs Road, as identified in Appendix 1 and Appendix 5' of the development consent.
- The Traffic Management Plan Section 3.5.2 suggests light vehicle access via Ulan Road, clarification is required if Ulan Road is only to be used for over dimensional and heavy vehicles as per the consent.
- The Traffic Management Plan is to provide evidence of consultation and measures to mitigate the cumulative impacts of coinciding AM/PM peak times for the construction workforce with the surrounding mines and the Wollar Solar Farm project.
- The Traffic Management Plan, Section 3.6 should reference the upgrade to the access point off Blue Springs Road, as identified in Appendix 1 and Appendix 5 of the consent.
- The Traffic Management Plan, Section 4.4 should include a comment to ensure that all internal roads are constructed as all-weather roads.
- The Traffic Management Plan, Section 4.8 suggests the contractor will consult with surrounding projects to minimise cumulative traffic impacts and to ensure deliveries associated with OSOM vehicles do not coincide, consultation information and schedules should be added to the TMP to minimise traffic impacts.

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E. development.west@transport.nsw.gov.au
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Transport for NSW

- The Traffic Management Plan, Section 4.2 (last dot point) states ‘minimum daily communication with transport company’, is this supposed to be ‘maintain daily communication with transport company?’
- To adequately address Condition 11c details need to provided for the employee shuttle bus service pick-up and drop-off points and associated parking arrangements for workers, and measures to encourage shuttle bus usage. The Traffic Management Plan must be updated to identify the shuttle bus service pick-up/drop-off points, how the commitment to the employee shuttle bus service will be achieved and the process for ensuring compliance and enforcement with the shuttle bus service commitment.
- Safety around school buses is important and should be appropriately addressed. Section 2.5 states that Eastend Bus Service operates several school bus services, one which travels in a loop along Cope Road, Blue Springs Road, Merotherie Road and Barneys Reef Road, with associated school bus stops located along the route. The Traffic Management Plan should be updated to clarify if construction traffic peaks and school bus schedules overlap and the bus stop locations should be identified. Opportunities to avoid overlapping schedules for heavy vehicle transport during the scheduled school bus periods should be considered.
- Appendix A, Driver Code of Conduct has not adequately addressed Condition 11d as it does not address procedures to ensure that drivers adhere to the designated transport routes and there is no reference to any transport routes. TfNSW suggests that the Driver Code of Conduct be updated to reference the approved vehicle routes/maps.
- Section 3.5.4 of the Traffic Management Plan suggests the construction peak period would generate the most traffic with 12 heavy vehicle trips and 230 light vehicle trips forecast to be generated in the peak hours. Consideration should be given to how the traffic impacts will be mitigated during the peak of construction.
- Section 1.1 of the Traffic Management Plan states the project will require approximately 500 full time employees compared to 400 employees in the initial traffic report. Further information is required as to how this increase will affect traffic generation and vehicle movement limits shown in the consent. What implications in terms to distribution, points of origin and assessment of the change in the workforce from 400 to 500 on key intersections with the classified road network.
- The Traffic Management Plan is to be amended to include a requirement for the operator to check the Live Traffic website to identify any roadwork sites that may impact their journey and contact on-site representative or the Customer & Network Operations Coordinator for the South (cnc.south@transport.nsw.gov.au) prior to OSOM movement and development.west@transport.nsw.gov.au .
- The Traffic Management Plan is required to be amended to include a commitment to providing a weekly movement / delivery schedule via email to be sent to CNC.South@transport.nsw.gov.au and development.western@transport.nsw.gov.au
- Swept path analysis is required demonstrating the largest design vehicle entering and leaving the development, and moving in each direction through intersections along the proposed OSOM transport route/s. The route analysis is to include at a minimum the following:
- The design vehicle templates used with the swept path analysis software are also requested in order for TfNSW to review the performance within the software (e.g. Autodesk Vehicle Tracking or Transoft AutoTURN).
- Highlighting each at-risk road structures that the haulage route crosses including bridges, traffic signals, signage, major culverts, and minor culverts that may not meet the desirable cover to cater for proposed axle loads.
- Identify and provide the following measurements parameters of the OSOM components / materials to be moved:
  - Identify all the types of OSOM vehicles proposed to be used for the project.
  - Overall combination load length, width, height and mass
  - Maximum component length, widths and heights

- Wheelbase dimensions,
- Maximum trailer articulation angle(s),
- Minimum overhang heights above the road surface,
- Axle loads and axle group loads in terms of both tonnes and Equivalent Standard Axles (refer to Austroads Guide to Pavement Technology).

Please note that TfNSW has not considered the following document:

- Accommodation and Employment Strategy – TfNSW notes that the document has not been provided for review however acknowledges that Council is the relevant local authority to assess matters affecting local accommodation and employment impacts as per Condition 33 of the development consent.
- Dilapidation reports – The TMP refers to Dilapidation Reports for Ulan Road, Cope Road and Blue Springs Road. Council is the Roads Authority for the affected roads and should be satisfied with the content and conclusions of the reports.

If you wish to discuss this matter further, please contact Hayley Sarvanandan on ph. 02 9983 2372.

Yours faithfully,

Alexandra Power
Team Leader Development Services (Renewable Resources)
West Region | Community and Place
Regional and Outer Metropolitan

Appendix 1

No.	Condition	Proponent comment	TfNSW comment regarding relevant section
2	The Applicant must ensure that the: a) development does not generate more than: • 60 heavy vehicle movements a day during construction, upgrading and decommissioning; • 20 over-dimensional vehicle movements during construction, upgrading and decommissioning; and • 5 heavy vehicle movements a day during operations on the public road network; and b) length of any vehicles (excluding over-dimensional vehicles) used for the development does not exceed 26 metres, unless the Planning Secretary agrees otherwise	Complies: Refer Section 3.4.1 for (a) Refer section 3.3 for (b) It is noted that these metrics include construction traffic by both Transgrid and PCL.	a) Relates to section 3.5.1 b) Relates to section 3.4
3	The Applicant must keep accurate records of the number of overdimensional and heavy vehicles entering or leaving the site each day for the duration of the project.	Complies: Section 4.2	Relates to section 4.2
4	All over-dimensional and heavy vehicles associated with the development must travel to and from the site via Golden Highway, Ulan Road, Cope Road and Blue Springs Road as identified in Appendix 1 and Appendix 5.	Complies: Section 3.4.3	Relates to section 3.5.3
5	All vehicles associated with the development must enter and exit the site via the preferred site access point off Blue Springs Road, as identified in Appendix 1 and Appendix 5	Complies: Section 3.4.3	Relates to section 3.5
6	If the applicant cannot secure access via the preferred site access point detailed in condition 5 of Schedule 3 of this consent, all vehicles associated with the development must enter and exit the site via the alternative site access point off Blue Springs	Complies: Section 3.4.3	Relates to section 3.5

	Road, as identified in Appendix 1 and Appendix 5.		
7	The site access point off Barneys Reef Road may only be used for emergency purposes	Complies: Section 4.10	Section 4.10
8	Unless the Planning Secretary agrees otherwise, prior to commencing construction the Applicant must upgrade: a) the selected access point off Blue Springs Road, as identified in Appendix 1 and Appendix 5, in accordance with Council requirements; b) Blue Springs Road from the Cope Road up to a minimum 100 m beyond the selected site access point, as identified in Appendix 5; and c) the intersection of Cope Road and Blue Springs Road with BAR and BAL treatments to be sealed, designed and constructed for 100 km/h speed environment, able to accommodate the largest vehicle using the intersection, match existing road levels and not interfere with existing road drainage, identified in Appendix 5. Unless the relevant roads authority agrees otherwise, these upgrades must comply with the Austroads Guide to Road Design (as amended by TfNSW supplements), and be carried out to the satisfaction of the relevant roads authority.	Complies: Section 3.5	Relates to section 3.6
9	The Applicant must: a) undertake an independent dilapidation survey to assess the: • existing condition of Ulan Road, Cope Road and Blue Springs Road on the transport route, prior to construction, upgrading or decommissioning works; and • condition of Ulan Road, Cope Road and Blue Springs Road on the transport route, following construction, upgrading or decommissioning works; b) repair Ulan Road, Cope Road and Blue Springs Road on the transport route if dilapidation surveys identify that the road has been damaged during construction, upgrading or decommissioning works,	Complies: Section 5	Section 5

	in consultation with the relevant roads authority, to the satisfaction of the Planning Secretary. If there is a dispute about the repair of Ulan Road, Cope Road and Blue Springs Road between the applicant and the relevant roads authority, then either party may refer the matter to the Planning Secretary for resolution. The Planning Secretary's decision on the matter must be final and binding on both parties.		
10	The Applicant must ensure: a) the internal roads are constructed as all-weather roads; b) there is sufficient parking on site for all vehicles, and no parking occurs on the public road network in the vicinity of the site; c) the capacity of the existing roadside drainage network is not reduced; d) all vehicles are loaded and unloaded on site, and enter and leave the site in a forward direction; and e) vehicles leaving the site are in a clean condition, with loads appropriately covered or contained, to minimise dirt being tracked onto the sealed public road network.	Complies: Section 4.5	Relates to section 4.4
11	TMP - Prior to commencing road upgrades, the Applicant must prepare a Traffic Management Plan for the development in consultation with TfNSW and Council and to the satisfaction of the Planning Secretary. This plan must include:	Complies:	
a)	details of the transport route to be used for all development-related traffic;	Section 3.4	Relates to section 3.5
b)	details of the road upgrade works required by condition 8 of Schedule 3 of this consent	Section 3.5	Relates to section 3.6
c)	details of the measures that would be implemented to minimise traffic impacts during construction, upgrading or decommissioning works, including: • details of the dilapidation surveys required by condition 7 of Schedule 3 of this consent;	Section 5	Section 5
	• temporary traffic controls, including detours and signage;	Section 7.3	Section 7.3

	• notifying the local community about development-related traffic impacts;	Section 8	Relates to section 4.3
	• procedures for receiving and addressing complaints from the community about development related traffic;	Section 9.4	Section 9.4
	• minimising potential cumulative traffic impacts with other projects in the area, including during construction, upgrading or decommissioning works	Section 4.10	Relates to section 4.8
	• minimising potential for conflict with school buses and other road users as far as practicable, including preventing queuing on the public road network (measures also required during operation of the project)	Section 4.7	Appendix A driver code of conduct, and section 2.5
	• minimising dirt tracked onto the public road network from development-related traffic;	Section 4.5	Relates to section 4.4
	• details of the employee shuttle bus service, including pick-up and drop-off points and associated parking arrangements for construction workers, and measures to encourage employee use of this service	Section 4.8	Relates to section 4.7
	• encouraging car-pooling or ride sharing by employees	Section 4.8	Relates to section 4.7
	• scheduling of haulage vehicle movements to minimise convoy length or platoons;		Relates to section 4.2
	• responding to local climate conditions that may affect road safety such as fog, dust, wet weather and flooding;	Section 4.10	Section 4.10
	• monthly monitoring for, and responding to, any emergency repair and/or maintenance requirements; and	Section 5	Section 5
	• a traffic management system for managing over-dimensional vehicles;	Section 4.6	Relates to section 4.5

d)	a driver's code of conduct that addresses: • travelling speeds; • driver fatigue; • procedures to ensure that drivers adhere to the designated transport routes and speed limits; and • procedures to ensure that drivers implement safe driving practices;	Section 4.1	Section 4.1 & Appendix A
e)	a program to ensure drivers working on the development receive suitable training on the code of conduct and any other relevant obligations under the Traffic Management Plan.	Section 8 and 9	Section 8 & 9
	Following the Planning Secretary's approval, the Applicant must implement the Traffic Management Plan.		

Appendix F

Response to Transport for NSW Comments

Table 14: TfNSW Comments – 2 May 2023

Comment	Response
TfNSW has reviewed the TMP prepared by Amber, dated March 2023, for the management of traffic associated with stage 2 involving construction of the solar farm. TfNSW require the TMP to be revised in light of the following comments (below) and provided to TfNSW for further consultation, after the TMP is revised.	
The Traffic Management Plan, Section 1.3 includes Table 1: Development Consent Requirements, the reference locations for multiple sections do not match, this needs to be updated (refer to Appendix 1).	The references have been updated based on the comments from TfNSW.
The Traffic Management Plan, Section 4.2 should include a comment to ensure the maximum number of over dimensional vehicles entering or leaving the site is adhered to and complies with condition 2.	This has been added.
The Traffic Management Plan, Section 3.5 should address condition 6 'If the applicant cannot secure access via the preferred site access point detailed in condition 5 of Schedule 3 of this consent, all vehicles associated with the development must enter and exit the site via the alternative site access point off Blue Springs Road, as identified in Appendix 1 and Appendix 5' of the development consent.	This has been added at the end of Section 3.5.3.
The Traffic Management Plan Section 3.5.2 suggests light vehicle access via Ulan Road, clarification is required if Ulan Road is only to be used for over dimensional and heavy vehicles as per the consent.	Following discussions with TfNSW Officers an assessment has been provided within Section 3.5.2 to assess potential traffic impacts in the event light vehicles were to use Ulan Road. The assessment indicates the minimal level of traffic, in the order of 12 vehicles, is able to be readily accommodated on the road network.
The Traffic Management Plan is to provide evidence of consultation and measures to mitigate the cumulative impacts of coinciding AM/PM peak times for the construction workforce with the surrounding mines and the Wollar Solar Farm project.	Consultation is to be undertaken with the surrounding mines and the Wollar Solar Farm to coordinate vehicle movements to limit the cumulative impacts of heavy and OSOM vehicles as far as practical. Consultation is to be undertaken prior to and during construction. TfNSW have previously been advised that this would be appended to the TMP. However, DPE have advised that this is not required and has been removed from the TMP.
The Traffic Management Plan, Section 3.6 should reference the upgrade to the access point off Blue Springs Road, as identified in Appendix 1 and Appendix 5 of the consent.	The upgrade to the access has been referenced within Section 3.6.
The Traffic Management Plan, Section 4.4 should include a comment to ensure that all internal roads are constructed as all-weather roads.	This comment has been added.

Comment	Response
The Traffic Management Plan, Section 4.8 suggests the contractor will consult with surrounding projects to minimise cumulative traffic impacts and to ensure deliveries associated with OSOM vehicles do not coincide, consultation information and schedules should be added to the TMP to minimise traffic impacts.	Consultation is to be undertaken with the surrounding mines and the Wollar Solar Farm to coordinate vehicle movements to limit the cumulative impacts of heavy and OSOM vehicles as far as practical. Consultation is to be undertaken prior to and during construction.
The Traffic Management Plan, Section 4.2 (last dot point) states 'minimum daily communication with transport company', is this supposed to be 'maintain daily communication with transport company?'	This typo has been corrected.
To adequately address Condition 11c details need to provided for the employee shuttle bus service pick-up and drop-off points and associated parking arrangements for workers, and measures to encourage shuttle bus usage. The Traffic Management Plan must be updated to identify the shuttle bus service pick-up/drop-off points, how the commitment to the employee shuttle bus service will be achieved and the process for ensuring compliance and enforcement with the shuttle bus service commitment.	Mid-Western Regional Council have prohibited the use of park and ride style shuttle bus locations. As such, shuttle buses will pick personnel up from the individual accommodation sites. Further discussion on the use of shuttle buses is provided within Section 4.7.
Safety around school buses is important and should be appropriately addressed. Section 2.5 states that Eastend Bus Service operates several school bus services, one which travels in a loop along Cope Road, Blue Springs Road, Merotherie Road and Barneys Reef Road, with associated school bus stops located along the route. The Traffic Management Plan should be updated to clarify if construction traffic peaks and school bus schedules overlap and the bus stop locations should be identified. Opportunities to avoid overlapping schedules for heavy vehicle transport during the scheduled school bus periods should be considered.	Updated bus information is provided within Section 2.5. The route information indicates that the bus routes operate outside of the AM and PM peak construction times and that there are no bus stops on Blue Springs Road. Refer Section 4.6.
Appendix A, Driver Code of Conduct has not adequately addressed Condition 11d as it does not address procedures to ensure that drivers adhere to the designated transport routes and there is no reference to any transport routes. TfNSW suggests that the Driver Code of Conduct be updated to reference the approved vehicle routes/maps.	The Driver Code of Conduct has been updated to state that drivers must adhere to the routes outlined within the TMP.
Section 3.5.4 of the Traffic Management Plan suggests the construction peak period would generate the most traffic with 12 heavy vehicle trips and 230 light vehicle trips forecast to be generated in the peak hours. Consideration should be given to how the traffic impacts will be mitigated during the peak of construction.	The traffic impacts associated with construction vehicle movements has been assessed as acceptable within the Traffic Impact Assessment, and the management measures outlined within the TMP are considered suitable to allow the road network to continue to operate in a safe and efficient manner.
Section 1.1 of the Traffic Management Plan states the project will require approximately 500 full time employees compared to 400 employees in the initial traffic report. Further information is required as to how this increase will affect traffic generation and vehicle movement limits shown in the consent. What implications in terms to distribution, points of origin and assessment of the change in the workforce from 400 to 500 on key intersections with the classified road network.	Shuttle buses are proposed to be utilised to ensure the overall number of vehicle movements generated during construction does not exceed the volumes assessed within the Traffic Impact Assessment. The use of shuttle buses to achieve this is discussed within Section 4.7.

Comment	Response
The Traffic Management Plan is to be amended to include a requirement for the operator to check the Live Traffic website to identify any roadwork sites that may impact their journey and contact on-site representative or the Customer & Network Operations Coordinator for the South (cnc.south@transport.nsw.gov.au) prior to OSOM movement and development.west@transport.nsw.gov.au.	This comment has been added to Section 4.2.
The Traffic Management Plan is required to be amended to include a commitment to providing a weekly movement / delivery schedule via email to be sent to CNC.South@transport.nsw.gov.au and development.western@transport.nsw.gov.au	This comment has been added to Section 4.2.
Swept path analysis is required demonstrating the largest design vehicle entering and leaving the development, and moving in each direction through intersections along the proposed OSOM transport route/s. The route analysis is to include at a minimum the following:	The TMP is proposed to be submitted on a progressive basis to reflect the proposed construction schedule and to provide extra time for the project team to develop those sections of the TMP relating to over-dimensional vehicles, noting that over-dimensional vehicles will not be required in the initial months of Stage 2a construction. A letter has been prepared for submission to the Planning Secretary which is included within Appendix H.
The design vehicle templates used with the swept path analysis software are also requested in order for TfNSW to review the performance within the software (e.g. Autodesk Vehicle Tracking or Transoft AutoTURN).	
Highlighting each at-risk road structures that the haulage route crosses including bridges, traffic signals, signage, major culverts, and minor culverts that may not meet the desirable cover to cater for proposed axle loads.	
Identify and provide the following measurements parameters of the OSOM components / materials to be moved:	
– Identify all the types of OSOM vehicles proposed to be used for the project.	
– Overall combination load length, width, height and mass	
– Maximum component length, widths and heights	
– Wheelbase dimensions,	
– Maximum trailer articulation angle(s), – Minimum overhang heights above the road surface,	
– Axle loads and axle group loads in terms of both tonnes and Equivalent Standard Axles (refer to Austroads Guide to Pavement Technology).	

Table 15: TfNSW Comments – 14 June 2023

Comment	Response
Reference is made to the Traffic Management Plan (TMP) submitted via email for Transport for NSW (TfNSW) consideration in accordance with the consent condition 11 of Notice of Determination for SSD-10452 issued 29 June 2021. TfNSW has reviewed the TMP prepared by Amber, dated May 2023, for stage 2a. The previous TMP submitted dated March 2023 addressed stage 2 of the development, TfNSW provided response letter dated 2 May 2023 and attended a Microsoft Teams meeting with ACEN and Amber on the 8 of May 2023 to discuss TfNSW' comments. The subject version of the TMP addresses stage 2a (construction of the solar farm). It is understood that stage 2b (operation of the solar farm), stage 3 (construction of the BESS) and stage 4 (decommissioning of the project) are not covered in this TMP. TfNSW requires the TMP to be revised to address the following points:	
The OSOM information requested by TfNSW in letter dated 2 May 2023 has not been provided. Clarification is required if transportation of transformers or any other OSOM loads will be required in stage 2a of the project. The Traffic Management Plan needs to be updated to reflect the change in staging and clarify which stage the OSOM movements will occur.	The TMP is proposed to be submitted on a progressive basis to reflect the proposed construction schedule and to provide extra time for the project team to develop those sections of the TMP relating to over-dimensional vehicles, noting that over-dimensional vehicles will not be required in the initial months of Stage 2a construction. A letter to the Planning Secretary is included within Appendix H.
The Traffic Management Plan, Section 4.7 states there will be no increase in the proposed maximum 230 LV movements per day due to an increase in workforce from 400-500. The TMP now proposes 12x12-seater shuttle buses to transport 120 personnel to and from the site and 217 LV movements per day (based on occupancy of 1.75 people as per the initial Traffic Impact Assessment). The TMP needs to be updated with the following information:	

Comment	Response
▪ Provide enforceable measures/strategies/protocols to ensure full compliance with the TIA, maximum light vehicles for peak (as per TIA) associated with stage 2a (217 light vehicle movements based on 1.75 people carpooling and 12x12 shuttle buses) during the AM/PM peaks. As a part of addressing this specify who is responsible for enforcement, how the measures will be enforced, what methods will be provided to monitor compliance, procedure for breaches in compliance and specify procedure for reviews of the implemented protocols, procedures, strategies.	Transportation of a majority of construction personnel to and from the site shall be by shuttle bus with the use of light vehicles offsite minimised. Light vehicles will typically be used by visitors, management, specialist contractors and for errands during operational hours. Personnel will be encouraged to use a shuttle buses to get to and from the site. The number of shuttle buses and the identified routes will be determined to minimise travel times and ensure convenient pick up points for personnel. Should any personnel seek to use their own vehicle, justification would need to be provided. The number of employees using their own vehicles to access the site will be recorded. This recorded data will be made available to the Planning Secretary if requested. The number of personnel using light vehicles to access and leave the site in place of the shuttle bus will be regularly monitored. It will be the EPC Lead Construction Manager's responsibility to ensure that the majority of site staff travel by shuttle bus.
▪ Identify the locations for the accommodation pick up and drop off points for the shuttle bus service.	The exact dwelling where staff are proposed to be located is unknown at this time but will be predominantly within Gulgong and Mudgee in NSW.
▪ Identify if the shuttle buses will be located at the project area during the day or return to another location outside of the AM/PM peak hours	The shuttle buses would remain on site.
▪ A commitment to the use of shuttle buses, carpooling and to the maximum light vehicle numbers identified within the TIA.	Please see comment above. Measures are provided to ensure the vehicle numbers comply with the TIA.
The Traffic Management Plan, Section 3.5.4 proposes that less than 5% (12) of light vehicles are expected to travel to the site via Ulan Road. The Golden Highway/Ulan Road intersection has an existing left tun lane however there is no treatment for vehicles turning right into Ulan Road. The Golden Highway is a high-speed road and the verges adjacent to the shoulder are steep, therefore the impacts of increasing right turn movements at this intersection needs to be considered. Further details are required identifying the following:	The Applicant has advised that these vehicle movements would be associated with staff being accommodated to the east of the site. The vehicle movements are not anticipated to travel through the intersection of Golden Highway and Ulan Road. DPE have confirmed that vehicle movements will be kept below 5% by way of the Accommodation Report which will be submitted to DPE for review.

Comment	Response
▪ The direction of travel of the 5% of light vehicles using Ulan Road i.e., from the east or west on the Golden Highway?	These vehicles would not travel on Golden Highway.
▪ Identify if the LV will be restricted to turning left from the Golden Highway onto Ulan using the existing left turn intersection treatment? And what measures will be in place to restrict the right turn?	These vehicles would not travel on Golden Highway.
▪ In the event light vehicles are proposed to turn right, then the TMP is required to be revised to address the following: – Provide a turn warrants assessment of the right turn for the project traffic during AM/PM peak at the Golden Highway/Ulan Road intersection, in accordance with Figure 3.26 of AGtTM Part 6. – Provide a strategic design of the intersection treatments, based on the outcome of the turn warrants assessment.	These vehicles would not travel through the intersection of Golden Highway and Ulan Road.
▪ What measures will be in place to ensure that light vehicle movements will be limited to 5% travelling via Ulan Road?	DPE have confirmed that vehicle movements will be kept below 5% by way of the Accommodation Report which will be submitted to DPE for review.
▪ Assess if the light vehicles anticipated to utilise the Golden Highway/Ulan Road intersection will oclf occur during the AM/PM peaks for the Golden Highway/Ulan Road or during the AM/PM peaks for the mines located along Ulan Road.	These vehicles would not travel through the intersection of Golden Highway and Ulan Road.
▪ Address whether the light vehicle movements will coincide with the AM/PM peak for the HVs utilising the Golden Highway/Ulan Road intersection.	The light vehicle movements are expected to occur at the start and end of the shifts which is outside of the peak times on the road network.
The Traffic Management Plan, Section 4.7 states Mid-Western Regional Council advised that park and ride type facilities are not to be used. Consultation details from Council need to be added to the TMP and consideration should be given to alternative locations for park and ride.	Please refer to Appendix D.
The Traffic Management Plan, Section 4.4 has been updated to ensure all internal roads are constructed as all-weather roads as required by Condition 10 of the Development Consent, this should be updated to specify 'of Schedule 3'.	Updated.
The Traffic Management Plan suggests that construction workforce trips would not coincide with school bus services. Section 2.5 states Ogden Coaches has recently taken over the school bus service and are still formulating maps and timetables and they will be contacted prior to construction to ensure the current timetable information is accurate. The TMP needs to be amended once the timetable updates are received and provide strategies to ensure that there will be no conflict between the school buses, vulnerable road users and the projects traffic generation (LV/HV/OSOM movements).	Section 4.6 has been updated to include this commitment.

Comment	Response
Appendix G of The Traffic Management Plan is blank. Section 4.8 of the TMP states the contractor is to consult with all other surrounding mines and major projects prior to and during construction of the solar farm to minimise cumulative traffic impacts and to ensure deliveries associated with OSOM vehicles do not coincide. All consultation information needs to be added to Appendix G of the TMP.	The TMP commits to this action noting that DPE have advised the consultation does not need to be appended to the report. As such, the appendix has been removed.

Appendix H

Staged TMP Approach Letter

28 June 2023

The Secretary
Department of Planning and Environment

Stubbo Solar project (SSD-10452)
Schedule 3, Condition 11 – Proposed staged submission of Traffic Management Plan (Stage 2a)

On 29 June 2021, the Executive Director, Energy, Resources and Industry Assessments granted consent to the development application for the Stubbo Solar project subject to conditions, under delegation from the Minister for Planning and Public Spaces and section 4.38 of the *Environmental Planning and Assessment Act 1979 (the Act)*.

In a letter dated 24 August 2022, the Secretary approved the Applicant's proposal to develop the project in two stages, comprising:

- Stage 1: Road upgrades including construction of the main site access; and
- Stage 2: Construction of the solar farm.

In a follow up letter dated 10 May 2023 (ref SSD-10452-PA-22), the Secretary approved ACEN's request to revise the staging of the Stubbo Solar Project into four stages comprising:

- Stage 1: Road upgrades (Blue Springs Road) and construction of the main site access.
- Stage 2: Solar project construction and operation including:
  - Stage2a: Construction and commissioning of the solar facilities including solar array, substation and all ancillary infrastructure, including the switchyard and transmission line connection to be constructed by Transgrid.
  - Stage 2b: Operation of the Stubbo Solar Project.
- Stage 3: Construction, commissioning and operation of the Battery Energy Storage System (BESS), including substation and switchyard expansion (within the development footprint).
- Stage 4: Decommissioning of the Stubbo Solar Project at end of life.

In accordance with Schedule 4 (Environmental Management and Reporting), Condition 3 (Updating and Staging of Strategies, Plan or Programs), ACEN is seeking the Secretary's approval to prepare and submit the Traffic Management Plan (TMP) for Stage 2a on a progressive basis to reflect the proposed construction schedule and to provide extra time for the project team to develop those sections of the TMP relating to over-dimensional vehicles, noting that over-dimensional vehicles will not be required in the initial months of Stage 2a construction.

In seeking the Secretary's approval for the staged submission of the TMP for Stage 2a, ACEN will ensure that all development being carried out on site is covered by an approved TMP.

ACEN Australia
Suite 2, Level 2 15 Castray Esplanade
Battery Point, TAS 7004
ACN 616 856 672
ABN 27 616 856 672

ACEN also commits to submitting updated versions of the TMP at least two months in advance of when the over-dimensional vehicles will be required on site. This will ensure that sufficient time is allowed for the preparation, review and approval of progressive TMP submissions relating to over-dimensional vehicles.

The next version of the TMP will be submitted in August/September 2023.

In regards to EIS commitments, additional information is required before EIS commitments T2 and T5 can be addressed in the TMP for Stage 2a, as outlined in the following table:

ID	Measures	Status
T2	A construction traffic management plan will be prepared in consultation with TfNSW and Mid-Western Regional Council, to the satisfaction of the Secretary. The plan will include:	TfNSW and MWRC consulted during preparation of TMP.(complete)
	▪ loads, weights and lengths of haulage and construction related vehicles and the number of movements of such vehicles	Over-dimensional vehicle movement forecasts and specifications will be provided in a subsequent submission of the TMP in Q3 2023, once these details are confirmed by the Project team.
T5	A full and detailed assessment will be undertaken by a suitably qualified bridge Engineer of the structural and load capacity of all bridges and culverts on any and all proposed access routes to be used by oversize/over mass vehicles. The assessment reports will be provided to Mid-Western Regional Council for approval prior to commencement of construction.	A full and detailed assessment is proposed to be undertaken as part of the permit application process for OSOM vehicles as discussed within Section 3.5.3 of the TMP. The assessment will be in accordance with all requirements of this commitment, including providing reports to Mid-Western Regional Council.

It is also intended that the TMP will be amended progressively to address the following over-dimensional vehicle and over size over mass (OSOM) vehicle related information requested by Transport for NSW in its initial TMP review dated 2 May 2023 (**Attachment A**):

- *The contractor will consult with surrounding projects to minimise cumulative traffic impacts and to ensure deliveries associated with OSOM vehicles do not coincide, consultation information and schedules should be added to the TMP to minimise traffic impacts;*

- *Swept path analysis is required demonstrating the largest design vehicle entering and leaving the development, and moving in each direction through intersections along the proposed OSOM transport route/s. The route analysis is to include at a minimum the following:*
    - *The design vehicle templates used with the swept path analysis software are also requested in order for TfNSW to review the performance within the software (e.g. Autodesk Vehicle Tracking or Transoft AutoTURN).*
    - *Highlighting each at-risk road structures that the haulage route crosses including bridges, traffic signals, signage, major culverts, and minor culverts that may not meet the desirable cover to cater for proposed axle loads.*

- *Identify and provide the following measurements parameters of the OSOM components/materials to be moved:*
    - *Identify all the types of OSOM vehicles proposed to be used for the project.*
    - *Overall combination load length, width, height and mass*
    - *Maximum component length, widths and heights*
    - *Wheelbase dimensions,*
    - *Maximum trailer articulation angle(s),*
    - *Minimum overhang heights above the road surface,*
    - *Axle loads and axle group loads in terms of both tonnes and Equivalent Standard Axles (refer to Austroads Guide to Pavement Technology)*

The OSOM-related information requested by Transport for NSW is not currently available, and will be included in a TMP submission in August/September 2023.

Thank you for your consideration of this request. Please do not hesitate to contact the undersigned on 0413 625 097 or email at tim.greenaway@acenrenewables.com.au should you have any queries or require any additional information.

Kind Regards,
ACEN Australia

DocuSigned by:
AEF30AE5ED2B491...

Tim Greenaway
Construction Manager

Attachment A: Transport for NSW letter dated 2 May 2023 (ref WST20/00116/05 | SF2020/069117)

Attachment A: Transport for NSW letter dated 2 May 2023 (ref WST20/00116/05 | SF2020/069117)

Transport for NSW

WST20/00116/06 | SF2020/069117

David McKay
ACEN Australia
Suite 2, Level 2
15 Castray Esplanade
Battery Point, Tasmania

Review of Traffic Management Plan (Stage 2a - Construction of Solar Farm) for Stubbo Solar Farm

14 June 2023

Dear David,

Reference is made to the Traffic Management Plan (TMP) submitted via email for Transport for NSW (TfNSW) consideration in accordance with the consent condition 11 of Notice of Determination for SSD-10452 issued 29 June 2021.

TfNSW has reviewed the TMP prepared by Amber, dated May 2023, for stage 2a. The previous TMP submitted dated March 2023 addressed stage 2 of the development, TfNSW provided response letter dated 2 May 2023 and attended a Microsoft Teams meeting with ACEN and Amber on the 8 of May 2023 to discuss TfNSW' comments.

The subject version of the TMP addresses stage 2a (construction of the solar farm). It is understood that stage 2b (operation of the solar farm), stage 3 (construction of the BESS) and stage 4 (decommissioning of the project) are not covered in this TMP. TfNSW requires the TMP to be revised to address the following points:

1) The OSOM information requested by TfNSW in letter dated 2 May 2023 has not been provided. Clarification is required if transportation of transformers or any other OSOM loads will be required in stage 2a of the project. The Traffic Management Plan needs to be updated to reflect the change in staging and clarify which stage the OSOM movements will occur.
2) The Traffic Management Plan, Section 4.7 states there will be no increase in the proposed maximum 230 LV movements per day due to an increase in workforce from 400-500. The TMP now proposes 12x12-seater shuttle buses to transport 120 personnel to and from the site and 217 LV movements per day (based on occupancy of 1.75 people as per the initial Traffic Impact Assessment). The TMP needs to be updated with the following information:
   - Provide enforceable measures/strategies/protocols to ensure full compliance with the TIA, maximum light vehicles for peak (as per TIA) associated with stage 2a (217 light vehicle movements based on 1.75 people carpooling and 12x12 shuttle buses) during the AM/PM peaks. As a part of addressing this specify who is responsible for enforcement, how the measures will be enforced, what methods will be provided to monitor compliance, procedure for breaches in compliance and specify procedure for reviews of the implemented protocols, procedures, strategies.
   - Identify the locations for the accommodation pick up and drop off points for the shuttle bus service.
   - Identify if the shuttle buses will be located at the project area during the day or return to another location outside of the AM/PM peak hours.
   - A commitment to the use of shuttle buses, carpooling and to the maximum light vehicle numbers identified within the TIA.
3) The Traffic Management Plan, Section 3.5.4 proposes that less than 5% (12) of light vehicles are expected to travel to the site via Ulan Road. The Golden Highway/Ulan Road intersection has an existing left tun lane however there is no treatment for vehicles turning right into Ulan Road. The Golden Highway is a high-speed road and the verges adjacent to the shoulder are steep, therefore the impacts of increasing right turn movements at this intersection needs to be considered. Further details are required identifying the following:

- The direction of travel of the 5% of light vehicles using Ulan Road i.e., from the east or west on the Golden Highway?
- Identify if the LV will be restricted to turning left from the Golden Highway onto Ulan using the existing left turn intersection treatment? And what measures will be in place to restrict the right turn?
- In the event light vehicles are proposed to turn right, then the TMP is required to be revised to address the following:
  - Provide a turn warrants assessment of the right turn for the project traffic during AM/PM peak at the Golden Highway/Ulan Road intersection, in accordance with Figure 3.26 of AGtTM Part 6.
  - Provide a strategic design of the intersection treatments, based on the outcome of the turn warrants assessment.
- What measures will be in place to ensure that light vehicle movements will be limited to 5% travelling via Ulan Road?
- Assess if the light vehicles anticipated to utilise the Golden Highway/Ulan Road intersection will ocIf occur during the AM/PM peaks for the Golden Highway/Ulan Road or during the AM/PM peaks for the mines located along Ulan Road.
- Address whether the light vehicle movements will coincide with the AM/PM peak for the HVs utilising the Golden Highway/Ulan Road intersection.

4) The Traffic Management Plan, Section 4.7 states Mid-Western Regional Council advised that park and ride type facilities are not to be used. Consultation details from Council need to be added to the TMP and consideration should be given to alternative locations for park and ride.
5) The Traffic Management Plan, Section 4.4 has been updated to ensure all internal roads are constructed as all-weather roads as required by Condition 10 of the Development Consent, this should be updated to specify 'of Schedule 3'.
6) The Traffic Management Plan suggests that construction workforce trips would not coincide with school bus services. Section 2.5 states Ogden Coaches has recently taken over the school bus service and are still formulating maps and timetables and they will be contacted prior to construction to ensure the current timetable information is accurate. The TMP needs to be amended once the timetable updates are received and provide strategies to ensure that there will be no conflict between the school buses, vulnerable road users and the projects traffic generation (LV/HV/OSOM movements).
7) Appendix G of The Traffic Management Plan is blank. Section 4.8 of the TMP states the contractor is to consult with all other surrounding mines and major projects prior to and during construction of the solar farm to minimise cumulative traffic impacts and to ensure deliveries associated with OSOM vehicles do not coincide. All consultation information needs to be added to Appendix G of the TMP.

If you wish to discuss this matter further, please contact Hayley Sarvanandan on ph. 02 9983 2372 or via development.west@transport.nsw.gov.au

Yours faithfully,

Alexandra Power
Development Services Team Leader (Renewable Resources)
West Region | Community and Place
Regional and Outer Metropolitan

Appendix I

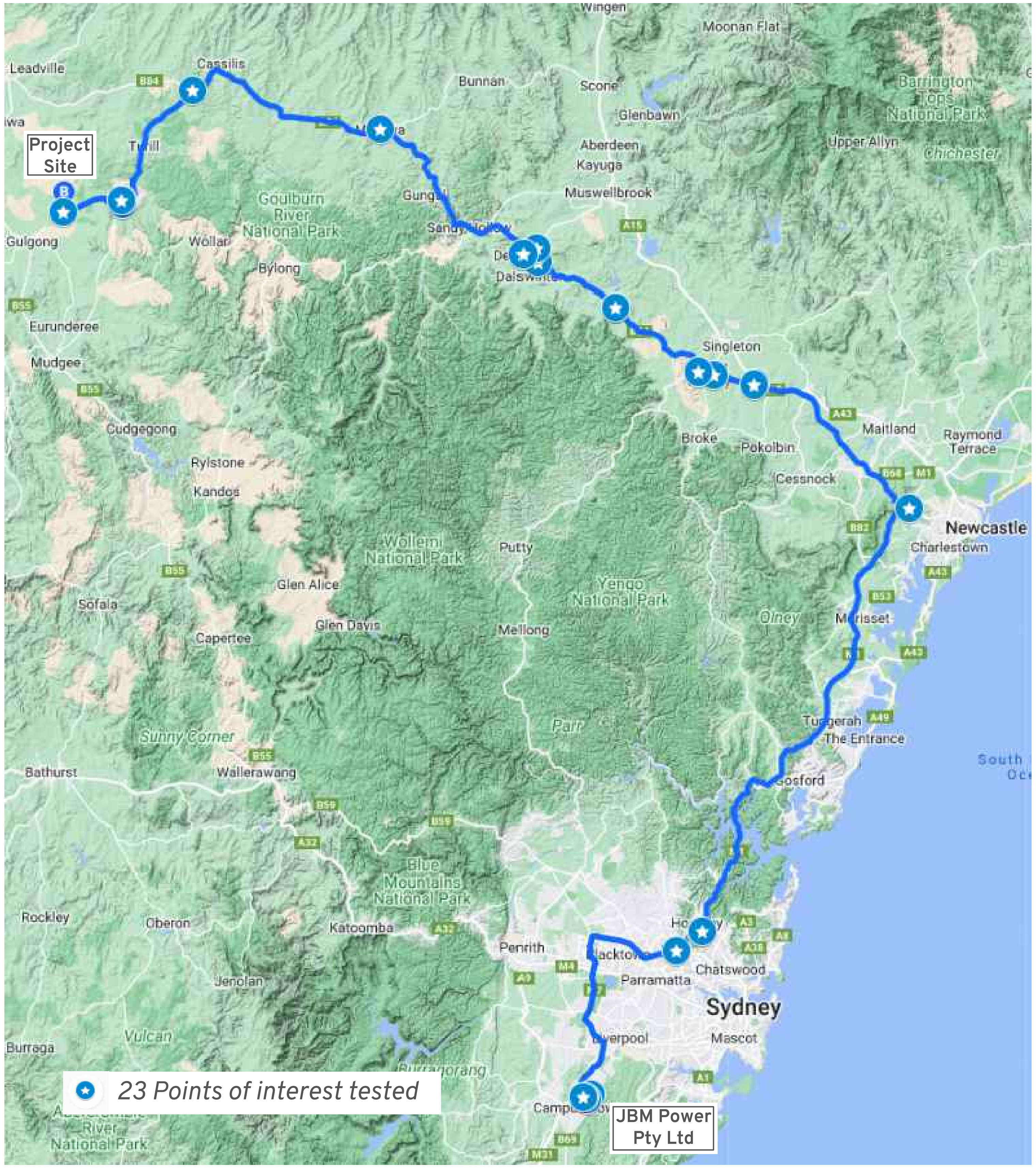
Sydney Route Assessment

The findings of the route assessments are summarised in Table 15.

Table 16: Sydney Route Assessment Findings - Summary

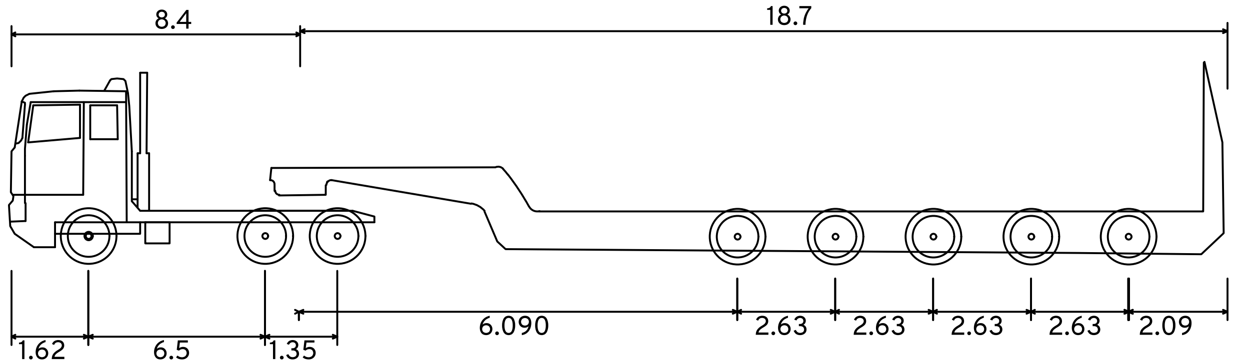
Sheet No.	Location	Web Link	Comment / Management Measure
01	Start of Route	**Link**	Clearance to electrical wires to be confirmed Escorts to control traffic as required
02	Pembrooke Road / Rose Payten Drive, Minto	**Link**	Spotter/s to assist to ensure load is clear of infrastructure Escorts to control traffic as required
03	Rose Payten Drive / Airdis Road, Minto	**Link**	Both circulating lanes to be used through roundabout
04	Rose Payten Drive / Campbelltown Road, Woodbine	**Link**	Spotter/s to assist to ensure load is clear of infrastructure
05	Hills Motorway / Cumberland Highway, West Penant Hills	**Link**	Escorts to control traffic as required
06	Penant Hills Road / Pacific Motorway, Wahroonga	**Link**	Spotter/s to assist to ensure load is clear of infrastructure Escorts to control traffic as required
07	Pacific Motorway On Ramp, Wahroonga	**Link**	Route clear in this area, no need for management measures identified
08	Pacific Motorway to Hunter Expressway, Cameron Park	**Link**	Route clear in this area, no need for management measures identified
09	New England Highway to Golden Highway, Whittingham	**Link**	Roadworks in the area to be monitored
10	New England Highway Whittingham	**Link**	Roundabout layout indicatively shown Upgrade works due for completion end of 2023 Assessment of impacts to be confirmed once works complete
11	Golden Highway / Putty Road, Mount Thorley	**Link**	Route clear in this area, no need for management measures identified
12	Putty Road / Golden Highway, Mount Thorley	**Link**	Spotter/s to assist to ensure load is clear of infrastructure Escorts to control traffic for swing into the adjacent through lanes
13	Golden Highway / Pagan Street, Jerry Plains	**Link**	Route clear in this area, no need for management measures identified
14	Golden Highway, Jerry Plains	**Link**	Route clear in this area, no need for management measures identified
15	Golden Highway / Duggans Road, Denman	**Link**	Route clear in this area, no need for management measures identified

Sheet No.	Location	Web Link	Comment / Management Measure
16	Golden Highway / Denman Road, Denman	**Link**	Escorts to control traffic as required at intersections Spotters to ensure load is clear of infrastructure
17	Golden Highway / Crinoline Street, Denman	**Link**	Route clear in this area, no need for management measures identified
18	Golden Highway / Dutton Street, Merriwa	**Link**	Route clear in this area, no need for management measures identified
19	Golden Highway / Ulan Road, Cassilis	**Link**	Route clear in this area, no need for management measures identified
20	Ulan Road / Main Street, Ulan	**Link**	Escorts to control traffic as required at intersections Spotters to ensure load is clear of infrastructure Rail Authority to be consulted for comment/approval
21	Main Street / MacKay Street, Ulan	**Link**	Escorts to control traffic for swing and use of opposing lanes Spotters to ensure load is clear of infrastructure
22	MacKay Street / Robinson Street, Ulan	**Link**	Escorts to control traffic as required at bend to ensure both lanes are clear
23	Cope Road / Blue Springs Road, Stubbo	N/A (based on upgrade plans)	Escorts to control traffic at intersection Planned upgrade would accommodate OSOM vehicle combination
24	Site Access from Blue Springs Road	N/A (based on upgrade plans)	Escorts to control traffic at intersection Planned upgrade would accommodate OSOM vehicle combination



Overall OSOM Route Map
JBM Power Pty Ltd to Site
Detailed Swept Path Assessments for locations shown on following sheets
Route available on-line here
https://www.google.com/maps/d/edit?mid=1Qsf92HEEAHWigsOMUdoPjeeLZkEdesg&usp=sharing

OSOM Truck Specifications



Transgrid 5-Axel Platform Trailer
Load Shown on Path: 3.9m W 20.0m L

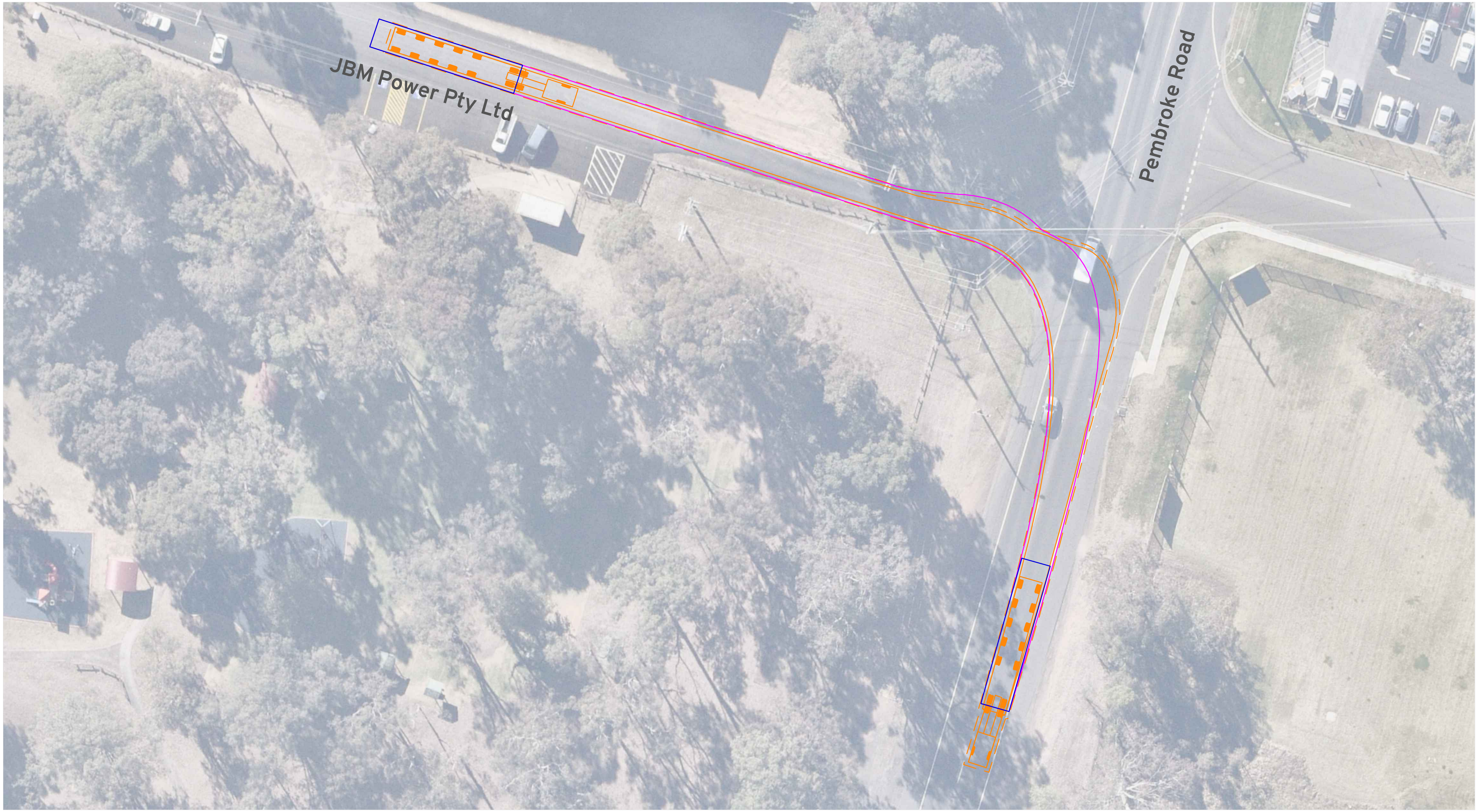
Overall Length w/ Load	28.000m
Truck and Trailer Length	25.550m
Trailer Width	3.090m
Overall Height	4.200m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

OSOM Configuration calibrated against similar OSOM configurations and is based on information available at the time of assessment

Route Assessment: Sydney
Stubbo Solar Farm
Overall Route Summary and OSOM Details

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: NTS

Amber 00



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

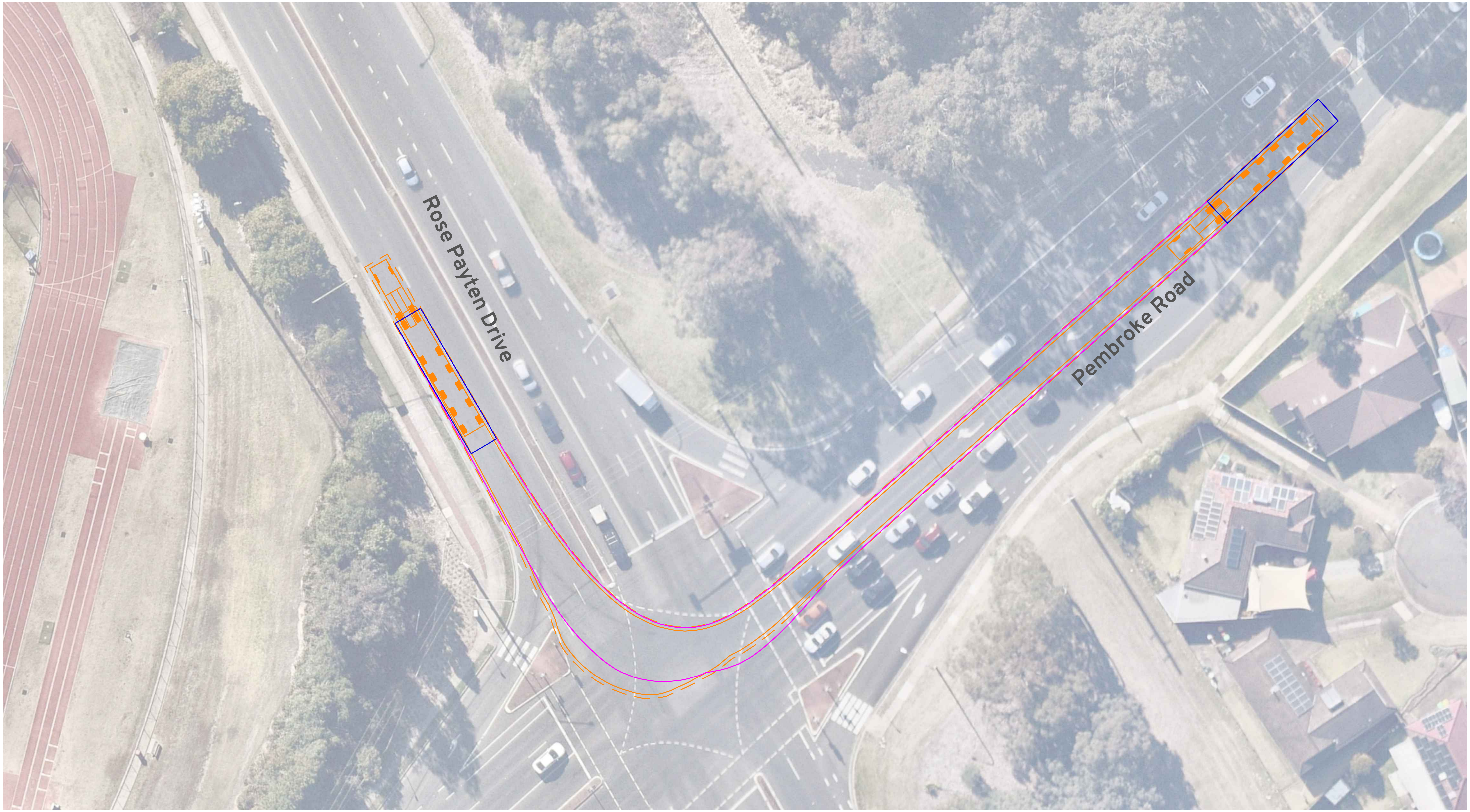
Notes:
Clearance to electrical wires to be confirmed
Escorts to control traffic as required

Location:
Minto NSW 2566
https://goo.gl/maps/a44EKEoEzxmmGFjK9

Route Assessment: Sydney
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500

Amber 01



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Spotter/s to assist to ensure load is clear of infrastructure

Escorts to control traffic as required

Location:

Minto NSW 2566

https://goo.gl/maps/5ftJx8jfo6Ynamh46

Route Assessment: Sydney

Stubbo Solar Farm

Swept Path Assessment

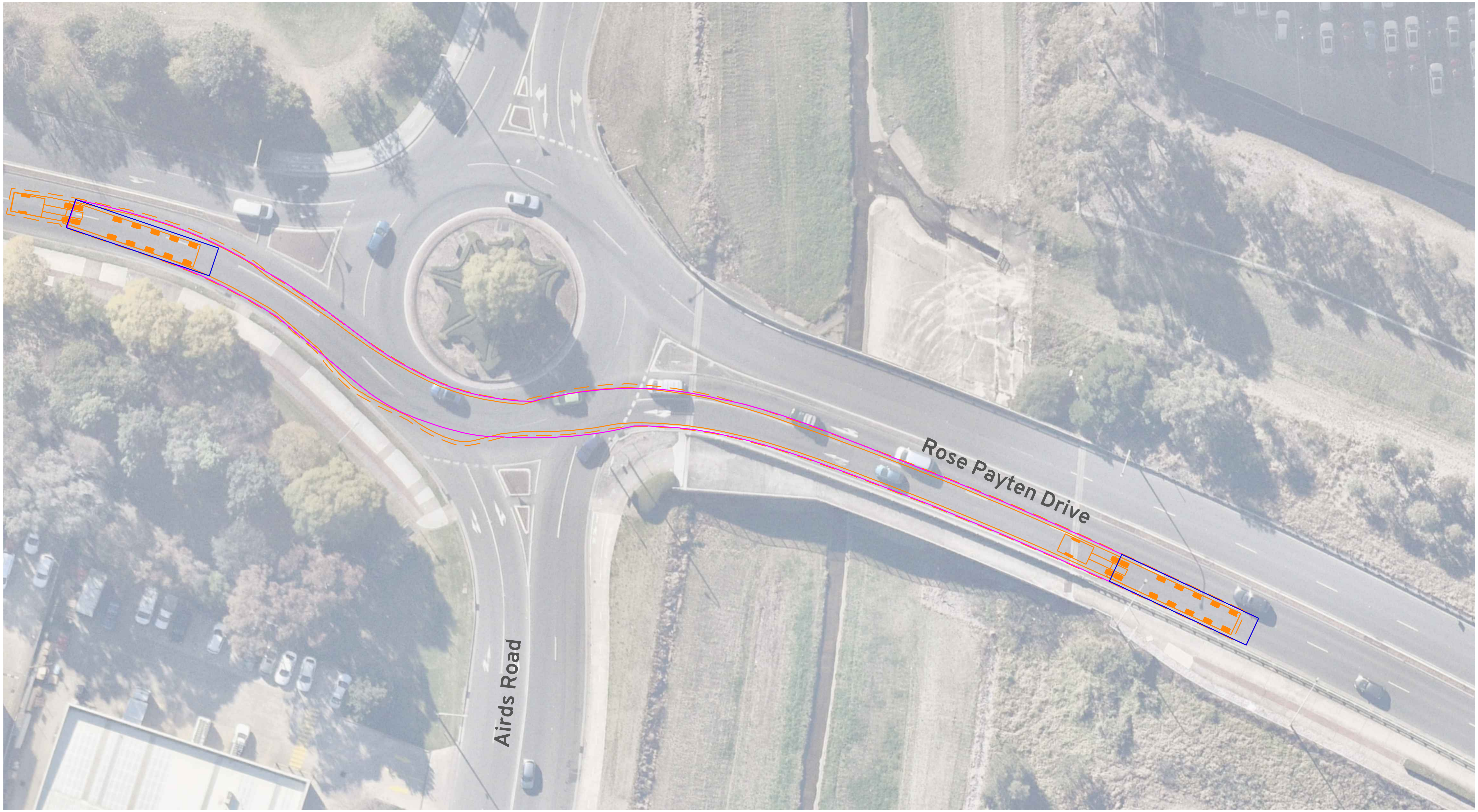
DRAWN: TD / RK

DATE: 12/09/2023

DWG NO: 594 Sydney S01A

SCALE at A3: 1:500

Amber 02



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

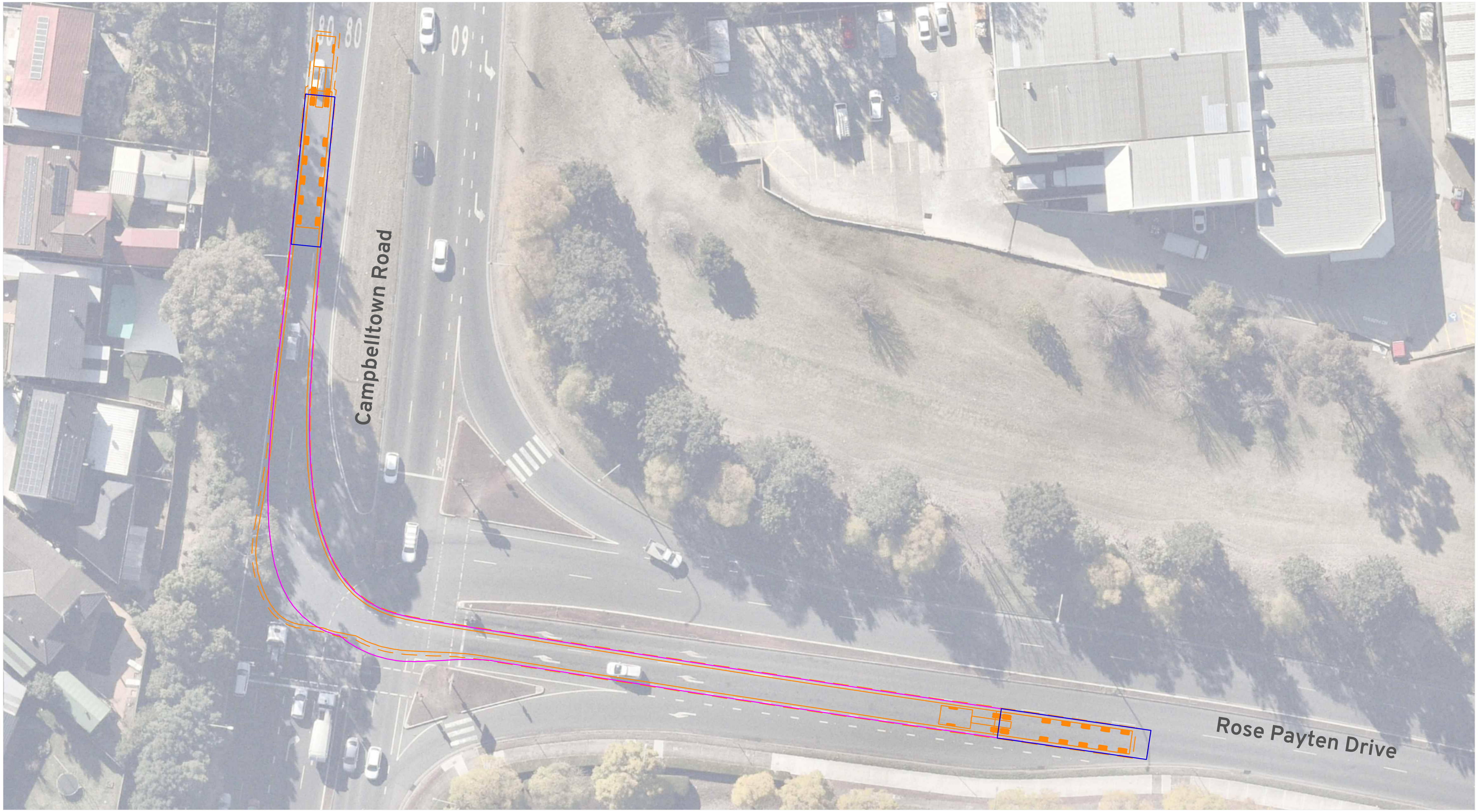
Notes:
Both circulating lanes to be used through roundabout

Location:
Minto NSW 2566
https://goo.gl/maps/HfhPhrbrUfVPesjT9

Route Assessment: Sydney
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500

Amber 03



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

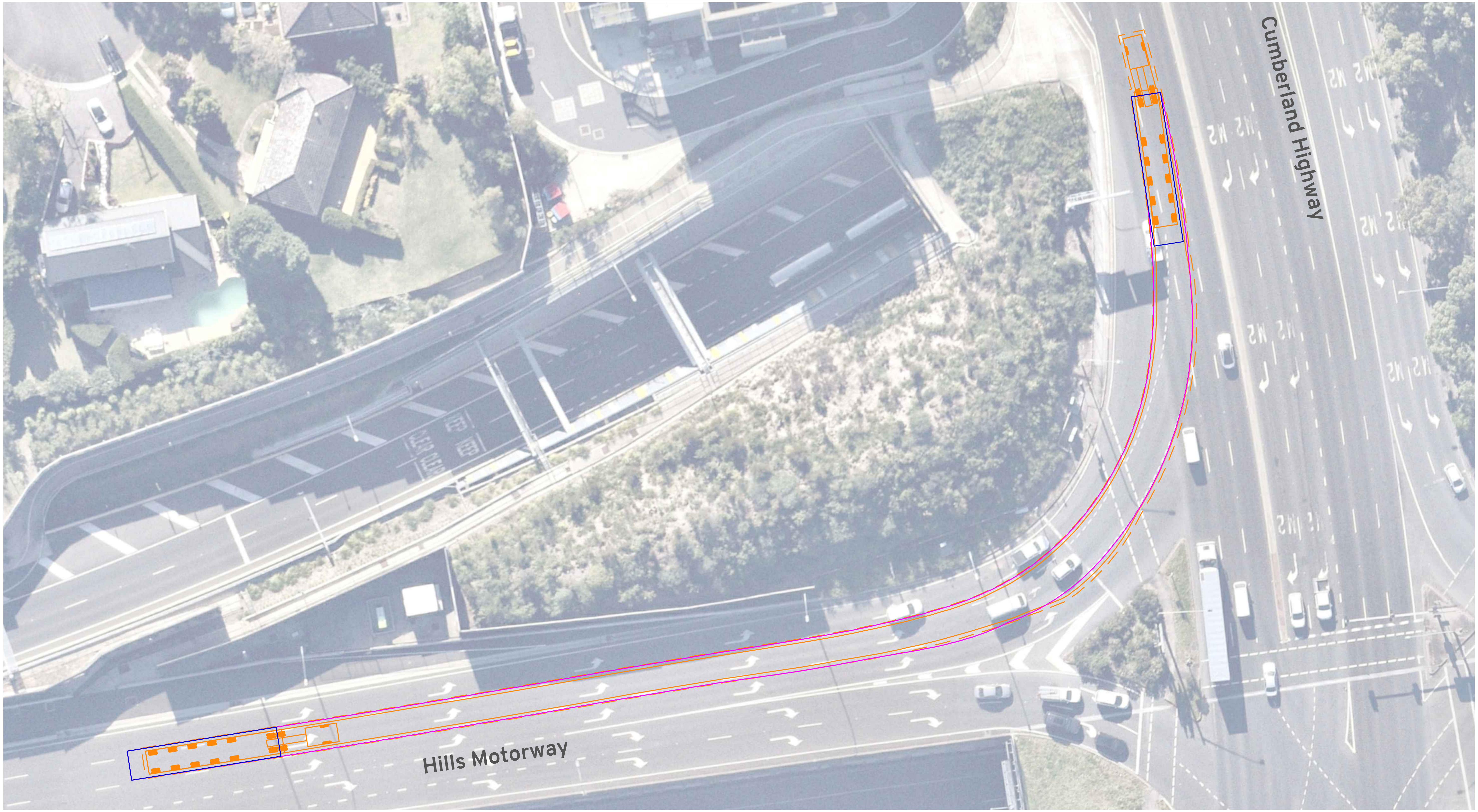
Notes:
Spotter/s to assist to ensure load is clear of infrastructure

Location:
Woodbine NSW 2560
https://goo.gl/maps/gzPL9JbmeMdyj8GPA

Route Assessment: Sydney
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500

Amber 04



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

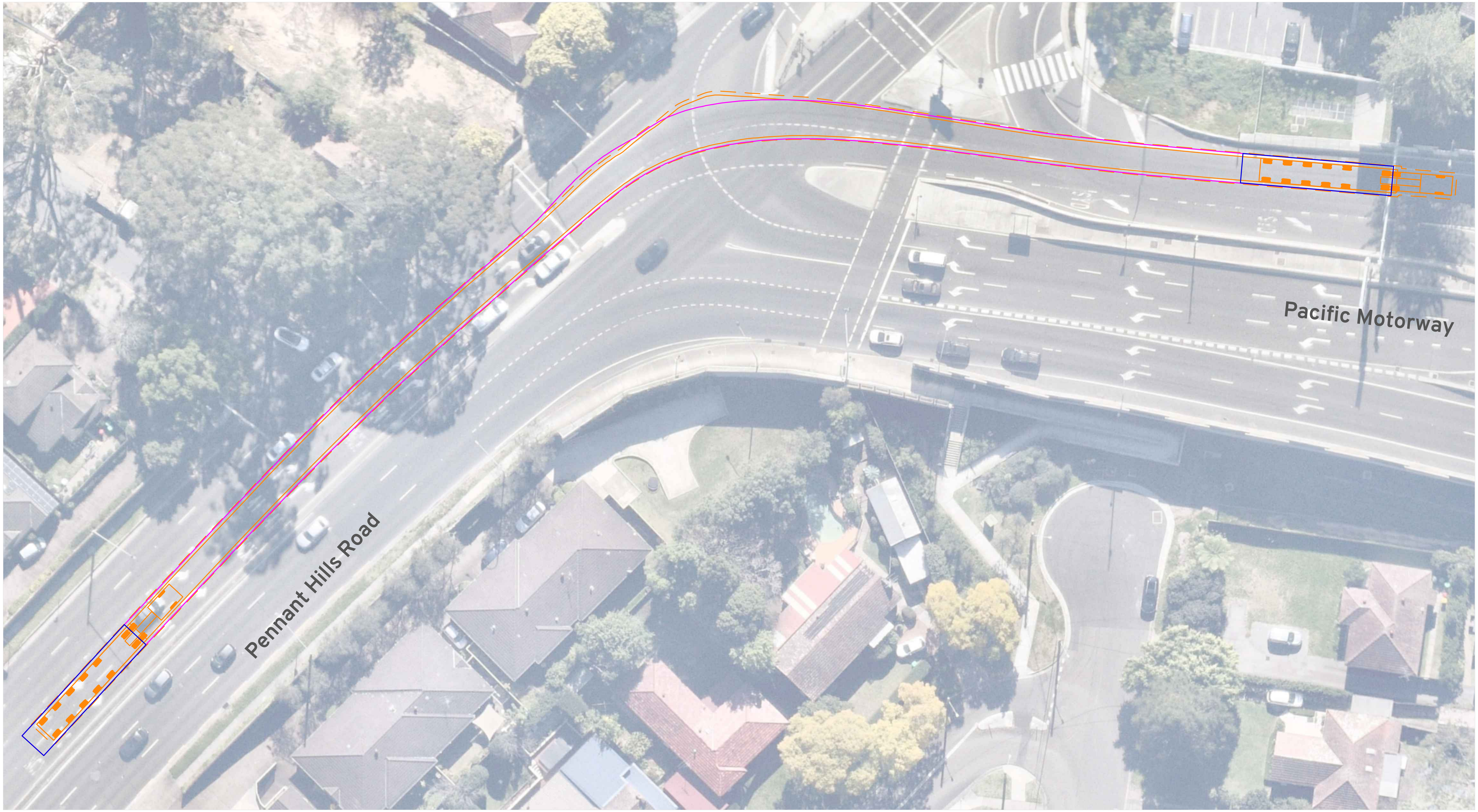
Notes:
Escorts to control traffic as required

Location:
West Pennant Hills NSW 2125
https://goo.gl/maps/93uoSz6tZ6CvoH4e8

Route Assessment: Sydney
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500

Amber 05



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Spotter/s to assist to ensure load is clear of infrastructure

Escorts to control traffic as required

Location:

Wahroonga NSW 2076

https://goo.gl/maps/5P9cb46SBR17GjYMA

Route Assessment: Sydney

Stubbo Solar Farm

Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500

Amber 06

Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:
Route clear in this area, no need for management measures identified

Location:
Wahroonga NSW 2076
https://goo.gl/maps/ahCbrnc9NQ1yDYXg8

Route Assessment: Sydney
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500

Amber 07

Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

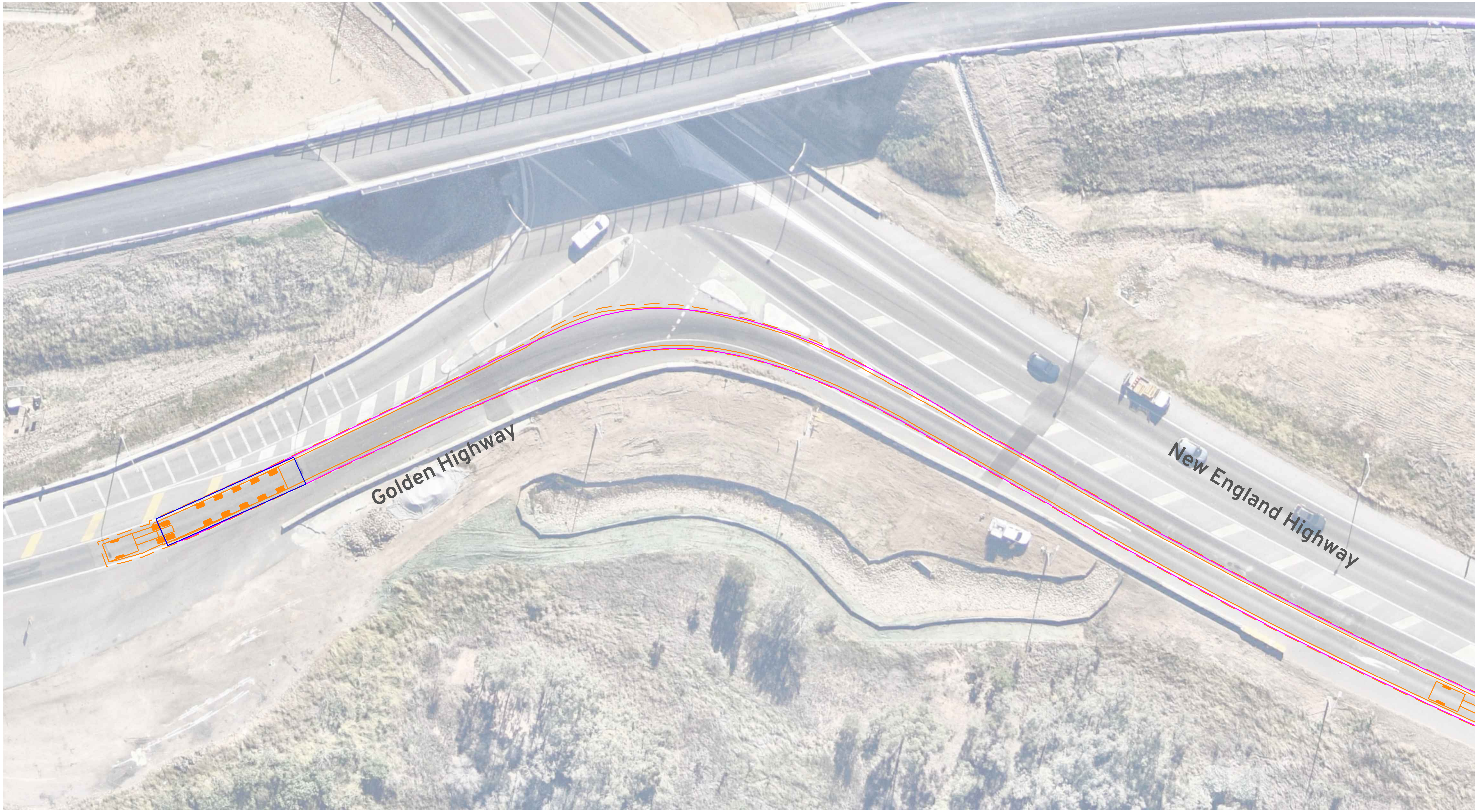
Notes:
Route clear in this area, no need for management measures identified

Location:
Cameron Park NSW 2285
https://goo.gl/maps/U8NZwouEWZbbA4QbA

Route Assessment: Sydney
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:1000

Amber 08



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

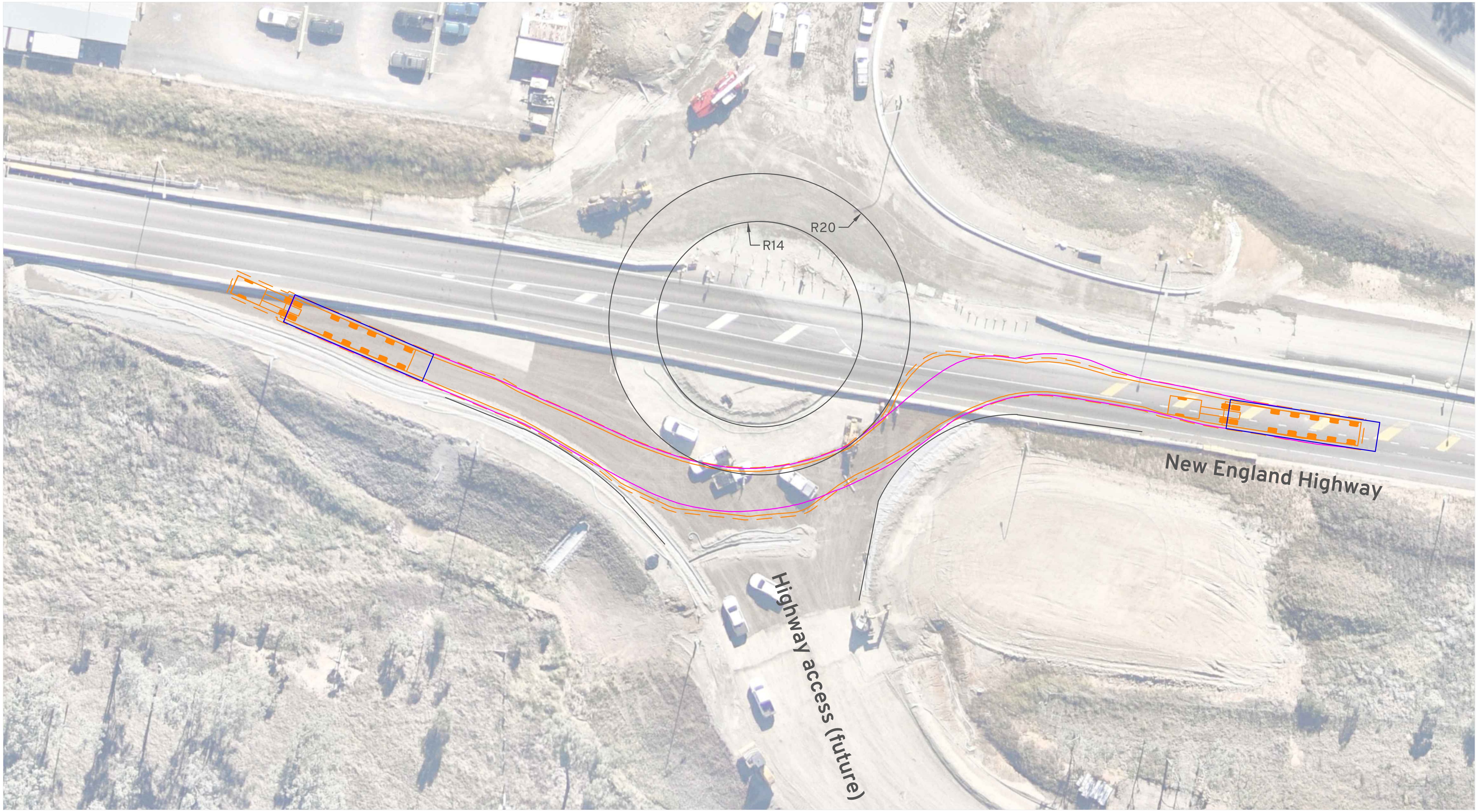
Notes:
Roadworks in the area to be monitored

Location:
Whittingham NSW 2330
https://goo.gl/maps/Rzu7kuBnZyLiFEw17

Route Assessment: Sydney
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500

Amber 09



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

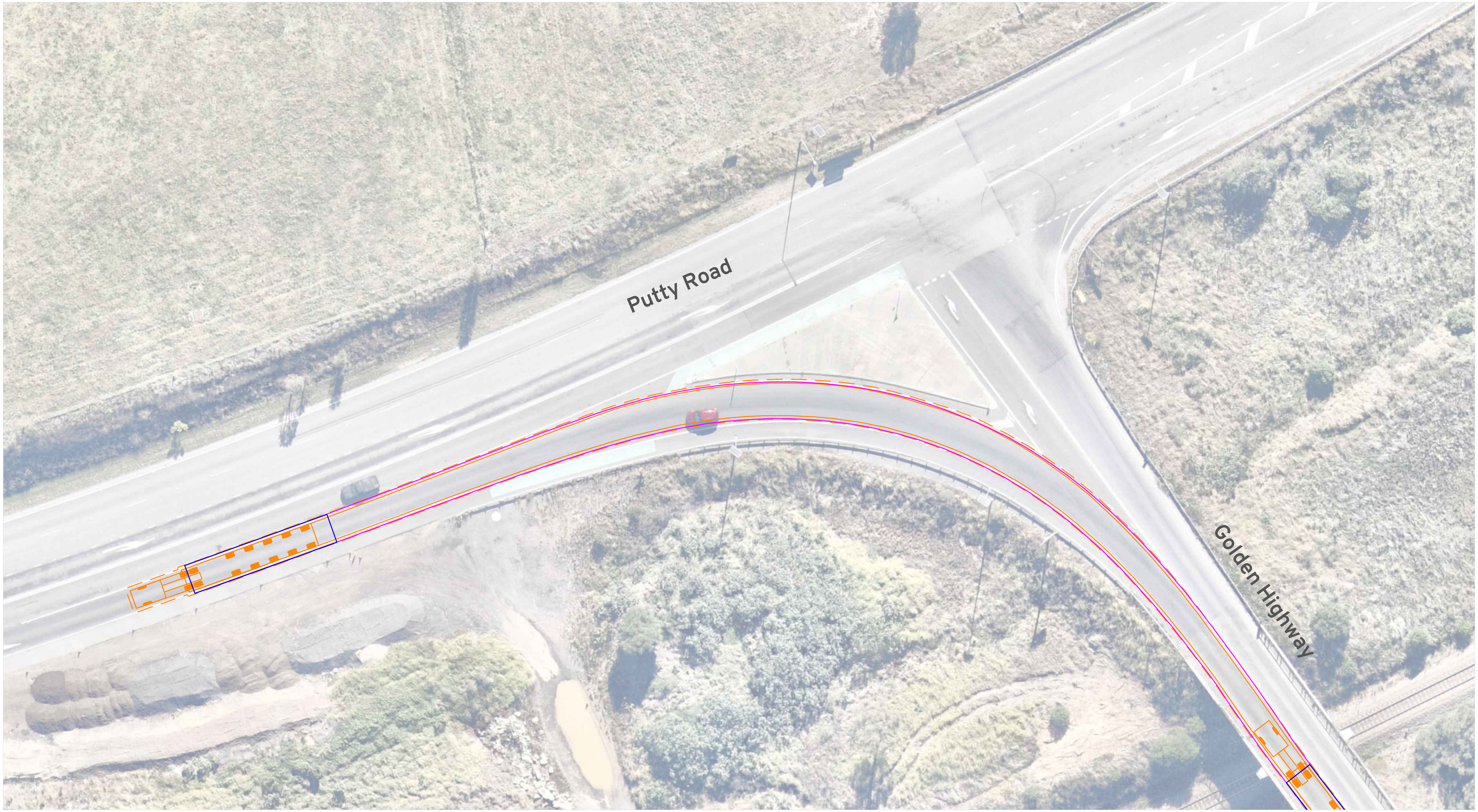
Notes:
Roundabout layout indicatively shown
Upgrade works due for completion end of 2023
Assessment of impacts to be confirmed once works complete

Location:
Whittingham NSW 2330
https://goo.gl/maps/MB5vbMB4mdrYNqLu8

Route Assessment: Sydney
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

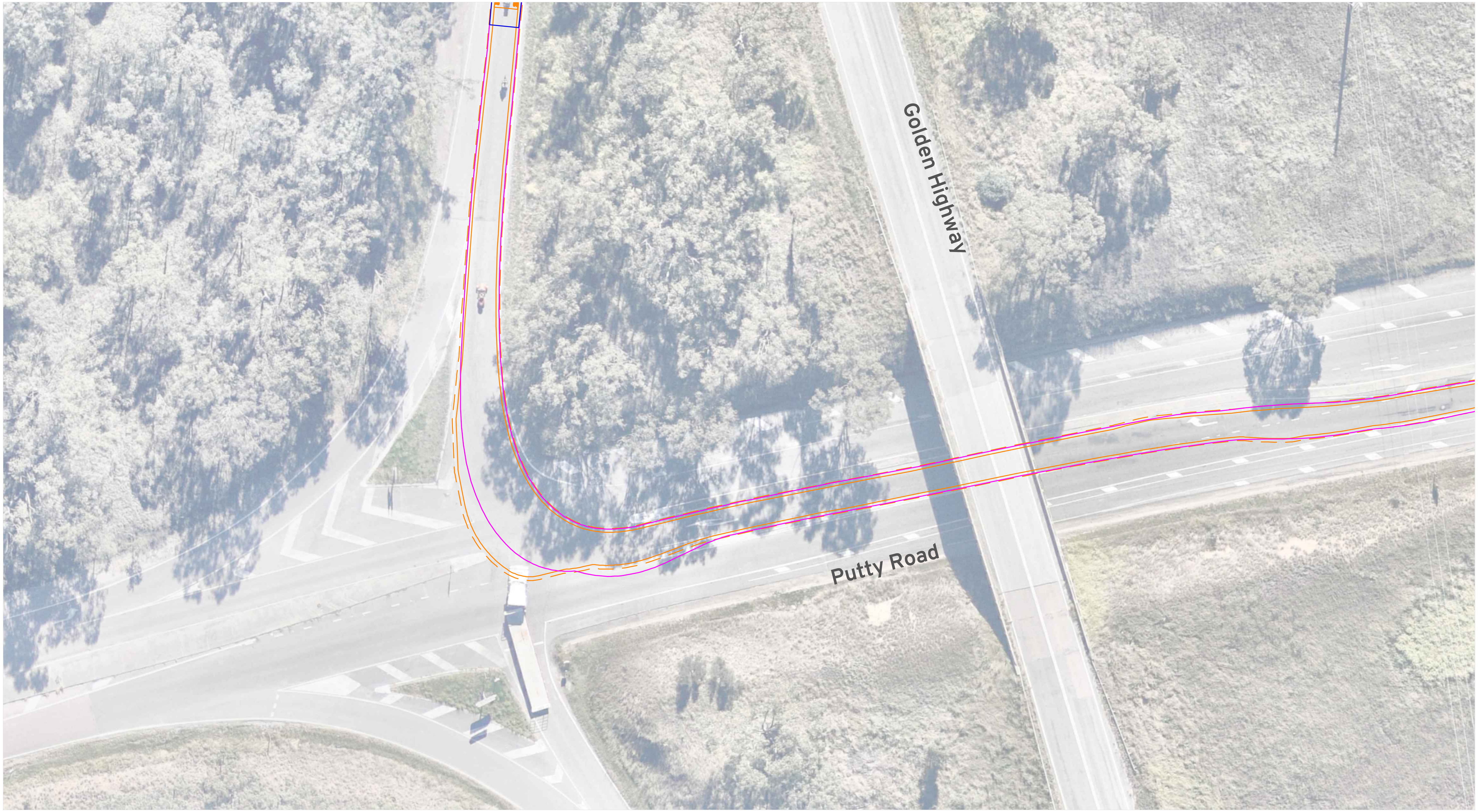
Notes:
Route clear in this area, no need for management measures identified

Location:
Mount Thorley NSW 2330
https://goo.gl/maps/6GZmmsgfp46ksaKq6

Route Assessment: Sydney
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Spotter/s to assist to ensure load is clear of infrastructure

Escorts to control traffic for swing into the adjacent through lanes

Location:

Mount Thorley NSW 2330
https://goo.gl/maps/1dAsE1Wbd6kPJvVT8

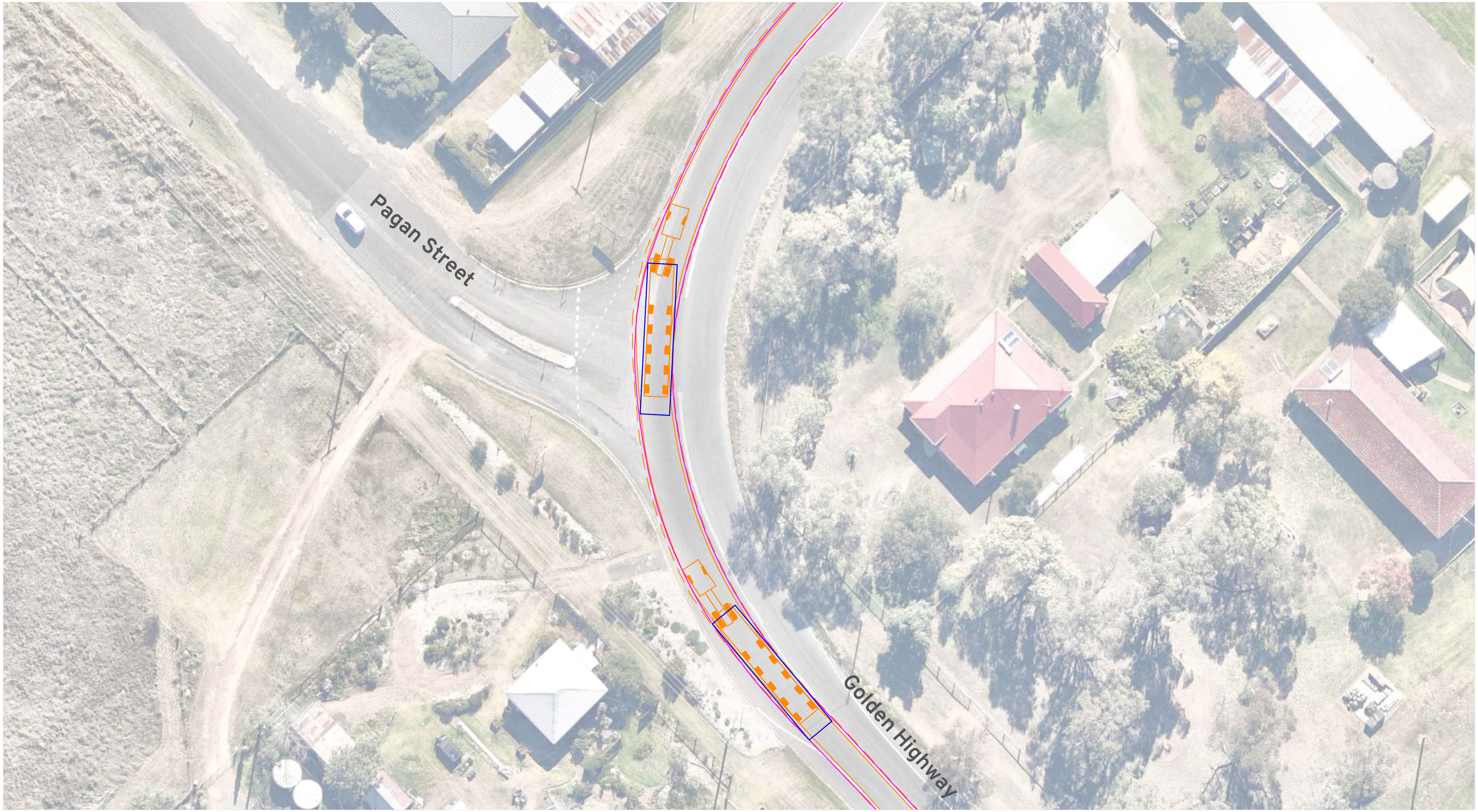
Route Assessment: Sydney

Stubbo Solar Farm

Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:
Route clear in this area, no need for management measures identified

Location:
Jerrys Plains NSW 2330
https://goo.gl/maps/SB5dLcDVCCGhMpC18

Route Assessment: Sydney
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500

Amber

Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

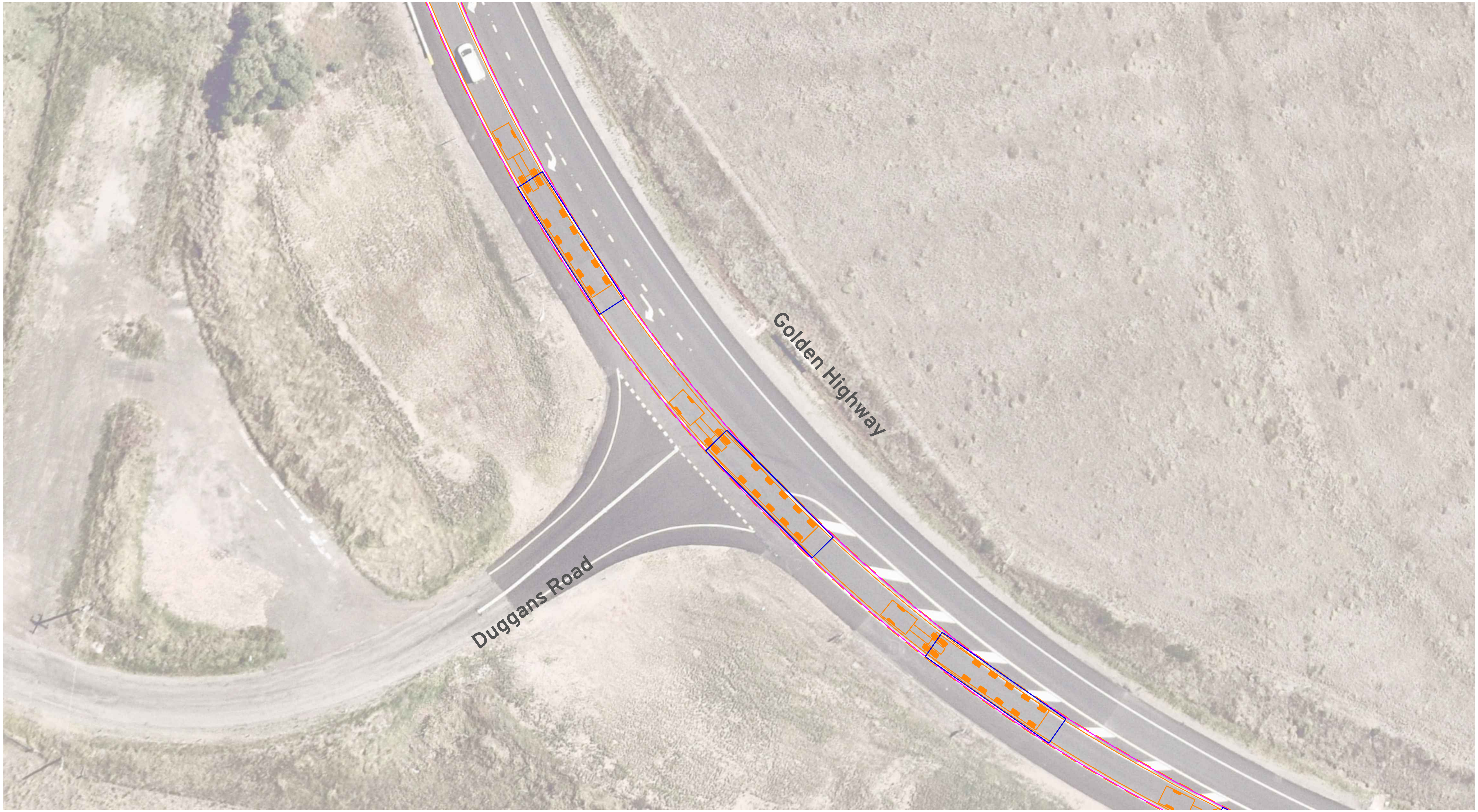
Notes:
Route clear in this area, no need for management measures identified

Location:
Jerrys Plains NSW 2330
https://goo.gl/maps/kcfWUfB7MGcb7ixx6

Route Assessment: Sydney
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

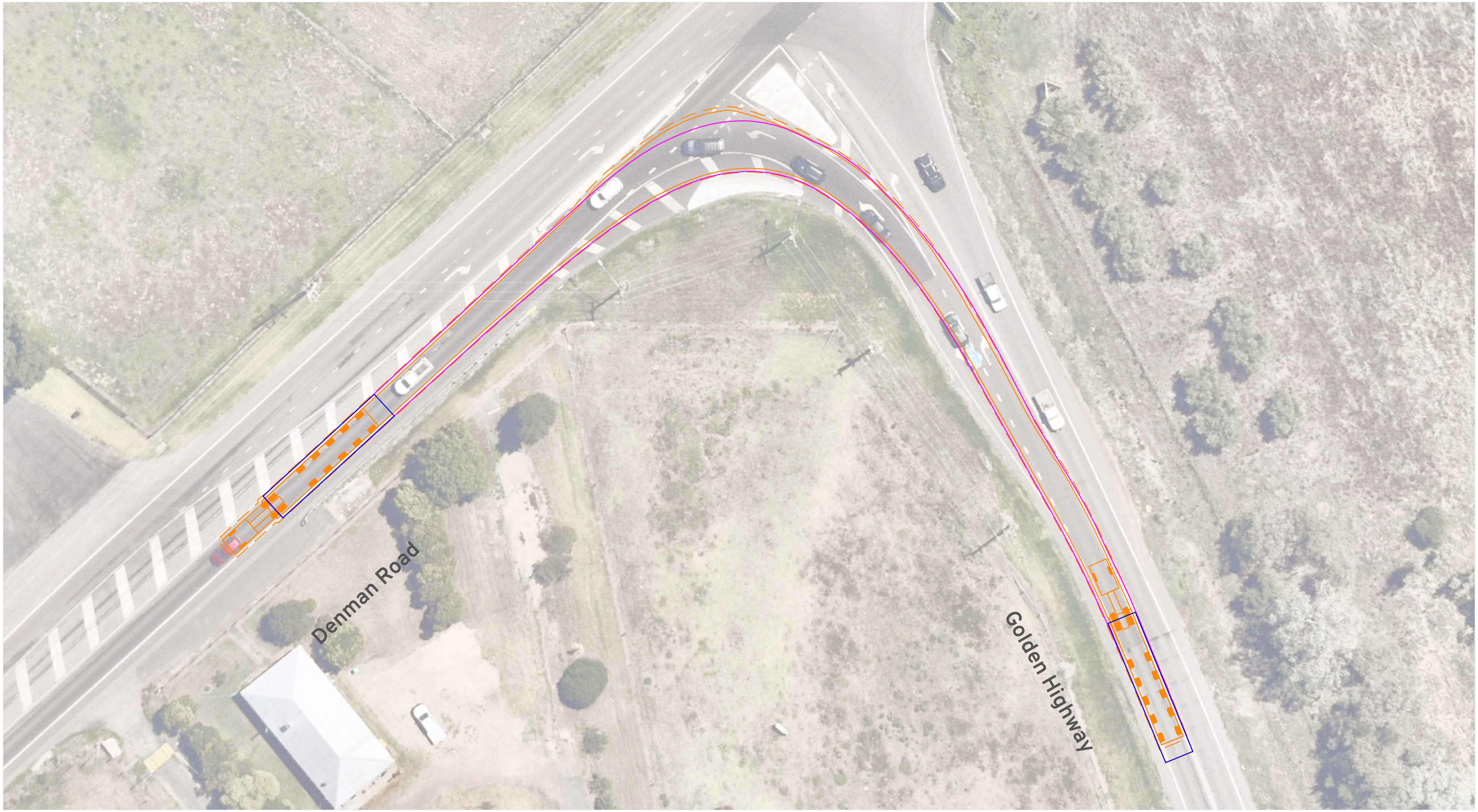
Notes:
Route clear in this area, no need for management measures identified

Location:
Denman NSW 2328
https://goo.gl/maps/GPNKzzFsYRQBgJAk8

Route Assessment: Sydney
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

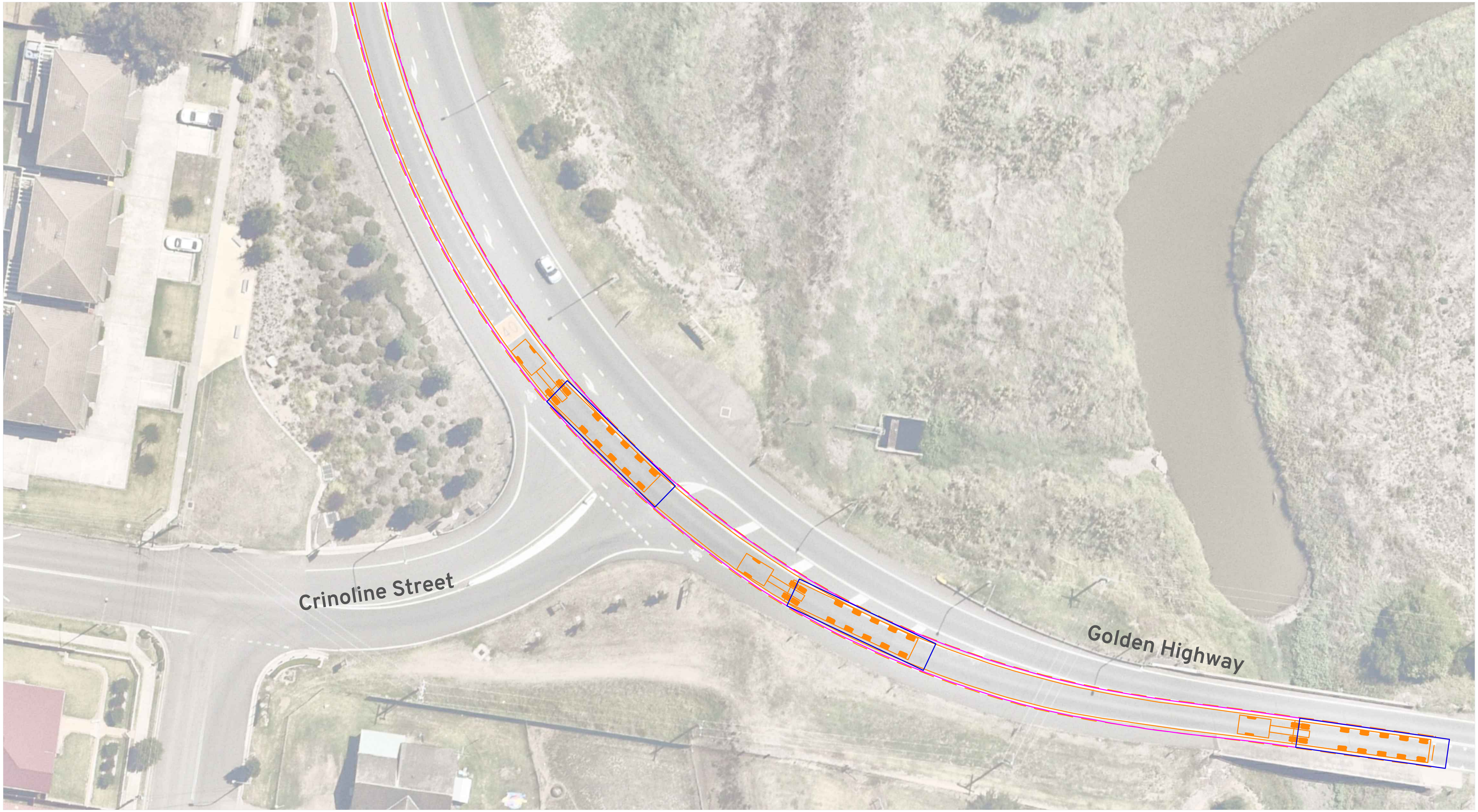
Notes:
Escorts to control traffic as required at intersections
Spotters to ensure load is clear of infrastructure

Location:
Denman NSW 2328
https://goo.gl/maps/GmLE7wB6MWHKHge66

Route Assessment: Sydney
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:
Route clear in this area, no need for management measures identified

Location:
Denman NSW 2328
https://goo.gl/maps/2EFuLxrZPn5Gs9rg6

Route Assessment: Sydney
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500

Amber

Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:
Route clear in this area, no need for management measures identified

Location:
Merriwa NSW 2329
https://goo.gl/maps/sZvDh14wLsMfqtGv5

Route Assessment: Sydney
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500

Amber

Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

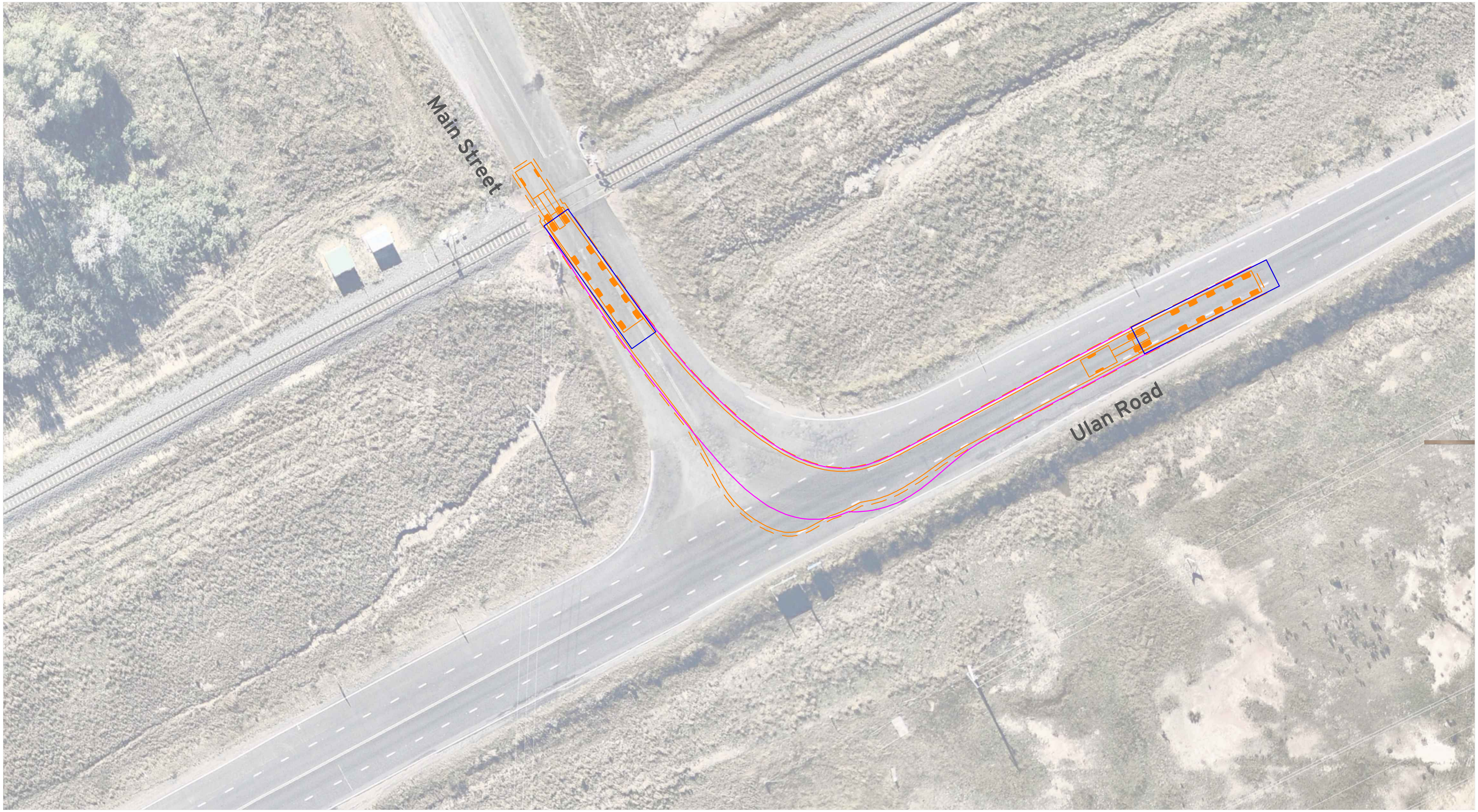
Notes:
Route clear in this area, no need for management measures identified

Location:
Cassilis NSW 2329
https://goo.gl/maps/Rs9RHu2iyeN8STGK9

Route Assessment: Sydney
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts to control traffic as required at intersections

Spotters to ensure load is clear of infrastructure

Rail Authority to be consulted for comment/approval

Location:

Ulan NSW 2850

https://goo.gl/maps/zG14MbQpAESsqNFY6

Route Assessment: Sydney

Stubbo Solar Farm

Swept Path Assessment

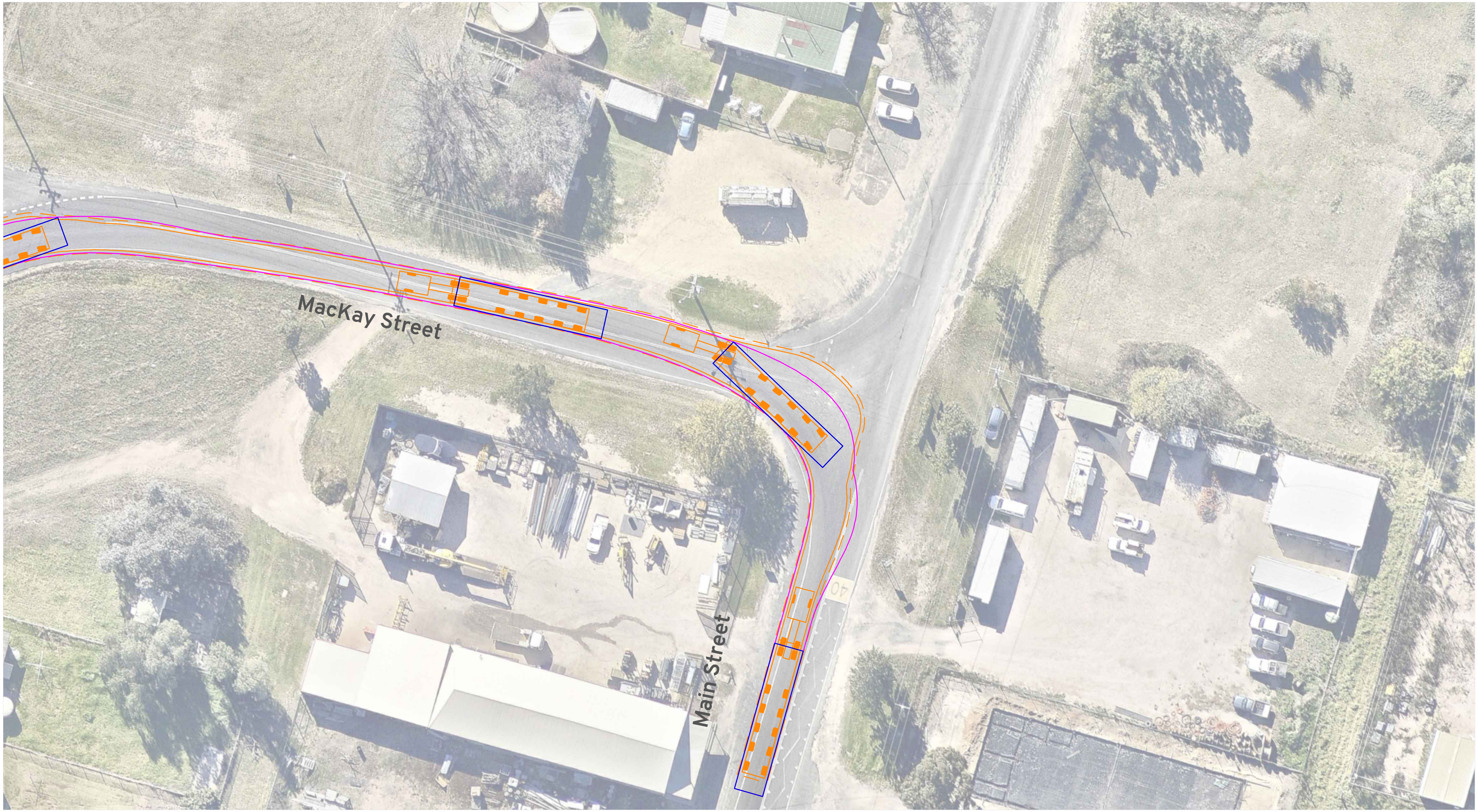
DRAWN: TD / RK

DATE: 12/09/2023

DWG NO: 594 Sydney S01A

SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts to control traffic for swing and use of opposing lanes

Spotters to ensure load is clear of infrastructure

Location:

Ulan NSW 2850

https://goo.gl/maps/4aJdN7cpGkD5i5hE9

Route Assessment: Sydney

Stubbo Solar Farm

Swept Path Assessment

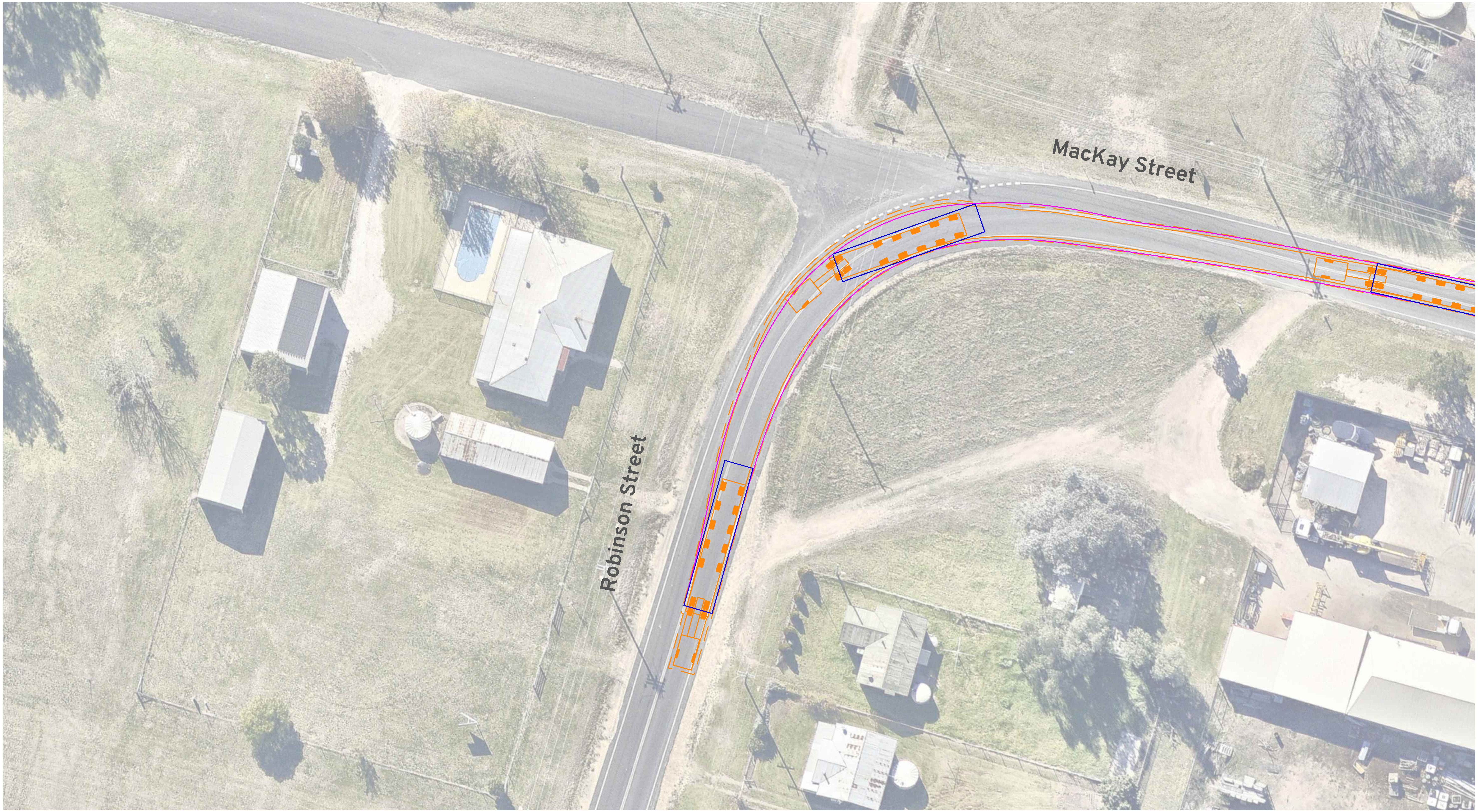
DRAWN: TD / RK

DATE: 12/09/2023

DWG NO: 594 Sydney S01A

SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

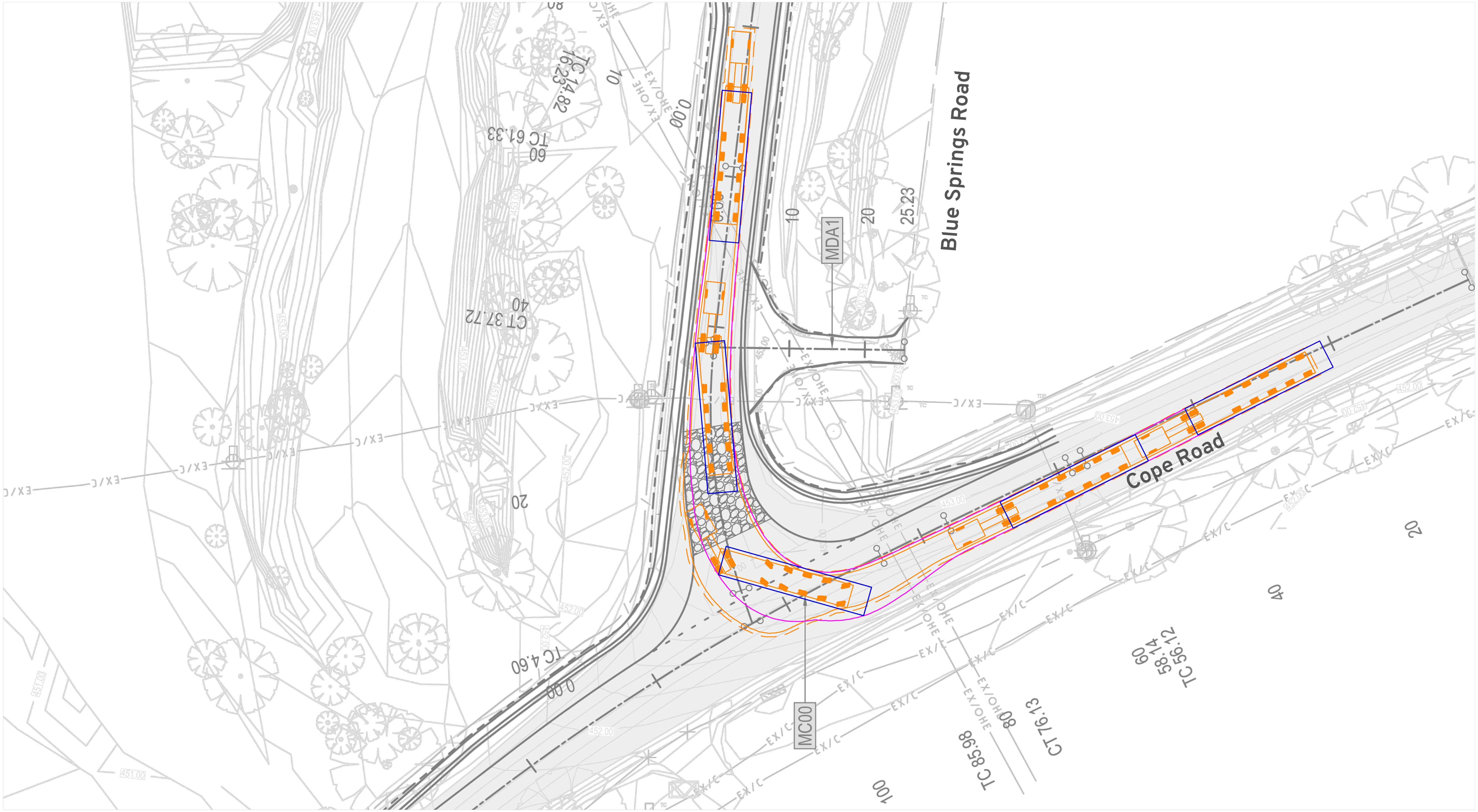
Load Path

Notes:
Escorts to control traffic as required at bend to ensure both lanes are clear

Location:
Ulan NSW 2850
https://goo.gl/maps/4aJdN7cpGkD5i5hE9

Route Assessment: Sydney
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

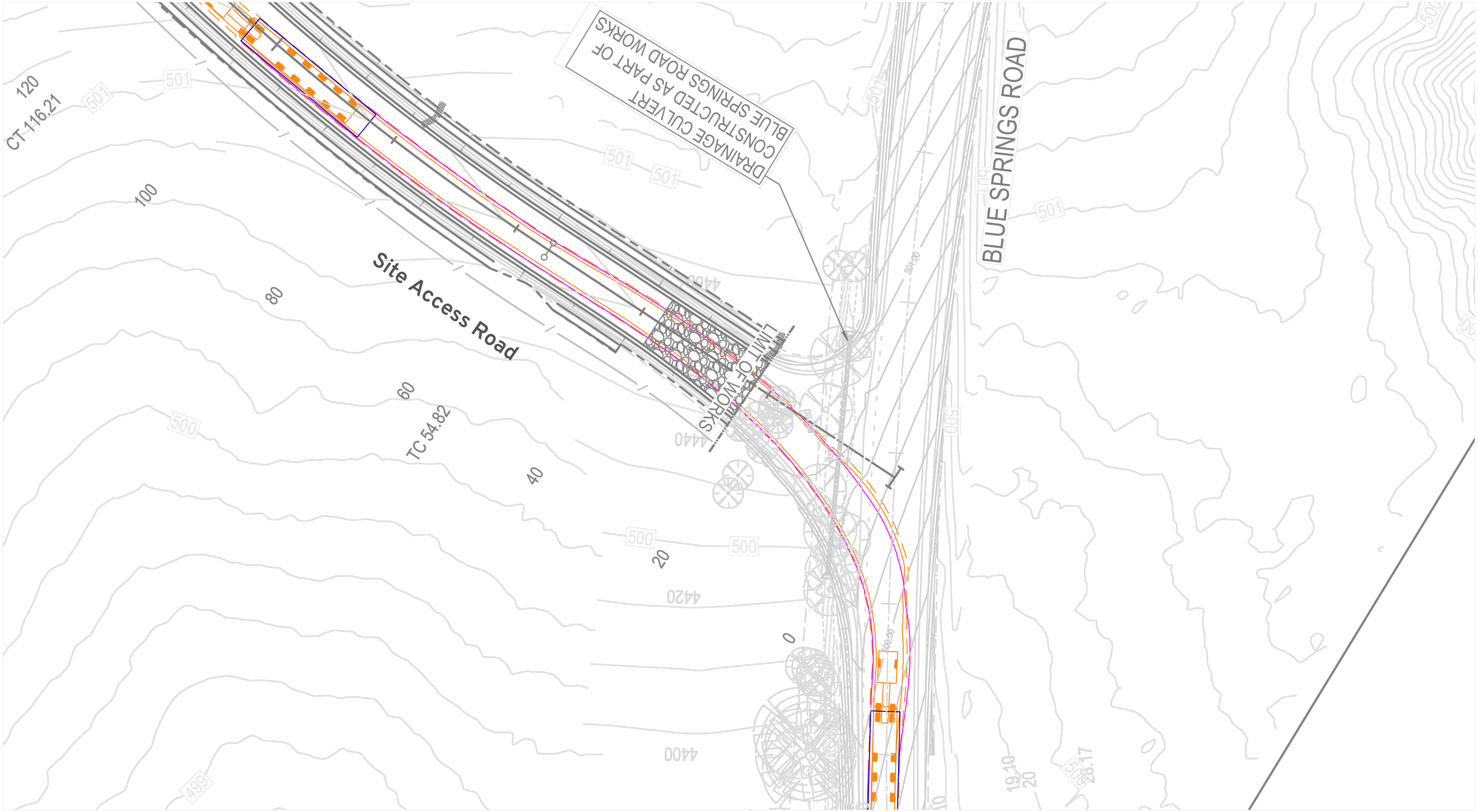
Notes:
Intersection and road upgrade plans shown for reference

Location:
Stubbo NSW 2852
https://goo.gl/maps/cJuMjANBRFy8up9F7

Route Assessment: Sydney
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:
Intersection and road upgrade plans shown for reference

Location:
Stubbo NSW 2852

Route Assessment: Sydney
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Sydney S01A
SCALE at A3: 1:500

Amber

Appendix J

Newcastle Route Survey
Lampson Pty Ltd

ROUTE SURVEY

FOR THE TRANSPORTATION OF
TRANSFORMER

FROM

PORT OF NEWCASTLE, NSW

VIA ULAN, NSW

TO

STUBBO, NSW

FOR

STUBBO SOLAR FARM PROJECT

LAMPSON (AUSTRALIA) PTY LTD
21 Toronto Street, TORONTO NSW 2283

Telephone No.: (02) 4941 0400

DOCUMENT №: -	**2920-RS - ULAN**	**FOR DISCUSSION**	**ISSUE DATE: 23/11/2023**
REVISION: B	**PREPARED BY:**	**REVIEWED BY:**	**APPROVED BY:**
NAME:	***Joe Hinds***	***Wayne Borgas***	***John Lee*** ***MIEAust CPEng NER***
SIGNATURE:	Joe Hinds	Wayne Borgas	John Lee
DATE:	**23/11/2023**	**23/11/2023**	**23/11/2023**

DISTRIBUTION LIST

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Master	Joe Hinds	Project Engineer	Lampson
1	Ben Thomson	Project Manager	EPEC Group
2	-	Road Manager	NHVR
3			
4			

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MANUAL HOLDER: **Ben Thomson**

DEPT / COMPANY: EPEC Group

Rev	Section	Page	Revision Description	Revised	Approved	Date
A			Issued For Permit Application	N/A	N/A	23/11/2023
B	1.3, 1.5 & 2.0	All	Revise to 2 x 12 Axle Trailers. Change to Route Through Ulan	Joe. Hinds	John Lee	11/12/2023

Disclaimer: The report is subject to Lampson supplied equipment and personnel; other terms and conditions as per the Engineering Service Agreement.

CONTENTS

1.0 SUMMARY

1.1 PROJECT BACKGROUND

The Stubbo Solar Farm is being developed approximately 14 Km Northeast of Gulgong, N.S.W.
The New Plant will consist of two 195 Te. transformers.

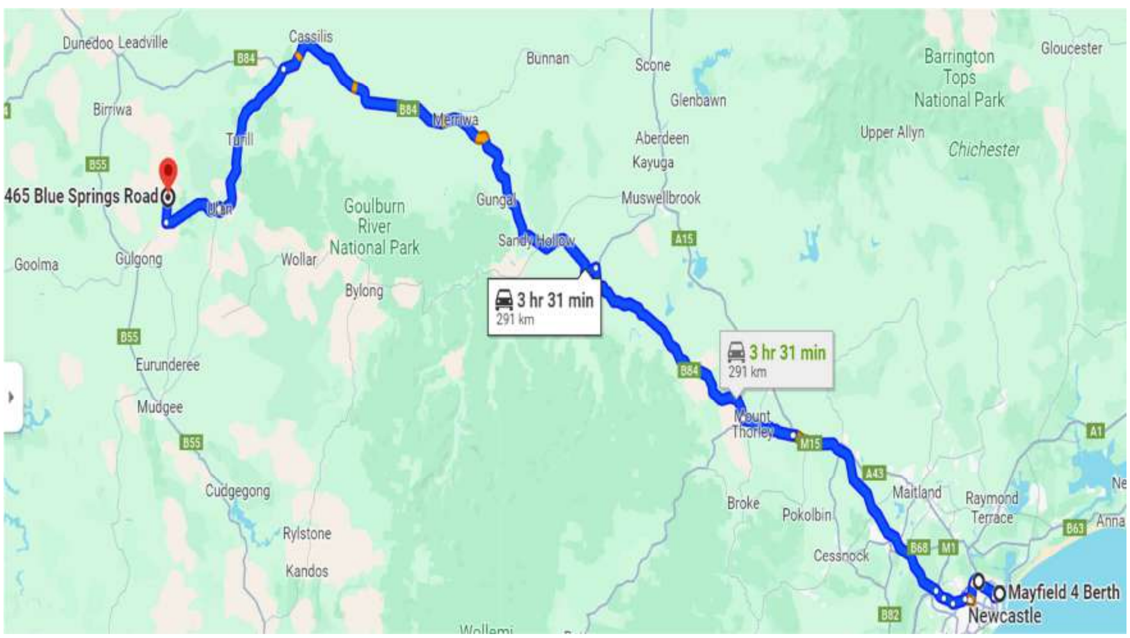
Lampson has been engaged to provide the transportation, offloading and final placement of the major OSOM Cargoes from the Port of Newcastle to the Stubbo, N.S.W. Project Site.

1.2 SUMMARY OF CARGO

The items to be transported are:

CARGO	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)	WEIGHT (t)
2 x Transformers	10010	3240	4270	195.0

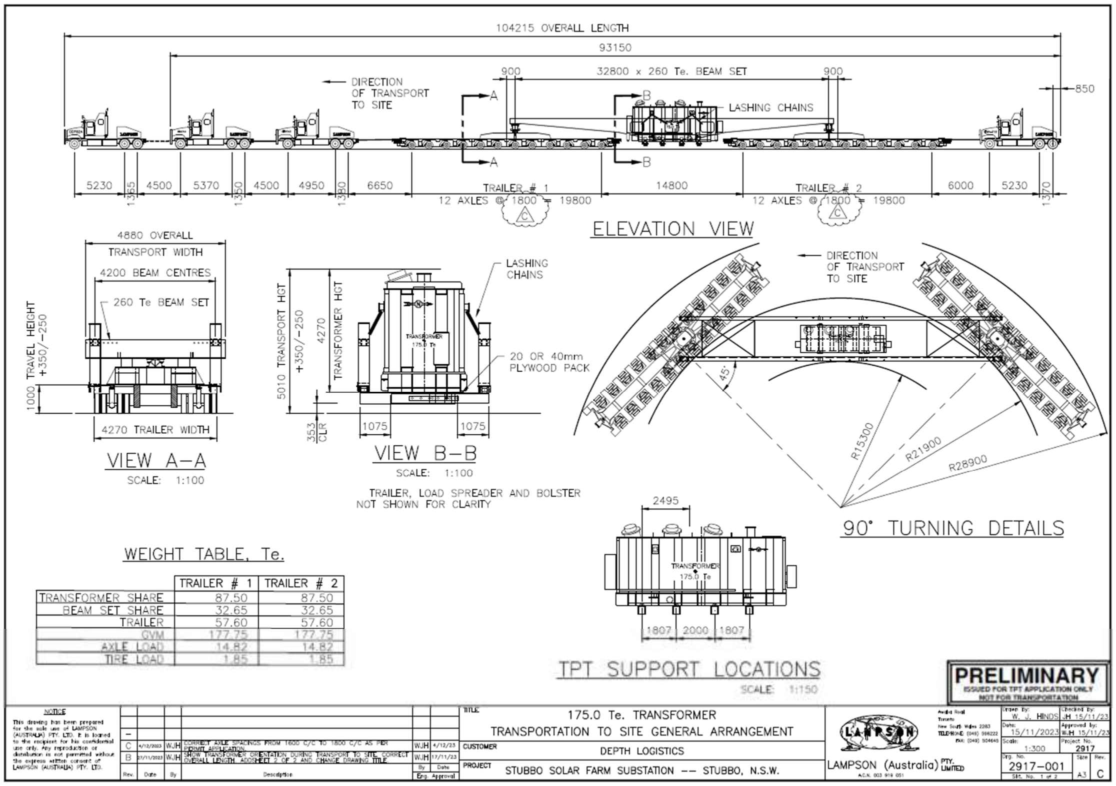
1.3 TRAVEL ROUTE



1.4 EXPECTED TRANSPORT DATES

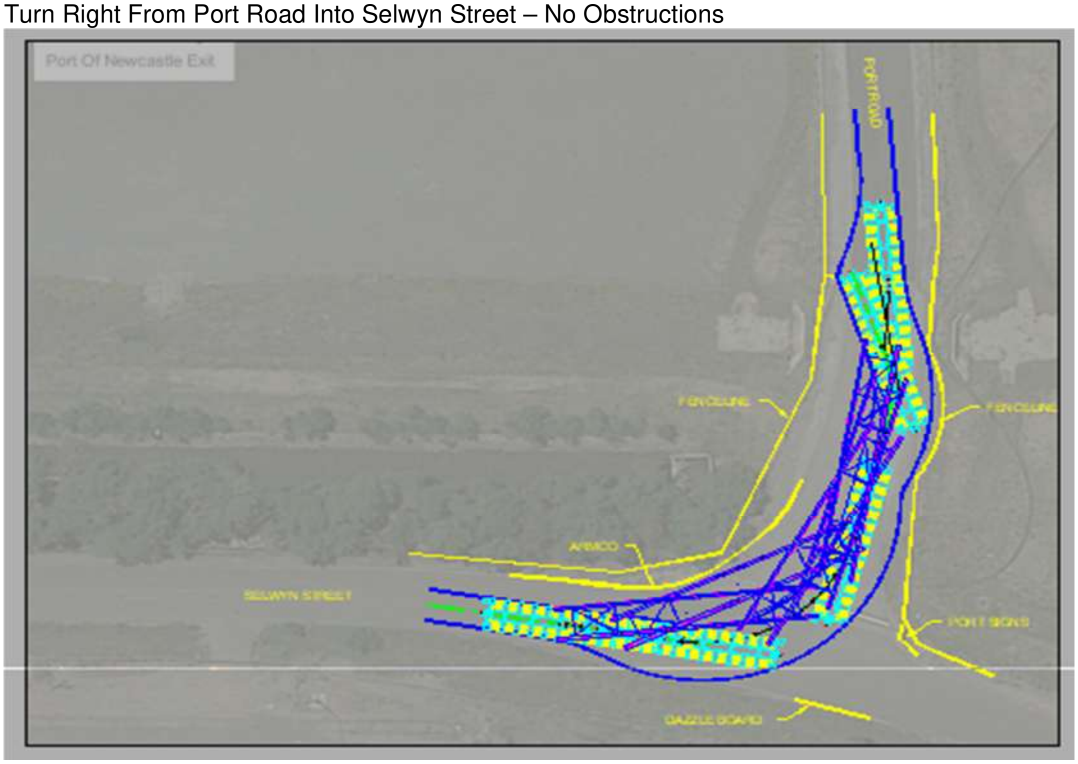
TO BE DETERMINED

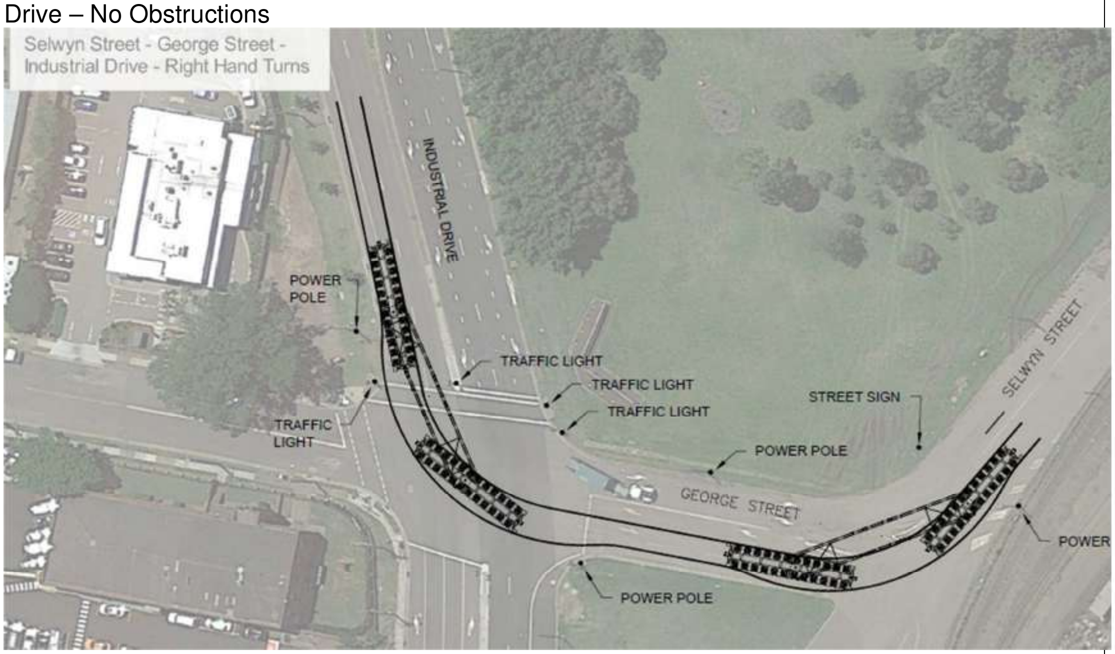
1.5 TRANSPORT CONFIGURATION

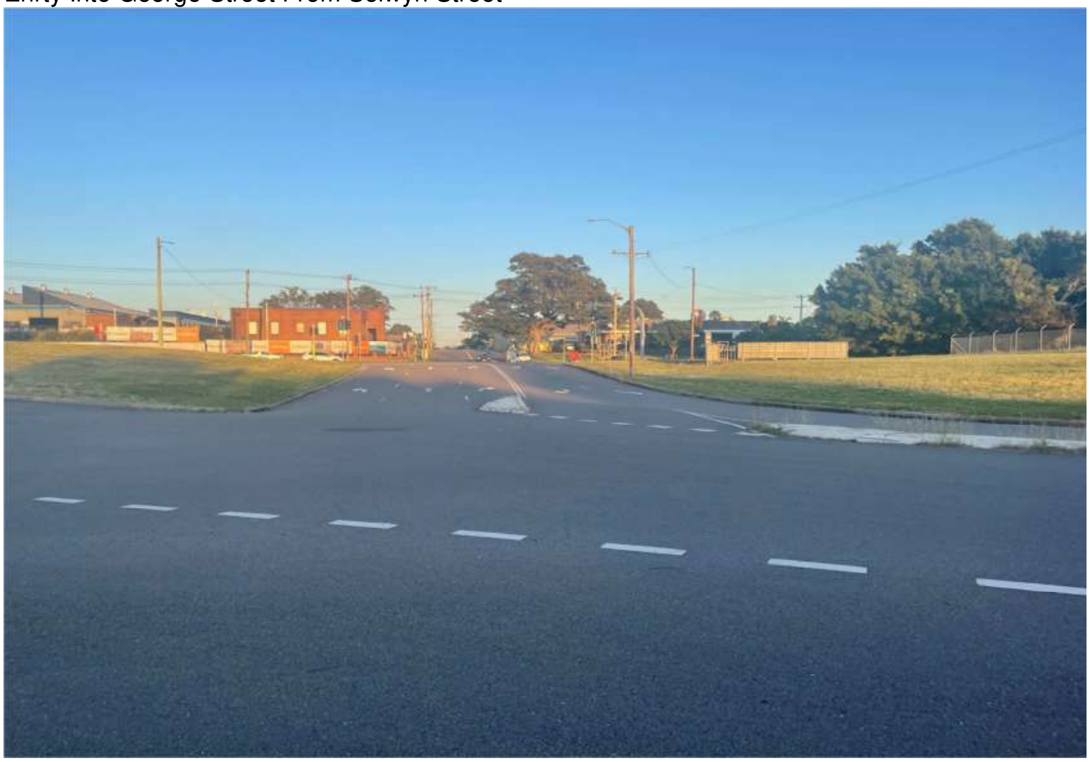


	TRAILER # 1	TRAILER # 2
TRANSFORMER SHARE	87.50	87.50
BEAM SET SHARE	32.65	32.65
TRAILER	57.60	57.60
GVM	177.75	177.75
AXLE LOAD	14.82	14.82
TIRE LOAD	1.85	1.85

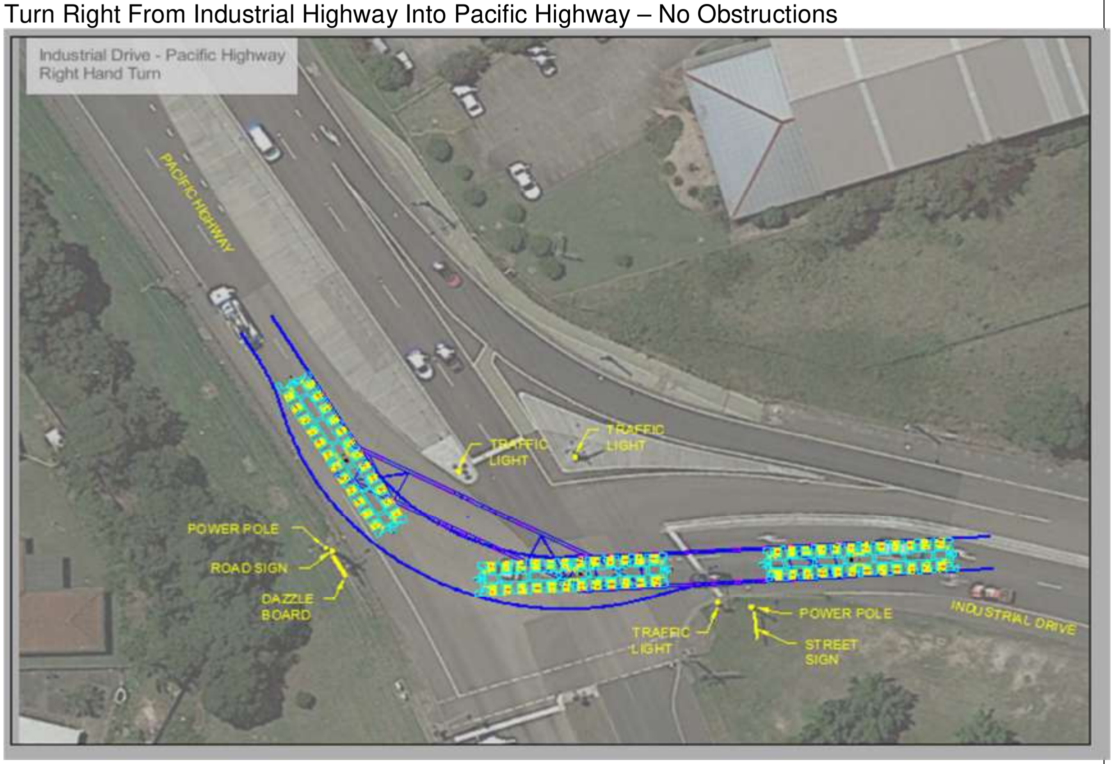
2.0 ROUTE SURVEY

KMS	COMMENT / PHOTO
0.0	Turn Right From Port Road Into Selwyn Street – No Obstructions 
	Enrty Into Corner From Port Road 

KMS	COMMENT / PHOTO
	Exit Into Selwyn Street From Port Road 
0.7	Level Railroad Crossing
1.2	Turn Right From Selwyn Street Into George Street the turn right from George Street Into Industrial Drive – No Obstructions 

KMS	**COMMENT / PHOTO**
	Enrty Into George Street From Selwyn Street 
	Entry Into Industrial Drive From Gearge Street 

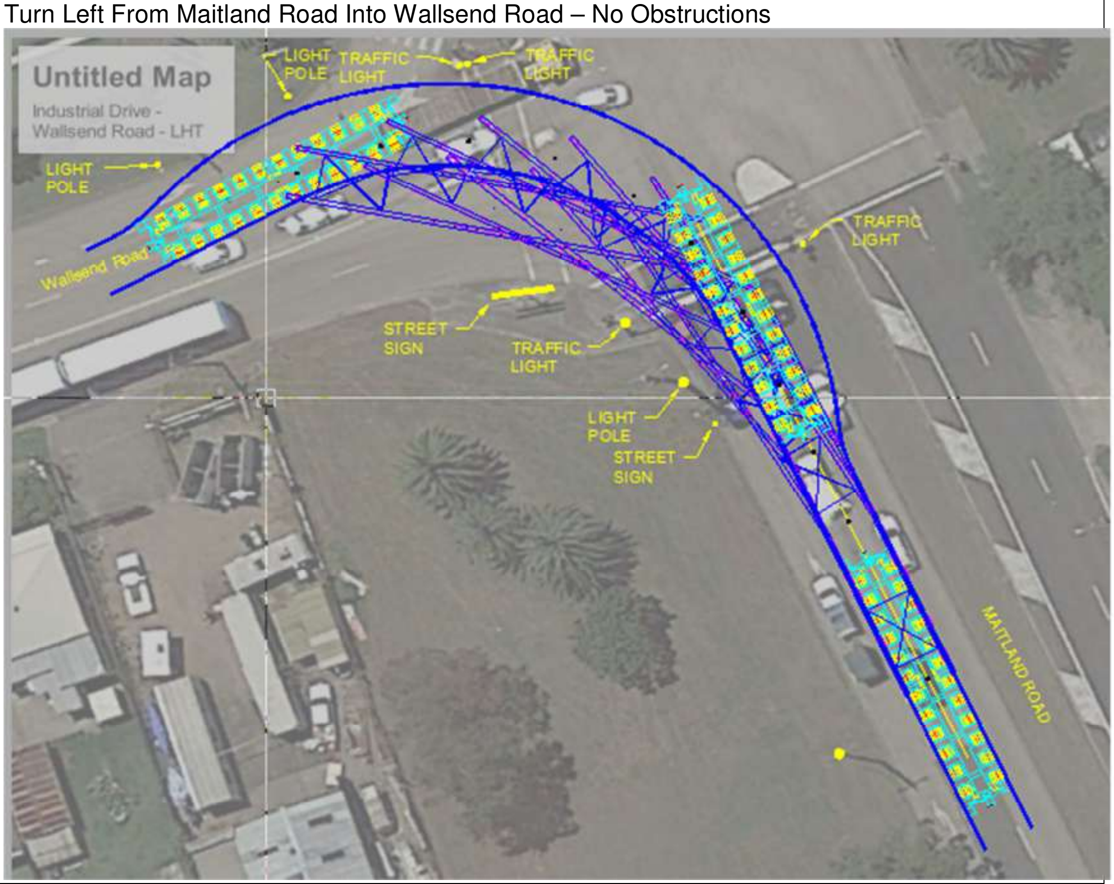
KMS	COMMENT / PHOTO
2.0	Ingall Street Overhead Traffic Light – No Clearance Issues
3.7	Tourle Street Overhead Traffic Light – No Clearance Issues
4.6	Steel River Blvd Overhead Traffic Light – No Clearance Issues
5.1	Turn Right From Industrial Highway Into Pacific Highway – No Obstructions

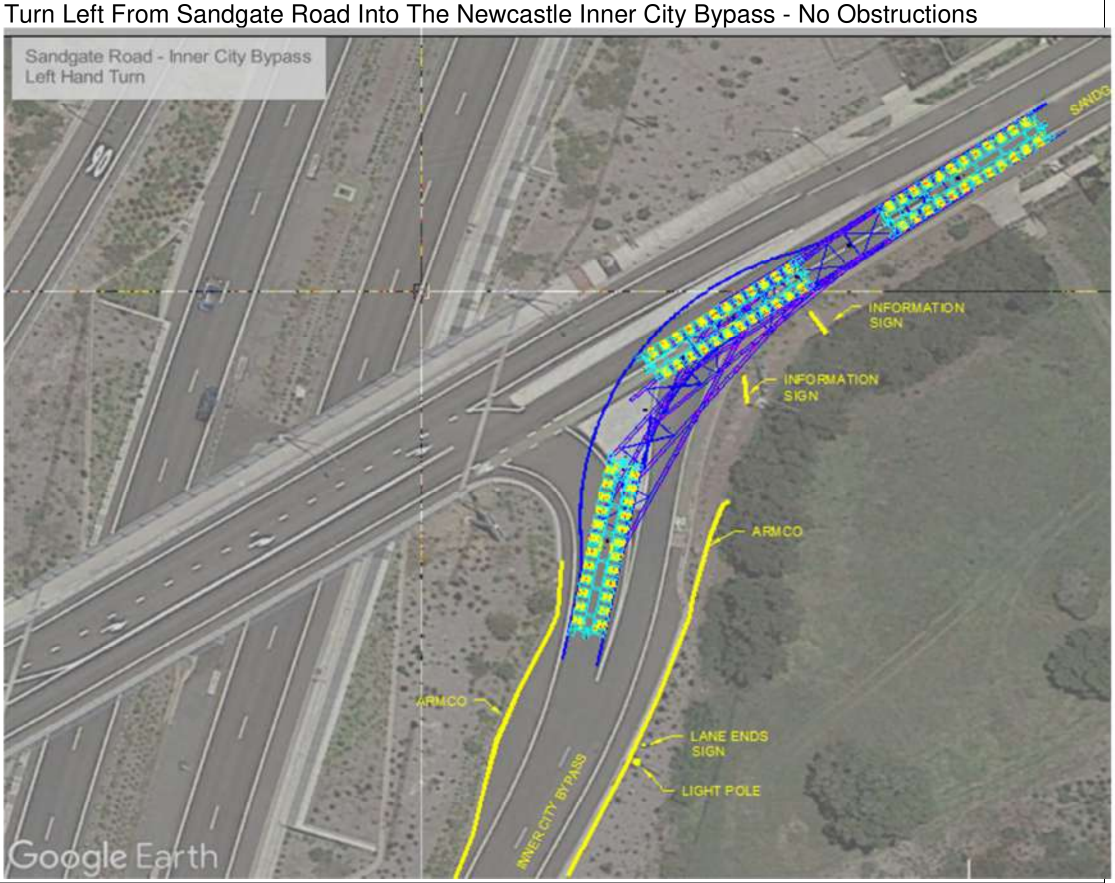


Entry Into Corner From Industrial Drive

KMS	COMMENT / PHOTO
	Exit From Corner Into Pacific Highway

KMS	COMMENT / PHOTO
5.9	Rail Bridge
5.9	Continue Straight Into Maitland Road (Name Change Only)
6.5	Turn Left From Maitland Road Into Wallsend Road – No Obstructions

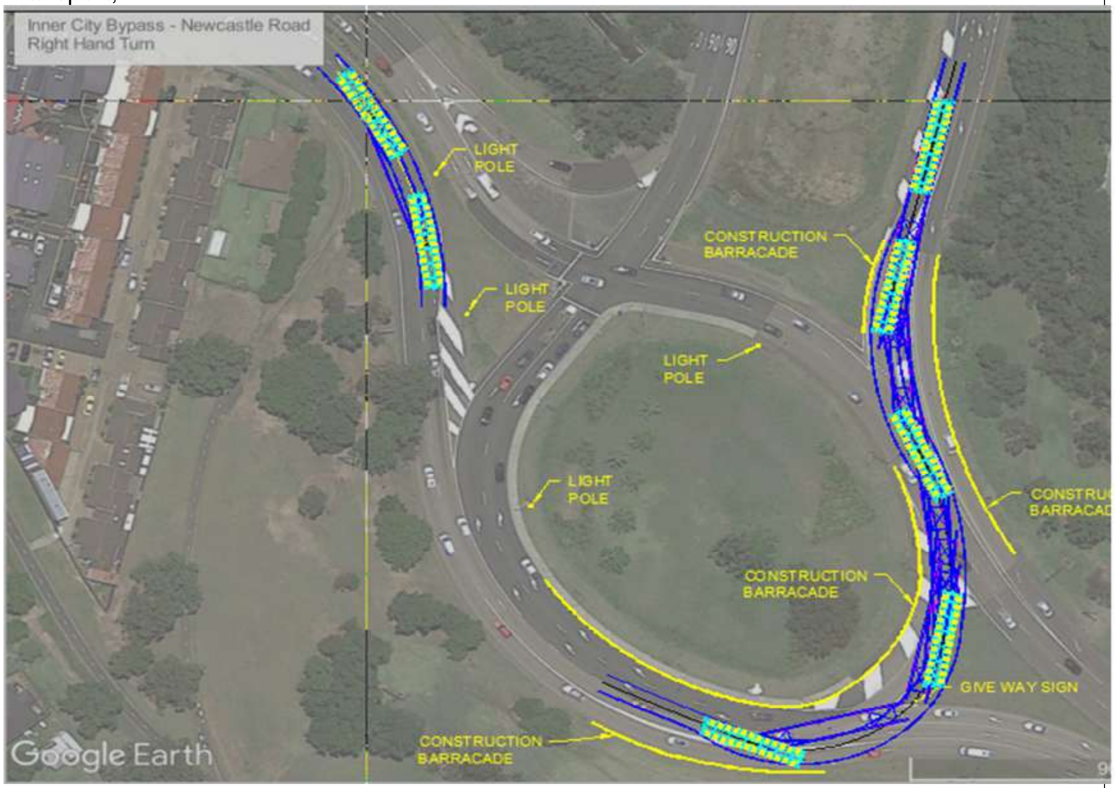


KMS	COMMENT / PHOTO
	Entry Into Wallsend Road From Maitland Road 
6.7-7.1	Overhead Wires At Rural Drive – No Clearance Issues
7.2	Rail Bridge
7.4	Deep Creek Bridge
7.9	Turn Left From Sandgate Road Into The Newcastle Inner City Bypass - No Obstructions 

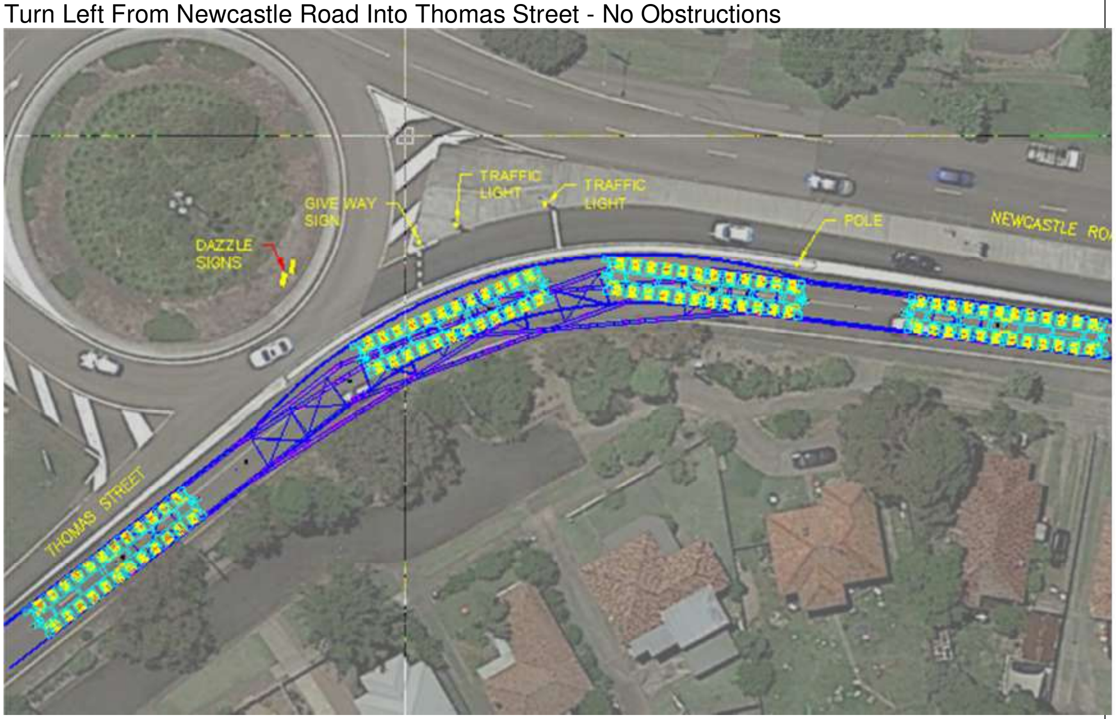
KMS	COMMENT / PHOTO
	Entry Into Newcastle Inner City Bypass From Sandgate Road 
8.2	Unnamed Overpass – Southbound - 5.56m High at East Fog Line; 5.65m High At West Fog Line 

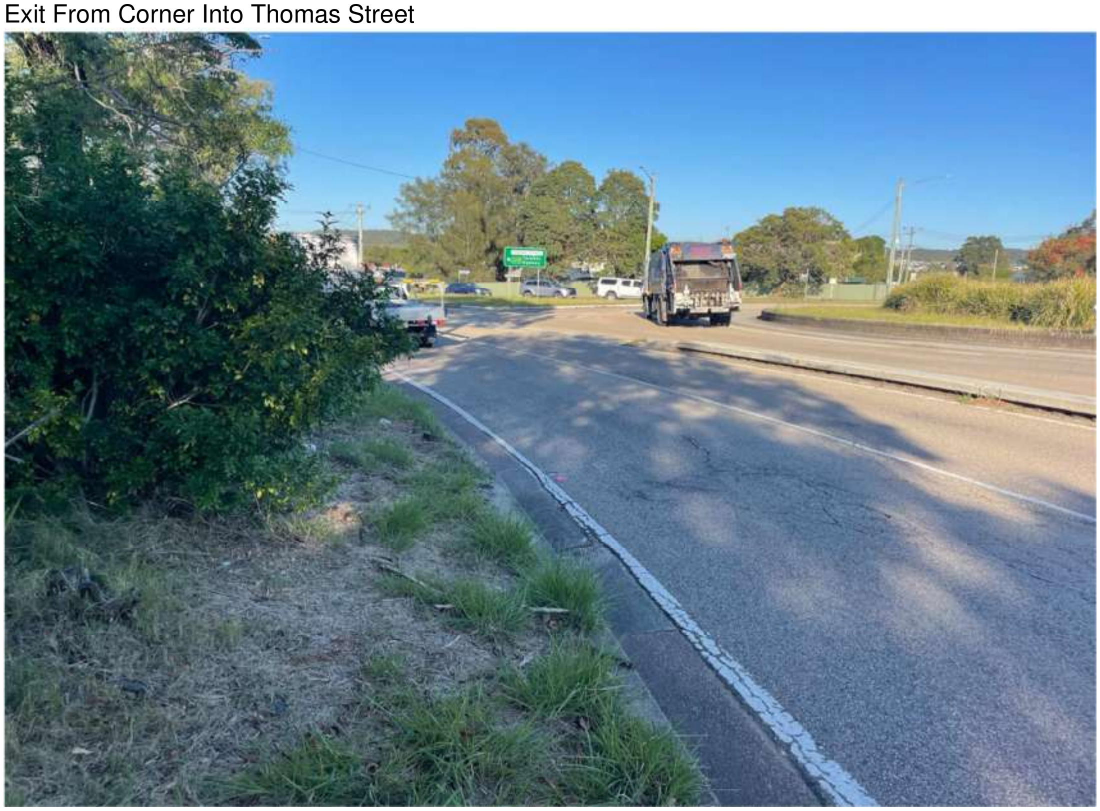
KMS	COMMENT / PHOTO
9.9	University Drive Overpass - Southbound - 5.56m High at East Fog Line; 5.79m High At West Fog Line 
10.0	University Drive Overpass - Southbound - 5.71m High at East Fog Line; 5.63m High At West Fog Line 

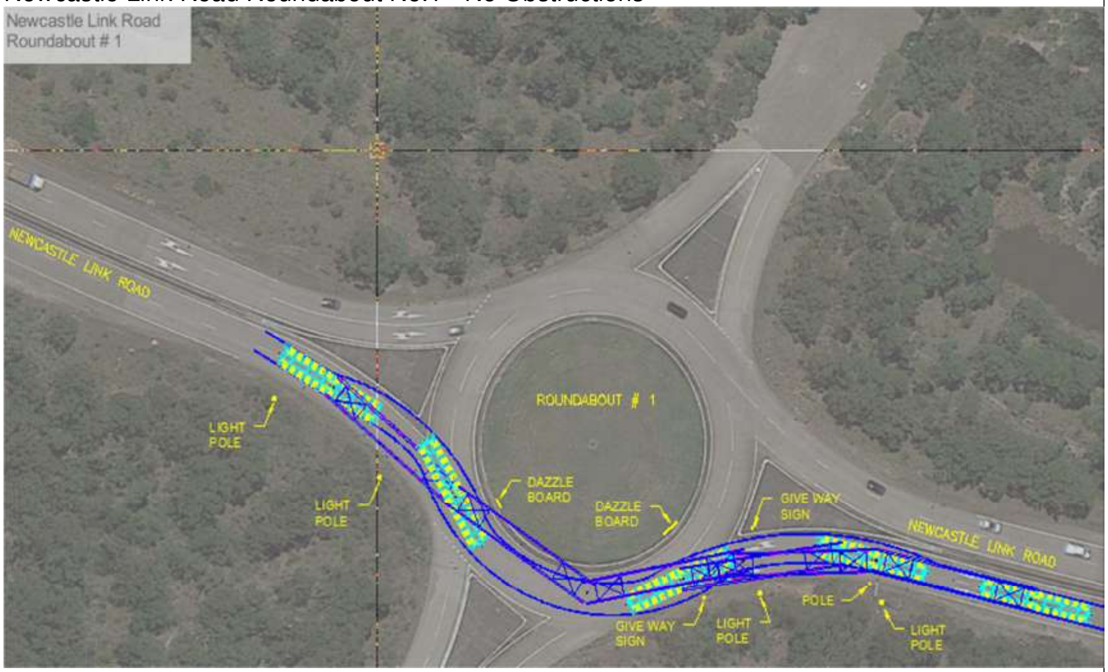
KMS	COMMENT / PHOTO
10.4	Janet Street Overpass – Southbound 5.64m High at East Fog Line; 5.50m High At West Fog Line 
10.5	Pedestrian Overpass – Very High Clearance 

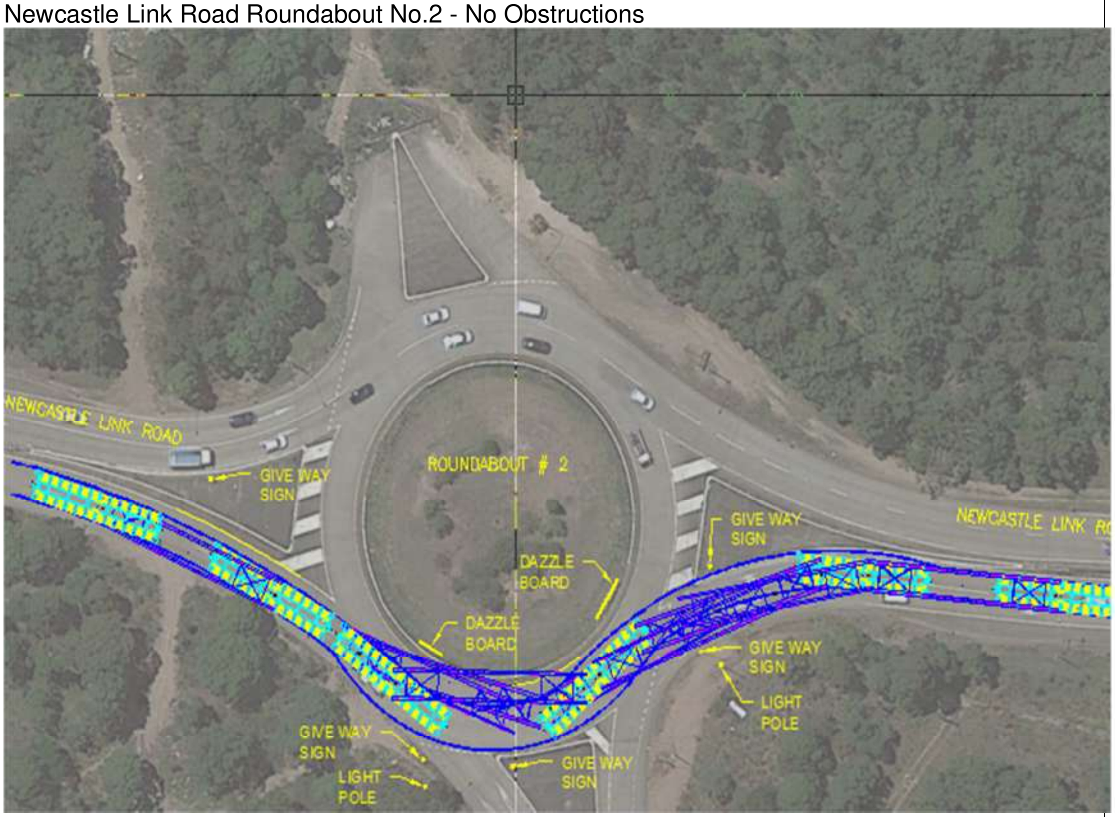
KMS	COMMENT / PHOTO
10.9	Turn Right From The Newcastle Inner City Bypass Into Newcastle Road Via The Jesmond Roundabout – Under Construction - No Obstructions As Of 11/12/2023. Confirm Prior To Transport, 
	Entry To Roundabout From Newcastle Inner City Bypass 

KMS	COMMENT / PHOTO
	Southeast Corner Of Roundabout 
	Southern Side Of Roundabout 

KMS	COMMENT / PHOTO
	Exit Into Newcastle Road 
11.3	Blue Gum Road – Overhead Traffic Light – No Clearance Issues
12.5	Turn Left From Newcastle Road Into Thomas Street - No Obstructions 

KMS	COMMENT / PHOTO
	Entry Into Corner From Newcastle Road 
	Exit From Corner Into Thomas Street 

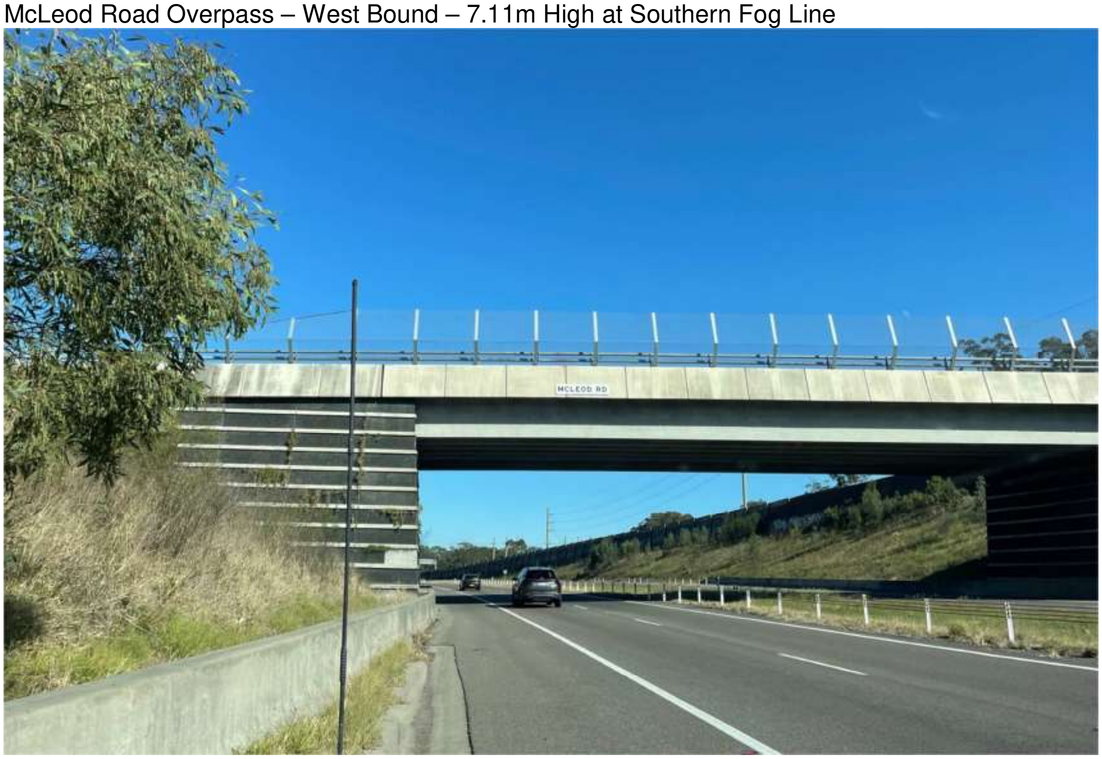
KMS	COMMENT / PHOTO
13.0	Metcalf Street – Overhead Traffic Light – No Clearance Issues
13.3	Walford Street – Overhead Traffic Light – No Clearance Issues
13.5	Overhead Information Sign – No Clearance Issues
13.7	Lake Road – Overhead Traffic Light – No Clearance Issues
13.7	Continue Straight Into The Newcastle Link Road (Name Change Only)
15.4	Newcastle Link Road Roundabout No.1 - No Obstructions 
	Entry Into Roundabout 

KMS	COMMENT / PHOTO
	Exit From Roundabout 
17.8	Newcastle Link Road Roundabout No.2 - No Obstructions 

KMS	COMMENT / PHOTO
	Entry Into Roundabout 
	Exit From Roundabout 
19.0	Overhead Information Sign – No Clearance Issues
19.4	Cameron Park Drive Intersection
19.5	Overhead Information Sign – No Clearance Issues

KMS	COMMENT / PHOTO
20.1	Pacific Motorway Overpass – West Bound – 6.66m High at Southern Fog Line 
20.5	Nurra Bridge
21.6	Seahampton Road Overpass – West Bound – 8.04m High at Southern Fog Line 
21.7	Palkirr Bridge
22.1	Wallambang Bridge
22.6	Nutyoon Bridge
25.5	Barinbellong Bridge
27.1	Wattaka Rest Area - Unsuitable Due To Access And Egress Clearances
28.6	Overhead Information Sign – No Clearance Issues

KMS	COMMENT / PHOTO
29.4 29.5	John Renshaw Drive Eastern Overpass – West Bound – 6.70m High at Southern Fog Line John Renshaw Drive Western Overpass – West Bound – 6.74m High at Southern Fog Line 
30.0	Makroo Bridge
30.5	Overhead Information Sign – No Clearance Issues
31.1	Avery Lane Overpass – West Bound – 6.51m High at Southern Fog Line 

KMS	COMMENT / PHOTO
33.1 33.2	Main Road Eastern Overpass – West Bound – 7.32m High at Southern Fog Line Main Road Western Overpass – West Bound – 7.18m High at Southern Fog Line 
34.4	McLeod Road Overpass – West Bound – 7.11m High at Southern Fog Line 

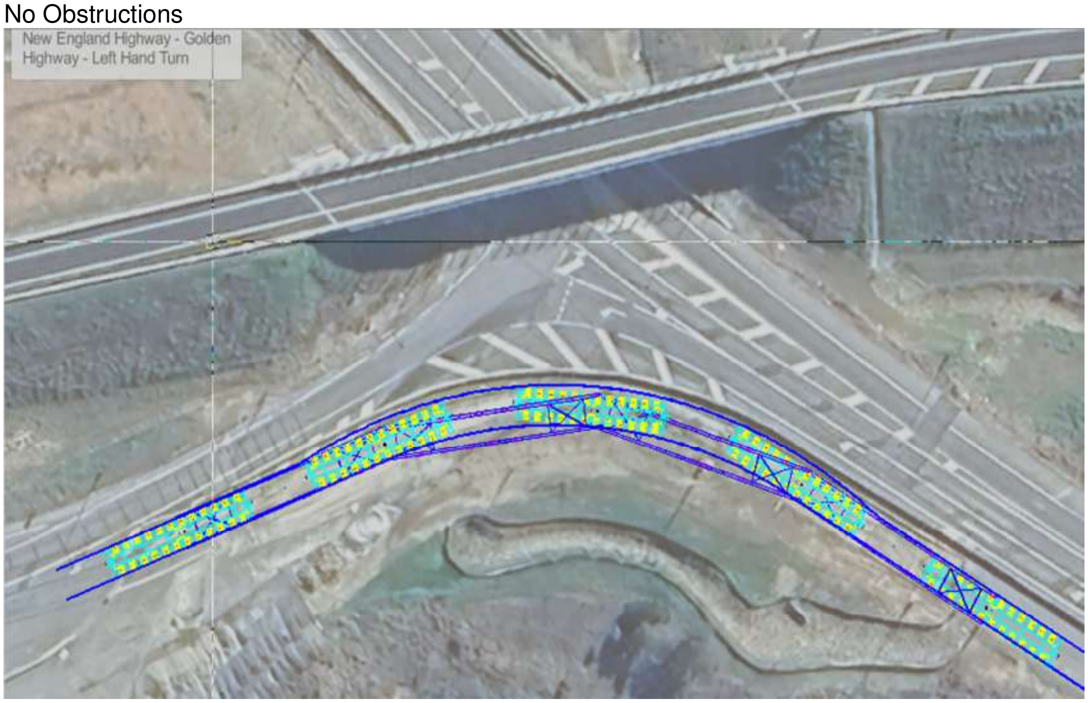
KMS	COMMENT / PHOTO
35.0	J. L. Horseman Overpass – West Bound – 7.06m High at Southern Fog Line 
35.1	Kannung Bridge
35.8	Hart Road Overpass – West Bound – 7.12m High at Southern Fog Line 
38.9	Small Stopping Bay – Approximately 6.5m Wide x 54m Long
39.2	Overhead Information Sign – No Clearance Issues

KMS	COMMENT / PHOTO
40.6	Old Maitland Road Overpass – West Bound – 7.44m High at Southern Fog Line 
43.7	Unnamed Bridge
46.0	Lovedale Road Overpass – West Bound – 7.12m High at Southern Fog Line 
48.6	Camp Road Bridge

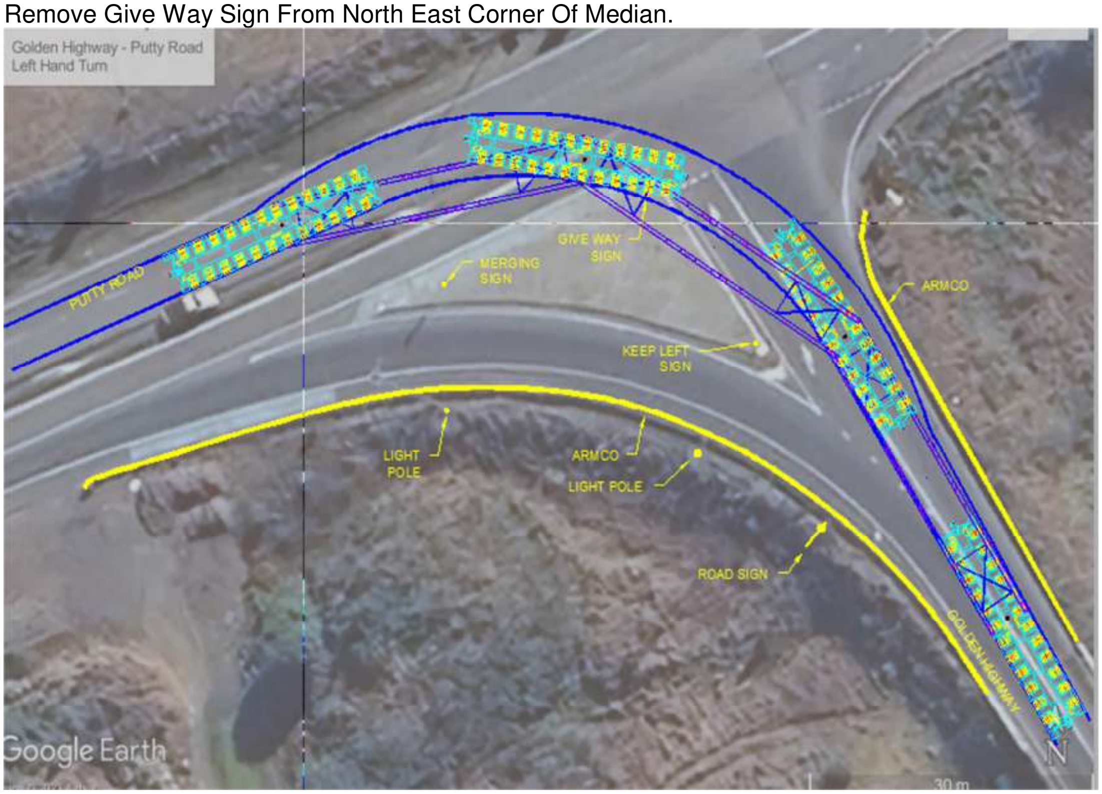
KMS	COMMENT / PHOTO
50.2	Tuckers Lane Overpass – West Bound – 8.08m High at Southern Fog Line 
53.3 53.4	Wine Country Drive Overpass – West Bound – 7.73m High at Southern Fog Line Wine Country Drive Overpass – West Bound – 6.92m High at Southern Fog Line 

KMS	COMMENT / PHOTO
54.4	Bridge Street Overpass – West Bound – 6.85m High at Southern Fog Line 
55.4	Unnamed Bridge
56.1	Parking Bay – Approximately 7.0m wide x 110m Long 

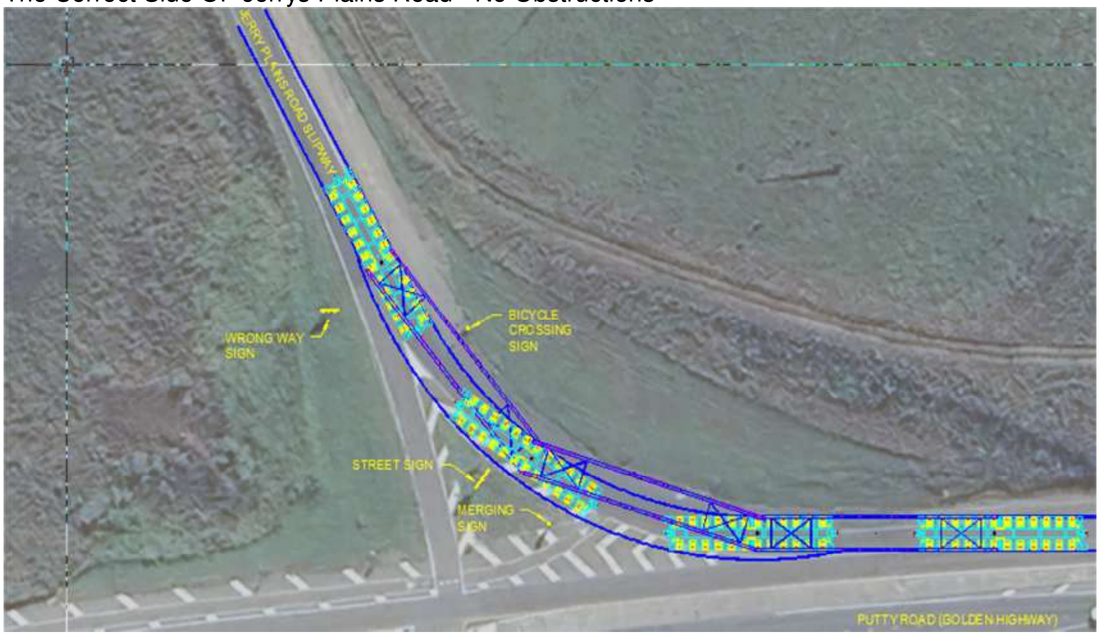
KMS	COMMENT / PHOTO
	
56.7	Kukindia Bridge
57.5	Possible Emergency/Parking Bay - Right Turn Lane (4m Wide x 150M Long) Leading To U-turn 

KMS	COMMENT / PHOTO
	
61.7	Safety Camera Structure – No Clearance Issues
61.8	Jump Up Creek Bridge
62.4	Construction – New England Highway Upgrade – Belford To Golden Highway
65.4	Turn Left From The New England Highway Into The Golden Highway. Intersection Modification - No Obstructions 

KMS	COMMENT / PHOTO
	Existing And New Entry Into Corner Looking Back Toward Transport Convoy. Scheduled Completion Advised To Be End November. Revisit Upon Completion. 
65.8	Golden Highway Roundabout - No Obstructions 
	Entry Into Roundabout. 

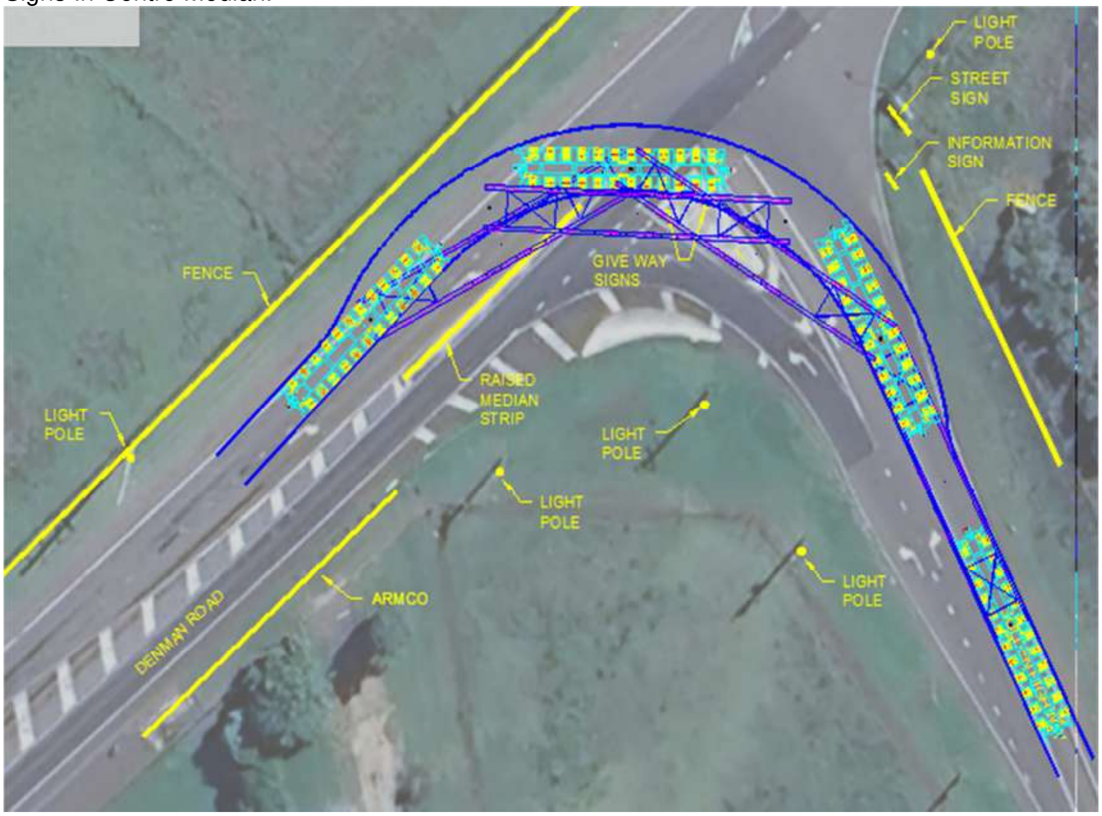
KMS	COMMENT / PHOTO
	Exit From Roundabout 
66.0	Railway Bridge
67.6	Muddies Creek Culvert
74.6	Rail Bridge
74.7	Turn Left From The Golden Highway Into Putty Road. Note: Incorrect Side Into Incorrect Side. Remove Give Way Sign From North East Corner Of Median. 

KMS	COMMENT / PHOTO
	Entry Into Corner From Golden Highway. After Crossing Rail Bridge Move To The Incorrect Side 
	Exit From Corner Into Incorrect Side Of Putty Road. After Clearing The Median, Move To The Correct Side Of Putty Road. 
76.2	Loders Creek Bridge

KMS	COMMENT / PHOTO
77.8	Move To The Incorrect Side Of Putty Road Approximately 100m Before Turning Right Into The Incorrect Direction Of The Jerrys Plains Road Slipway. After Exiting From The Slipway Move To The Correct Side OF Jerrys Plains Road - No Obstructions 
	Entry Into Jerrys Plains Slipway (Incorrect Direction) 
88.6	Wollombi Brook Bridge
89.9	Redbank Creek Bridge

KMS	COMMENT / PHOTO
94.4	Stopping Bay – Approximately 7m Wide x 200m Long 
	
100.0	Redman Vale Bridge
109.4	Hunter River Bridge

<table>
<tr><th>KMS</th><th>COMMENT / PHOTO</th></tr>
<tr><td>124.9</td><td>Stopping Bay – Right Hand Side – Approximately 7m Wide x 115m Long At Farm Access Road
</td></tr>
<tr><td></td><td></td></tr>
</table>

KMS	COMMENT / PHOTO
126.2	Turn Left From The Golden Highway Into Denman Road. On Approach To The Corner Move To The Incorrect Side Of The Golden Highway. Turn Left Into The Incorrect Side Of Denman Road. At Completion Of The Turn Move To The Correct Side Of Denman Road. Remove Give Way Signs In Centre Median. 
	Entry Into Turn From Incorrect Side Of The Golden Highway Into Incorrect Side Of Denman Road. 

KMS	COMMENT / PHOTO
	Exit Into Incorrect Side Of The Denman Road From Incorrect Side Of Golden Highway 
126.9	Hunter River Bridge With Overhead Structure – West Bound – 5.7m High at Southern Fog Line 

KMS	COMMENT / PHOTO
128.1	Possible Emergency Stopping On Left – Difficult To Enter 
	

KMS	COMMENT / PHOTO
131.4	Level Rail Crossing
138.4	Stopping Bay – Approximately 7m Wide x 130m Long 
	
138.8	Wybone Creek Bridge

KMS	COMMENT / PHOTO
144.3	Parking Bay – Right (North) Side – Approximately 6.5m x 100m – In Front Of Fleet Direct Petrol Station. Note That Parking Here Would Likely Block One Driveway Entrance. 
	
145.8	Giants Creek Bridge
147.5	Overhead Average Speed Camera Structure – No Clearance Issues

KMS	COMMENT / PHOTO
154.2	Unnamed Bridge
159.2	Battery Rock Rest Area On The Right Side
166.0	Worondi Creek Bridge
173.4	Overhead Average Speed Camera Structure – No Clearance Issues
174.3	Stopping Area On Right At Merriwa Sports Club – Approximately 8m Wide x110m Long 
	
175.9	Culvert
175.7	Bridge Work
178.0	Merriwa River Bridge
182.1	Farm Springs Gully Culvert
182.3	Black Springs Creek

KMS	COMMENT / PHOTO
184.6	Parking Bay – Right (North) Side – Approximately 12m Wide x 250m Long – Difficult Entry 
	

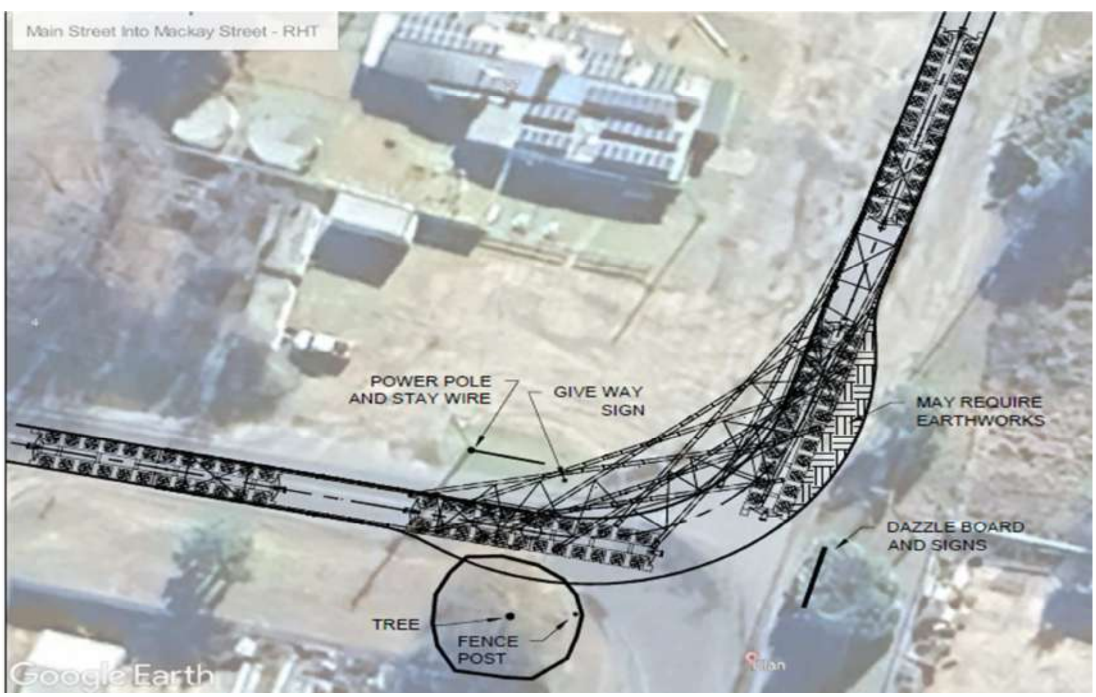
KMS	COMMENT / PHOTO
187.3	Bow Creek Bridge
192.6	Killoe Creek Bridge
198.2	Ginghi Creek Culvert
200.8	Krui Creek Bridge
207.2	Parking Bay – Proximately 10m Wide x 150m Long 
	

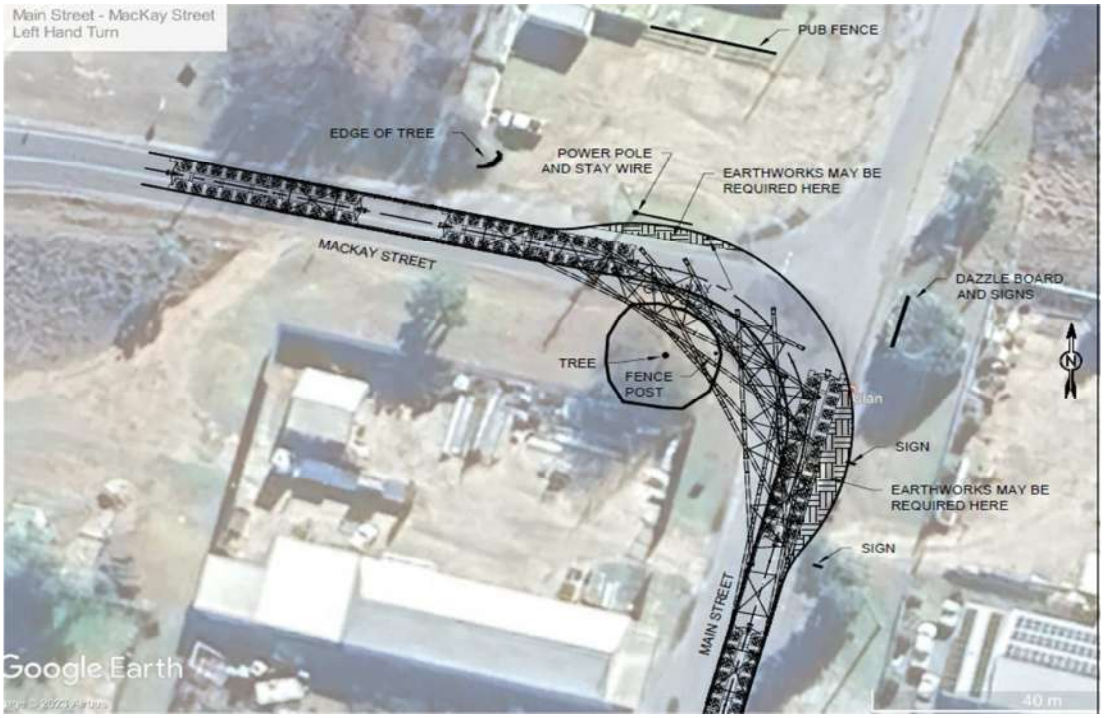
KMS	COMMENT / PHOTO
210.2	Borambil Creek Bridge
213.2	Eastern Gully Culvert
213.4	Two Mile Hollow Gully Culvert
214.4	Parking Bay – Approximately 6m Wide x 100m Long 
	
217.3	Munmurra Creek Bridge
218.7	Four Mile Creek Bridge

KMS	COMMENT / PHOTO
221.8	Cassils Park Rest Area – Approximately 16m Wide x 150m Long 
	
223.4	Iron Bark Creek Bridge

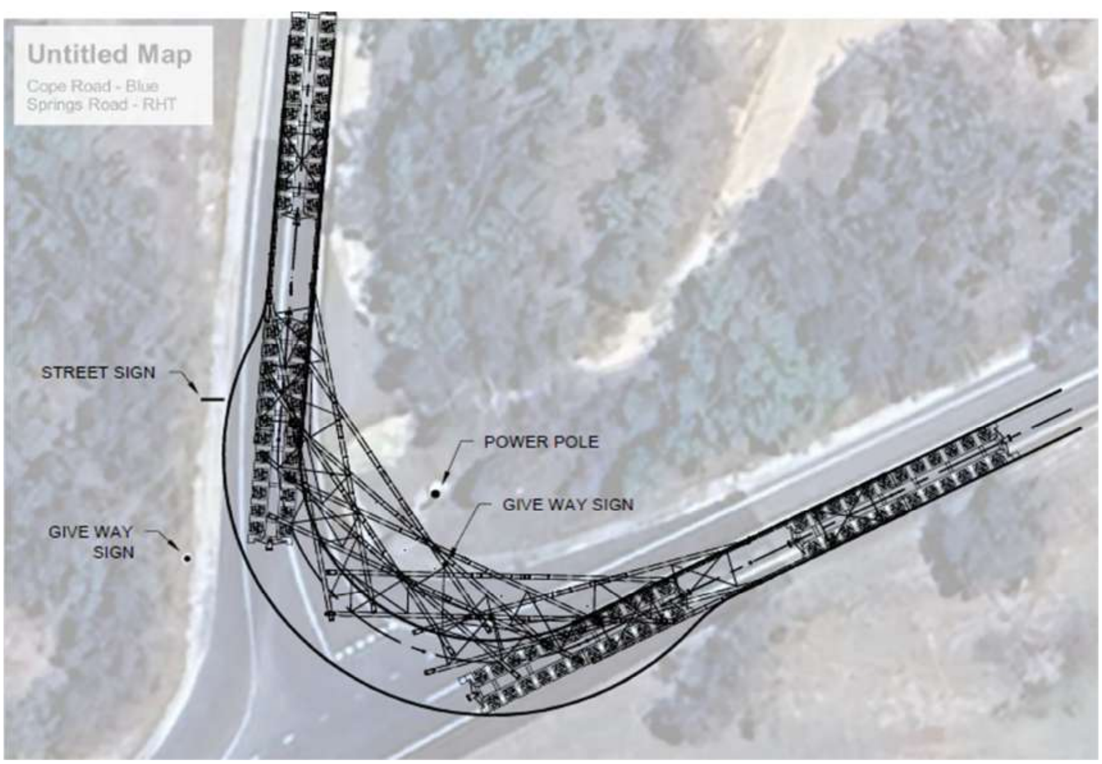
KMS	COMMENT / PHOTO
224.3	Turn Left From Golden Highway Into Ulan Road - No Obstructions 
	Entry Into Ulan Road 
232.3	Murrumbline Creek Bridge

KMS	COMMENT / PHOTO
235.0	Curryal Creek Bridge
244.7	Goulburn River Bridge
250.6	Rail Bridge
254.0	Turn Right From Ulan Road Into Main Street - No Obstructions 
	Entry Into Main Street 
254.1	Level Crossing

KMS	COMMENT / PHOTO
	Exit Into Main Street And Level Crossing 
254.7	Turn Right From Main Street Into MacKay – Option # 1. Confirm Main Street On North Side Of MacKay Street Is Public Road Or Obtain Permission To Use. Remove Give Way Sign On North Side Of MacKay Street. 

KMS	COMMENT / PHOTO
254.7	Turn Left From Main Street Into MacKay – Option # 2. Confirm Private Fence Post On Inside Corner Can Be Removed. Confirm Private Tree Can Be Trimmed/Removed. Remove Sign On East Side Of Main Street. 
	Entry From Main Street Into MacKay Street 

KMS	COMMENT / PHOTO
254.8	Turn Right From MacKay Street Into Robison Street (Cope Road) – Option # 1 – Remove Give Way Sign On North Side Of MacKay Street. Confirm Height Of Powerline Across MacKay Street 
254.8	Turn Left From MacKay Street Into Robison Street (Cope Road) – Option # 2 - No Obstructions 

KMS	COMMENT / PHOTO
	Entry From MacKay Street Into Robison Road (Cope Road) 
259.0	Sportsmans Hollow Creek Bridge
263.2	Dead Man's Creek Bridge
268.6	Turn Right From Cope Road Into Blue Springs Road, Remove Give Way Sign On inside Corner. Monitor Street Sign On West Side Of Blue Springs Road. 

KMS	COMMENT / PHOTO
	Entry Into Blue Springs Road From Cope Road 
272.6	Arrive At The Site Gate/Parking Area – Access To Be Between Stop Sign And Gate Post
	Entry Into Site Parking Area Looking Backwards To Direction Of Travel 
	End Of Survey

Appendix K

Adelaide Route Assessment

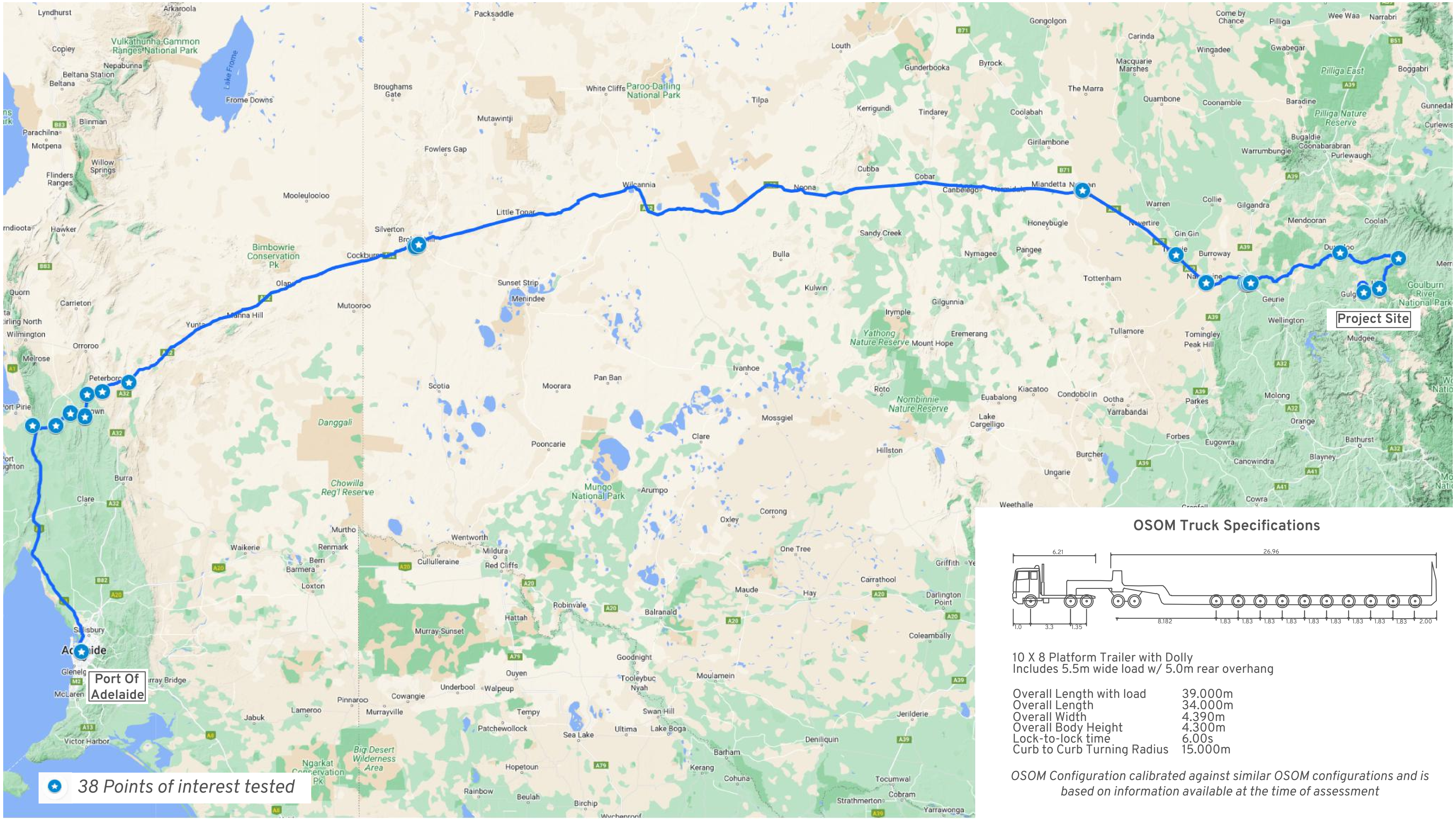
The findings of the route assessments are summarised in Table 17.

Table 17: Adelaide Route Assessment Findings - Summary

Sheet No.	Location	Web Link	Comment / Management Measure
01	120 Days Road, Regency Park	**Link**	Escorts to control traffic at access and facilitate use opposing traffic lanes Internal car park to be clear Spotters to monitor load and impacts to infrastructure
02	Regency Road / Days Road, Croydon Park	**Link**	Escorts / other to place intersection under traffic control and temporarily close during transport Mountable central concrete medians to be monitored and all signs removed and temporary relocated Spotters to monitor all impacts to infrastructure
03	Regency Road / South Road, Croydon Park	**Link**	Escorts / other to control traffic control for left turn movement Truck matting (or similar) to be provided and impacts to kerbing, paths etc monitored Spotters to monitor all impacts to infrastructure
04	Augusta Highway / Wilkins Highway, Warnertown	**Link**	Escorts to control traffic at intersection to ensure clear Spotter to monitor impacts to infrastructure
05	Wilkins Highway / Horrocks Highway, Gladstone	**Link**	Escorts to control traffic with movement at low speed Signs removed on island approaches to be temporary relocated Spotters to ensure trailer and load clear of infrastructure, impacts monitored
06	Wilkins Highway / Park Terrace, Gladstone	**Link**	Escorts to control traffic around bend to ensure both lanes are clear
07	Park Terrace / Wilkins Highway, Gladstone	**Link**	Escorts to control traffic around bend to ensure both lanes are clear
08	Wilkins Highway / Charles Street, Caltowie	**Link**	Escorts to control traffic to ensure intersection is clear
09	Ayr Street / R M Williams Way, Jamestown	**Link**	Escorts to control traffic at intersection Spotter/s to monitor any impacts to infrastructure
10	R M Williams Way, Jamestown	**Link**	Escorts to control traffic to ensure both traffic lanes are clear Spotters to ensure load is clear of infrastructure Rail Authority to be consulted for comment/approval

Sheet No.	Location	Web Link	Comment / Management Measure
11	R M Williams Way, Jamestown	**Link**	Escorts to control traffic to ensure both traffic lanes are clear Spotters to ensure load is clear of infrastructure
12	R M Williams Way ./ Beniah Road, Mannanarie	**Link**	Escorts to control traffic to ensure intersection is clear
13	Second Street / Main Street, Yongala	**Link**	Escorts to control traffic at intersection Spotter to monitor impacts to any infrastructure / vegetation
14	Petersburg Road / Barrier Highway, Ucolta	**Link**	Escorts to control traffic to ensure intersection is clear
	Cross NSW Border on Barrier Highway		
15	Barrier Highway / Creedon Street, Broken Hill	**Link**	Escorts to control traffic to ensure intersection is clear and impacted traffic lanes
16	Creedon Street, Gaffney Street, Broken Hill	**Link**	Escorts to control traffic to ensure intersection is clear
17	Crystal Street / Iodide Street, Broken Hill	**Link**	Escorts to control traffic to ensure intersection is clear Spotter to monitor impacts to infrastructure
18	Iodide Street / Barrier Highway, Broken Hill	**Link**	Escorts to control traffic to ensure intersection is clear, use of opposing lane for turn at intersection Spotter to monitor impacts to infrastructure
19	Barrier Highway / Mitchell Highway, Nyngan	**Link**	Escorts to control traffic to ensure intersection is clear
20	Mitchell Highway, Nyngan	**Link**	Escorts to control traffic to ensure both traffic lanes are clear Spotters to ensure load is clear of infrastructure Rail Authority to be consulted for comment/approval
21	Mitchell Highway, Nyngan	**Link**	Escorts to control traffic to ensure both traffic lanes are clear Spotters to ensure load is clear of infrastructure
22	Mitchell Highway, Trangie	**Link**	Route clear in this area, no need for management measures identified
23	Mitchell Highway, Trangie	**Link**	Escorts to control traffic as required to ensure both lanes clear
24	Mitchell Highway / Culling Street, Narromine	**Link**	Escorts to control traffic as required to ensure path of travel clear
25	Culling Street / Manildra Street, Narromine	**Link**	Escorts to control traffic around bend

Sheet No.	Location	Web Link	Comment / Management Measure
26	Manildra Street / Mitchell Highway, Narromine	**Link**	Escorts to control traffic at intersection Signs to be temporarily relocated on Manildra Street
27	Michell Highway / Thompson Street. Dubbo	**Link**	Escorts to control traffic to enable opposing lane of traffic to be used at intersection Spotters to monitor impacts to any infrastructure
28	Thompson Street / Newell Highway, Dubbo	**Link**	Escorts to control traffic at intersection Spotters to monitor impacts to infrastructure
29	Newell Highway / Golden Highway / Darling Street, Dubbo	**Link**	Escorts to control traffic at intersection Spotters to monitor impact to roundabout island, adjacent electrical poles
30	Golden Highway / Fitzroy Street, Dubbo	**Link**	Escorts to control traffic at intersection Spotters to monitor impact to roundabout island, adjacent electrical poles
31	Golden Highway / Myall Street, Dubbo	**Link**	Escorts to control traffic at intersection Spotters to monitor impact to roundabout island, adjacent electrical poles
32	Golden Highway / Wheelers Lane / Yarrandale Road, Dubbo	**Link**	Escorts to control traffic at intersection Spotters to monitor impact to roundabout island, adjacent electrical poles
33	Golden Highway, Dunedoo	**Link**	Escorts to control traffic around bend Rail Authority to be consulted for comment/approval
34	Golden Highway / Ulan Road, Cassilis	**Link**	Escorts to control traffic at intersection
35	Ulan Road / Main Street, Ulan	**Link**	Escorts to control traffic at intersection Rail Authority to be consulted for comment/approval
36	Main Street / MacKay Street, Ulan	**Link**	Escorts to control traffic in area and keep route clear Spotters to monitor impact to vegetation and infrastructure
37	MacKay Street / Robinson Street, Ulan	**Link**	Escorts to control traffic in area and at bend
38	Cope Road / Blue Springs Road, Stubbo	N/A (based on upgrade plans)	Escorts to control traffic at intersection Planned upgrade would accommodate OSOM vehicle combination
39	Blue Springs Road / Site Access, Stubbo	N/A (based on upgrade plans)	Escorts to control traffic at intersection Planned upgrade would accommodate OSOM vehicle combination



OSOM Truck Specifications

10 X 8 Platform Trailer with Dolly
Includes 5.5m wide load w/ 5.0m rear overhang

Overall Length with load	39.000m
Overall Length	34.000m
Overall Width	4.390m
Overall Body Height	4.300m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15.000m

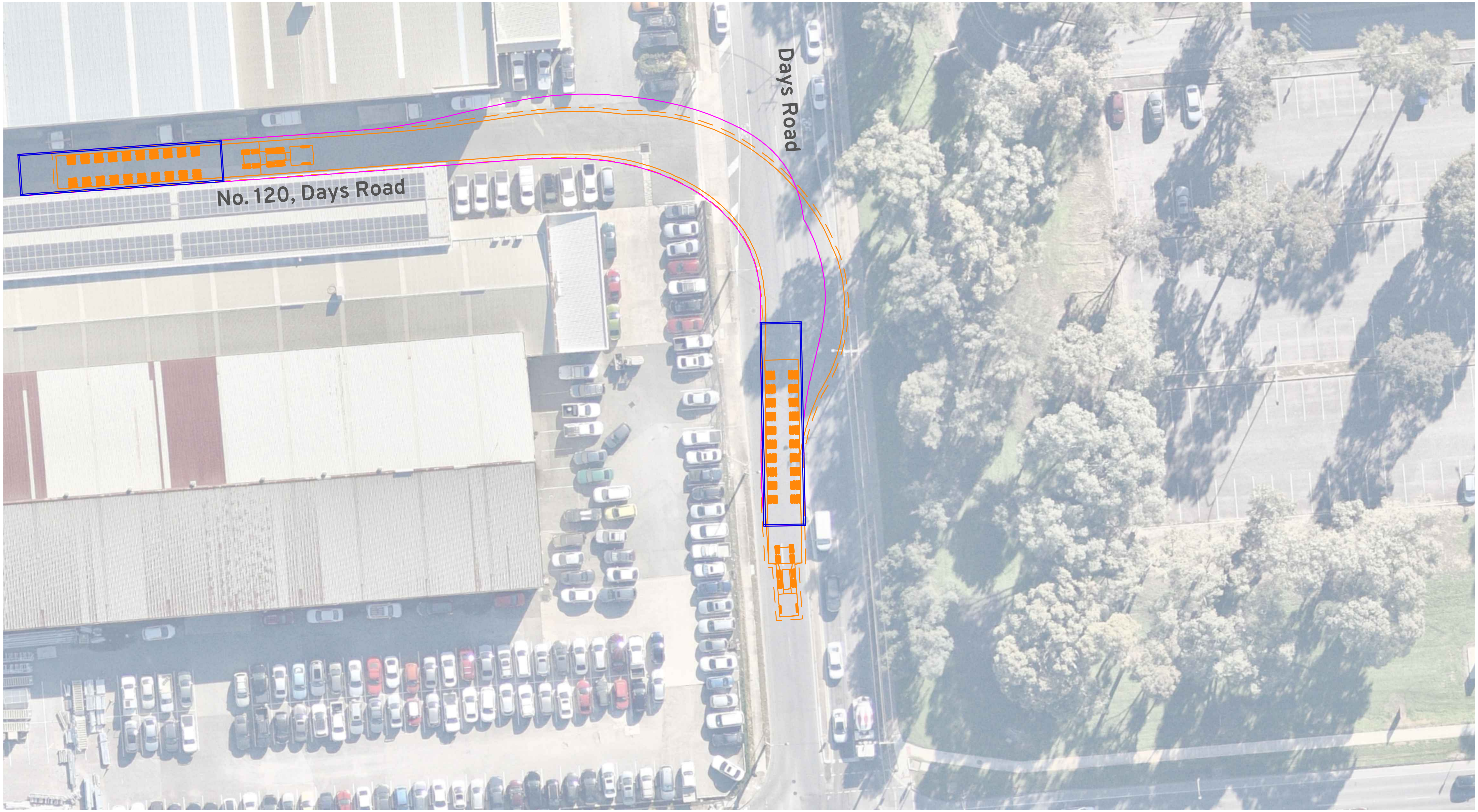
OSOM Configuration calibrated against similar OSOM configurations and is based on information available at the time of assessment

Overall OSOM Route Map
Port of Adelaide to Site
Detailed Swept Path Assessments for locations shown on following sheets
Route available on-line here
https://www.google.com/maps/d/edit?mid=1hDReFrkTJU4Ff20ALJOfOFaZnq4GUh0&usp=sharing

Route Assessment: Adelaide
Stubbo Solar Farm
Overall Route Summary and OSOM Details

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Adelaide S01A
SCALE at A3: NTS

Amber 00



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts to control traffic at access and facilitate use opposing traffic lanes

Internal car park to be clear

Spotters to monitor load and impacts to infrastructure

Location:

Regency Park SA 5010

https://goo.gl/maps/etXMvX5w9wXgZ5nZ9

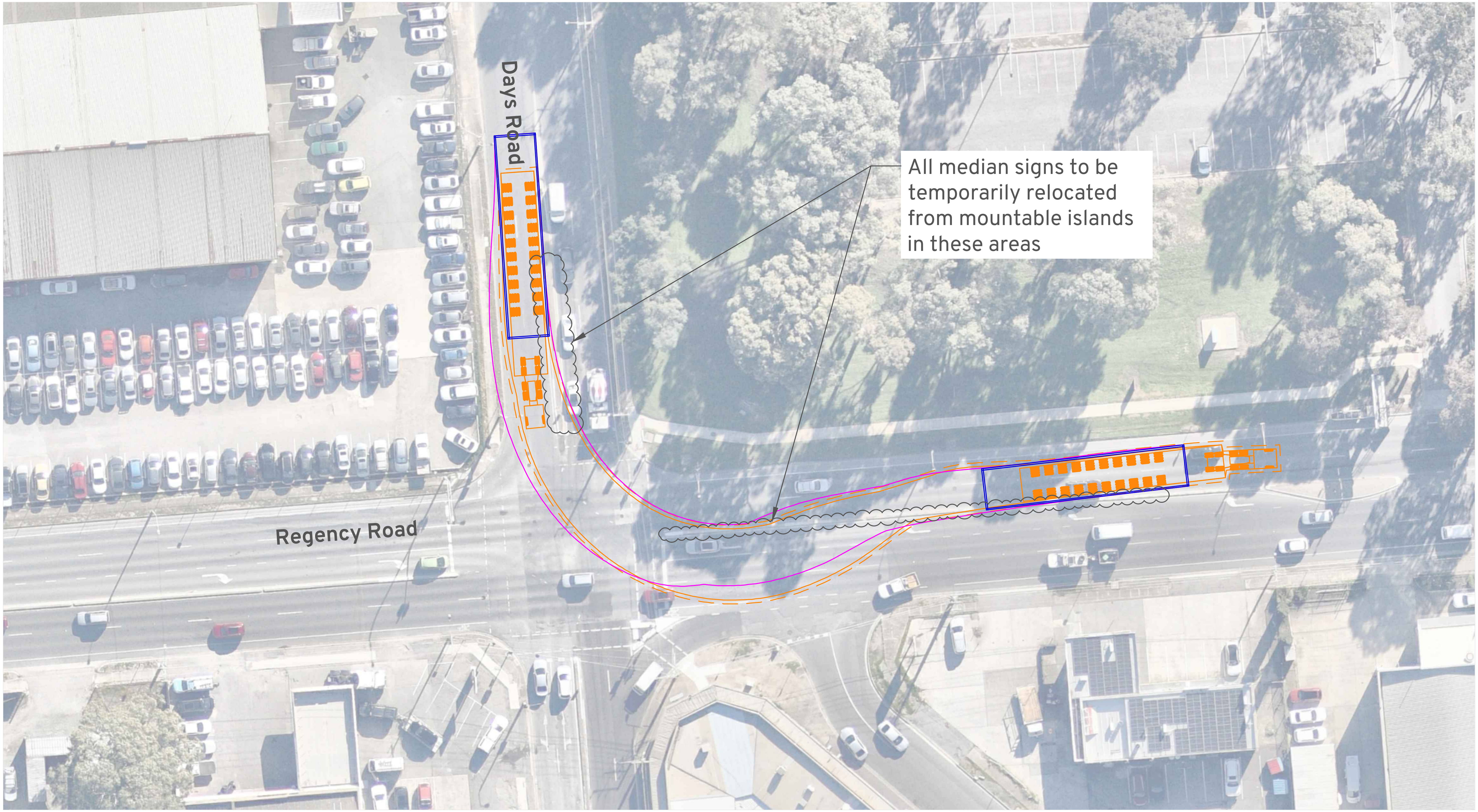
Route Assessment: Adelaide

Stubbo Solar Farm

Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Adelaide S01A
SCALE at A3: 1:500

Amber 01



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts / other to place intersection under traffic control and temporarily close during transport

Mountable central concrete medians to be monitored and all signs removed and temporary relocated

Spotters to monitor all impacts to infrastructure

Location:

Croydon Park SA 5008

https://goo.gl/maps/GG8i94CbwmwzaTwT7

Route Assessment: Adelaide

Stubbo Solar Farm

Swept Path Assessment

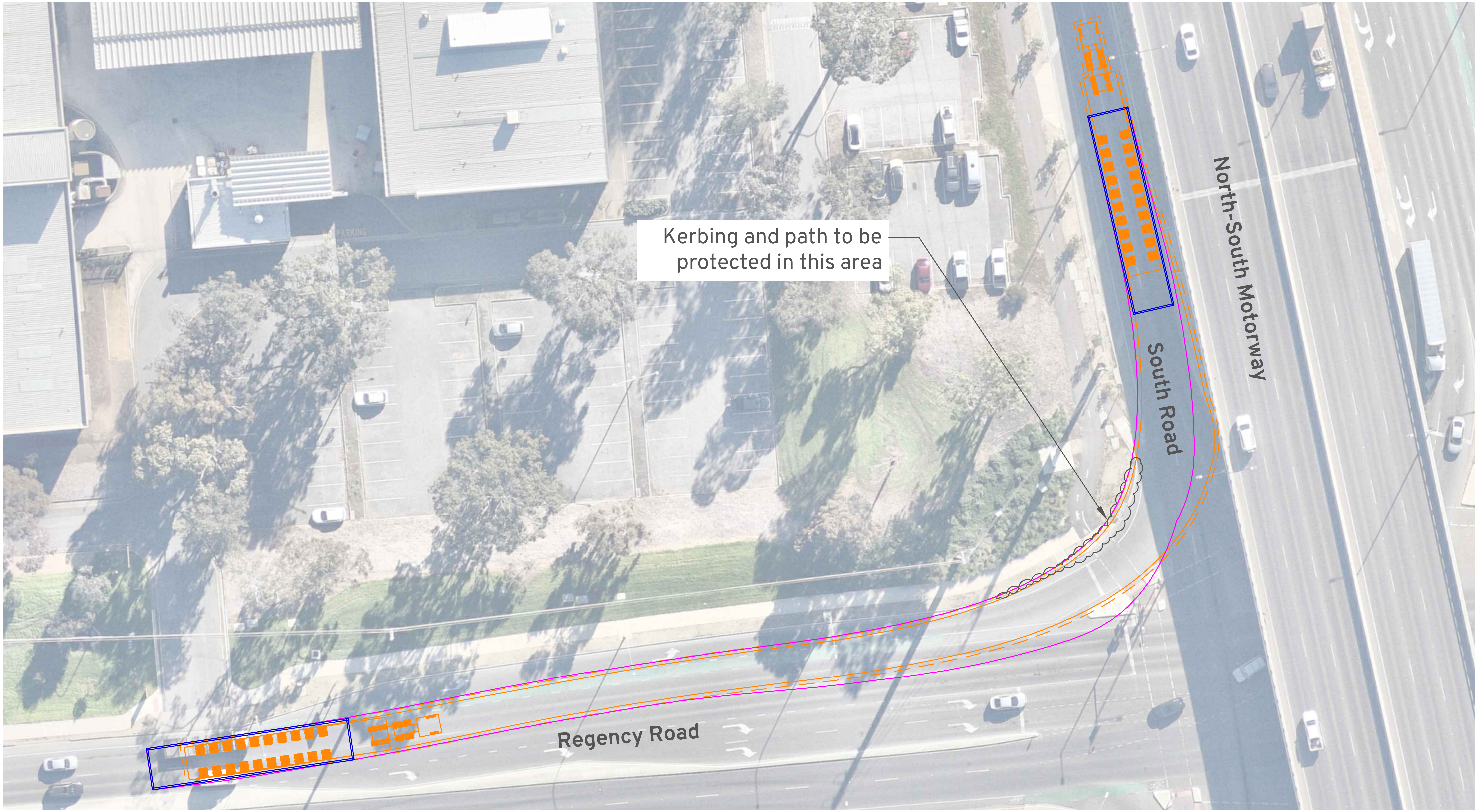
DRAWN: TD / RK

DATE: 12/09/2023

DWG NO: 594 Adelaide S01A

SCALE at A3: 1:500

02



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts / other to control traffic control for left turn movement

Truck matting (or similar) to be provided and impacts to kerbing, paths etc monitored

Spotters to monitor all impacts to infrastructure

Location:

Croydon Park SA 5008

https://goo.gl/maps/u5vbZwp71uuLHNgg7

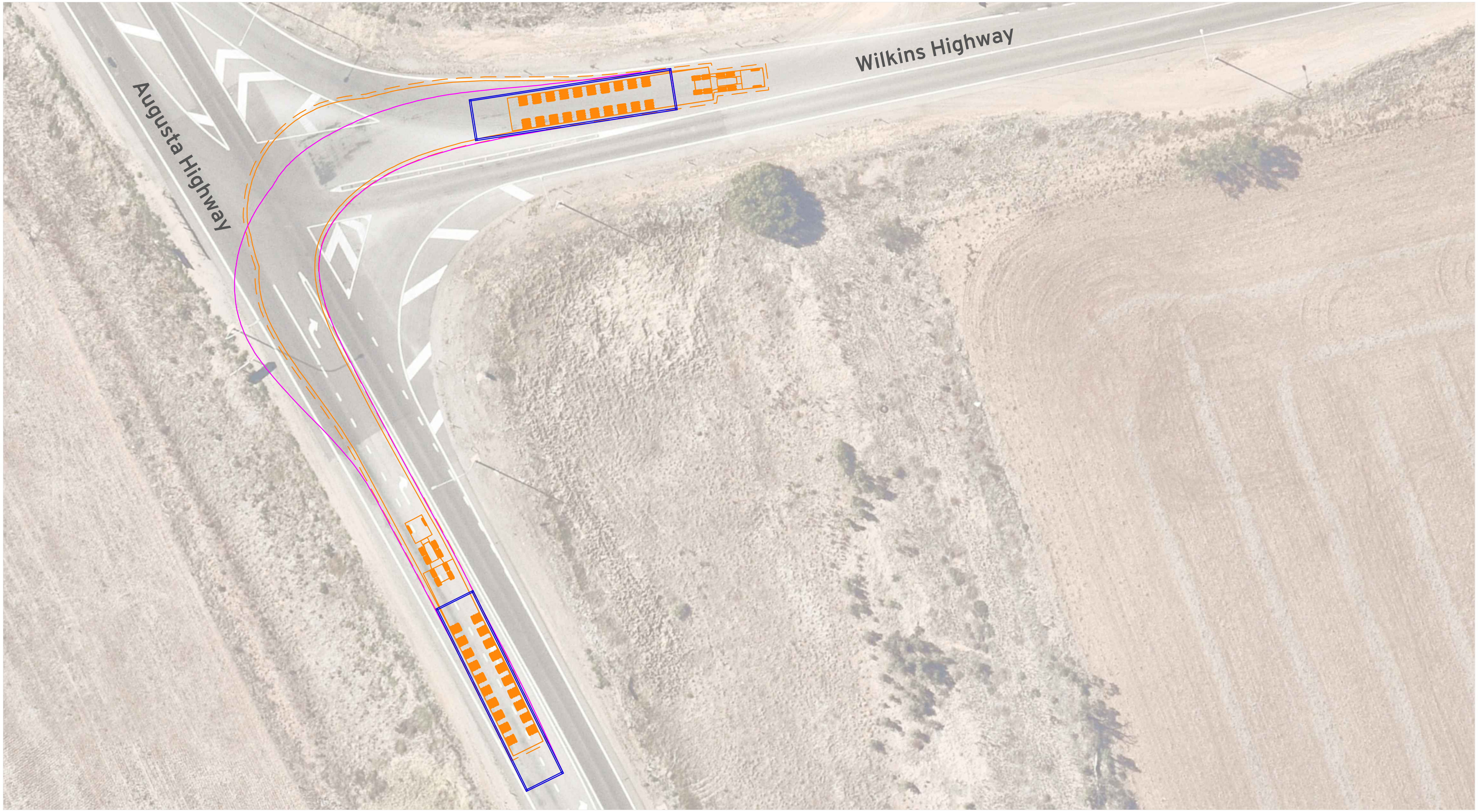
Route Assessment: Adelaide

Stubbo Solar Farm

Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Adelaide S01A
SCALE at A3: 1:500

Amber 03



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts to control traffic at intersection to ensure clear

Spotter to monitor impacts to infrastructure

Location:
Warnertown SA 5540
https://goo.gl/maps/xsnU9WVeVSGESsyS6

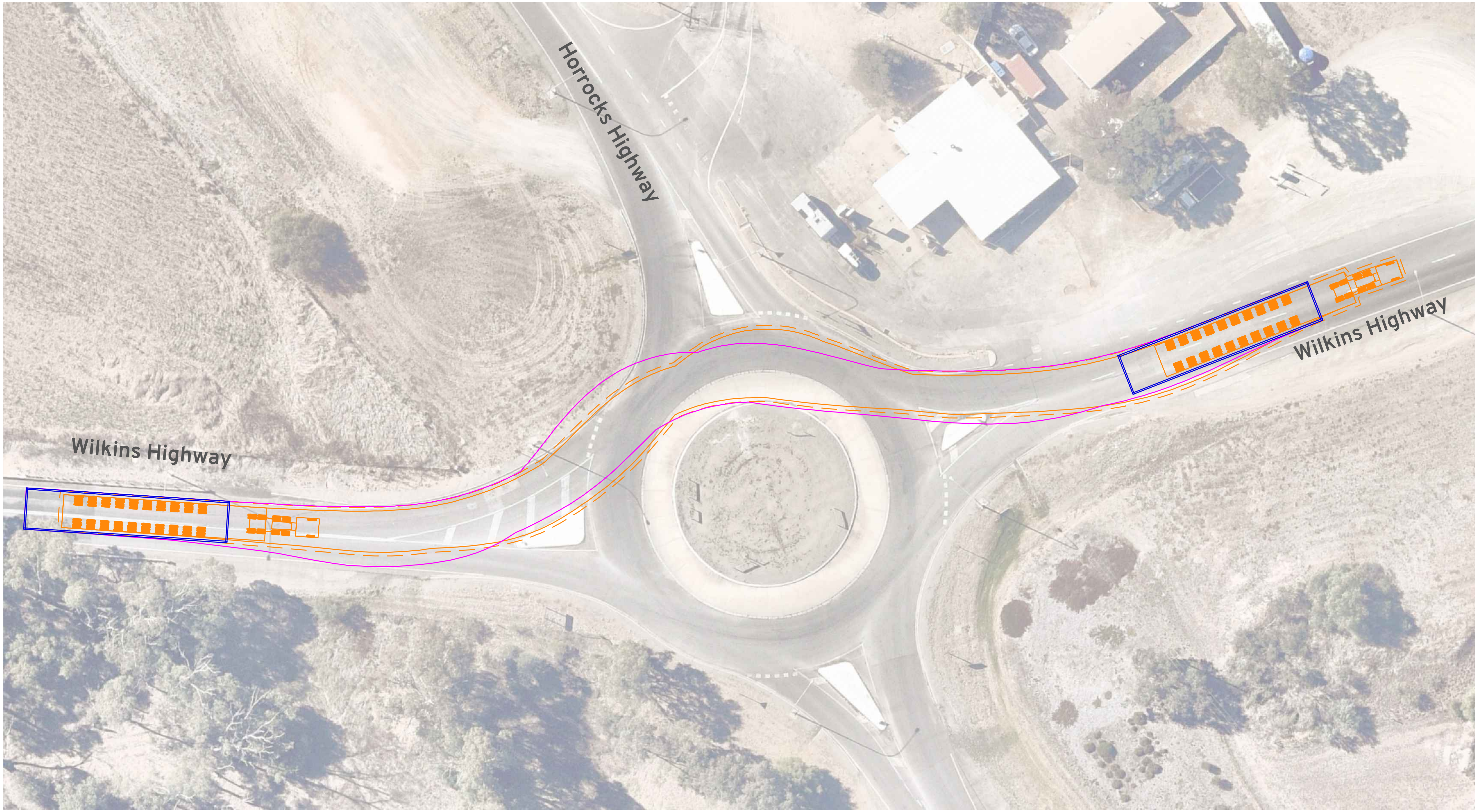
Route Assessment: Adelaide

Stubbo Solar Farm

Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Adelaide S01A
SCALE at A3: 1:500

Amber 04



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts to control traffic with movement at low speed

Signs removed on island approaches to be temporary relocated

Spotters to ensure trailer and load clear of infrastructure, impacts monitored

Location:

Gladstone SA 5473

https://goo.gl/maps/zSevA7P6ibvGNzdYA

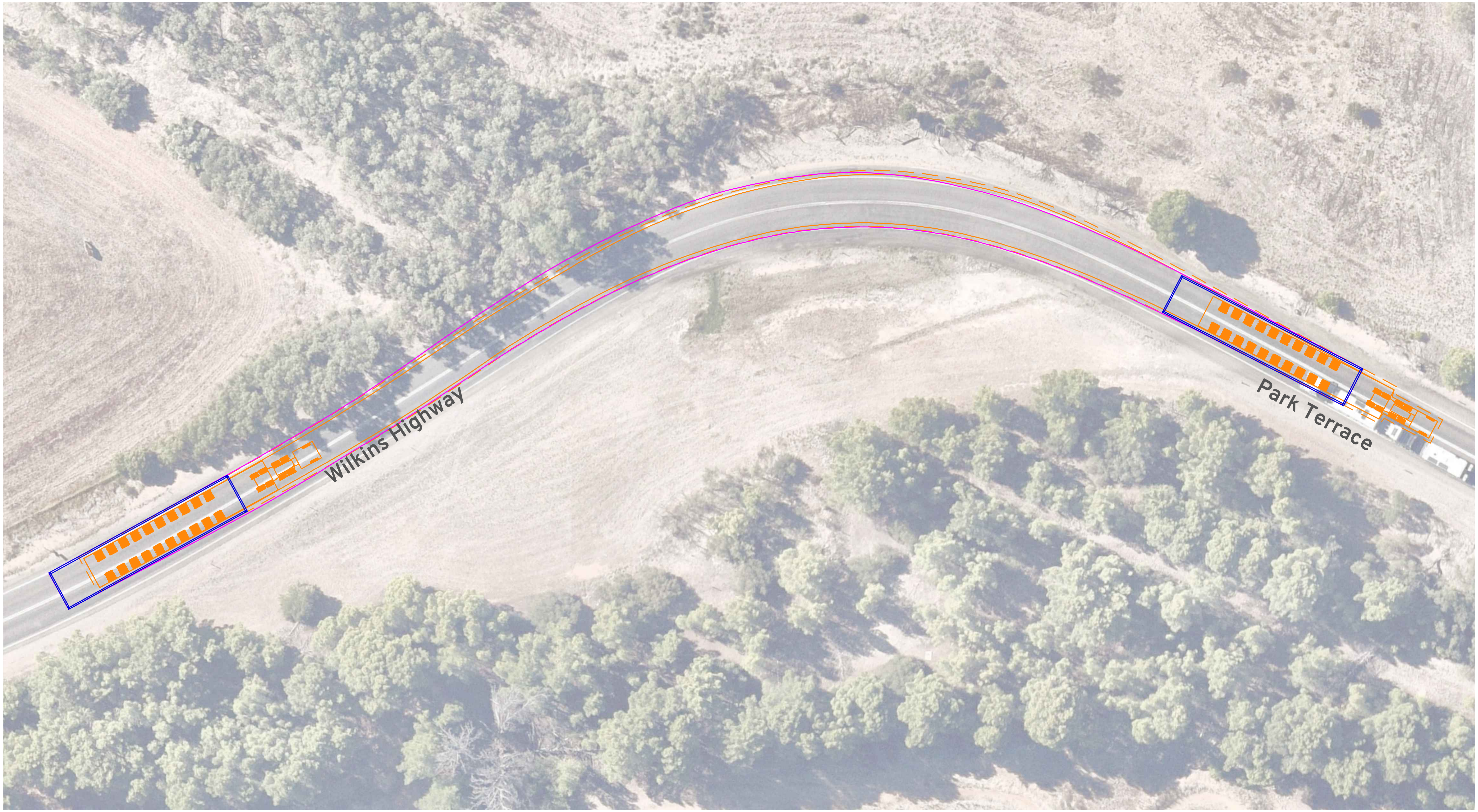
Route Assessment: Adelaide

Stubbo Solar Farm

Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Adelaide S01A
SCALE at A3: 1:500

Amber 05



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts to control traffic around bend to ensure both lanes are clear

Location:

Gladstone SA 5473

https://goo.gl/maps/a2WpfjSANVZE6jnM8

Route Assessment: Adelaide

Stubbo Solar Farm

Swept Path Assessment

DRAWN: TD / RK

DATE: 12/09/2023

DWG NO: 594 Adelaide S01A

SCALE at A3: 1:500

Amber 06

Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts to control traffic around bend to ensure both lanes are clear

Location:

Gladstone SA 5473

https://goo.gl/maps/cXsfm5dDRbSfde2B8

Route Assessment: Adelaide

Stubbo Solar Farm

Swept Path Assessment

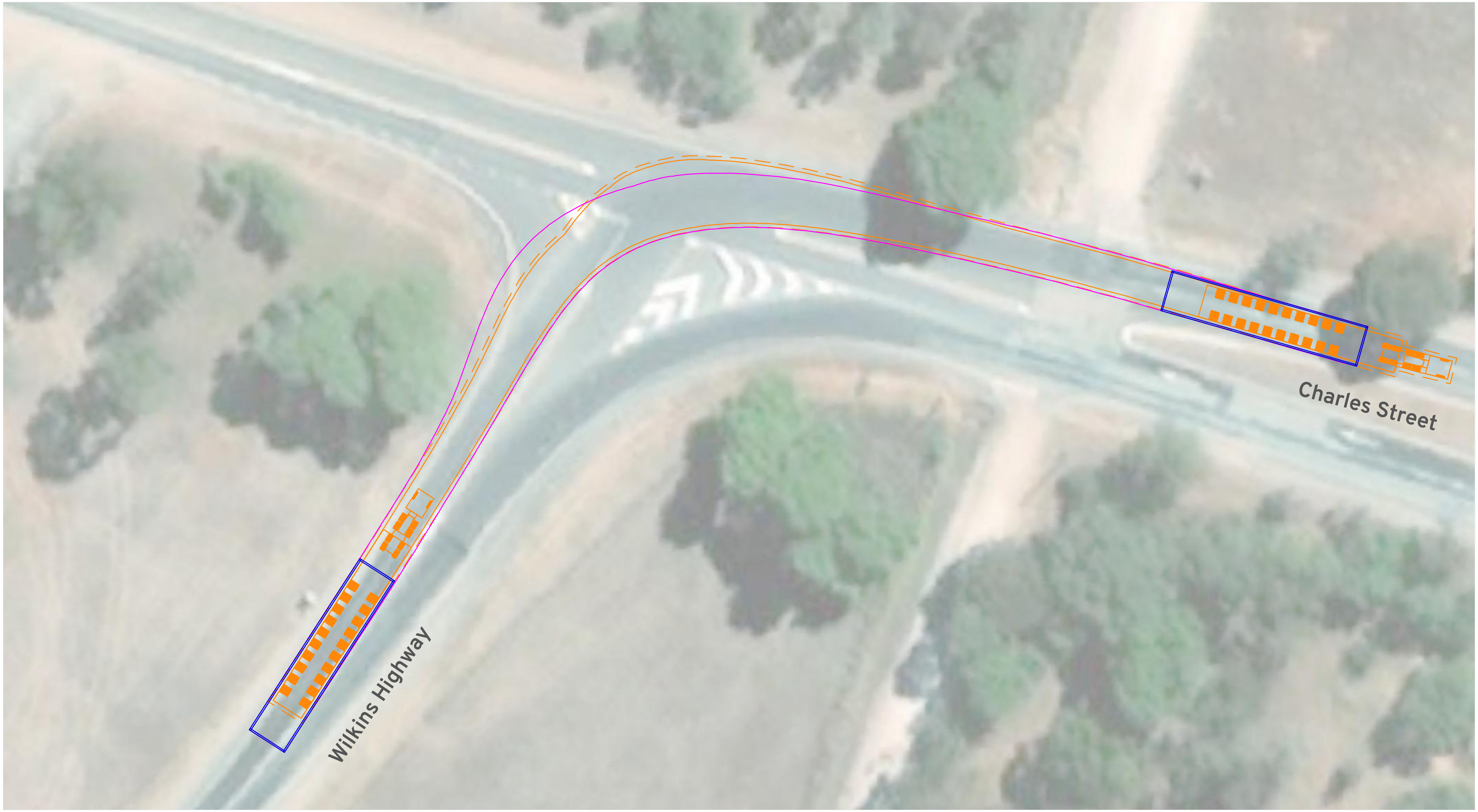
DRAWN: TD / RK

DATE: 12/09/2023

DWG NO: 594 Adelaide S01A

SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

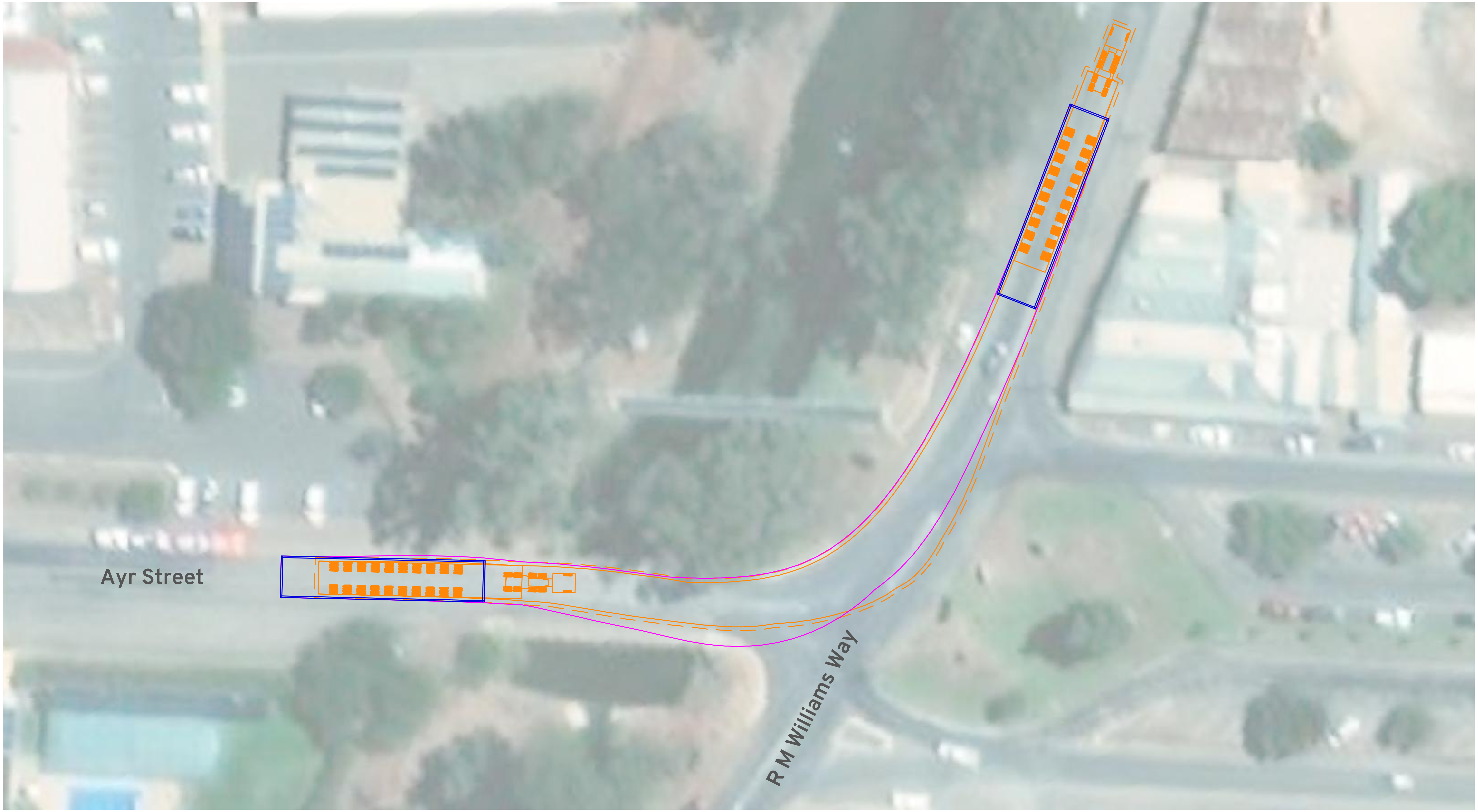
Notes:
Escorts to control traffic to ensure intersection is clear

Location:
Caltowie SA 5490
https://goo.gl/maps/prsjHbJtJUViZNuC8

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Adelaide S01A
SCALE at A3: 1:500

Amber 08



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts to control traffic at intersection

Spotter/s to monitor any impacts to infrastructure

Location:

Jamestown SA 5491

https://goo.gl/maps/cJVaQQJHqmU9d6tv6

Route Assessment: Adelaide

Stubbo Solar Farm

Swept Path Assessment

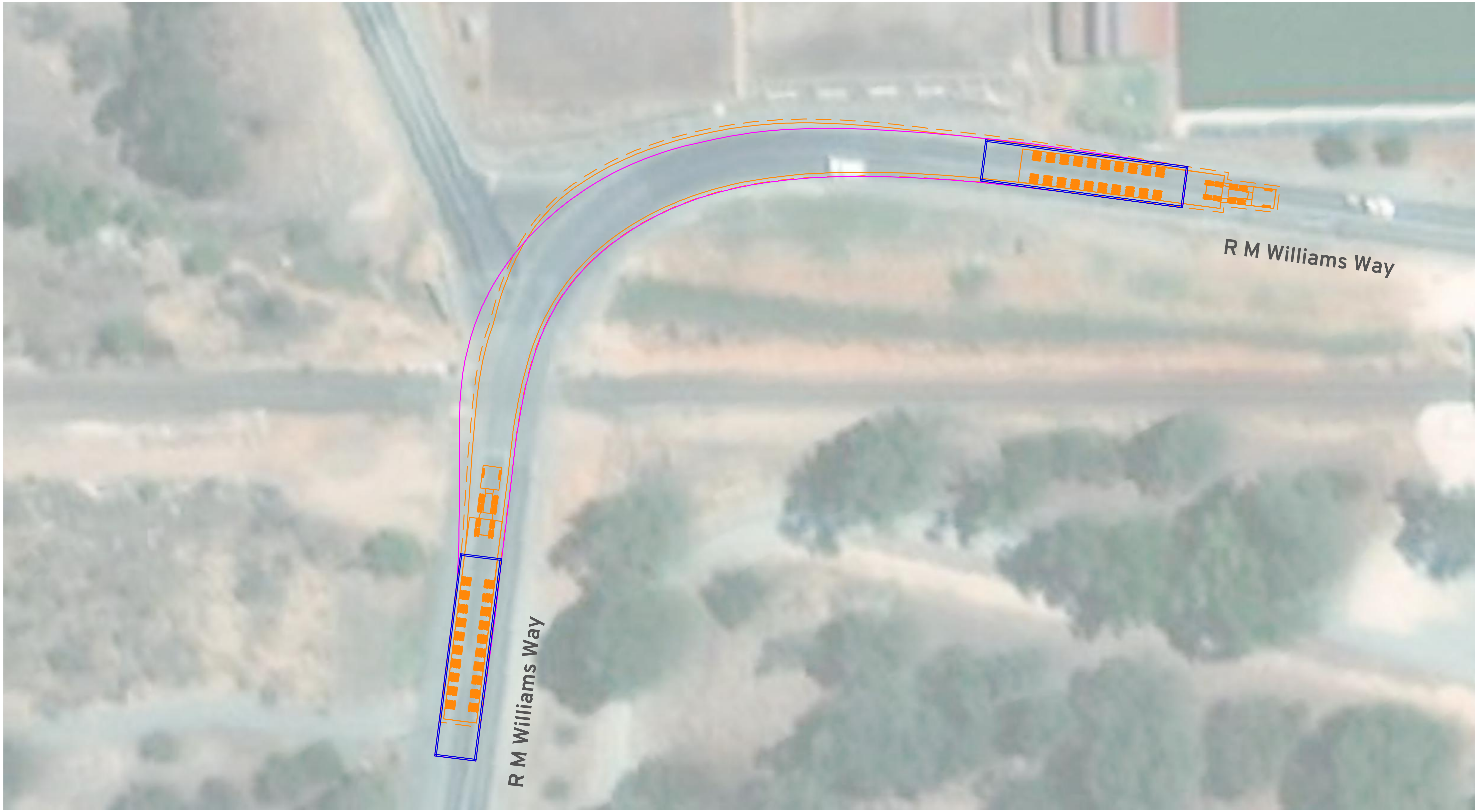
DRAWN: TD / RK

DATE: 12/09/2023

DWG NO: 594 Adelaide S01A

SCALE at A3: 1:500

Amber 09



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts to control traffic to ensure both traffic lanes are clear

Spotters to ensure load is clear of infrastructure

Rail Authority to be consulted for comment/approval

Location:
Jamestown SA 5491
https://goo.gl/maps/3MUgDu14CLbDqHVAA

Route Assessment: Adelaide

Stubbo Solar Farm

Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Adelaide S01A
SCALE at A3: 1:500

Amber

Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts to control traffic to ensure both traffic lanes are clear

Spotters to ensure load is clear of infrastructure

Location:

Jamestown SA 5491

https://goo.gl/maps/RSZo3sDBANG8YKn5A

Route Assessment: Adelaide

Stubbo Solar Farm

Swept Path Assessment

DRAWN: TD / RK

DATE: 12/09/2023

DWG NO: 594 Adelaide S01A

SCALE at A3: 1:500

Amber

Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts to control traffic to ensure intersection is clear

Location:

Mannanarie SA 5422

https://goo.gl/maps/Q7v5Ftp3o2RUDvLD7

Route Assessment: Adelaide

Stubbo Solar Farm

Swept Path Assessment

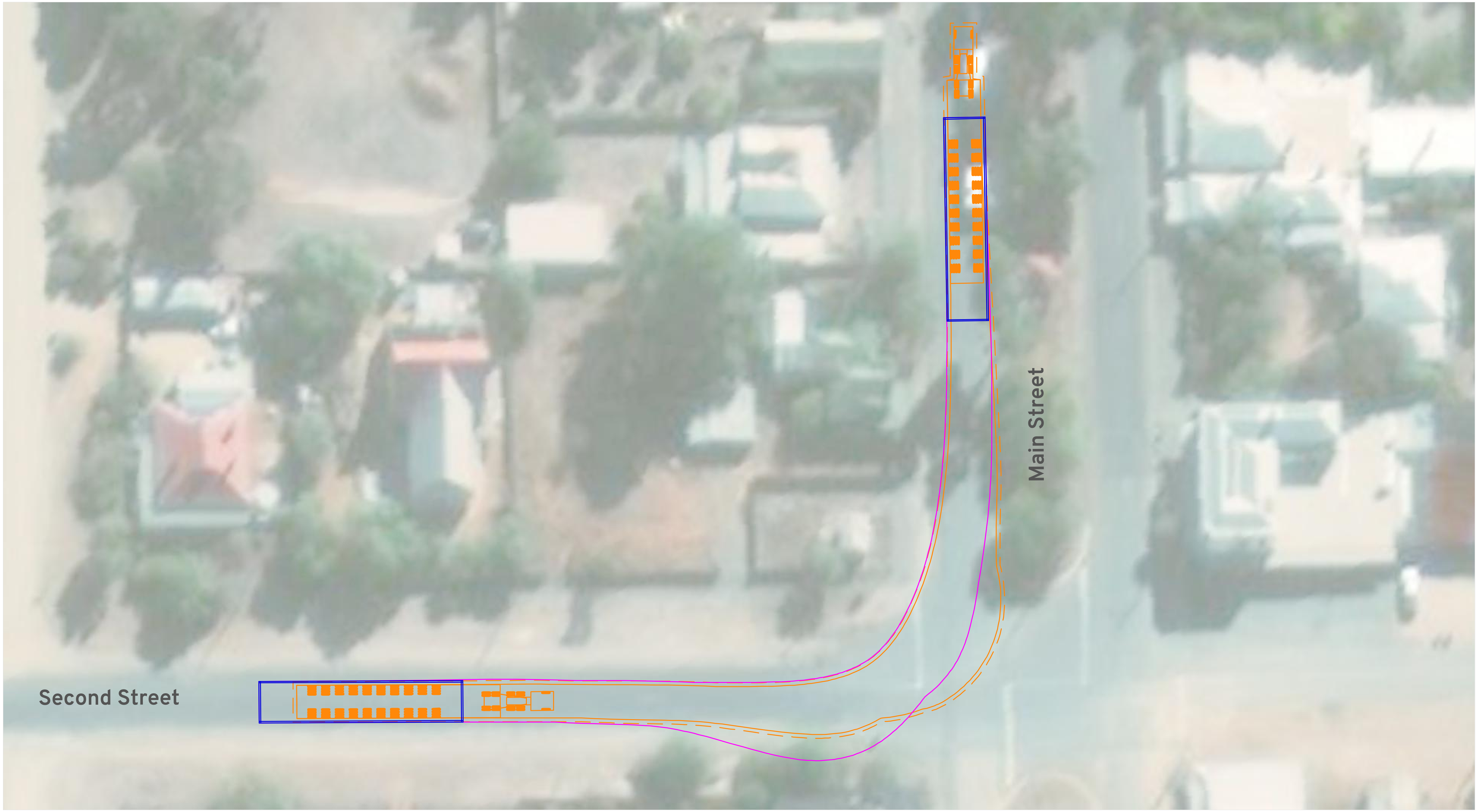
DRAWN: TD / RK

DATE: 12/09/2023

DWG NO: 594 Adelaide S01A

SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts to control traffic at intersection

Spotter to monitor impacts to any infrastructure / vegetation

Location:
Yongala SA 5422
https://goo.gl/maps/xMnWV9HXgNM9ttBW9

Route Assessment: Adelaide

Stubbo Solar Farm

Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Adelaide S01A
SCALE at A3: 1:500

Amber

Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

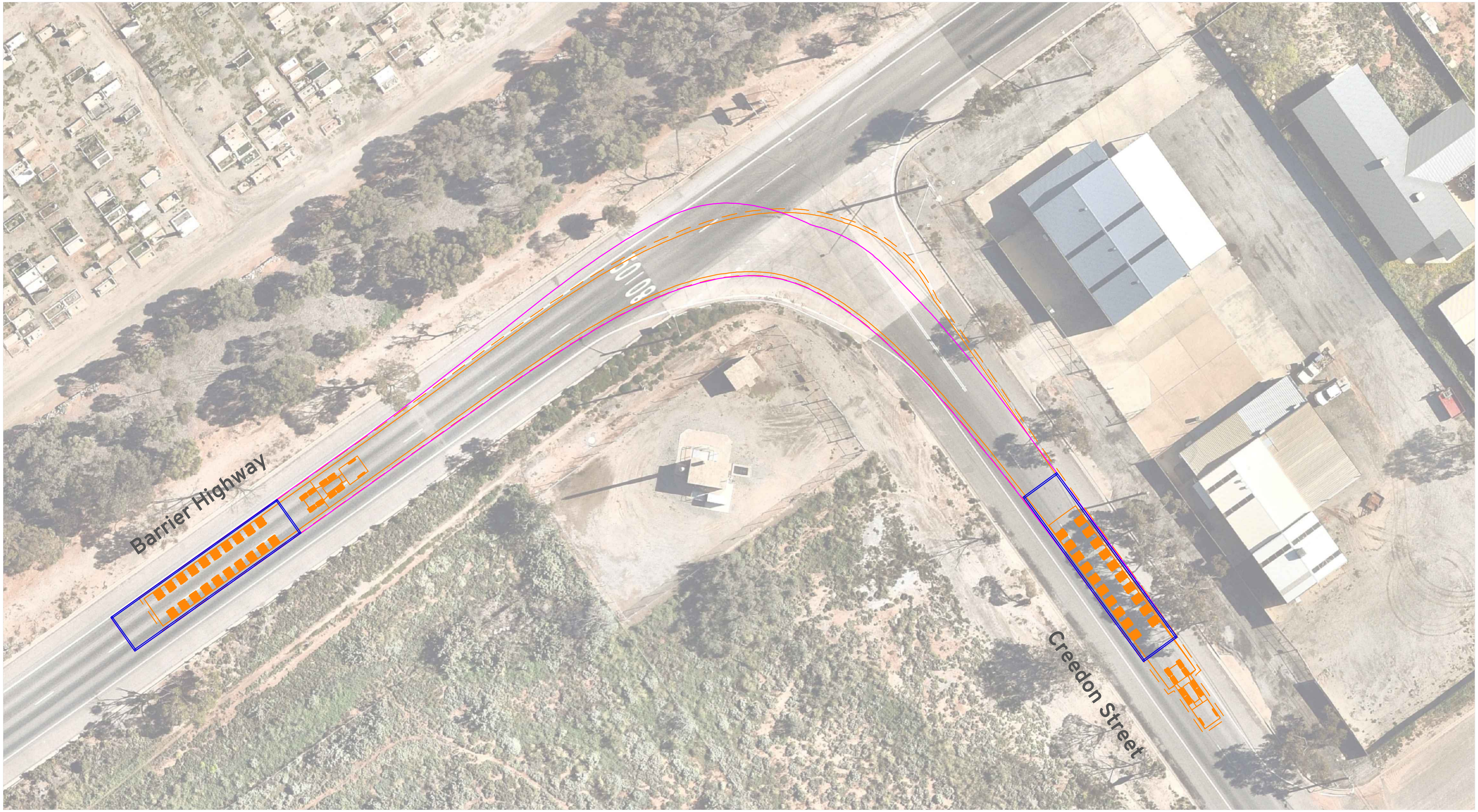
Notes:
Escorts to control traffic to ensure intersection is clear

Location:
Ucolta SA 5422
https://goo.gl/maps/iHhDpN5qfBXrktwEA

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Adelaide S01A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts to control traffic to ensure intersection is clear and impacted traffic lanes

Location:

Broken Hill NSW 2880
https://goo.gl/maps/Q4g2Dz83pfAFAJUe6

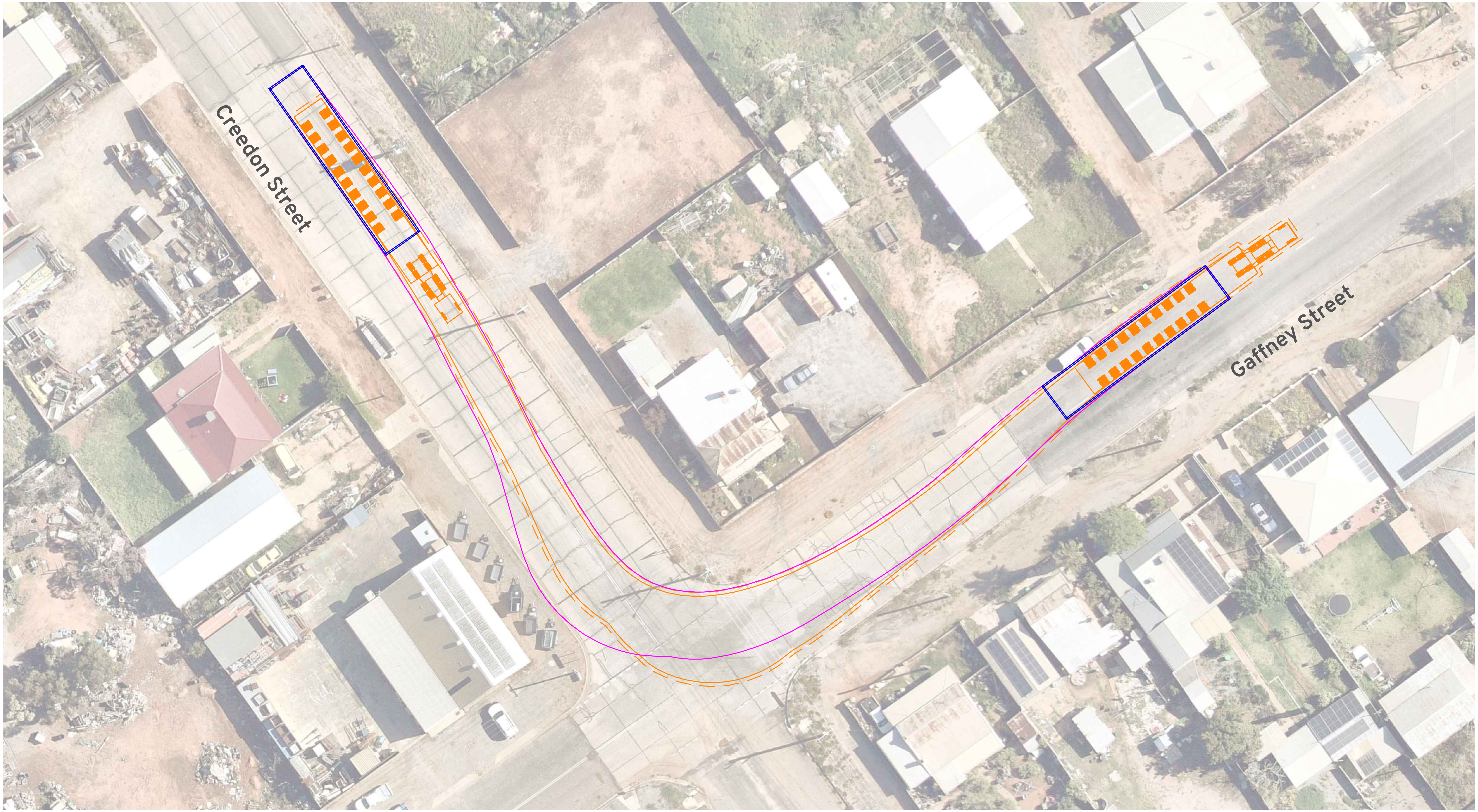
Route Assessment: Adelaide

Stubbo Solar Farm

Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Adelaide S01A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts to control traffic to ensure intersection is clear

Location:

Broken Hill NSW 2880

https://goo.gl/maps/9U9u112R4AJVo4dKA

Route Assessment: Adelaide

Stubbo Solar Farm

Swept Path Assessment

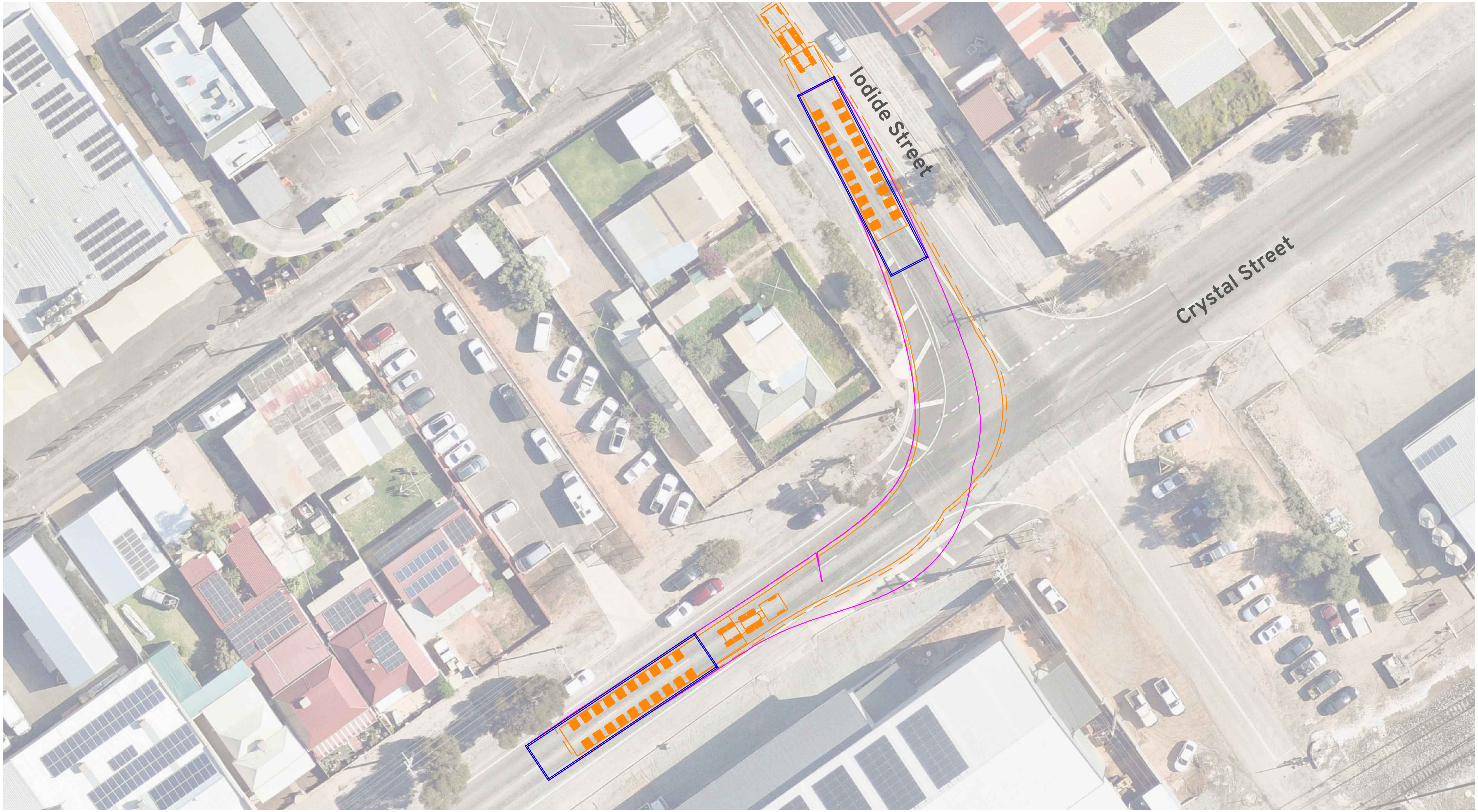
DRAWN: TD / RK

DATE: 12/09/2023

DWG NO: 594 Adelaide S01A

SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts to control traffic to ensure intersection is clear

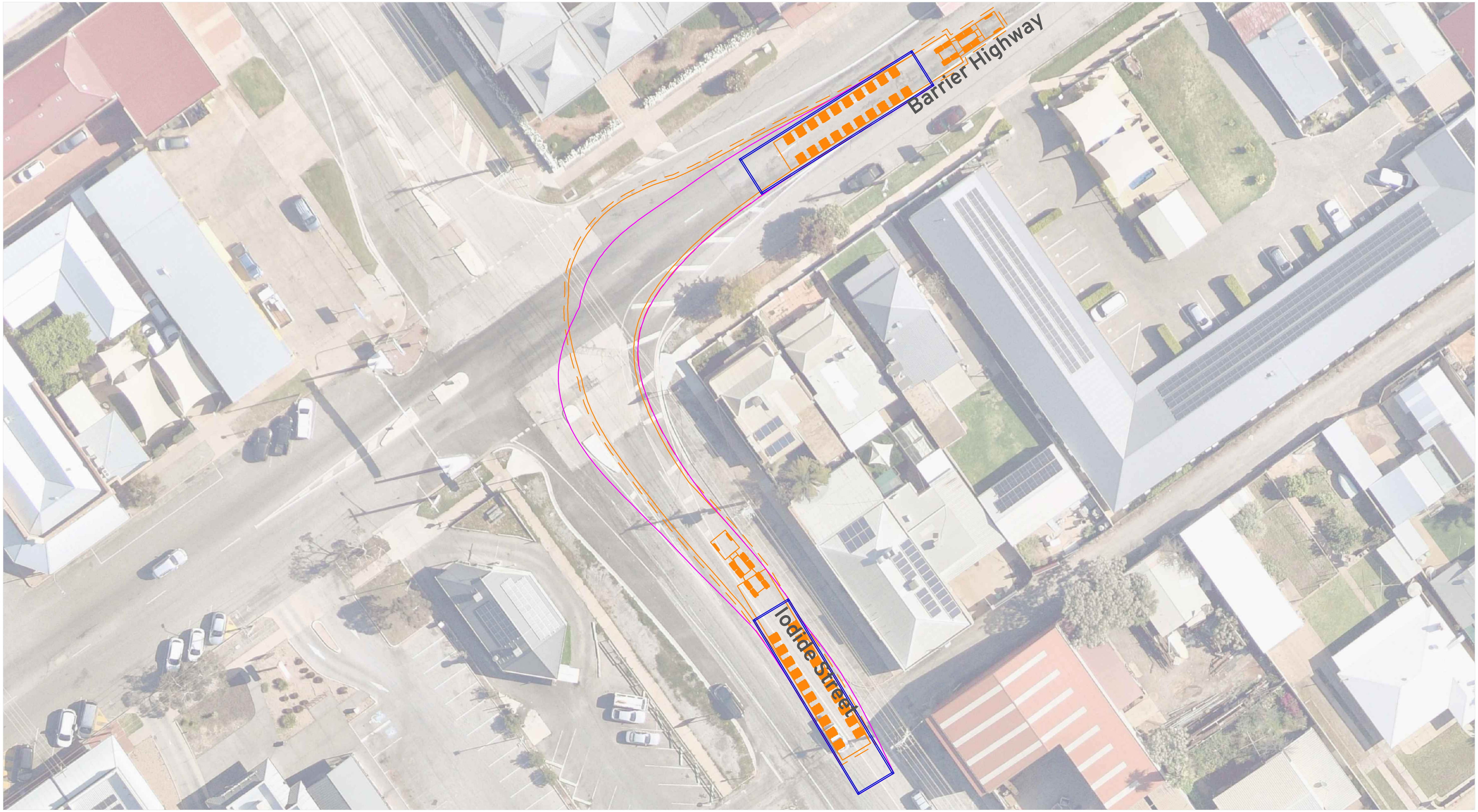
Spotter to monitor impacts to infrastructure

Location:
Broken Hill NSW 2880
https://goo.gl/maps/buR9P7KCTwh6v8AN7

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Adelaide S01A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts to control traffic to ensure intersection is clear, use of opposing lane for turn at intersection

Spotter to monitor impacts to infrastructure

Location:
Broken Hill NSW 2880
https://goo.gl/maps/XRkycpwKxwz5cFf38

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 12/09/2023
DWG NO: 594 Adelaide S01A
SCALE at A3: 1:500

Amber

Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

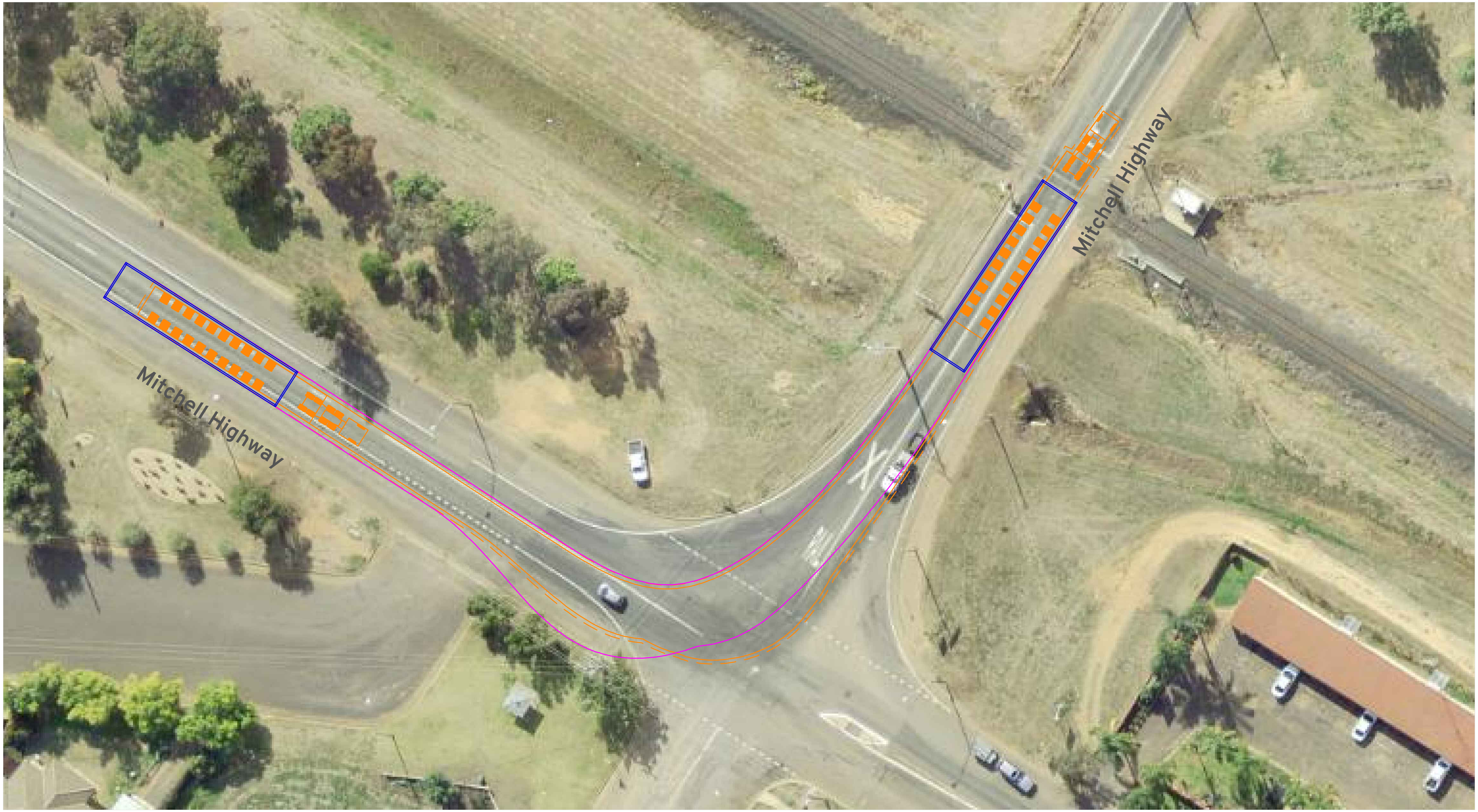
Notes:
Escorts to control traffic to ensure intersection is clear

Location:
Nyngan NSW 2825
https://goo.gl/maps/ZZ16gR3UE9tWHSr8A

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

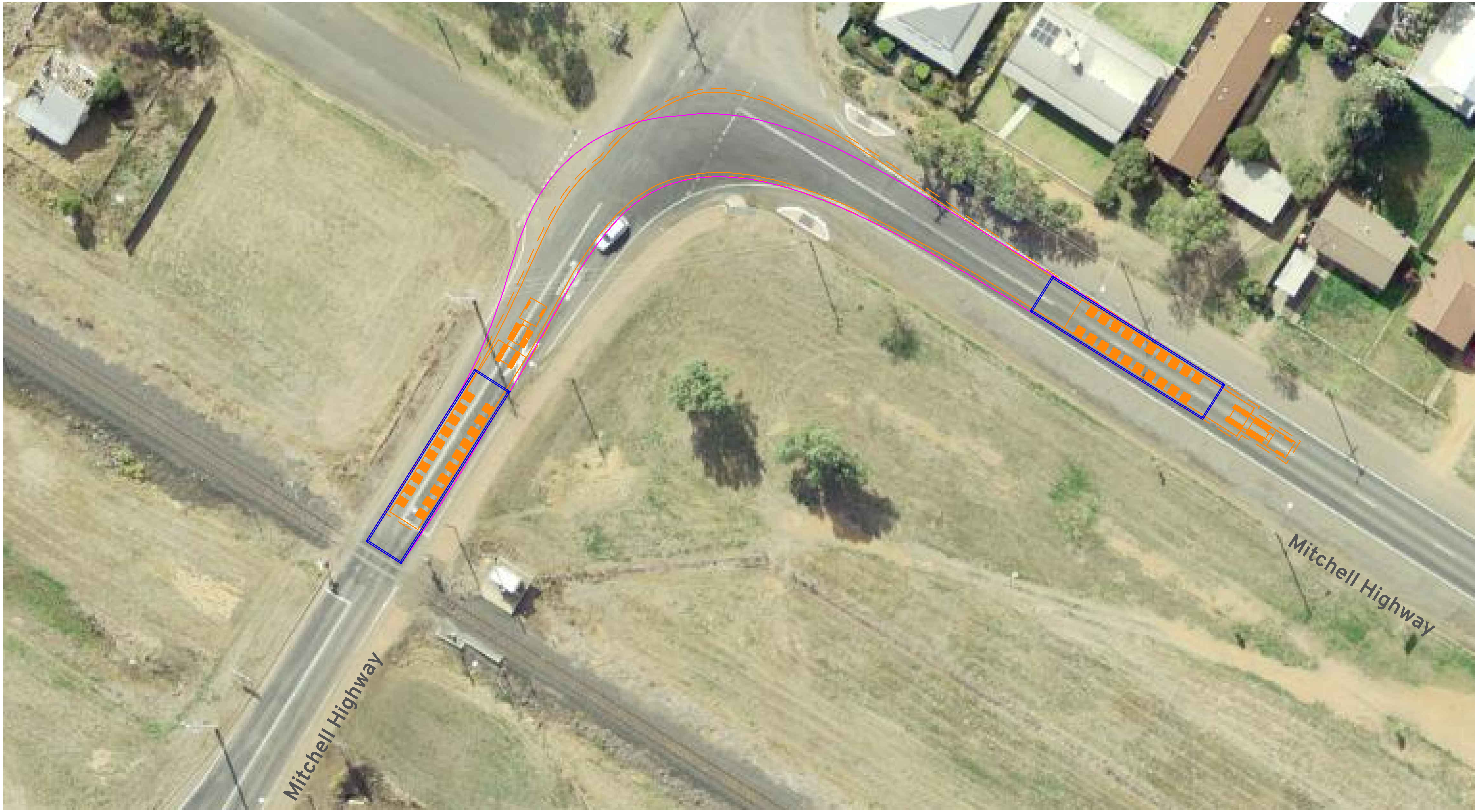
Notes:
Escorts to control traffic to ensure both traffic lanes are clear
Spotters to ensure load is clear of infrastructure
Rail Authority to be consulted for comment/approval

Location:
Nyngan NSW 2825
https://goo.gl/maps/sXanrfd31Gip8wyx6

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

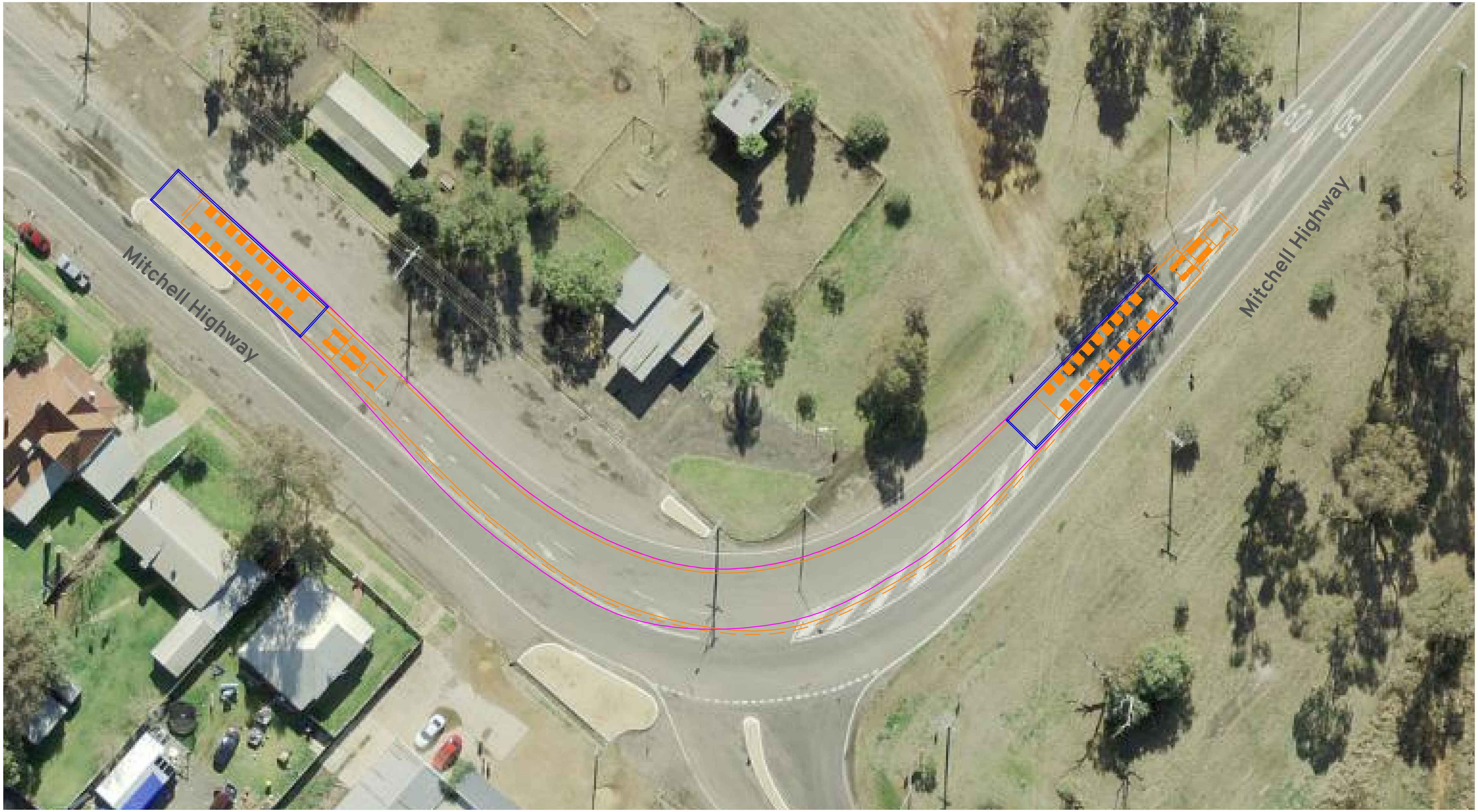
Notes:
Escorts to control traffic to ensure both traffic lanes are clear
Spotters to ensure load is clear of infrastructure

Location:
Nyngan NSW 2825
https://goo.gl/maps/WM5VMaYuEMMTJZcj6

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:
Route clear in this area, no need for management measures identified

Location:
Trangie NSW 2823
https://goo.gl/maps/DsD44wV8GAaJQs7q8

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500

Amber

Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

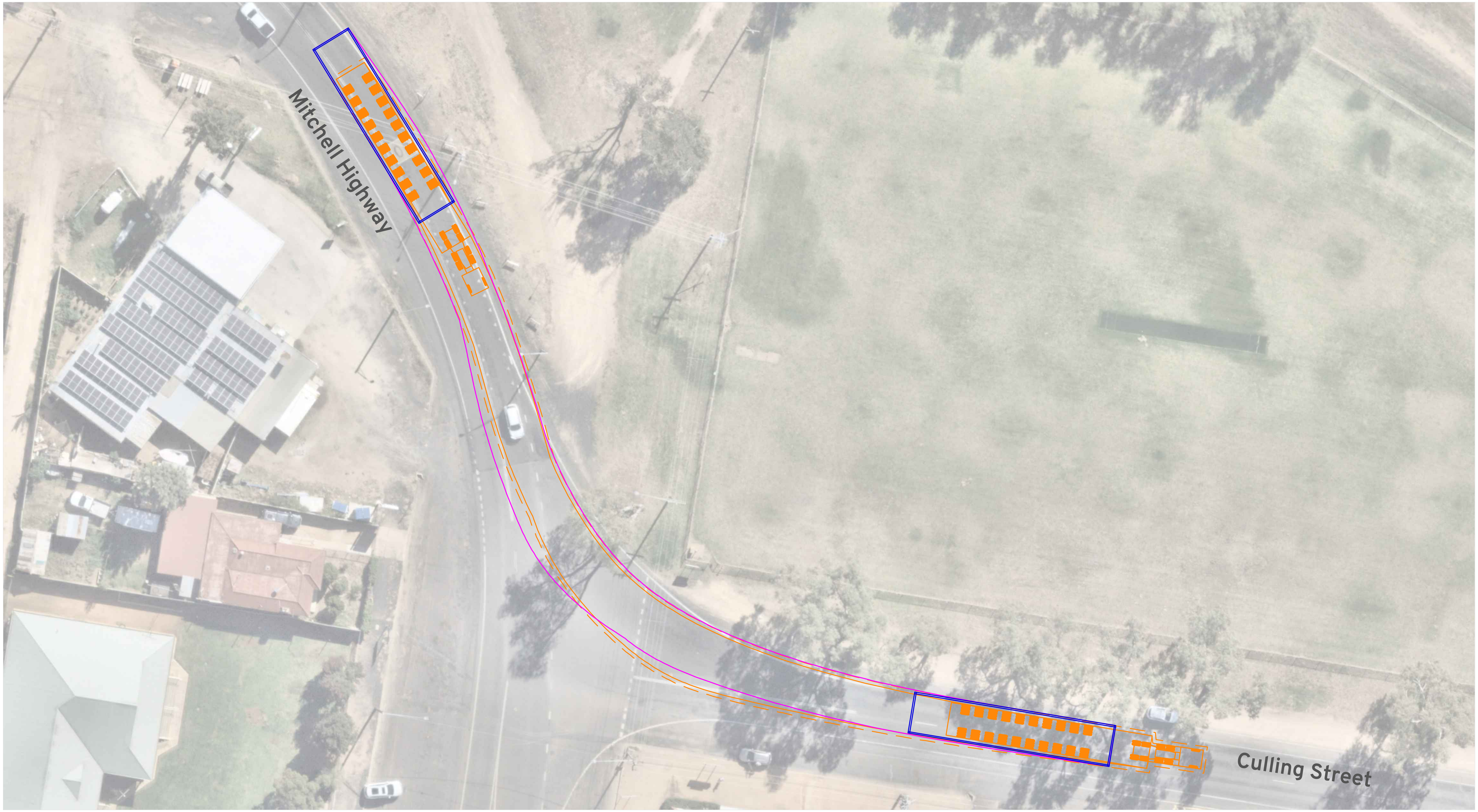
Notes:
Escorts to control traffic as required to ensure both lanes clear

Location:
Trangie NSW 2823
https://goo.gl/maps/CJbrtPJhrw3PnXE18

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

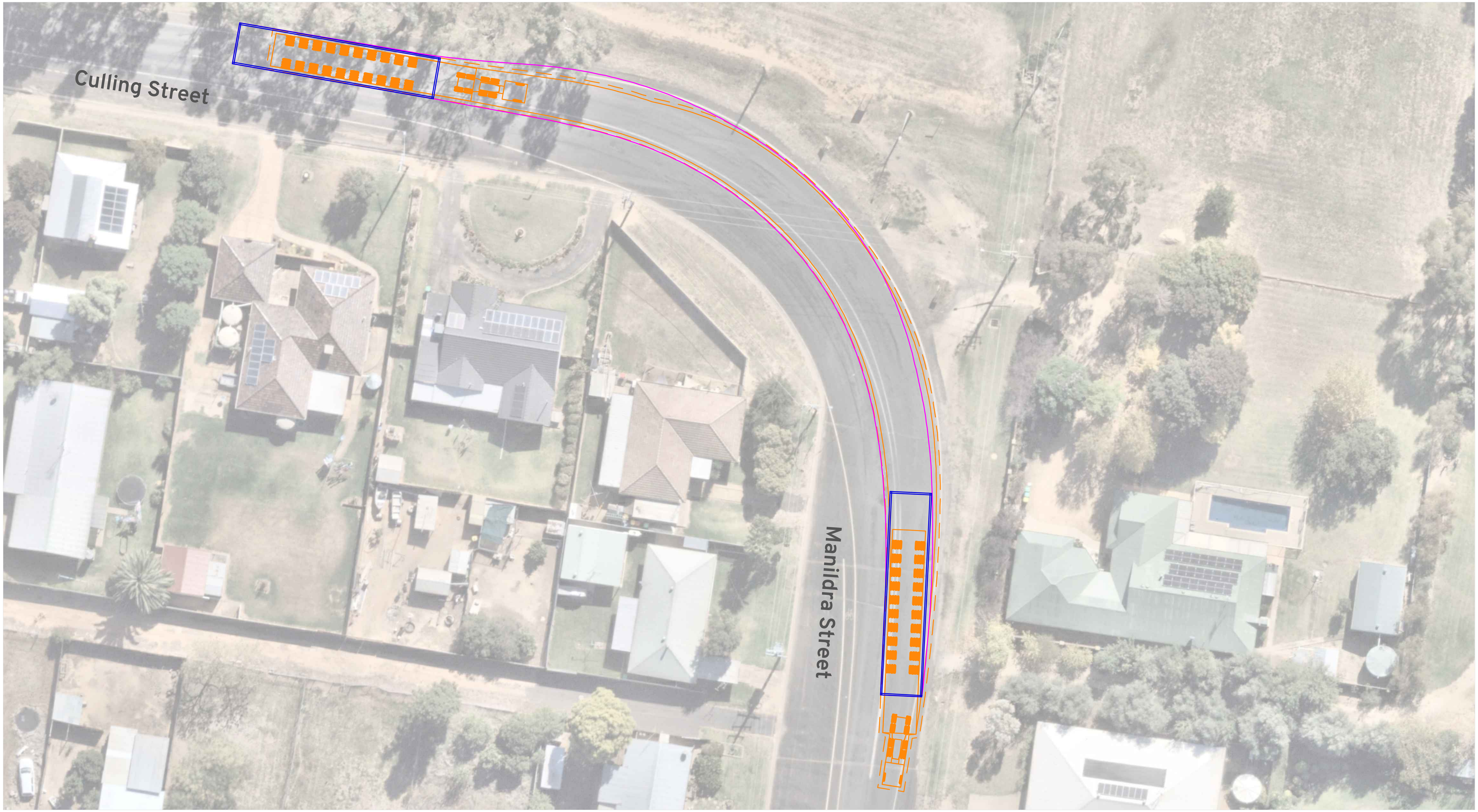
Notes:
Escorts to control traffic as required to ensure path of travel clear

Location:
Narromine NSW 2821
https://goo.gl/maps/hudJ5PFm7aYLaXsJ9

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

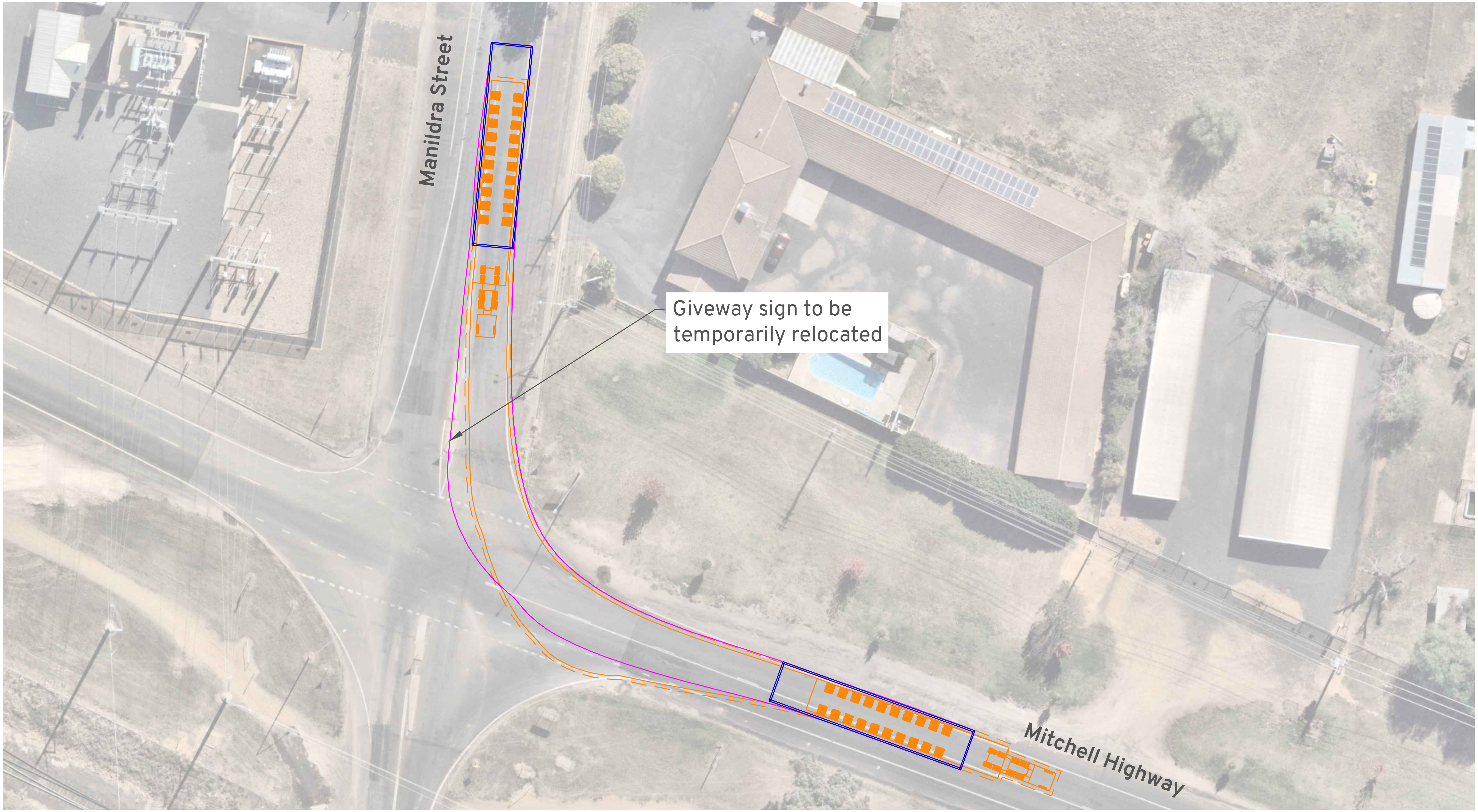
Load Path

Notes:
Escorts to control traffic around bend

Location:
Narromine NSW 2821
https://goo.gl/maps/xR994i3nQBdgMEzd7

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

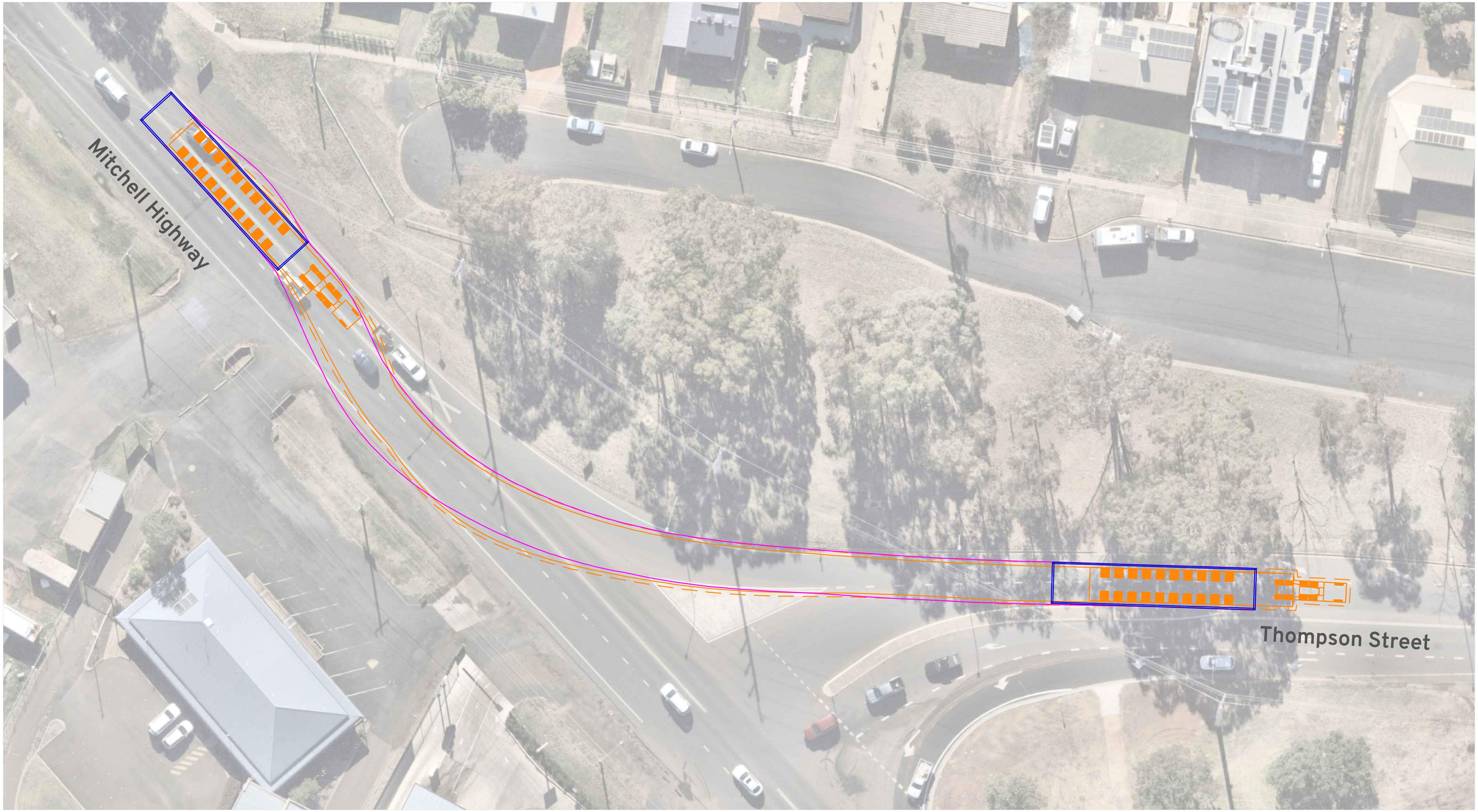
Notes:
Escorts to control traffic at intersection
Signs to be temporarily relocated on Manildra Street

Location:
Narromine NSW 2821
https://goo.gl/maps/nrfUNR4uWpZWmtE19

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts to control traffic to enable opposing lane of traffic to be used at intersection

Spotters to monitor impacts to any infrastructure

Location:

Dubbo NSW 2830

https://goo.gl/maps/fLsDSBT3KpHSpvtW9

Route Assessment: Adelaide

Stubbo Solar Farm

Swept Path Assessment

DRAWN: TD / RK

DATE: 13/09/2023

DWG NO: 594 Adelaide S02A

SCALE at A3: 1:500

Amber

Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

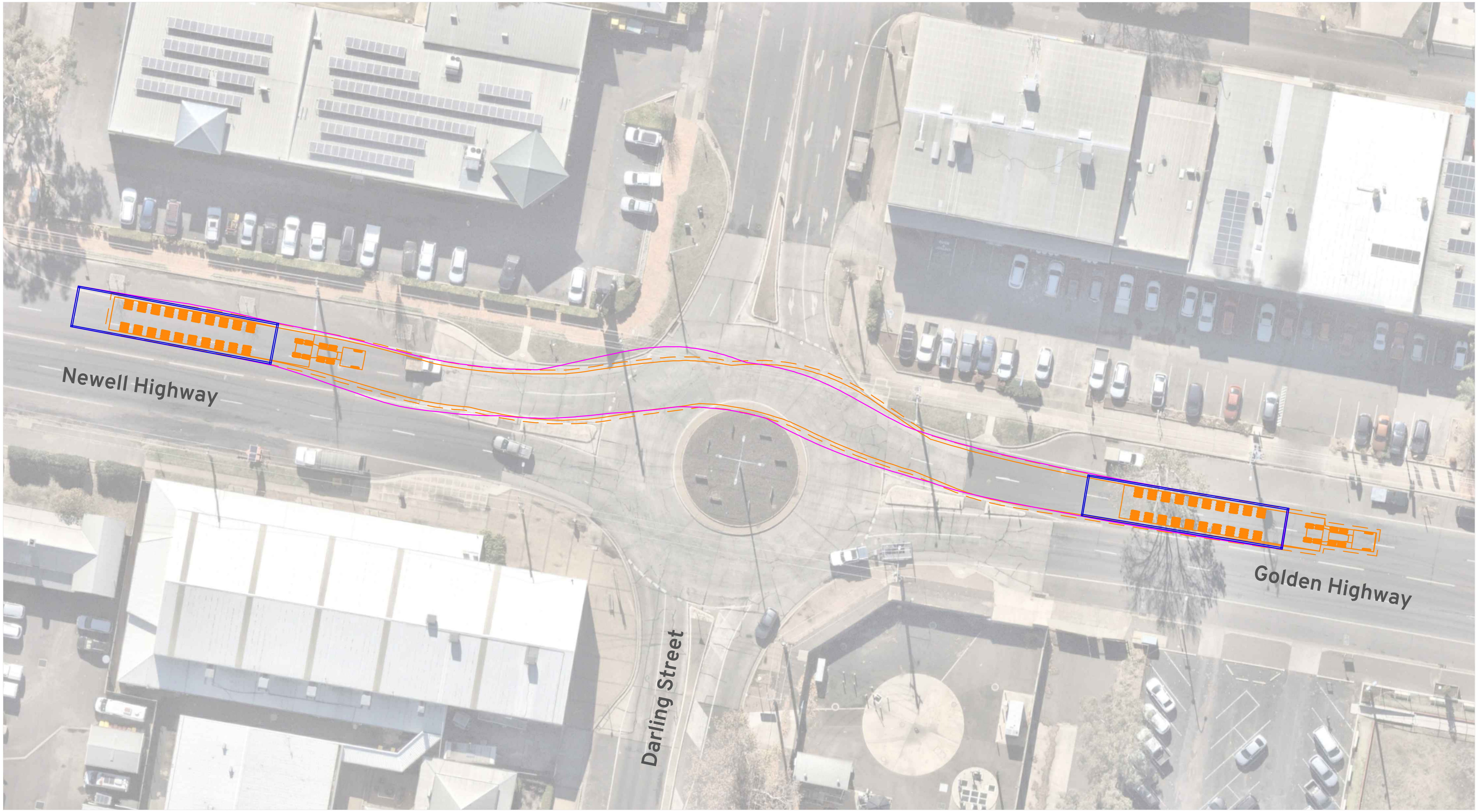
Notes:
Escorts to control traffic at intersection
Spotters to monitor impacts to infrastructure

Location:
Dubbo NSW 2830
https://goo.gl/maps/vZWdUo1F3aPWH75q9

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:
Escorts to control traffic at intersection
Spotters to monitor impact to roundabout island, adjacent electrical poles

Location:
Dubbo NSW 2830
https://goo.gl/maps/8gCHZsE1dPMvwh1AA

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500

Amber

Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

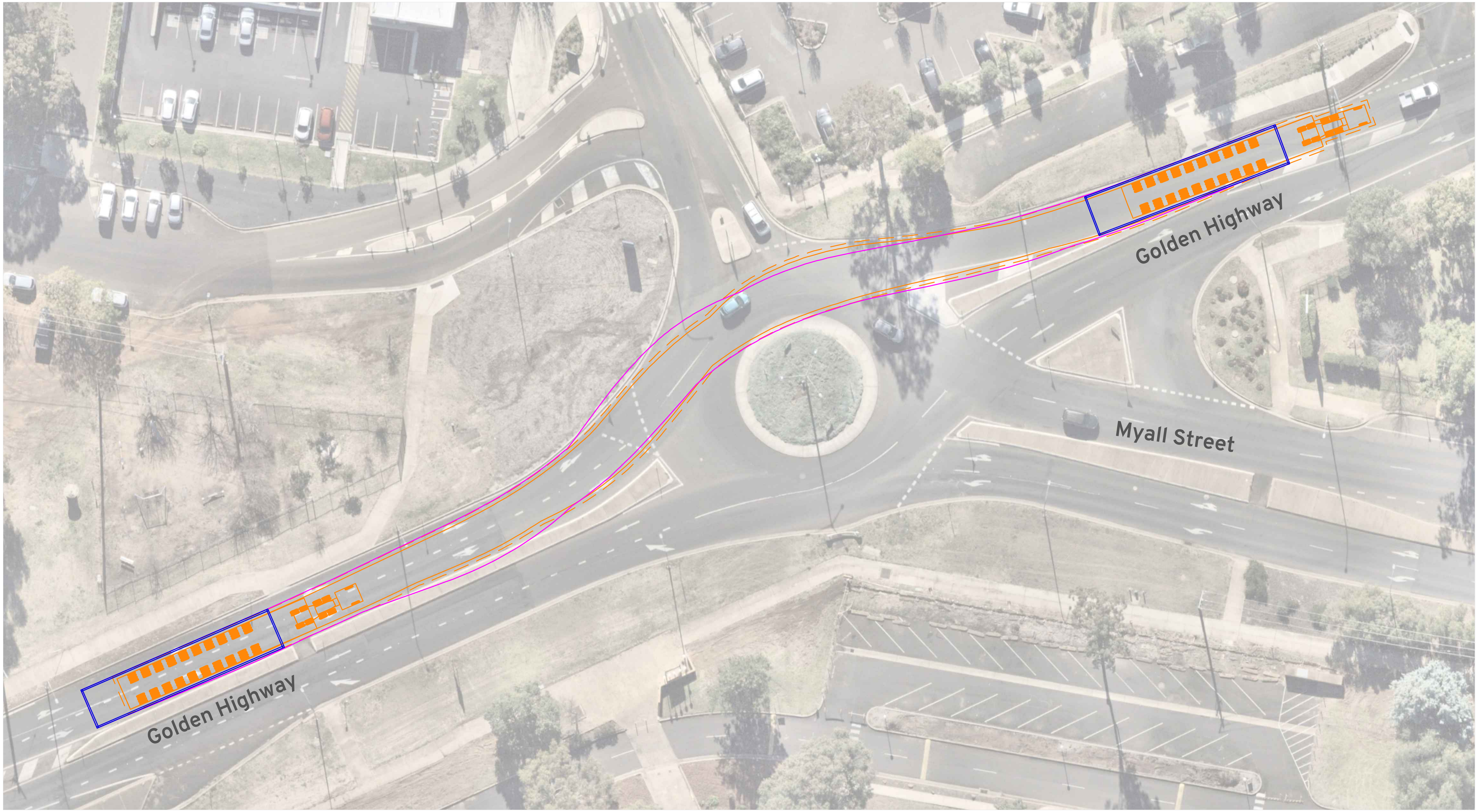
Notes:
Escorts to control traffic at intersection
Spotters to monitor impact to roundabout island, adjacent electrical poles

Location:
Dubbo NSW 2830
https://goo.gl/maps/rRDjmiS4VwpVHnfW6

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

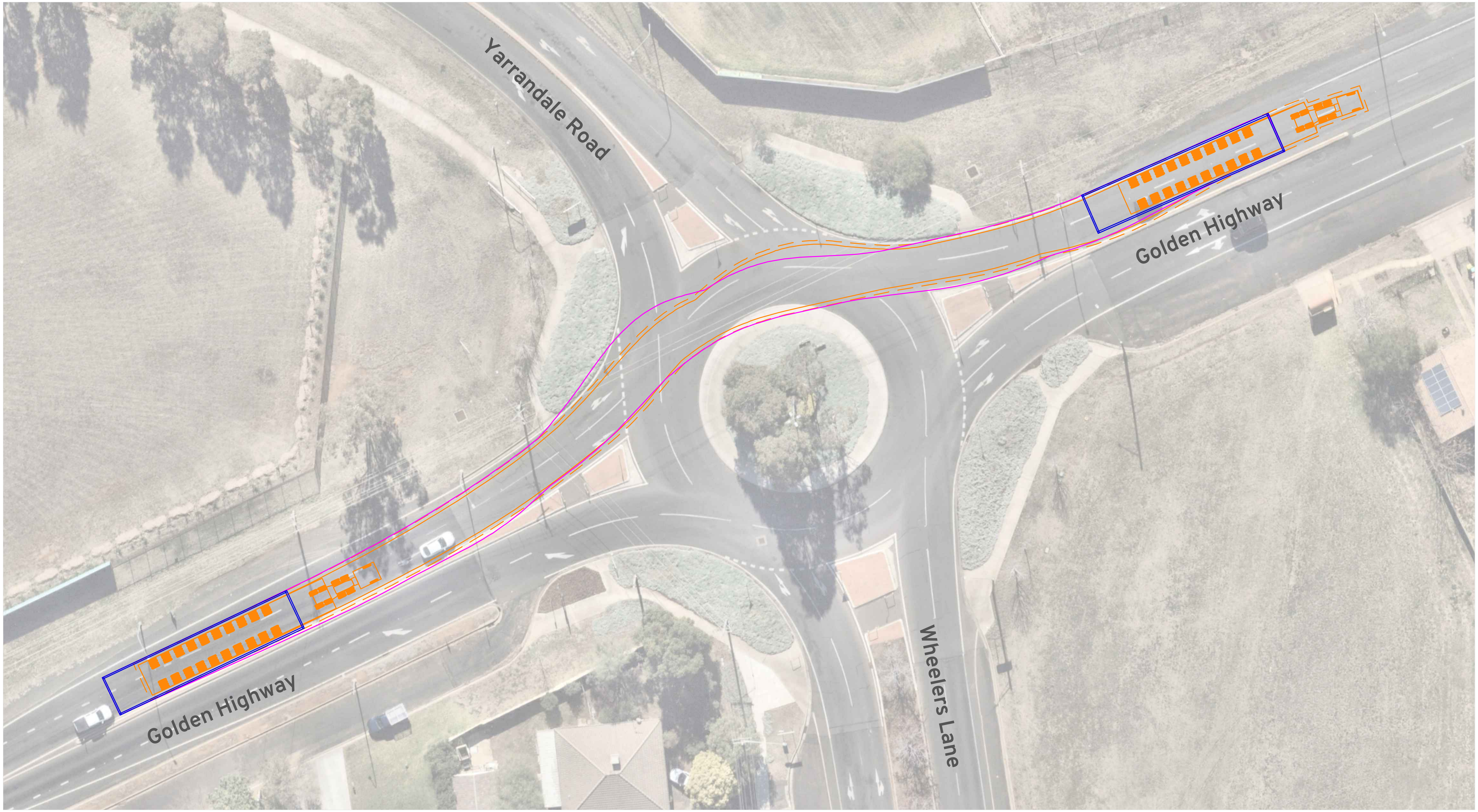
Notes:
Escorts to control traffic at intersection
Spotters to monitor impact to roundabout island, adjacent electrical poles

Location:
Dubbo NSW 2830
https://goo.gl/maps/KRtMnfNzqtYEYLjt8

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:
Escorts to control traffic at intersection
Spotters to monitor impact to roundabout island, adjacent electrical poles

Location:
Dubbo NSW 2830
https://goo.gl/maps/Uk2p8SzbsG9Sv1Xu8

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500

Amber

Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:
Escorts to control traffic around bend
Rail Authority to be consulted for comment/approval

Location:
Dunedoo NSW 2844
https://goo.gl/maps/m7KatPVLnudgTT3E9

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500

Amber 33

Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

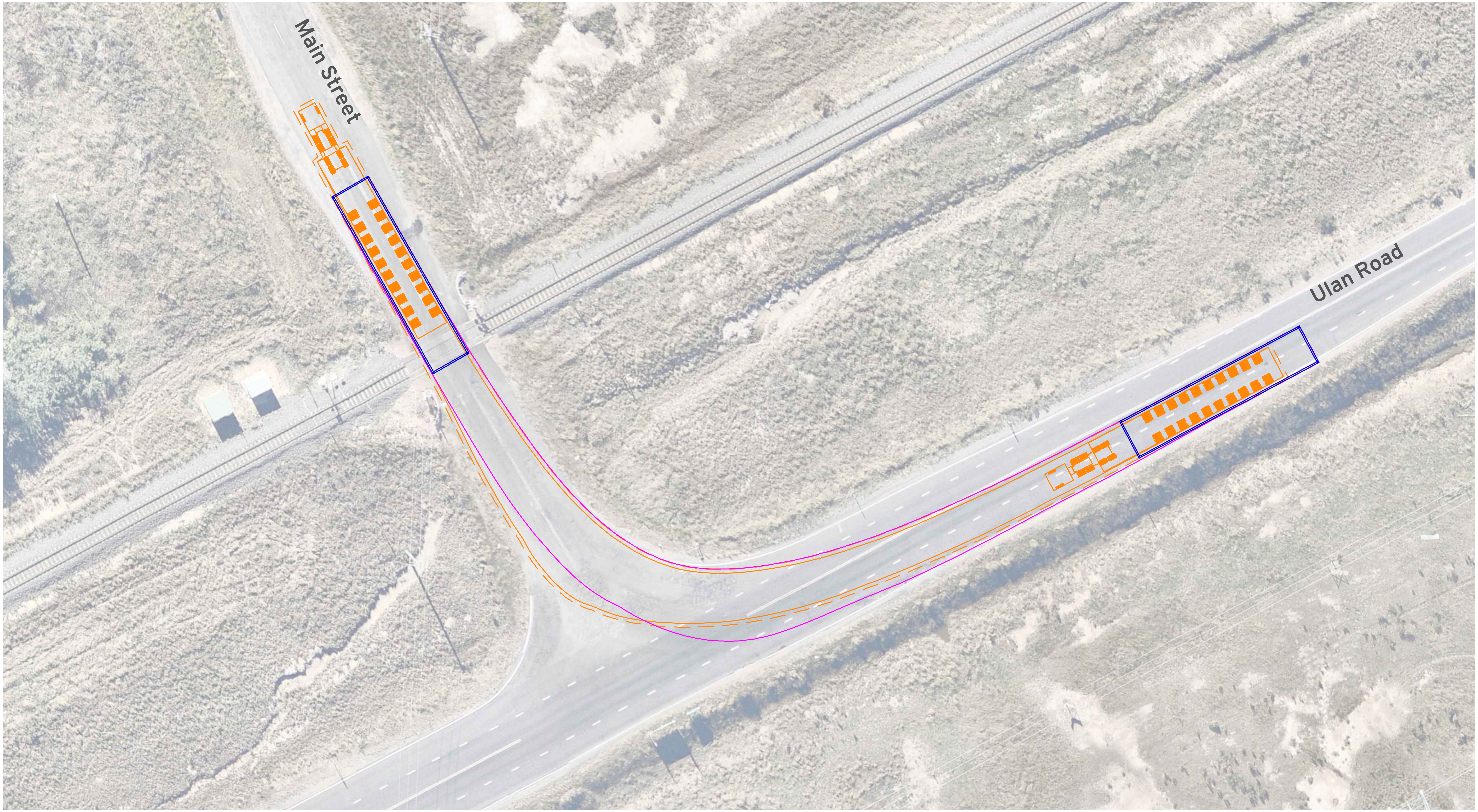
Notes:
Escorts to control traffic at intersection

Location:
Cassilis NSW 2329
https://goo.gl/maps/tkCXJbndJ3CoAdoV8

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

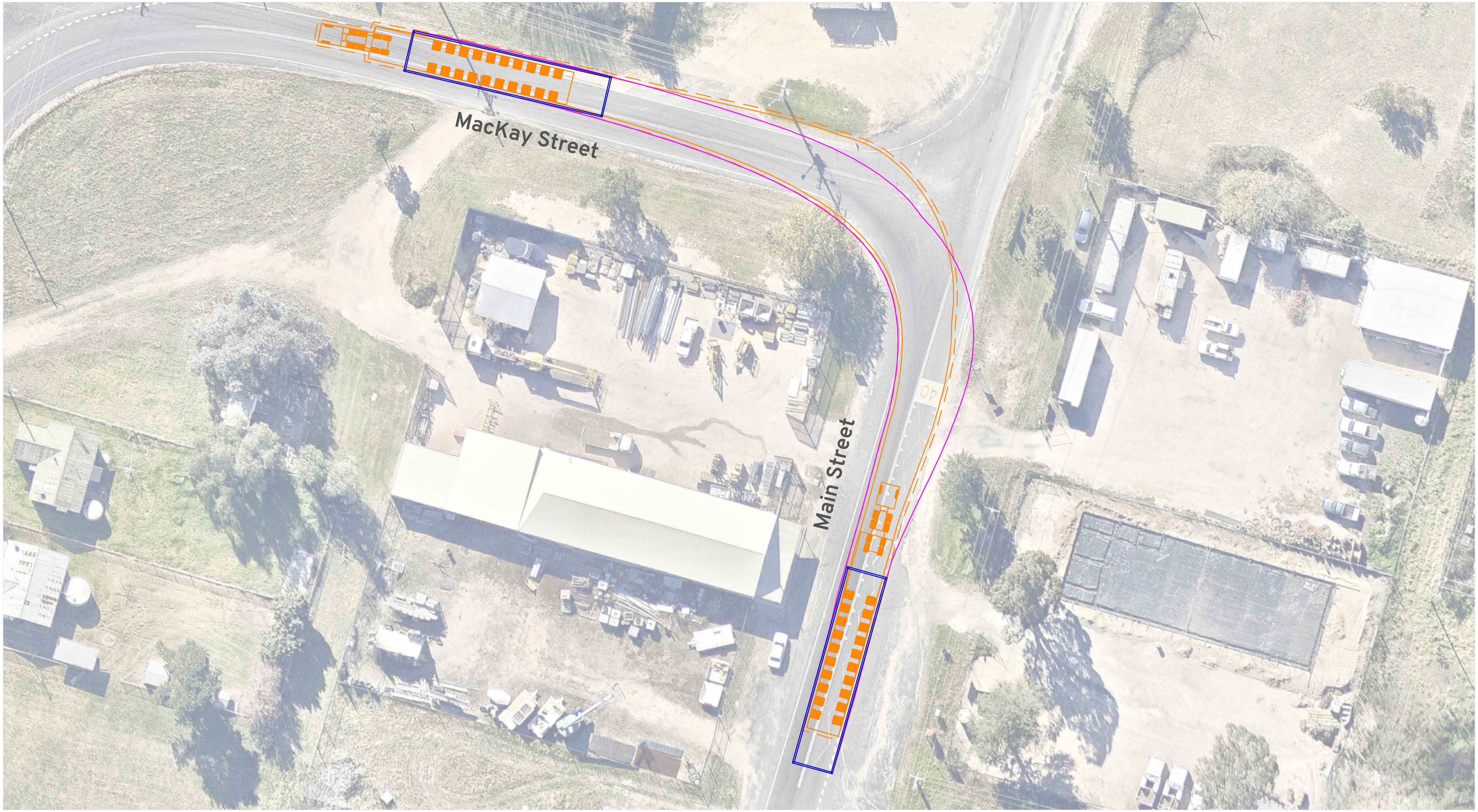
Notes:
Escorts to control traffic at intersection
Rail Authority to be consulted for comment/approval

Location:
Ulan NSW 2850
https://goo.gl/maps/d9ptbFeSyxgVvSoK8

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:
Escorts to control traffic in area and keep route clear
Spotters to monitor impact to vegetation and infrastructure.

Location:
Ulan NSW 2850
https://goo.gl/maps/Px5dBWj1AsUyX5Z6A

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500

Amber

Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

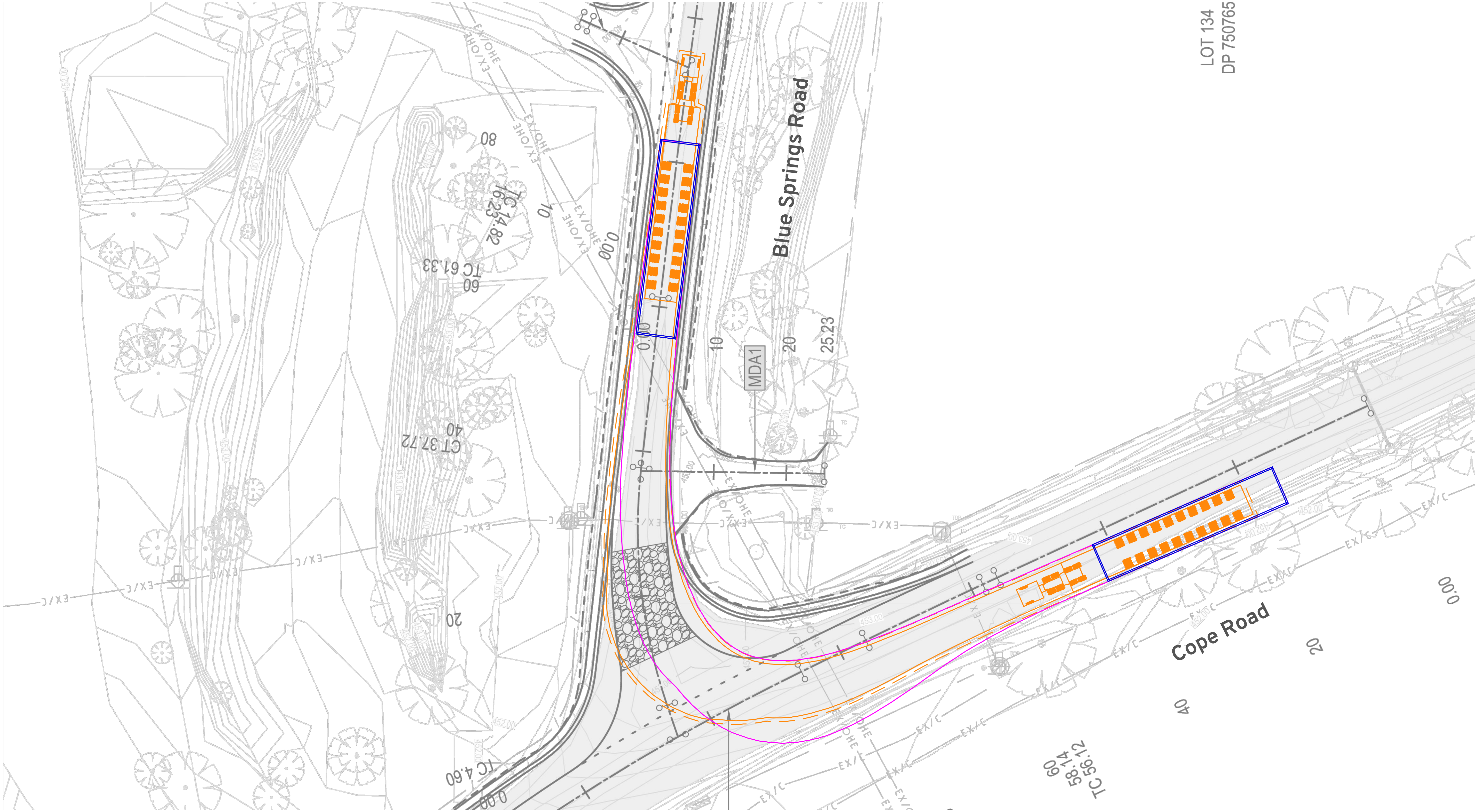
Notes:
Escorts to control traffic in area and at bend

Location:
Ulan NSW 2850
https://goo.gl/maps/6Kw3NvSM9YacNPcs5

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

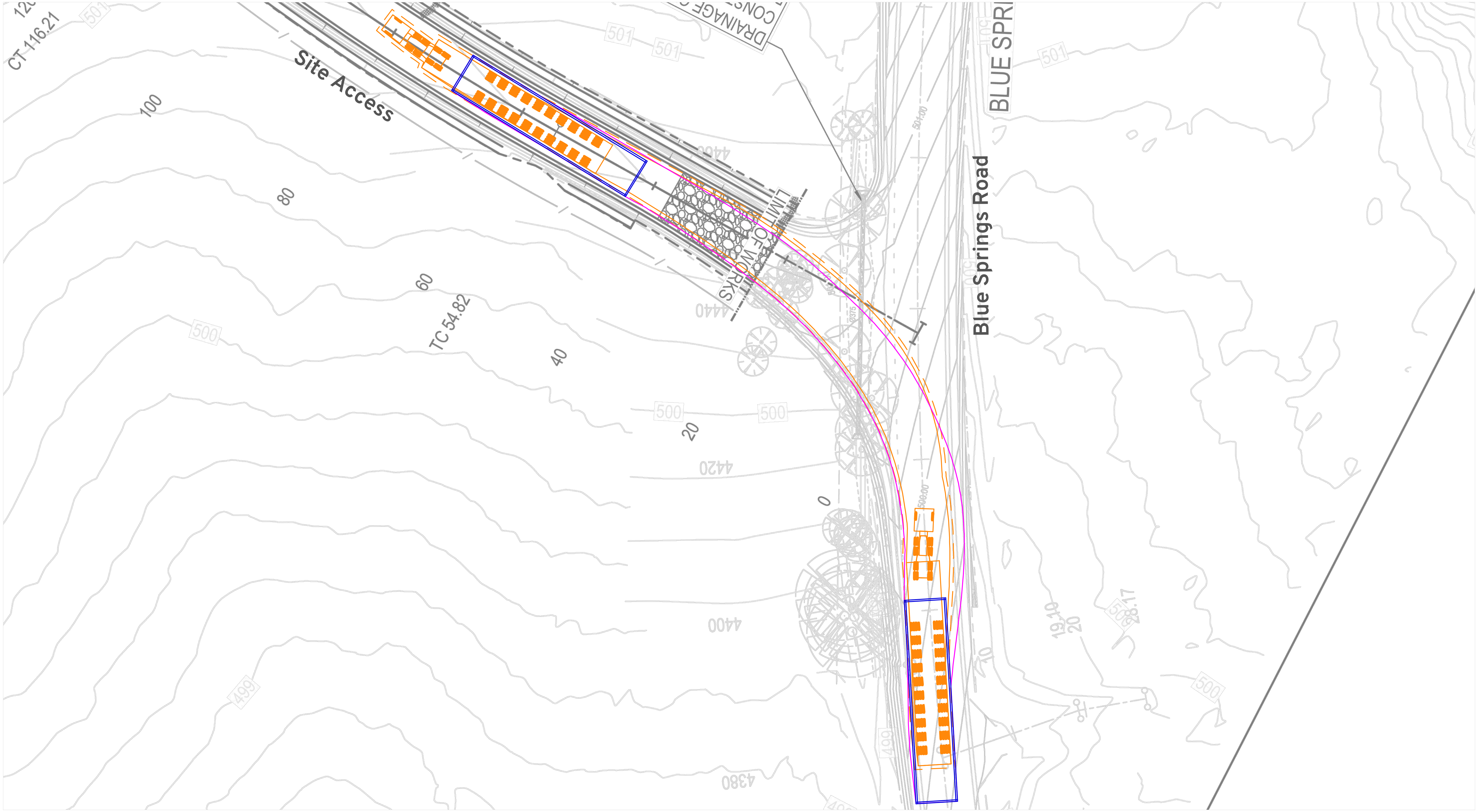
Notes:
Escorts to control traffic at intersection
Planned upgrade would accommodate OSOM combination

Location:
Stubbo NSW 2852
https://goo.gl/maps/ikLD8DVjd1VN5CKP9

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500

Amber



Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:
Escorts to control traffic at intersection
Planned upgrade would accommodate OSOM combination

Location:
Stubbo NSW 2852

Route Assessment: Adelaide
Stubbo Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 13/09/2023
DWG NO: 594 Adelaide S02A
SCALE at A3: 1:500

Amber

Appendix L

Bridge and Culvert Load Assessment Report

PCL Constructors Pacific Rim Pty Ltd

PCL Solar Australia

2023

Bridge and culvert assessment report Stage 2

Stubbo Solar Farm Stage 2a

Blue spring road, Stubbo

Rob Saghafi

Harryan Engineering Consulting

Mudgee NSW

11/12/2023

Bridge and Culvert Assessment Report Register

Issue	Section & Page No.	Issue / Amendment Details	Author	Reviewer	Date
A	All	Review	Ruodong Pan	Rob Saghafi	03/10/2023
B	All	Review	Ruodong Pan	Rob Saghafi	11/12/2023

ISSUE / AMENDMENT AUTHOR:

……………………………….

Ruodong Pan

Author of Issue / Amendment

Signing for and on behalf of

Harryan Engineering Consulting Pty Ltd

REVIEWER:

Rob Saghafi

……………………………….

Rob Saghafi

Reviewer of Issue / Amendment

Signing for and on behalf of

Harryan Engineering Consulting Pty

Table of Contents

Bridge and culvert load assessment

Ulan Road- cope Road and Blue Springs Road

1.0 Introduction:

The purpose of this report is to conduct a load assessment of bridges and culverts situated along a main route to Stubbo solar farm in the regional area of New South Wales, Australia, as shown in Figure 1-1.
Table 1-1 also shows selected structures along the route that has been assessed in this report. The report aims to provide summaries and recommendations to PCL solar farm to confirm structures' adequacy and/or limitations for the proposed Oversize and/or Overmass (OSOM) vehicles.

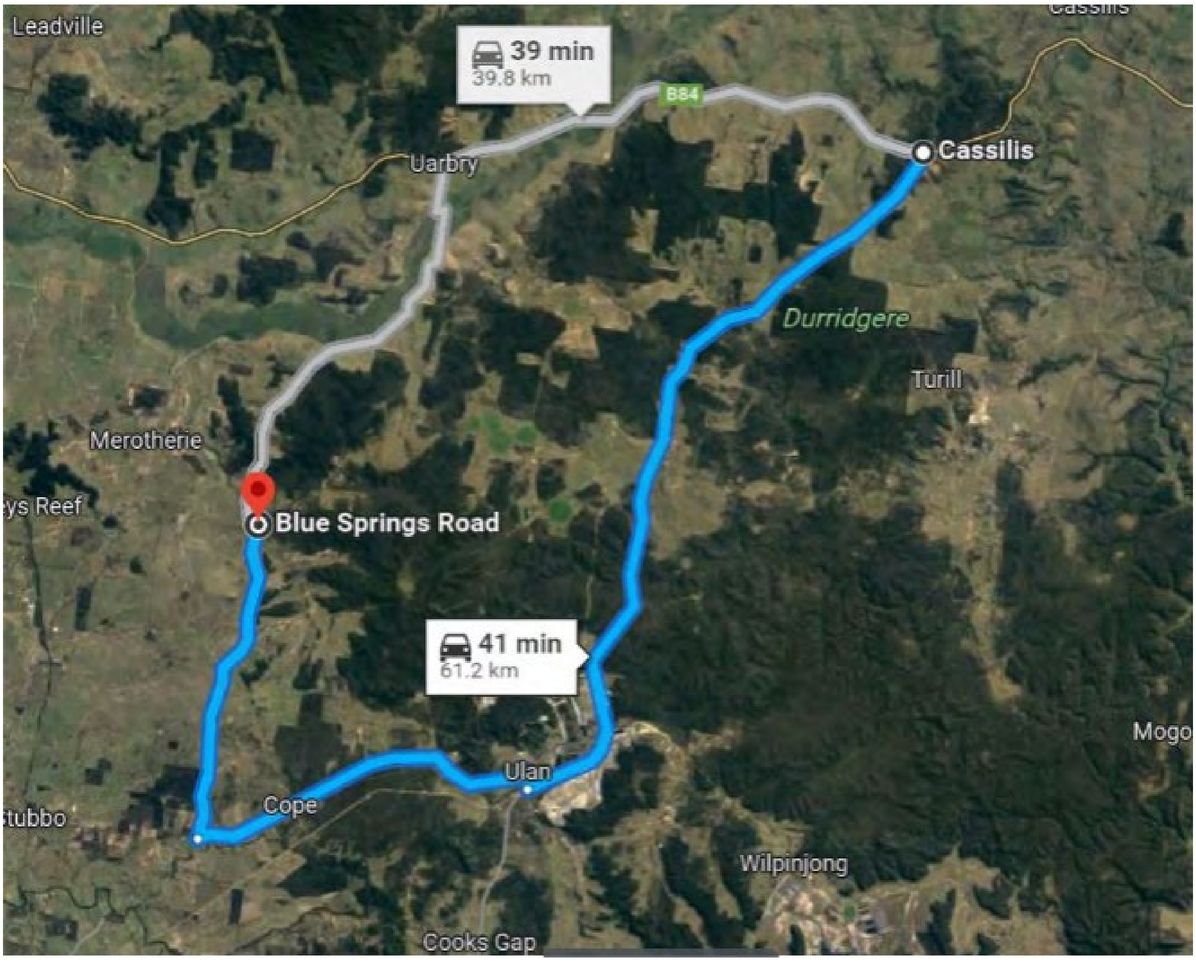


Figure 1-1 OSOM Travelling Route

Table 1-1 Selected Structures List

#	Km	Name
1	9+500	Murrumbline Creek Turill Bridge
2	12+600	Curryal Creek, Two Cells Concrete Bridge/Culvert
3	16+600	Single Cell Concrete Culvert 4.0m(h) x 2.5(w)
4	18+600	Three Cell Culvert/Bridge
5	22+700	Bridge over Goulburn River
6	24+300	Single Cell Concrete Culvert 4.0m(h) x 3.0m(w)
7	29+400	Bridge over Sandy Hollow-Ulan Railway
8	30+400	Five Box Culverts 2.0m(h) x 1.2m(w)
9	32+500	Bridge over Moolarben Creek
10	33+300	Bridge over Sportsman's Hollow Creek
11	37+200	Three Box Culverts 1.0m(h) x 0.6m(w)
12	37+900	Four Box Culverts at Sportsman Hollow
13	39+700	Three Box Culverts 1.2(h) x 0.6m(w)
14	42+400	Four Concrete Pipes at Deadmans Creek

2.0 OSOM Loading:

The primary purpose of this document is to assess the bridges and culverts along the specified route and determine their structural capacity for handling the proposed OSOM loadings.

The OSOM’s are proposed to deliver Main Transformers, Substation Building and Switchgear Building with program shown in Table 2-1.

Table 2-1 Proposed OSOM Delivery

Items	Est. Delivery Quantity	Est. Delivery Date
Main transformers (EPEC)	2	2 x January 2024
Substation building (EPEC)	1	March 2024
Switchgear building (TransGrid)	1	February 2024

An updated transporter for Main Transformer was received after submission of Revision A report, this Revision B report has been prepared to update the load assessment accordingly. The adopted vehicle configurations are discussed in the subsequent sections.

2.1 Transporter for EPEC Substation Building

A configuration as shown in Figure 2-1 is derived from Stubbo Permit in Progress, dated 02 August 2023.The main trailer consists of 10 number 8-tyre axles, weighted 8.4 ton, spaced at 1.8m. This configuration was used in Revision A report.

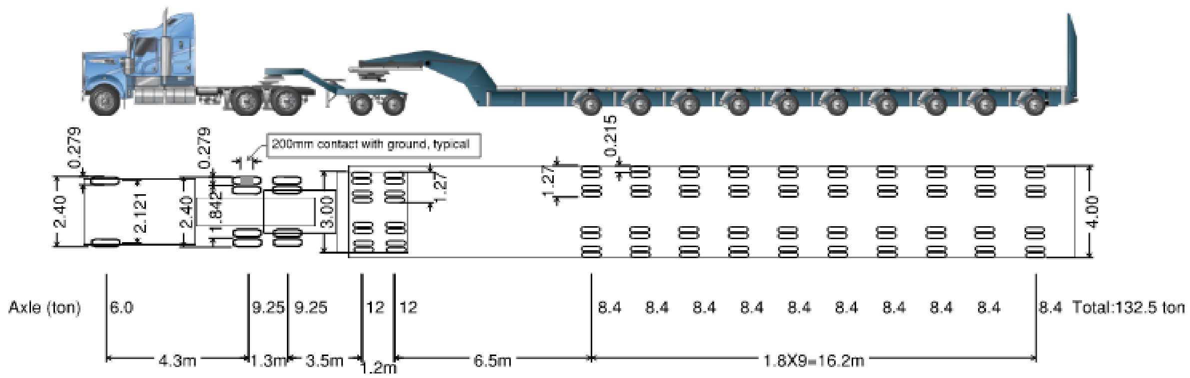
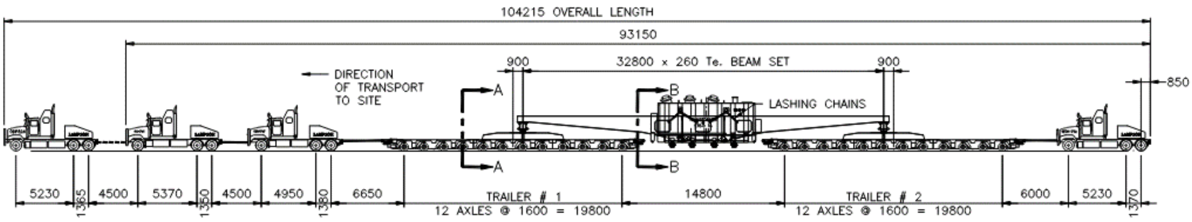


Figure 2-1 Transporter for EPEC Substation Building

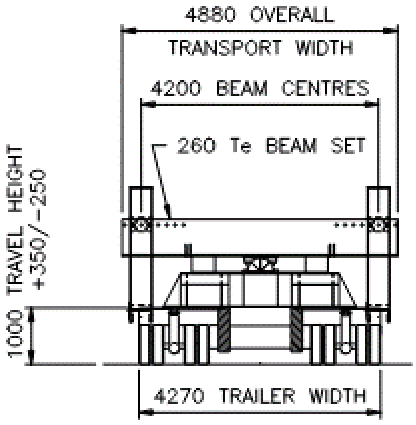
2.2 Transporter for EPEC Transformer

Figure 2-2 shows transporter configuration contained on drawing titled 175.0 Te. Transformer Transportation to Site General Arrangement, dated 15 November 2023, prepared by Lampson Pty. Ltd. Each trailer consists of 12 number 8-tyre axles, weighted 14.82 ton, spaced at 1.6m.

A configuration same as Figure 2-1 with heavy axles was used in Revision A report. Comparing the latest configuration with what was adopted previously, the axle load is reduced by 8% and the width of the axle is increased by 7%.



Elevation of the Transporter



WEIGHT TABLE, Te.

	TRAILER # 1	TRAILER # 2
TRANSFORMER SHARE	87.50	87.50
BEAM SET SHARE	32.65	32.65
TRAILER	57.60	57.60
GVM	177.75	177.75
AXLE LOAD	14.82	14.82
TIRE LOAD	1.85	1.85

End View of the Transporter

Weight Table

Figure 2-2 Transporter for EPEC Transformer

2.3 Transporter for TransGrid Building

Configuration shown in Figure 2-3 is derived from documents contained in an email from Transgrid, RE: Stubbo - TMP OSOM Vehicle Update - Meeting Notes, received on 25 August 2023. The main trailer consists of 5 number 4-tyre axles, weighted 10.2 ton, spaced at 2.6m. This configuration was used in Revision A report.

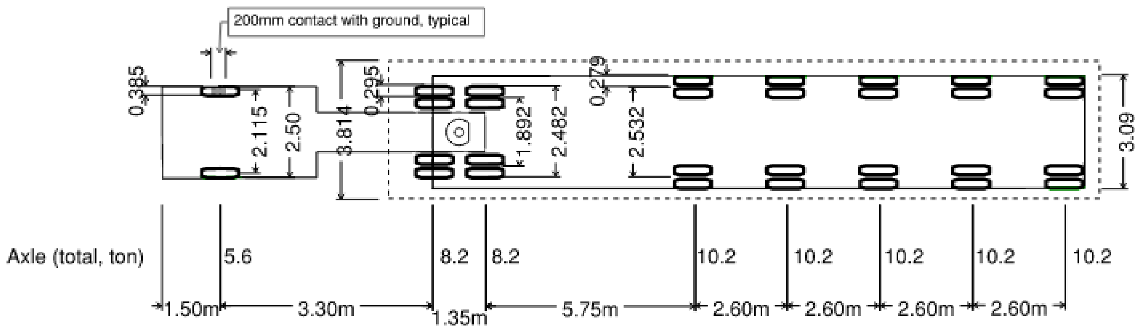


Figure 2-3 Transporter for TransGrid Building

3.0 Assessment Methodology:

There are existing design drawings available for four bridges out of the 14 structures listed in Table 1-1, only one of them has a complete set of drawings, the other three bridges also have missing details including reinforcement in some structural elements and or dimensions of structural members.

The purpose of the assessment is to compare the OSOM loading with the available structure capacity to determine if the proposed transporters can safely traverse all the structures. Due to lack of as-built information, it is impractical to calculate each structural element's theoretical structural capacity based on the latest Australia Bridge Standard. According to the site inspections, there is no identified deflects that will undermine any structural element's designed capacity. Therefore, it is reasonable to compare the load effects from original design loads with the load effects from OSOM transporters.

Limit states design method is adopted in AS5100-2017, there are two limit states to be complied when a new bridge is designed, serviceability limit state (SLS) refers to an action that has a 5% probability of being exceeded per year, which represents an average return interval of 20 years, and ultimate limit state (ULS) refers to a design action has a 5% probability of being exceeded during the design life, which represent an average return interval of 2000 years. Bridges designed to standards prior to 1992 adopted allowable stress design method for reinforced concrete members, any live load exceeding the nominated design load is covered by stress reduction factors. The members SLS capacity equivalent to AS5100 cannot be readily assessed because it is not defined in the old standards, while the ULS capacity equivalent to AS5100 can be derived by concerning the strength reduction factors. It is considered to be acceptable to assess the ultimate limit state load effects for these one off OSOM loadings. It is suggested to inspect all structures after the operation of these OSOM transporters to ensure no SLS related defects.

A load rating factor (RF) is defined as a ratio of load effects from original design loads to the load effects from OSOM transporters. An RF greater than unity means that the structure/structure element has adequate capacity for the proposed OSOM loading.

The original design loads will be derived from the Design Standard at the time of the structure being designed.

Dynamic load allowance (DLA) of 0.4 for the transporter without speed limit will be considered initially, the reduced speed with associated DLA will be examined if the RF is less than 1. The DLA can be reduced to 0.3, 0.2, 0.1 and 0.0 for maximum travel speed of 30km/h, 20km/h, 10km/h and 5km/h respectively. The most critical OSOM Transporter for EPEC Switch Building is assessed first, the other loading will be examined if RF for this transporter is less 1.0. Speed limit will be given to bring the RF to be equal or greater than 1.0.

All types of transporters have been examined in the updated assessment and the worst load effects and associated RF are reported in the subsequent sections.

The platform transporters will be travelling along the marked double line - centreline of the bridge/structure. An offset of 1.0 m is considered in analysis to account for positioning error during driving.

The following design standard will be adopted in the assessment:

- Australian Standard, Bridge Design, AS5100-2017
- Austroads, Bridge Design Code, 1992
- National Association of Australian State Road Authorities, Bridge Design Specification, 1976
- National Association of Australian State Road Authorities, Bridge Design Specification, 1970
- National Association of Australian State Road Authorities, Bridge Design Specification, 1965

The applicable standard is adopted based on the date shown on available drawings. Among the bridges with available drawings, the earliest bridge was designed in 1970, it is assumed all the other structures would have been designed in the same period. The 1965 Specification has been applied to structures where the design date is not available.

4.0 Assessment Result:

4.1 Murrumbline Creek Turill Bridge at Ch9500

4.1.1 Structure Description

There is no design drawing available for this bridge. The site measurements show the bridge in similar geometry to the bridge over Moolarben Creek at Ch32,500, including deck width, traffic barrier geometry, deck unit numbers and height. Therefore, same structure parameter has been assumed for structure elements where site confirmation is not practical. The bridge is assumed to be designed around 1981 when the Moolarben Creek Bridge was designed, the applicable standard is National Association of Australian State Road Authorities, Bridge Design Specification, 1976.

It is a two-span bridge containing two traffic lanes, each span is 14.5m long, the carriageway between faces of traffic barriers is 8.0m. Based on site measurements and drawings for Moolarben Creek Bridge, the superstructure consists of 14 number 600mmx535mm deep precast prestressed concrete planks composite with 110mm thick deck slab. All spans are simply supported on headstock/sill beam through elastomeric bearing strips. The bridge has no skew. The pier substructure consists of 0.95mx0.95mx8.25m headstock beam supported on two number 0.8m diameter columns. The abutments consist of 3.7m high reinforced concrete wall. the foundations at abutment and pier cannot be identified on site.

Site inspection confirms there is no identified defects undermining the structure integrity and the original designed capacity.

Figure 4.1-1 Murrumbline Creek Turill Bridge at Ch9500

According to drawings for Moolarben Creek Bridge, the minimum 28-day compressive strength for concrete is 40MPa for planks and 25MPa for other elements. The reinforcement grade is 230 or 410. The strands are 7 wire 12.5mm diameter low relaxation strands of super grade with minimum ultimate tensile strength of 184kN.

4.1.2 Original Design Load

Designed traffic specified in NAASRA 1976 are T44 truck and lane loading as shown below:

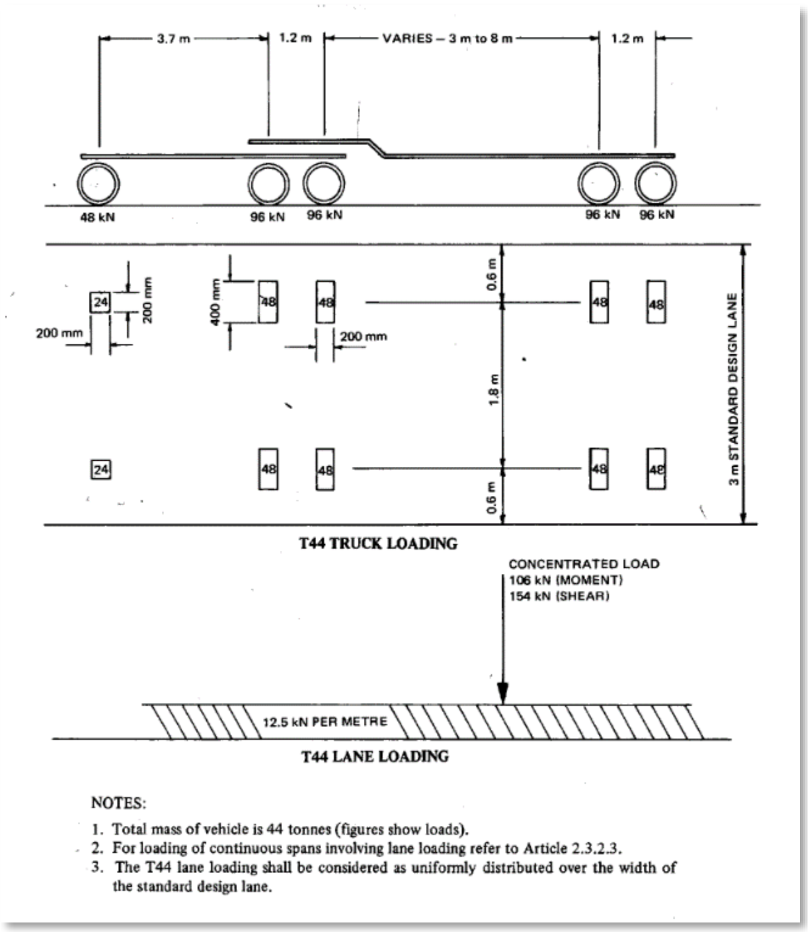


Figure 4.1-2 T44 Traffic Load

The traffic load shall be place in 3.0m wide design lanes located between face of traffic barriers. The accompanying lane factor for two-lane bridge is 1.0. The applicable DLA shall be calculated based on span length and type, 0.29 has been determined for this bridge.

The NAASRA 1976 adopts allowable stress method for reinforced concrete structures, with reduction factor of 0.4 for concrete, 0.41 for grade 230 reinforcement. The equivalent ULS factor used in the latest Australia Bridge Standard, with strength reduction factor of 0.8, is 1.95.

The ultimate limit state design is required for prestressed precast reinforced concrete members, the ULS load factor for live load is 2.25 with reduction factor 0.9 to member strength. The equivalent ULS factor used in the latest Australia Bridge Standard, with strength reduction factor of 0.8, is 2.0.

4.1.3 Structure Model

A complete 3D global model presented in Figure 4.1-3 has been created to determine the design actions due to gravity loads in the structure. The model incorporated the correct geometry, material properties and section properties of the bridge structures.

The following elements have been included in the model:

- Abutment – bearings;
- Pier – bearings, headstock, columns; and
- Deck – PSC Planks composite with deck slab as longitudinal member, transverse member as deck slab, all members with equivalent flexural and axial stiffness.

The line beams representing the bridge deck is connected to the substructure via the bearings only. This approach correctly models the interaction between superstructure and substructure.

Because there is no foundation information available, the pier columns are assumed to be fully fixed at ground level, and bearings at abutment are fixed at bearing shelf. The model is still adequate to determine the load rating factor between the OSOM load and the original design load because the distribution of the gravity live load is determined by the above ground structure.

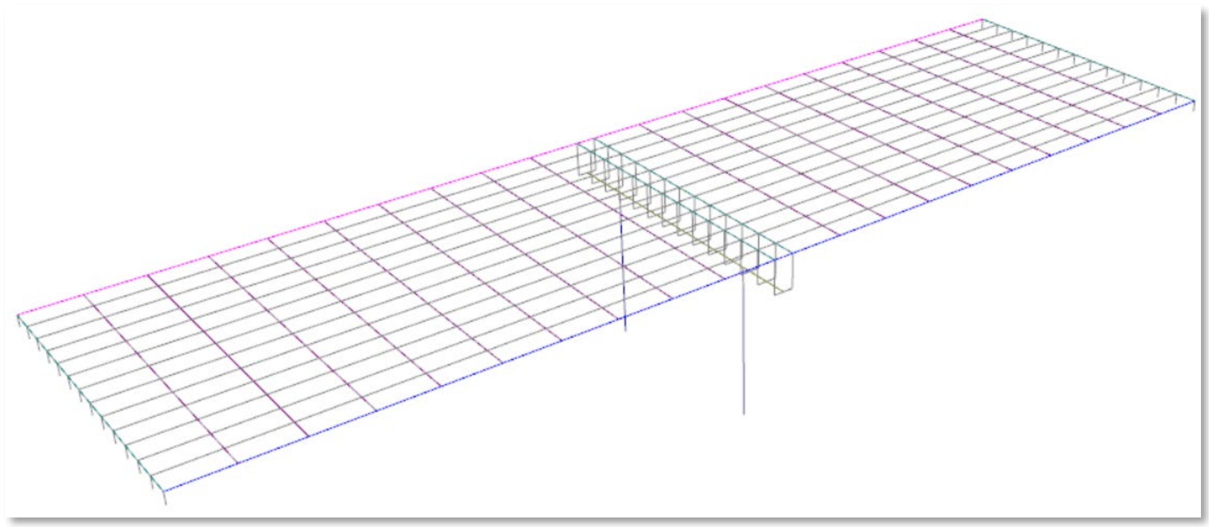


Figure 4.1-3 Global Structural Analysis Model

4.1.4 Analysis Results

Gravity load effects are presented in the following tables:

Table 4.1-1 Pier Column

Live Load	ULS bending moment (kNm)	ULS axial (kN)	ULS shear (kN)
T44	465	1241	177
OSOM	420	1113	153
Speed Limit (km/hr)	-	-	-
RF	1.11	1.11	1.16

Table 4.1-2 Transverse Deck Slab

Live Load	ULS bending moment Sagging (kNm)	ULS bending moment Hogging (kNm)	ULS shear (kN)
T44	20	-10	61
OSOM	15	-7	41
Speed Limit (km/hr)	-	-	-
RF	1.31	1.44	1.49

Table 4.1-3 Edge Plank Composite Section

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS torsion (kN)
T44	354	114	15
OSOM	329	49	14
Speed Limit (km/hr)	-	-	-
RF	1.08	2.32	1.08

Table 4.1-4 Internal Plank Composite Section

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS torsion (kN)
T44	556	152	15
OSOM	372	125	14
Speed Limit (km/hr)	-	-	-
RF	1.49	1.22	1.08

Table 4.1-5 Pier head stock

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS torsion (kN)
T44	563	735	303
OSOM	479	699	202
Speed Limit (km/hr)	-	-	-
RF	1.18	1.05	1.50

The elastomeric bearings are designed for SLS only in AS5100-2017 because the rubber can carry a lot more load under ULS. Therefore, it is not necessary to check the strip bearings for ULS.

The bridge structure is adequate for the OSOM loading. The critical structure member is Pier Headstock with an RF of 1.05.

The rating factor has increased by 4% and speed limit has been removed since Revision A assessment.

4.2 Curryal Creek Bridge at Ch12500

4.2.1 Structure Description

There is no design drawing available for this structure. It is conservatively assumed that the structure was designed circa 1969 the oldest bridge with available drawings, the applicable standard is National Association of Australian State Road Authorities, Bridge Design Specification, 1965.

It is a two-cell cast in place reinforced concrete culvert structure carrying two traffic lanes, the carriageway between faces of traffic barriers is 7.6m, marked carriageway is measured to be 6.5m wide, the culvert is 10.2m long. Each cell is measured to be 3m wide x 3m high. The roof slab is 200mm thick and intermediate leg is 200mm thick. The culvert base slab cannot be accessed during the site inspection, the thickness is assumed to be same as the roof slab 200mm. The side wall thickness is 200mm. The road pavement above the roof slab is 1200mm – 1500mm.

According to 1965 Specification, the min 28-day compressive strength for concrete is 3,000 P.S.I. (~21MPa). The reinforcement has allowable tensile strength of 18,000 lb. per sq. in. (124MPa) or 22,500 lb. per sq. in. (155MPa).

Site inspection confirms there is no identified defects undermining the structure integrity and the original designed capacity.

Figure 4.2-1 Twin-cell culvert at Ch12500

4.2.2 Original Design Load

Designed traffic specified in NAASRA 1965 is H and H-S trucks as shown below:

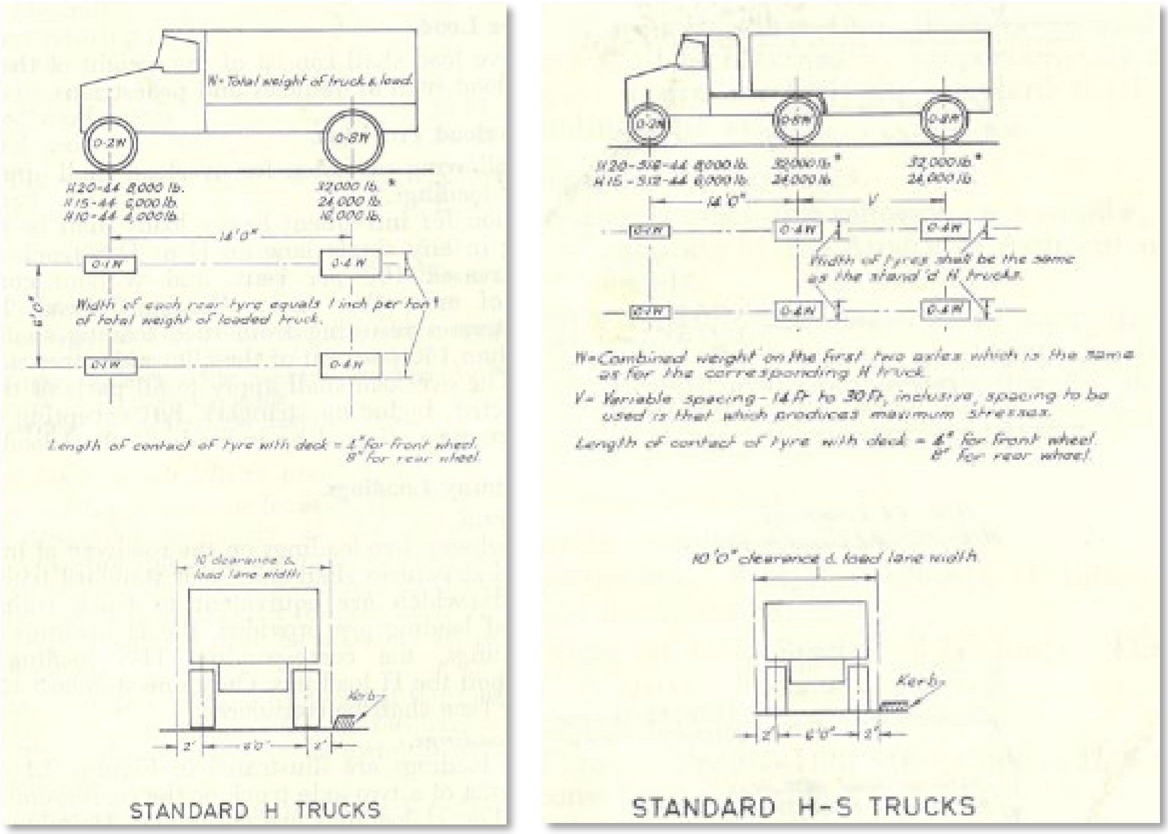


Figure 4.2-2 Standard H and H-S Trucks Load

The traffic load shall be place in 3.05m wide design lanes located between face of traffic barriers. The accompanying lane factor for two-lane bridge is 1.0. The applicable DLA shall be calculated based on span length and type, 0.3 has been determined for this structure.

The NAASRA 1965 adopts allowable stress method for reinforced concrete structures, with reduction factor of 0.4 for concrete, 0.45 for structural grade reinforcement. The equivalent ULS factor used in the latest Australia Bridge Standard, with strength reduction factor of 0.8, is 1.78.

4.2.3 Structure Model

A complete 3D global model presented in Figure 4.2-3 has been created to determine the design actions due to gravity loads in the structure. The model incorporates the correct geometry, material properties and section properties of the culvert structure.

The roof slab, side wall, intermediate leg and base slab are modelled at grillage. The vertical walls are pin connected to the base slab to transfer shear forces only. Lateral and vertical soil springs have been applied along the height of the side walls and length of the base slab. Spring stiffness values have estimated based on past project experiences. The accuracy of the spring value will not affect the qualitative conclusion in comparing gravity load effects.

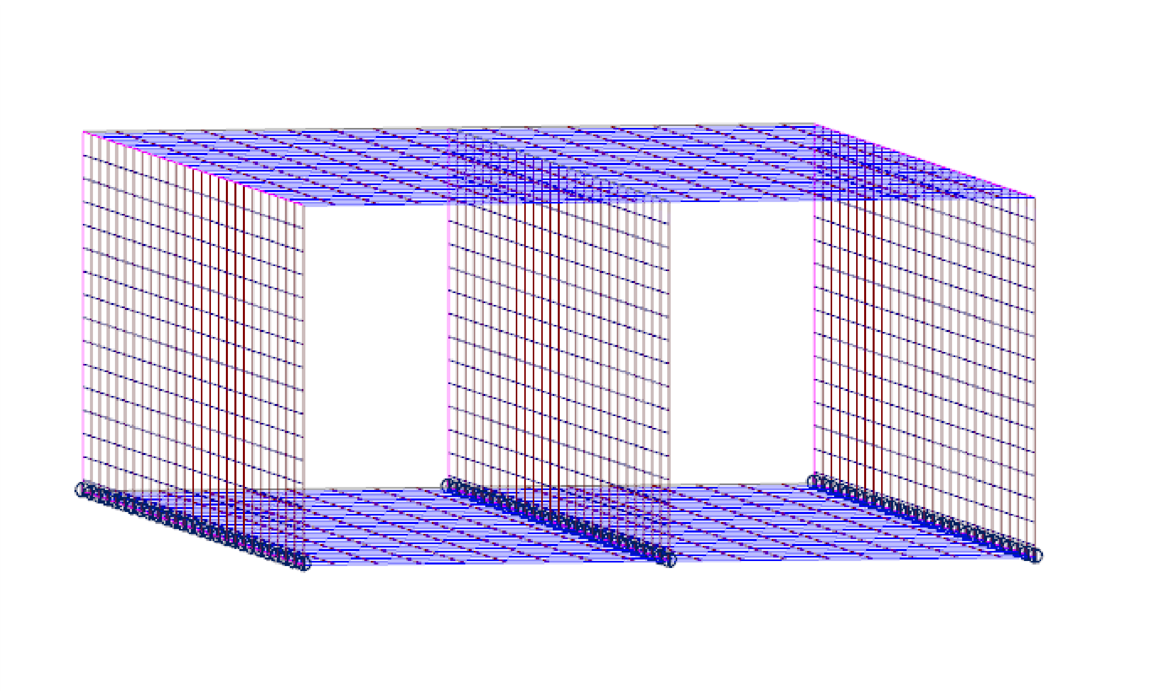


Figure 4.2-3 Global Structural Analysis Model

The wheel load distributes along a spread slope of 1V:0.725H, as shown in Figure 4.2-4.

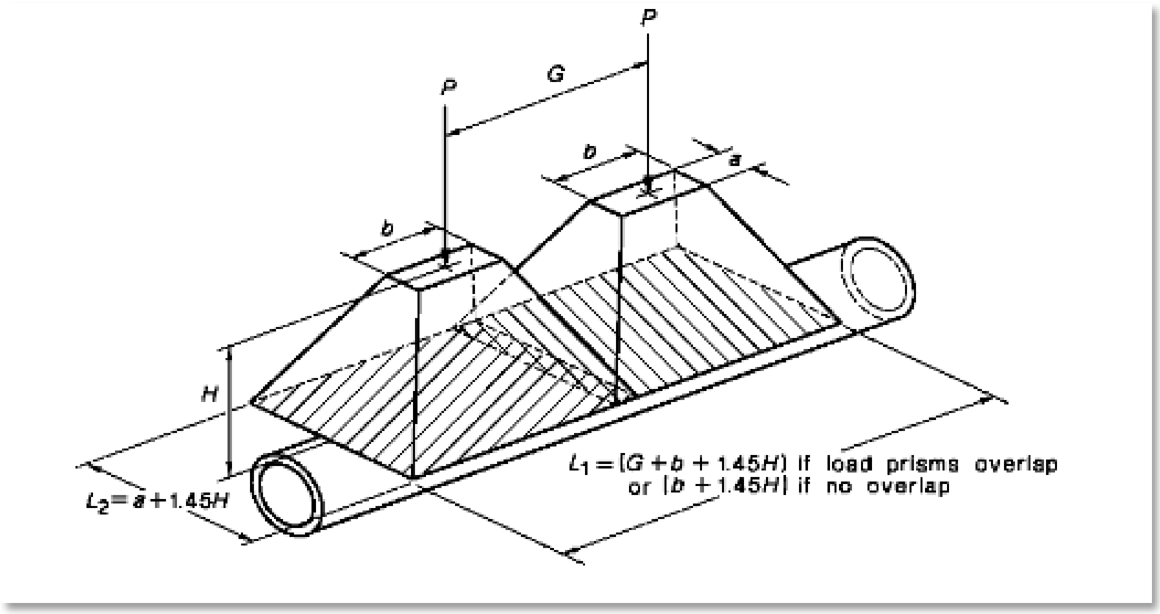


Figure 4.2-4 Wheel Loads Through Fill

4.2.4 Analysis Results

Gravity load effects are presented in the following tables:

Table 4.2-1 Roof Slab

Live Load	ULS bending moment (kNm)	ULS shear (kN)
H-S Trucks	16	37
OSOM	9	26
Speed Limit (km/hr)	-	-
RF	1.84	1.41

Table 4.2-2 Intermediate Leg

Live Load	ULS bending moment (kNm)	ULS axial (kN)	ULS shear (kN)
H-S Trucks	7	44	5
OSOM	6	32	3
Speed Limit (km/hr)	-	-	-
RF	1.24	1.37	1.65

Table 4.2-3 Side Wall

Live Load	ULS bending moment (kNm)	ULS axial (kN)	ULS shear (kN)
H-S Trucks	12	28	12
OSOM	7	27	11
Speed Limit (km/hr)	-	-	-
RF	1.69	1.02	1.03

Table 4.2-4 Base Slab

Live Load	ULS bending moment (kNm)	ULS shear (kN)
H-S Trucks	2	5
OSOM	1	3
Speed Limit (km/hr)	-	-
RF	1.65	1.65

The minimum RF for all structural elements is 1.02 for side wall, which confirms that the bridge structure is adequate for the OSOM loading.

The rating factor has increased by 3% and speed limit has been removed since Revision A assessment.

4.3 Culvert at Ch16600

4.3.1 Structure Description

There is no design drawing available for this structure. It is conservatively assumed that the structure was designed circa 1969 the oldest bridge with available drawings, the applicable standard is National Association of Australian State Road Authorities, Bridge Design Specification, 1965.

It is a single-cell cast in place reinforced concrete culvert structure carrying two traffic lanes, the carriageway between faces of traffic barriers is 7.2m, marked carriageway is measured to be 6.5m wide, the culvert is 11.7m long. The clear opening is measured to be 3m wide x 3m high. The roof slab is 500mm thick and the vertical walls are 500mm thick. The culvert base slab is measured to be 450mm. The road pavement above the roof slab is 1200mm.

According to 1965 Specification, the min 28-day compressive strength for concrete is 3,000 P.S.I. (~21MPa). The reinforcement has allowable tensile strength of 18,000 lb. per sq. in. (124MPa) or 22,500 lb. per sq. in. (155MPa).

Site inspection confirms there is no identified defects undermining the structure integrity and the original designed capacity.

Figure 4.3-1 Single -cell culvert at Ch16600

4.3.2 Original Design Load

Designed traffic specified in NAASRA 1965 is H and H-S trucks as shown below:

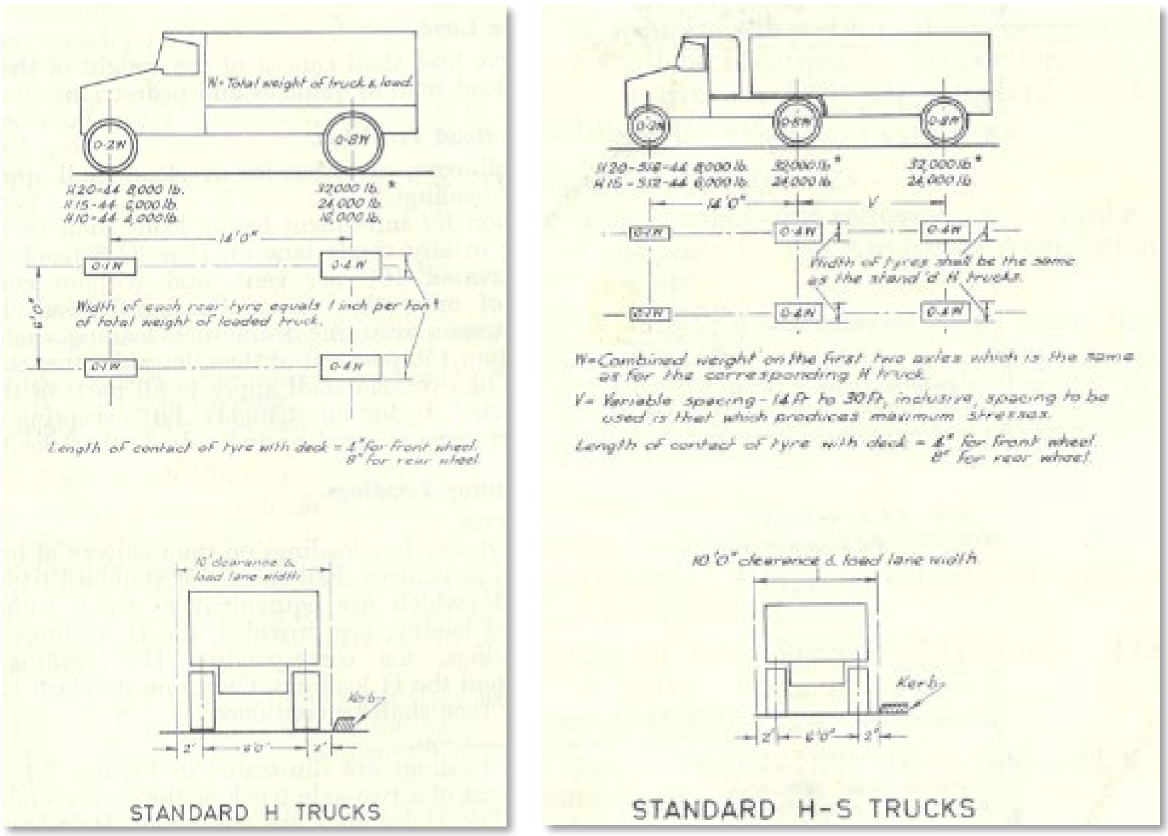


Figure 4.3-2 Standard H and H-s Trucks Load

The traffic load shall be place in 3.05m wide design lanes located between face of traffic barriers. The accompanying lane factor for two-lane bridge is 1.0. The applicable DLA shall be calculated based on span length and type, 0.3 has been determined for this structure.

The NAASRA 1965 adopts allowable stress method for reinforced concrete structures, with reduction factor of 0.4 for concrete, 0.45 for structural grade reinforcement. The equivalent ULS factor used in the latest Australia Bridge Standard, with strength reduction factor of 0.8, is 1.78.

4.3.3 Structure Model

A complete 3D global model presented in Figure 4.3-3 has been created to determine the design actions due to gravity loads in the structure. The model incorporates the correct geometry, material properties and section properties of the bridge structures.

The roof slab, side wall, intermediate leg and base slab are modelled at grillage. The vertical walls are pin connected to the base slab to transfer shear forces only. Lateral and vertical soil springs have been applied along the height of the side walls and length of the base slab. Spring stiffness values have estimated based on past project experiences. The accuracy of the spring value will not affect the qualitative conclusion in comparing gravity load effects.

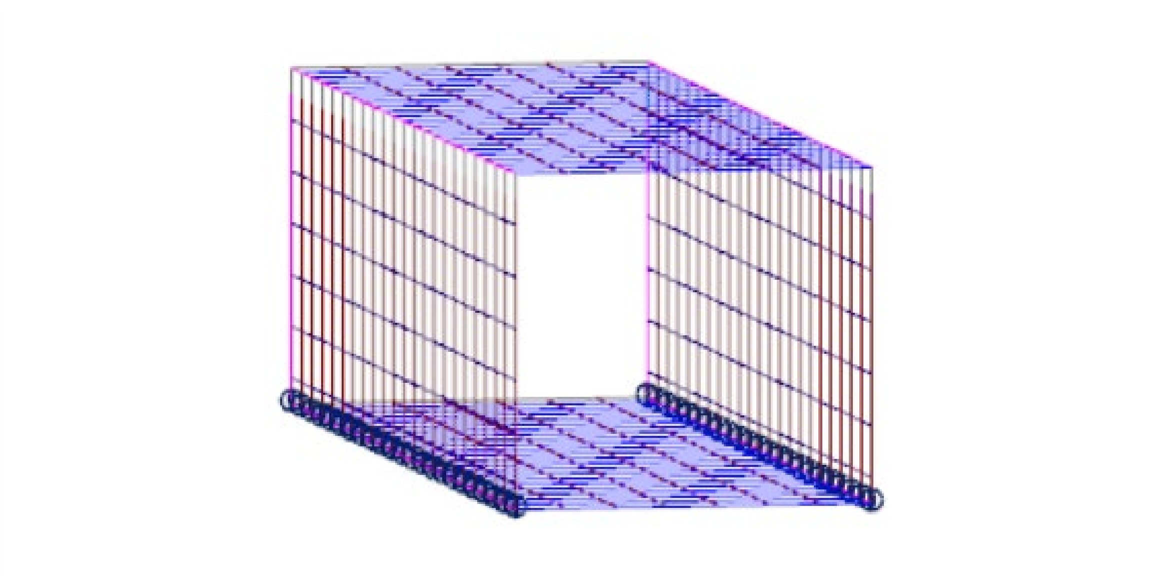


Figure 4.3-3 Global Structural Analysis Model

The wheel load distributes along a spread slope of 1V:0.725H, as shown in Figure 4.3-4.

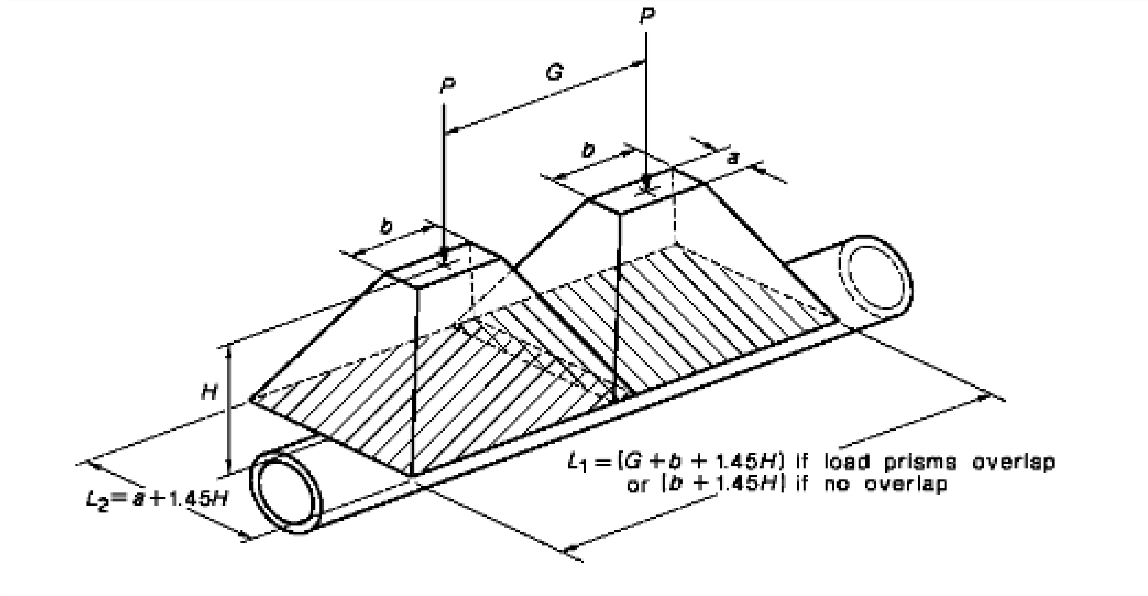


Figure 4.3-4 Wheel Loads Through Fill

4.3.4 Analysis Results

Gravity load effects are presented in the following tables:

Table 4.3-1 Roof Slab

Live Load	ULS bending moment (kNm)	ULS shear (kN)
H-S Trucks	19	39
OSOM	10	26
Speed Limit (km/hr)	-	-
RF	1.90	1.49

Table 4.3-2 Side Wall

Live Load	ULS bending moment (kNm)	ULS axial (kN)	ULS shear (kN)
H-S Trucks	12	35	7
OSOM	6	23	4
Speed Limit (km/hr)	-	-	-
RF	1.98	1.48	1.78

Table 4.3-3 Base Slab

Live Load	ULS bending moment (kNm)	ULS shear (kN)
H-S Trucks	5	7
OSOM	2	2
Speed Limit (km/hr)	-	-
RF	2.37	3.56

The bridge structure is adequate for the OSOM loading. The critical structure member is Side Wall with an RF of 1.48.

The rating factor has increased by 40% and speed limit has been removed since Revision A assessment. The critical member, roof slab, in previous assessment is found to be sensitive the axle spacing and tyre load.

4.4 Culverts at Ch18600

4.4.1 Structure Description

There is no design drawing available for this structure. It is conservatively assumed that the structure was designed circa 1969 the oldest bridge with available drawings, the applicable standard is National Association of Australian State Road Authorities, Bridge Design Specification, 1965.

It is a three-cell culvert structure carries two traffic lanes, the carriageway between faces of traffic barriers is 7.2m, the culvert is 12.2m long. Each cell is measured to be 3m wide x 2m high. The roof slab is 500mm thick and intermediate legs are 230mm thick, the culvert is supported on a 550mm thick base. The side wall thickness cannot be obtained on site, it is assumed to be same as the roof slab, 500mm. The road pavement above the roof slab is 100mm.

According to 1965 Specification, the min 28-day compressive strength for concrete is 3,000 P.S.I. (~21MPa). The reinforcement has allowable tensile strength of 18,000 lb. per sq. in. (124MPa) or 22,500 lb. per sq. in. (155MPa).

Site inspection confirms there is no identified defects undermining the structure integrity and the original designed capacity.

Figure 4.4-1 Three -cell culvert at Ch18600

4.4.2 Original Design Load

Designed traffic specified in NAASRA 1965 is H and H-S trucks as shown below:

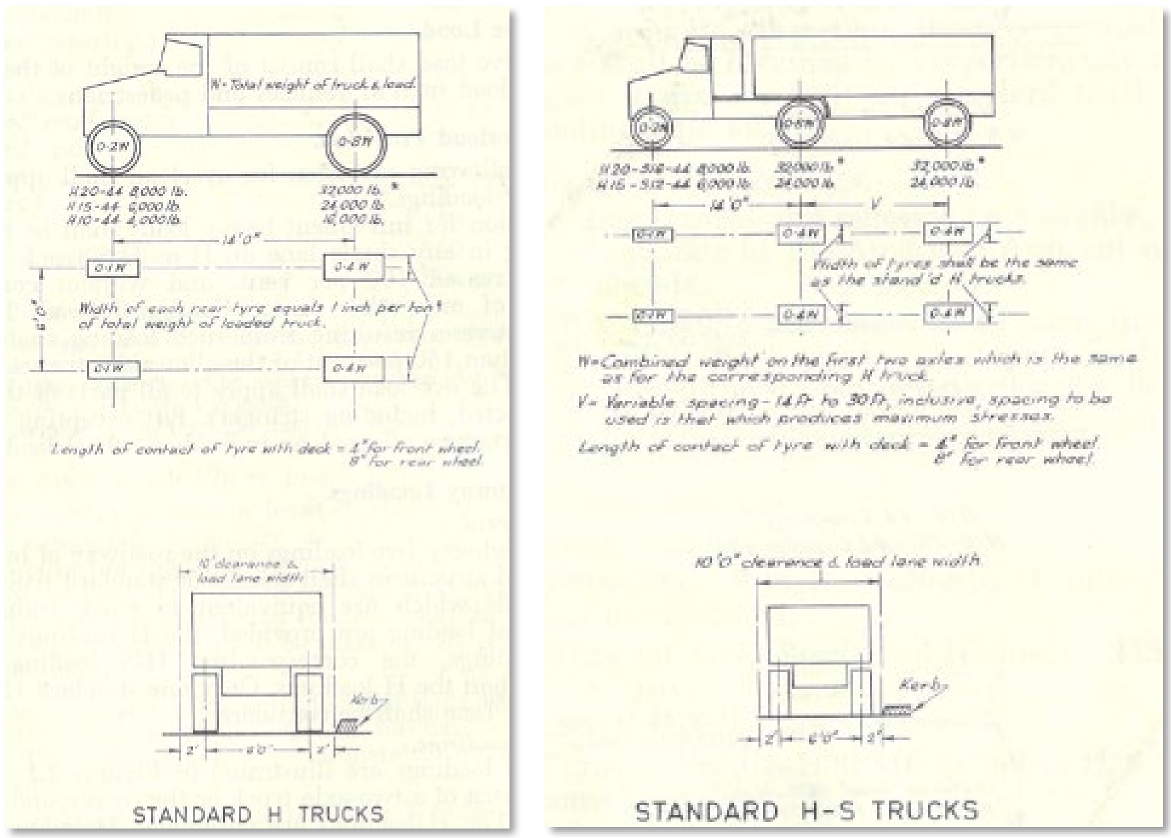


Figure 4.4-2 Standard H and H-S Trucks Load

The traffic load shall be place in 3.05m wide design lanes located between face of traffic barriers. The accompanying lane factor for two-lane bridge is 1.0. The applicable DLA shall be calculated based on span length and type, 0.3 has been determined for this structure.

The NAASRA 1965 adopts allowable stress method for reinforced concrete structures, with reduction factor of 0.4 for concrete, 0.45 for structural grade reinforcement. The equivalent ULS factor used in the latest Australia Bridge Standard, with strength reduction factor of 0.8, is 1.78.

4.4.3 Structure Model

A complete 3D global model presented in Figure 4.4-3 has been created to determine the design actions due to gravity loads in the structure. The model incorporates the correct geometry, material properties and section properties of the bridge structures.

The roof slab, side wall, intermediate legs and base slab are modelled at grillage. The vertical walls are pin connected to the base slab to transfer shear forces only. Lateral and vertical soil springs have been applied along the height of the side walls and length of the base slab. Spring stiffness values have estimated based on past project experiences. The accuracy of the spring value will not affect the qualitative conclusion in comparing gravity load effects.

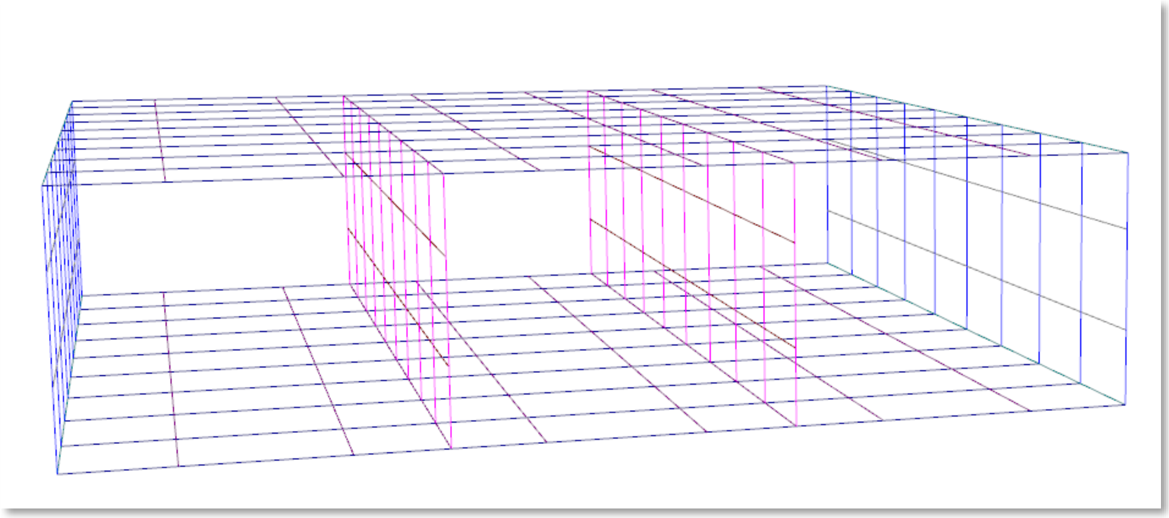


Figure 4.4-3 Global Structural Analysis Model

4.4.4 Analysis Results

Gravity load effects are presented in the following tables:

Table 4.4-1 Roof Slab

Live Load	ULS bending moment (kNm)	ULS shear (kN)
H-S Trucks	39	72
OSOM	14	31
Speed Limit (km/hr)	-	-
RF	2.91	2.31

Table 4.4-2 Intermediate Leg

Live Load	ULS bending moment (kNm)	ULS axial (kN)	ULS shear (kN)
H-S Trucks	2	60	5
OSOM	1	38	3
Speed Limit (km/hr)	-	-	-
RF	1.71	1.59	1.71

Table 4.4-3 Side Wall

Live Load	ULS bending moment (kNm)	ULS axial (kN)	ULS shear (kN)
H-S Trucks	16	56	14
OSOM	9	39	9
Speed Limit (km/hr)	-	-	-
RF	1.71	1.42	1.47

Table 4.4-4 Base Slab

Live Load	ULS bending moment (kNm)	ULS shear (kN)
H-S Trucks	5	14
OSOM	3	11
Speed Limit (km/hr)	-	-
RF	1.88	1.28

The bridge structure is adequate for the OSOM loading. The critical structure member is Base Slab with an RF of 1.28.

The rating factor has increased by 19% and speed limit has been removed since Revision A assessment. The critical member, intermediate leg, in previous assessment is found to be sensitive the axle spacing and tyre load.

4.5 Bridge over Goulburn River at Ch22700

4.5.1 Structure Description

A full set of design drawings are available. The bridge was designed in 2021 in accordance with the latest standards for bridge design – AS5100-2017.

It is a two-span bridge containing two traffic lanes, each span is 15.7m long, the carriageway between faces of traffic barriers is 8.9m. The superstructure consists of 8 number 600x600 precast prestressed concrete planks with 180mm thick deck slab. The substructure consists of headstock/sill beam supported on 3 number 750mm diameter cast in place bored piles. Both spans are simply supported on headstock/sill beam through laminated elastomeric bearings. The bridge has a skew of 33 degrees.

According to the bridge drawings, the minimum 28-day compressive strength for concrete is 50MPa for planks and 40MPa for other elements. The reinforcement grade is D500N, strands are 7 wire 15.2mm diameter ordinary grade with ultimate tensile strength of 1750MPa.

Site inspection confirms there is no identified defects undermining the structure integrity and the original designed capacity.

Figure 4.5-1 Bridge over Goulburn River at Ch22700

4.5.2 Original Design Load

Designed traffic specified in AS5100-2017 is SM1600. For this bridge, the critical traffic load is M1600 moving load as shown below:

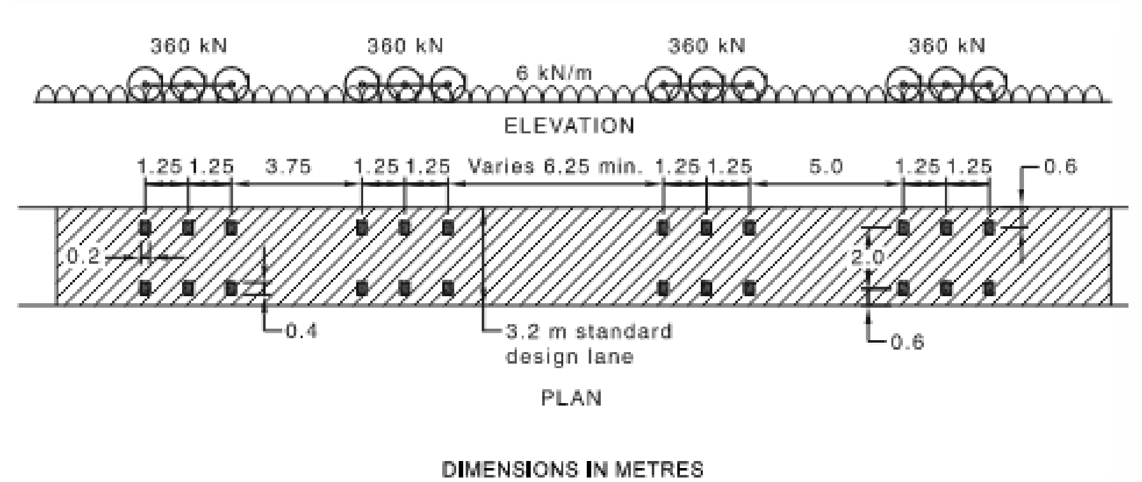


Figure 4.5-2 M1600 Moving Traffic Load

The traffic load shall be place in 3.2m wide design lanes located between faces of traffic barriers with ULS load factor of 1.8, DLA of 0.3 and accompanying lane factor for the second lane is 0.8.

4.5.3 Structure Model

A complete 3D global model presented in Figure 4.5-3 has been created to determine the design actions due to gravity loads in the structure. The model incorporates the correct geometry, material properties and section properties of the bridge structures.

The following elements have been included in the model:

- Abutment – bearings, sill beam and piles;
- Pier – bearings, headstock, columns and piles; and
- Deck – PSC Planks composite with deck slab as longitudinal member, transverse member as deck slab, all members with equivalent flexural and axial stiffness.

The line beams representing the bridge deck is connected to the substructure via the bearings only. This approach correctly models the interaction between superstructure and substructure.

Lateral soil springs have been applied along the lengths of the piles. Spring stiffness values have estimated based on past project experiences. The accuracy of the spring value will not affect the qualitative conclusion in comparing gravity load effects.

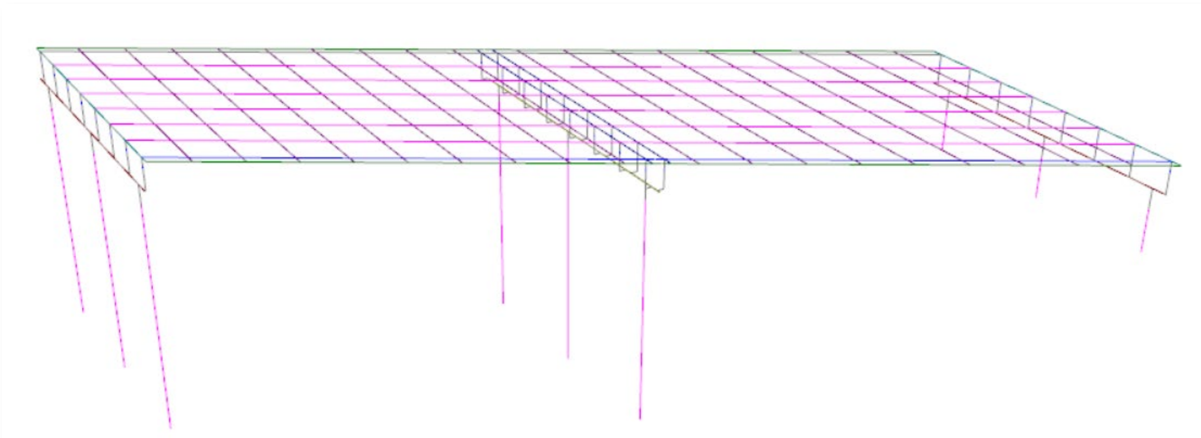


Figure 4.5-3 Global Structural Analysis Model

4.5.4 Analysis Results

Horizontal load including braking and surcharge for OSOM vehicles are compared with SM1600 traffic load and found not critical. Gravity load effects are presented in the following tables:

Table 4.5-1 Piles

Location	Live Load	ULS bending moment (kNm)	ULS axial (kN)	ULS shear (kN)
Abut A	M1600	56	1458	16
	OSOM	24	542	8
	Speed Limit (km/hr)	-	-	-
	RF	2.36	2.69	1.95
Pier	M1600	119	1755	16
	OSOM	78	998	11
	Speed Limit (km/hr)	-	-	-
	RF	1.52	1.76	1.46
Abut B	M1600	21	2122	14
	OSOM	7	650	6
	Speed Limit (km/hr)	-	-	-
	RF	3.01	3.27	2.51

Table 4.5-2 Transverse Deck Slab

Live Load	ULS bending moment Sagging (kNm)	ULS bending moment Hogging (kNm)	ULS shear (kN)
M1600	56	-35	91
OSOM	36	-21	53
Speed Limit (km/hr)	-	-	-
RF	1.54	1.67	1.72

Table 4.5.4-3 Edge Plank Composite Section

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS torsion (kN)
M1600	1200	309	35
OSOM	475	101	28
Speed Limit (km/hr)	-	-	-
RF	2.53	3.06	1.25

Table 4.5-4 Internal Plank Composite Section

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS torsion (kN)
M1600	1296	414	59
OSOM	678	203	39
Speed Limit (km/hr)	-	-	-
RF	1.91	2.04	1.49

Table 4.5-5 Abutment sill beam

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS torsion (kN)
M1600	945	863	33
OSOM	346	315	13
Speed Limit (km/hr)	-	-	-
RF	2.73	2.74	2.60

Table 4.5-6 Pier head stock

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS torsion (kN)
M1600	772	959	164
OSOM	498	550	78
Speed Limit (km/hr)	-	-	-
RF	1.55	1.74	2.09

The elastomeric bearings are designed for SLS only in AS5100-2017 because the rubber can carry a lot more load under ULS. Therefore, it is not necessary to check the strip bearings for ULS.

The bridge structure is adequate for the OSOM loading. The critical structure member is Edge Plank with an RF of 1.25.

The rating factor has increased by 23% and speed limit has been removed since Revision A assessment. The critical member, Deck Slab, in previous assessment is found to be sensitive the axle spacing and tyre load.

4.6 Culvert at Ch24300

4.6.1 Structure Description

There is no design drawing available for this structure. It is conservatively assumed that the structure was designed circa 1969 the oldest bridge with available drawings, the applicable standard is National Association of Australian State Road Authorities, Bridge Design Specification, 1965.

It is a single-cell cast in place reinforced concrete culvert structure carrying two traffic lanes, there is no traffic barrier installed at this location, marked carriageway is measured to be 6.7m wide, the culvert is 9.4m long. The clear opening is measured to be 2.76m wide x 2.76m high. The roof slab is 500mm thick and the vertical walls are 200mm thick. The culvert base slab cannot be measured accurately on site, it is assumed to be same as the roof slab, 500mm. The road pavement above the roof slab is 100mm.

According to 1965 Specification, the min 28-day compressive strength for concrete is 3,000 P.S.I. (~21MPa). The reinforcement has allowable tensile strength of 18,000 lb. per sq. in. (124MPa) or 22,500 lb. per sq. in. (155MPa).

Site inspection confirms there is no identified defects undermining the structure integrity and the original designed capacity.

Figure 4.6-1 Single-cell culvert at Ch24300

4.6.2 Original Design Load

Designed traffic specified in NAASRA 1965 is H and H-S trucks as shown below:

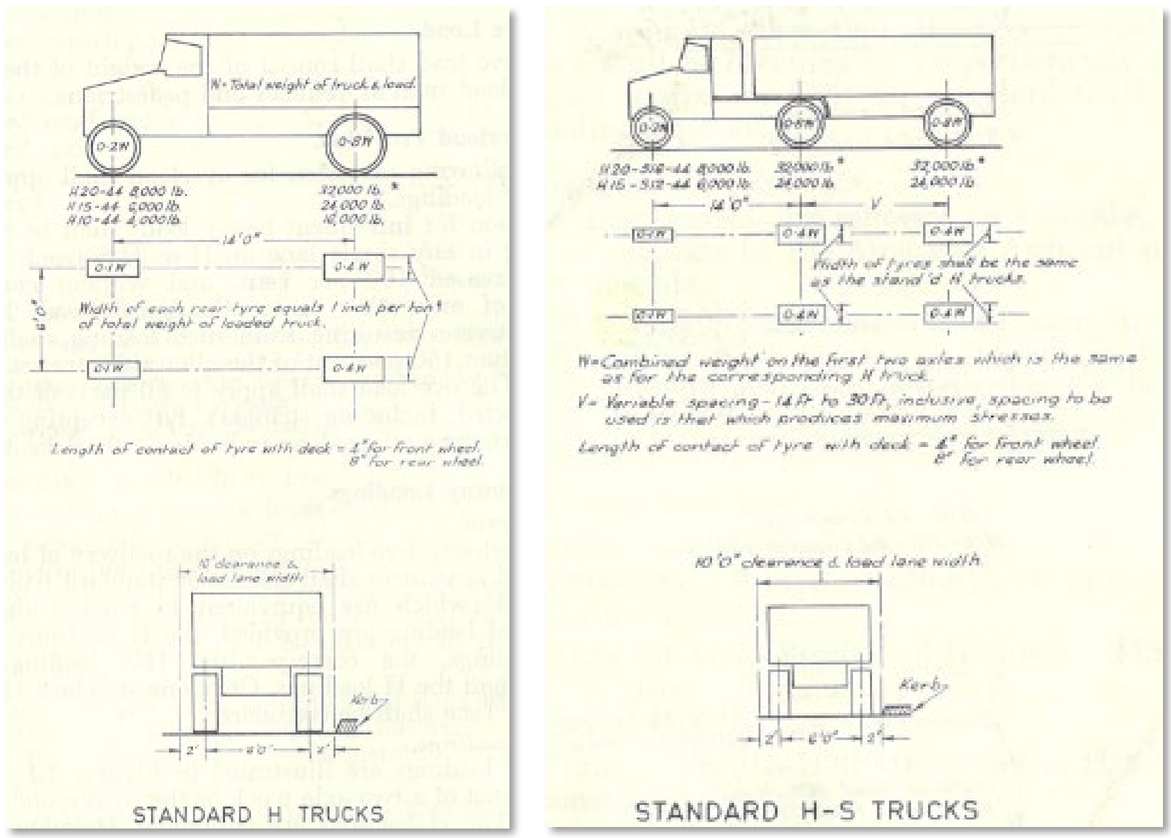


Figure 4.6-2 Standard H and H-s Trucks Load

The traffic load shall be place in 3.05m wide design lanes located between face of traffic barriers. The accompanying lane factor for two-lane bridge is 1.0. The applicable DLA shall be calculated based on span length and type, 0.3 has been determined for this structure.

The NAASRA 1965 adopts allowable stress method for reinforced concrete structures, with reduction factor of 0.4 for concrete, 0.45 for structural grade reinforcement. The equivalent ULS factor used in the latest Australia Bridge Standard, with strength reduction factor of 0.8, is 1.78.

4.6.3 Structure Model

A complete 3D global model presented in Figure 4.6-3 has been created to determine the design actions due to gravity loads in the structure. The model incorporated the correct geometry, material properties and section properties of the bridge structures.

The roof slab, side wall and base slab are modelled at grillage. The vertical walls are pin connected to the base slab to transfer shear forces only. Lateral and vertical soil springs have been applied along the height of the side walls and length of the base slab. Spring stiffness values have estimated based on past project experiences. The accuracy of the spring value will not affect the qualitative conclusion in comparing gravity load effects.

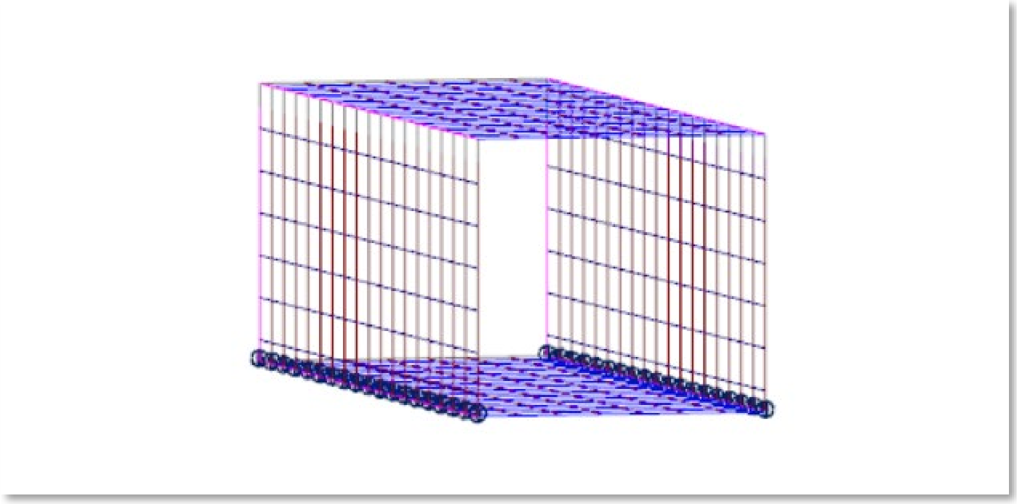


Figure 4.6-3 Global Structural Analysis Model

The wheel load distributes along a spread slope of 1V:0.725H, as shown in Figure 4.6-4.

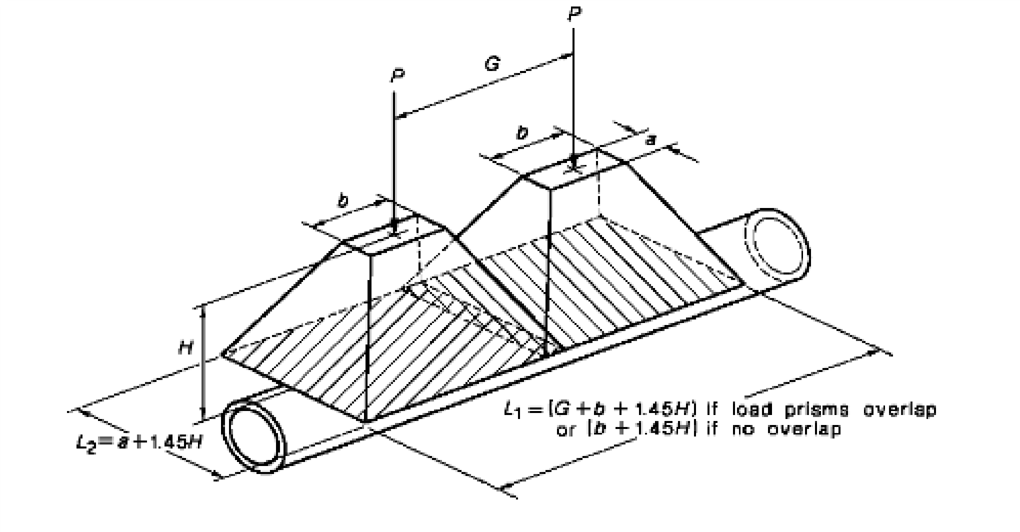


Figure 4.6-4 Wheel Loads Through Fill

4.6.4 Analysis Results

Gravity load effects are presented in the following tables:

Table 4.6-1 Roof Slab

Live Load	ULS bending moment (kNm)	ULS shear (kN)
H-S Trucks	23	81
OSOM	12	35
Speed Limit (km/hr)	-	-
RF	1.90	2.31

Table 4.6-2 Side Wall

Live Load	ULS bending moment (kNm)	ULS axial (kN)	ULS shear (kN)
H-S Trucks	16	56	19
OSOM	12	32	12
Speed Limit (km/hr)	-	-	-
RF	1.33	1.71	1.52

Table 4.6-3 Base Slab

Live Load	ULS bending moment (kNm)	ULS shear (kN)
H-S Trucks	5	7
OSOM	3	3
Speed Limit (km/hr)	-	-
RF	1.88	2.57

The bridge structure is adequate for the OSOM loading. The critical structure member is Side Wall with an RF of 1.33.

The rating factor has increased by 33% and speed limit has been removed since Revision A assessment. The critical member, Side Wall, in previous assessment is found to be sensitive the axle spacing and tyre load.

4.7 Bridge over Sandy Hollow-Ulan Railway at Ch29400

4.7.1 Structure Description

Some design drawings are available. The bridge was designed in 1981, the applicable standard is National Association of Australian State Road Authorities, Bridge Design Specification, 1976.

It is a three-span bridge (14.2m, 20.7m and 14.2m) carrying two traffic lanes, the carriageway between faces of traffic barriers is 8.0m. The superstructure consists of 4/5 number NAASRA Type 3 precast prestressed concrete girders with 200mm thick deck slab. The pier substructure consists of headstock beam supported on a 0.9mx6mx6.6m high blade wall with pad footing, each abutment consists of a 1.2m x 0.8m deep sill beam supported on 4 number 500mm diameter cast in place bored piles. All spans are simply supported on headstock/sill beam through laminated elastomeric bearings. The bridge has a skew of 41.45 degrees.

According to the available bridge drawings and drawings for Moolarben Creek Bridge (designed in the same year), the minimum 28-day compressive strength for concrete is 40MPa for planks and 25MPa for other elements. The reinforcement grade is 230 or 410. The strands are 7 wire 12.5mm diameter low relaxation strands of super grade with minimum ultimate tensile strength of 184kN.

Site inspection confirms there is no identified defects undermining the structure integrity and the original designed capacity.

Figure 4.7-1 Bridge over Sandy Hollow-Ulan Railway at Ch29400

4.7.2 Original Design Load

Designed traffic specified in NAASRA 1976 is T44 truck and lane loading as shown below:

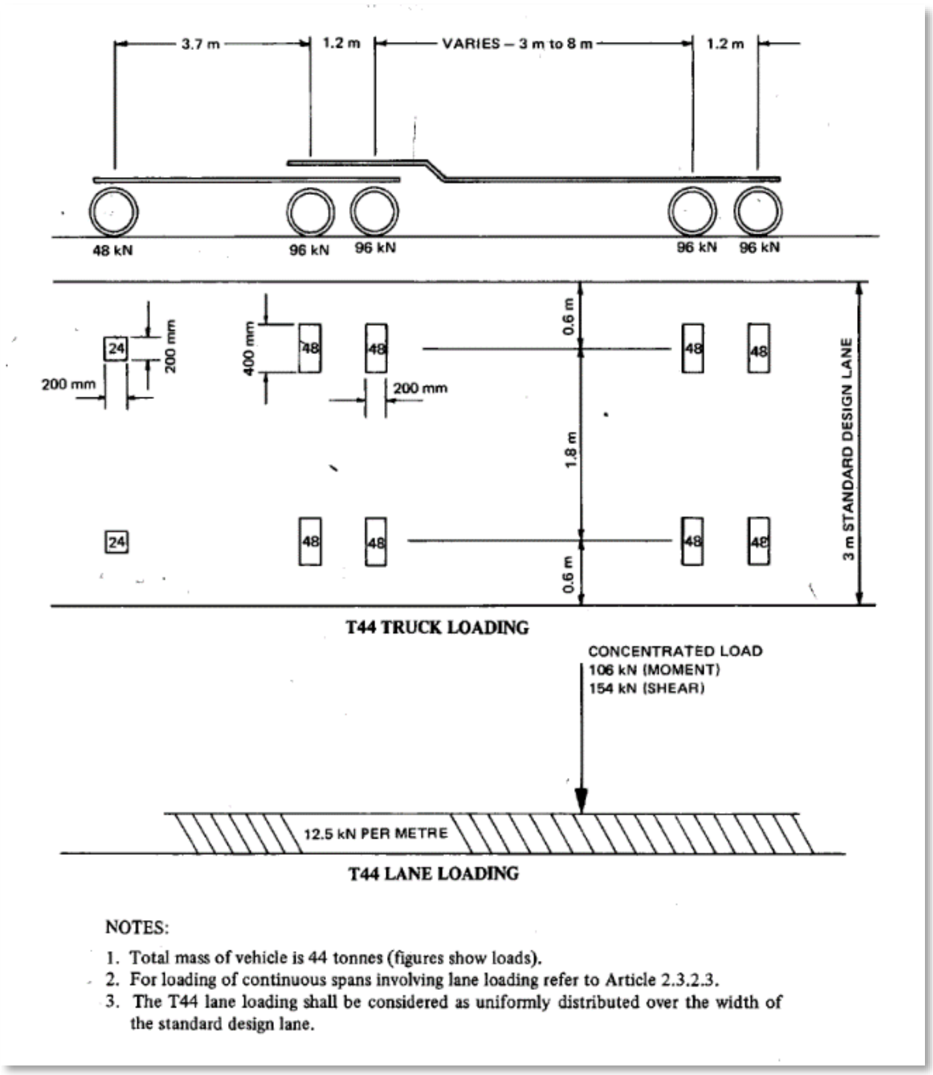


Figure 4.7-2 T44 Traffic Load

The traffic load shall be place in 3.0m wide design lanes located between face of traffic barriers. The accompanying lane factor for two-lane bridge is 1.0. The applicable DLA shall be calculated based on span length and type, 0.29 has been determined for this bridge.

The NAASRA 1976 adopts allowable stress method for reinforced concrete structures, with reduction factor of 0.4 for concrete, 0.41 for grade 230 reinforcement. The equivalent ULS factor used in the latest Australia Bridge Standard, with strength reduction factor of 0.8, is 1.95.

The ultimate limit state design is required for prestressed precast reinforced concrete members, the ULS load factor for live load is 2.25 with reduction factor 0.9 to member strength. The equivalent ULS factor used in the latest Australia Bridge Standard, with strength reduction factor of 0.8, is 2.0.

4.7.3 Structure Model

A complete 3D global model presented in Figure 4.7-3 has been created to determine the design actions due to gravity loads in the structure. The model incorporates the correct geometry, material properties and section properties of the bridge structures.

The following elements have been included in the model:

- Abutment – bearings, sill beam and piles;
- Pier – bearings, headstock, blade wall; and
- Deck – PSC Girders composite with deck slab as longitudinal member, transverse member as deck slab, all members with equivalent flexural and axial stiffness.

The line beams representing the bridge deck is connected to the substructure via the bearings only. This approach correctly models the interaction between superstructure and substructure.

Lateral soil springs have been applied along the lengths of the piles. Spring stiffness values have estimated based on past project experiences. The accuracy of the spring value will not affect the qualitative conclusion in comparing gravity load effects.

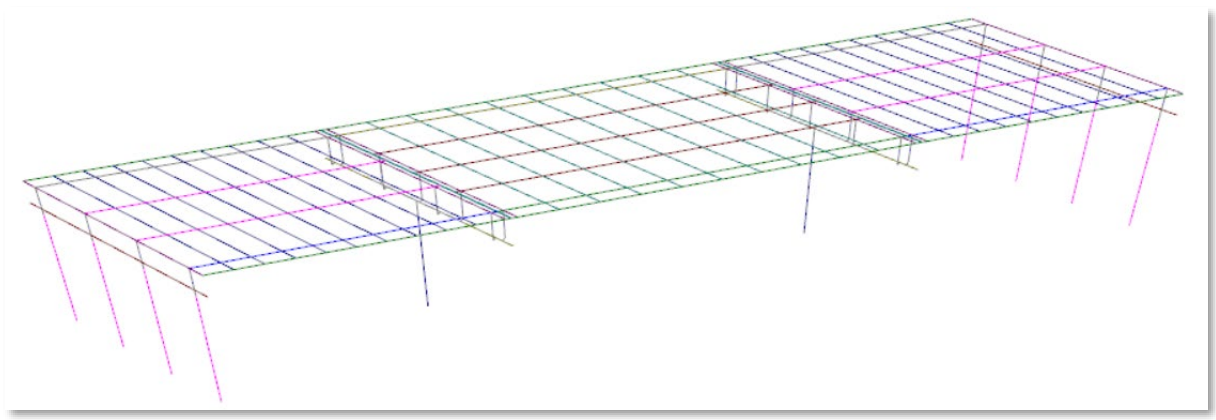


Figure 4.7-3 Global Structural Analysis Model

4.7.4 Analysis Results

Gravity load effects are presented in the following tables:

Table 4.7-1 Piles

Live Load	ULS bending moment (kNm)	ULS axial (kN)	ULS shear (kN)
T44	28	968	15
OSOM	10	371	7
Speed Limit (km/hr)	-	-	-
RF	2.84	2.61	2.17

Table 4.7-2 Transverse Deck Slab

Live Load	ULS bending moment Sagging (kNm)	ULS bending moment Hogging (kNm)	ULS shear (kN)
T44	66	-58	136
OSOM	45	-35	66
Speed Limit (km/hr)	-	-	-
RF	1.47	1.66	2.07

Table 4.7-3 Edge Girder Composite Section

Live Load	SLS bending moment (kNm)	ULS bending moment (kNm)	ULS shear (kN)	ULS torsion (kN)
T44	1945	368	26	1945
OSOM	1469	273	14	1469
Speed Limit (km/hr)	-	-	-	-
RF	1.32	1.35	1.85	1.32

Table 4.7-4 Internal Girder Composite Section

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS torsion (kN)
T44	2453	541	31
OSOM	1819	374	17
Speed Limit (km/hr)	-	-	-
RF	1.35	1.45	1.85

Table 4.7-5 Abutment sill beam

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS torsion (kN)
T44	207	45	18
OSOM	66	24	14
Speed Limit (km/hr)	-	-	-
RF	3.15	1.91	1.26

Table 4.7-6 Pier head stock

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS torsion (kN)
T44	910	435	83
OSOM	798	388	57
Speed Limit (km/hr)	-	-	-
RF	1.14	1.12	1.45

Table 4.7-7 Pier blade wall

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS Axial (kN)
T44	2951	13	1885
OSOM	2689	11	1816
Speed Limit (km/hr)	-	-	-
RF	1.10	1.13	1.04

The elastomeric bearings are designed for SLS only in AS5100-2017 because the rubber can carry a lot more load under ULS. Therefore, it is not necessary to check the strip bearings for ULS.

The bridge structure is adequate for the OSOM loading. The critical structure member is Pier Blade Wall with an RF of 1.04.

The rating factor has increased by 3% and speed limit has been removed since Revision A assessment.

4.8 Culverts at Ch30400

4.8.1 Structure Description

There is no design drawing available for this structure. It is conservatively assumed that the structure was designed circa 1969 the oldest bridge with available drawings, the applicable standard is National Association of Australian State Road Authorities, Bridge Design Specification, 1965.

It is a five single-cell culverts structure carrying two traffic lanes, there are no traffic barriers installed at this location, the culvert is 10.3m long, the marked carriageway is 6.5m wide. Each box culvert is measured to be 1.8m wide x 1.2m high. The roof slab is 200mm thick and the side walls are 150mm thick, the culvert is supported on a 150mm thick base slab. The road pavement above the roof slab is 550mm.

According to 1965 Specification, the min 28-day compressive strength for concrete is 3,000 P.S.I. (~21MPa). The reinforcement has allowable tensile strength of 18,000 lb. per sq. in. (124MPa) or 22,500 lb. per sq. in. (155MPa).

Site inspection confirms there is no identified defects undermining the structure integrity and the original designed capacity.

Figure 4.8-1 Five single-cell culverts at Ch30400

4.8.2 Original Design Load

Designed traffic specified in NAASRA 1965 is H and H-S trucks as shown below:

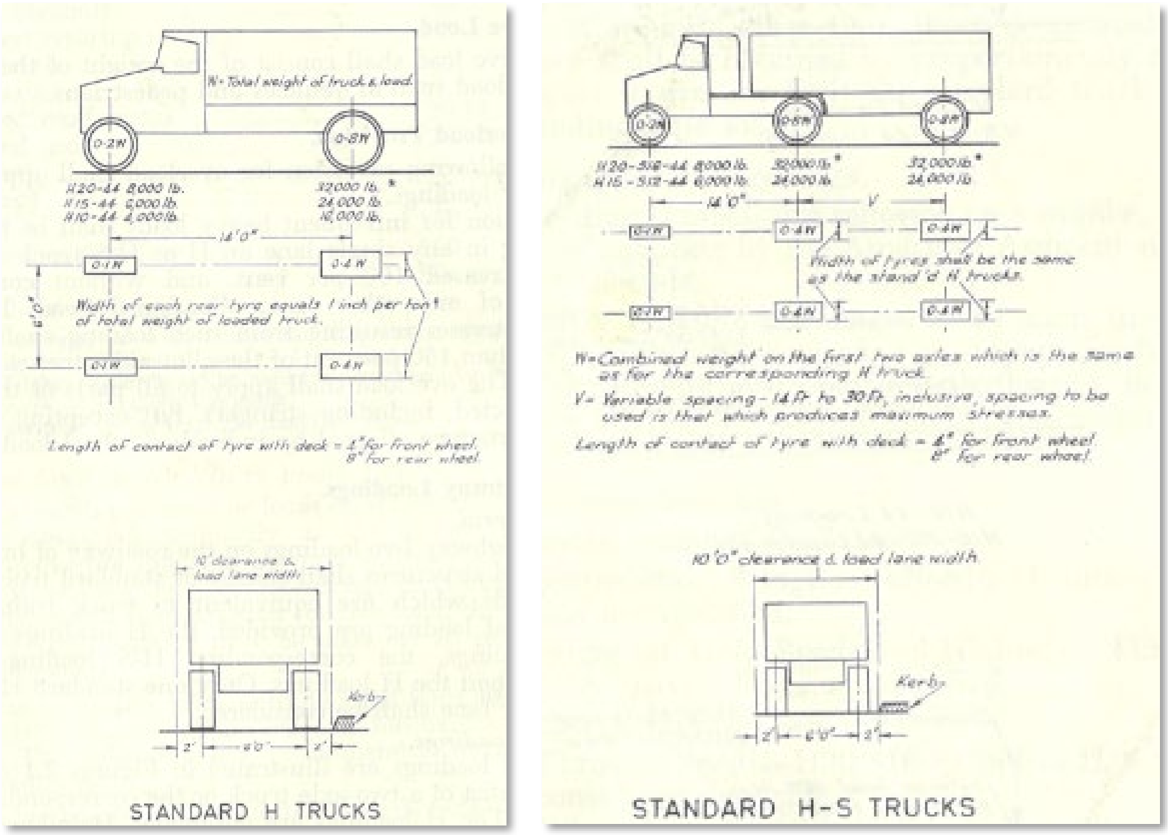


Figure 4.4-2 Standard H and H-s Trucks Load

The traffic load shall be place in 3.05m wide design lanes located between face of traffic barriers. The accompanying lane factor for two-lane bridge is 1.0. The applicable DLA shall be calculated based on span length and type, 0.3 has been determined for this structure.

The NAASRA 1965 adopts allowable stress method for reinforced concrete structures, with reduction factor of 0.4 for concrete, 0.45 for structural grade reinforcement. The equivalent ULS factor used in the latest Australia Bridge Standard, with strength reduction factor of 0.8, is 1.78.

4.8.3 Structure Model

A complete 3D global model presented in Figure 4.8-3 has been created to determine the design actions due to gravity loads in the structure. The model incorporated the correct geometry, material properties and section properties of the bridge structures.

The roof slab, side wall, intermediate legs and base slab are modelled at grillage. The vertical walls are pin connected to the base slab to transfer shear forces only. Adjacent side walls are connected through compression only members. Lateral and vertical soil springs have been applied along the height of the side walls and length of the base slab. Spring stiffness values have estimated based on past project experiences. The accuracy of the spring value will not affect the qualitative conclusion in comparing gravity load effects.

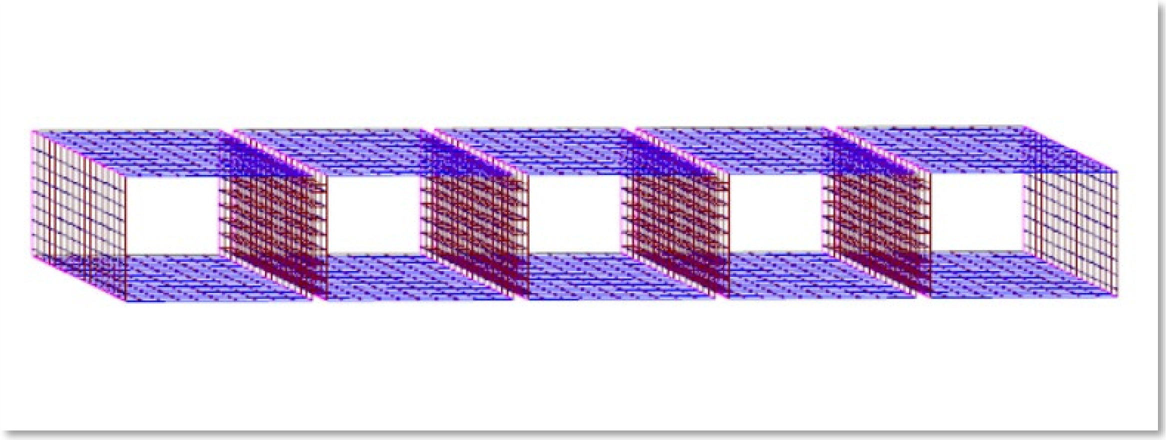


Figure 4.8-3 Global Structural Analysis Model

The wheel load distributes along a spread slope of 1V:0.725H, as shown in Figure 4.8-4.

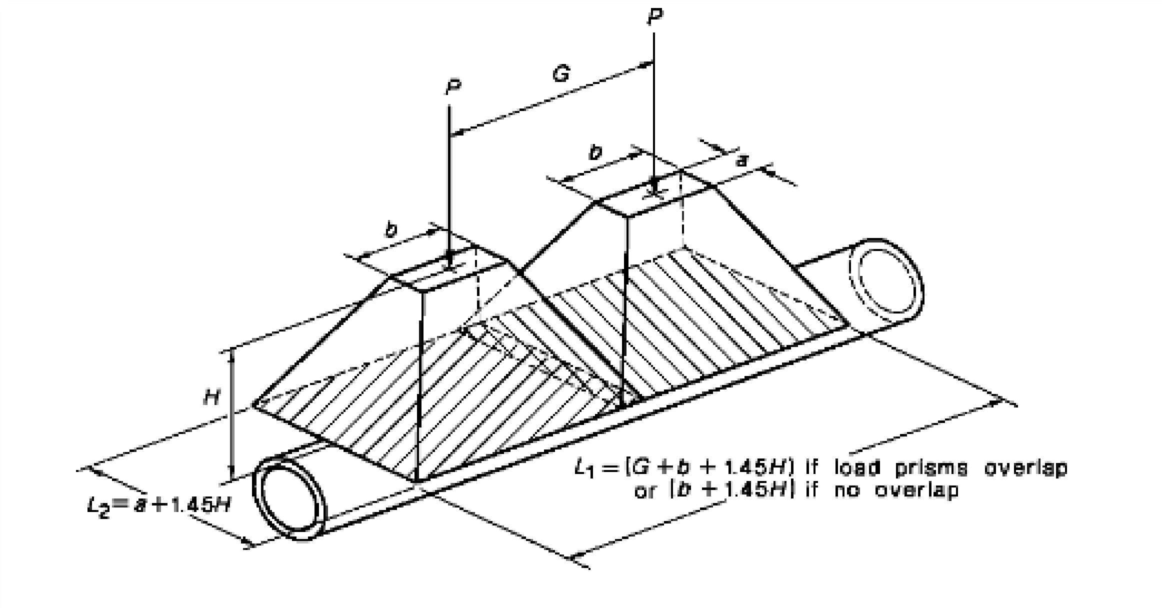


Figure 4.8-4 Wheel Loads Through Fill

4.8.4 Analysis Results

Gravity load effects are presented in the following tables:

Table 4.8-1 Roof Slab

Live Load	ULS bending moment (kNm)	ULS shear (kN)
H-S Trucks	16	58
OSOM	8	43
Speed Limit (km/hr)	-	-
RF	1.98	1.34

Table 4.8-2 Outside Wall

Live Load	ULS bending moment (kNm)	ULS axial (kN)	ULS shear (kN)
H-S Trucks	16	58	12
OSOM	4	32	6
Speed Limit (km/hr)	-	-	-
RF	4.62	1.84	1.98

Table 4.8-3 Internal Wall

Live Load	ULS bending moment (kNm)	ULS axial (kN)	ULS shear (kN)
H-S Trucks	14	90	53
OSOM	6	44	18
Speed Limit (km/hr)	-	-	-
RF	2.38	2.03	3.04

Table 4.8-4 Base Slab

Live Load	ULS bending moment (kNm)	ULS shear (kN)
H-S Trucks	2	7
OSOM	1	4
Speed Limit (km/hr)	-	-
RF	1.98	1.98

The bridge structure is adequate for the OSOM loading. The critical structure member is Roof Slab with an RF of 1.34.

The rating factor has increased by 30% and speed limit has been removed since Revision A assessment. The critical member, Intermediate Wall, in previous assessment is found to be sensitive the axle spacing and tyre load.

4.9 Bridge over Moolarben Creek at Ch32500

4.9.1 Structure Description

Some design drawings are available. The bridge was designed in 1981, the applicable standard is National Association of Australian State Road Authorities, Bridge Design Specification, 1976.

It is a three-span bridge containing two traffic lanes, each span is 15.5m long, the carriageway between faces of traffic barriers is 8.0m. The superstructure consists of 14 number 600mmx535mm deep precast prestressed concrete planks composite with 110mm thick deck slab. The pier substructure consists of headstock beam supported on a 0.82mx2.4mx3.8m high blade wall with pile cap supported on 6 number 500mm diameter cast in place bored piles, each abutment consists of a 1.0mx1.1m deep sill beam supported on 5 number 500mm diameter cast in place bored piles. All spans are simply supported on headstock/sill beam through elastomeric bearing strips. The bridge has no skew.

According to the available bridge drawings, the minimum 28-day compressive strength for concrete is 40MPa for planks and 25MPa for other elements. The reinforcement grade is 230 or 410. The strands are 7 wire 12.5mm diameter low relaxation strands of super grade with minimum ultimate tensile strength of 184kN.

Site inspection confirms there is no identified defects undermining the structure integrity and the original designed capacity.

Figure 4.9-1 Bridge over Sandy Hollow-Ulan Railway at Ch32500

4.9.2 Original Design Load

Designed traffic specified in NAASRA 1976 is T44 truck and lane loading as shown below:

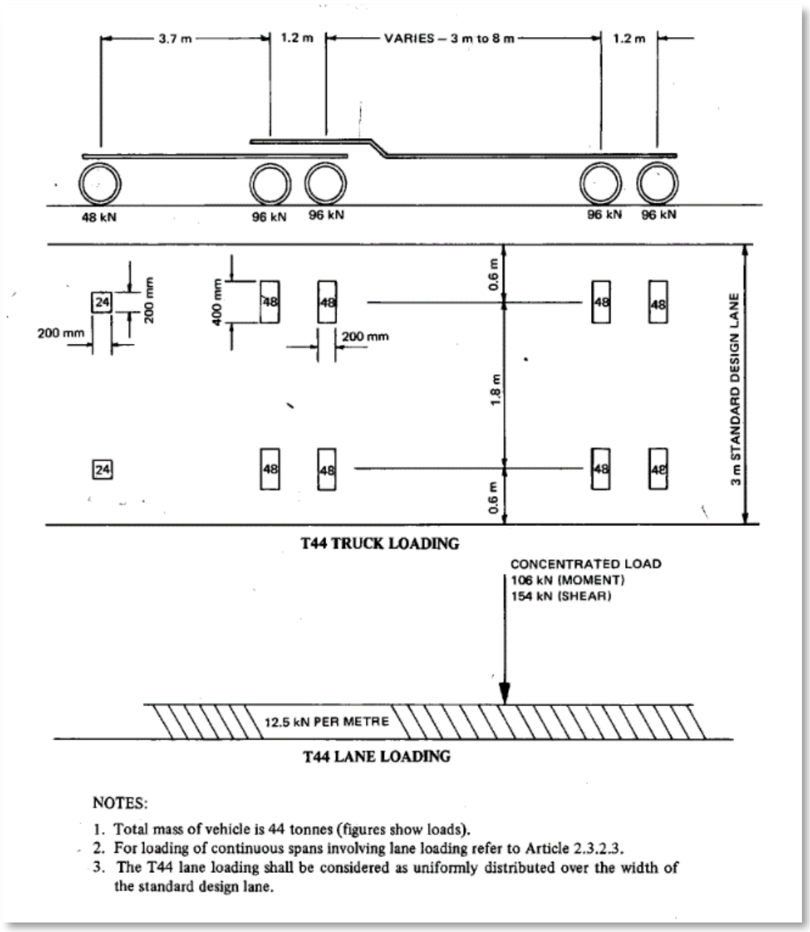


Figure 4.9-2 T44 Traffic Load

The traffic load shall be place in 3.0m wide design lanes located between face of traffic barriers. The accompanying lane factor for two-lane bridge is 1.0. The applicable DLA shall be calculated based on span length and type, 0.29 has been determined for this bridge.

The NAASRA 1976 adopts allowable stress method for reinforced concrete structures, with reduction factor of 0.4 for concrete, 0.41 for grade 230 reinforcement. The equivalent ULS factor used in the latest Australia Bridge Standard, with strength reduction factor of 0.8, is 1.95.

The ultimate limit state design is required for prestressed precast reinforced concrete members, the ULS load factor for live load is 2.25 with reduction factor 0.9 to member strength. The equivalent ULS factor used in the latest Australia Bridge Standard, with strength reduction factor of 0.8, is 2.0.

4.9.3 Structure Model

A complete 3D global model presented in Figure 4.9-3 has been created to determine the design actions due to gravity loads in the structure. The model incorporated the correct geometry, material properties and section properties of the bridge structures.

The following elements have been included in the model:

- Abutment – bearings, sill beam and piles;
- Pier – bearings, headstock, blade wall, pile cap and piles; and
- Deck – PSC Planks composite with deck slab as longitudinal member, transverse member as deck slab, all members with equivalent flexural and axial stiffness.

The line beams representing the bridge deck is connected to the substructure via the bearings only. This approach correctly models the interaction between superstructure and substructure.

Lateral soil springs have been applied along the lengths of the piles. Spring stiffness values have estimated based on past project experiences. The accuracy of the spring value will not affect the qualitative conclusion in comparing gravity load effects.

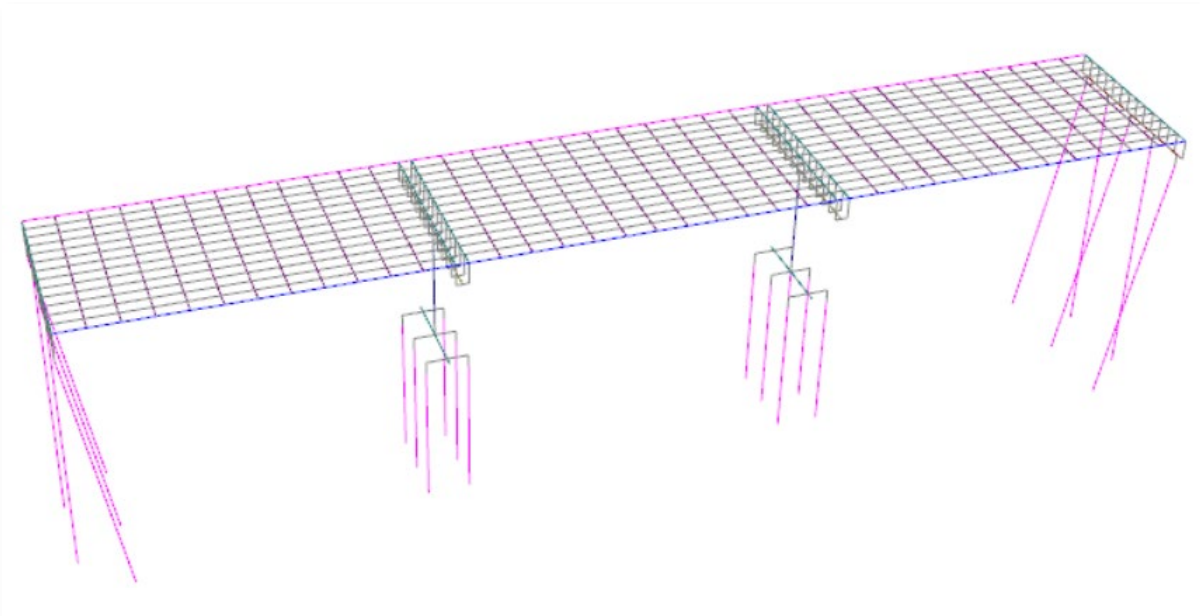


Figure 4.9-3 Global Structural Analysis Model

4.9.4 Analysis Results

Horizontal load including braking and surcharge for OSOM vehicles are compared with T44 traffic load and found not critical. Gravity load effects are presented in the following tables:

Table 4.9-1 Piles

location	Live Load	ULS bending moment (kNm)	ULS axial (kN)	ULS shear (kN)
Abutment	T44	48	658	33
	OSOM	47	446	33
	Speed Limit (km/hr)	30	30	30
	RF	1.02	1.48	1.01
Pier	T44	148	962	83
	OSOM	143	897	78
	Speed Limit (km/hr)	-	-	-
	RF	1.04	1.07	1.06

Table 4.9-2 Transverse Deck Slab

Live Load	ULS bending moment Sagging (kNm)	ULS bending moment Hogging (kNm)	ULS shear (kN)
T44	18	-8	48
OSOM	14	-7	35
Speed Limit (km/hr)	-	-	-
RF	1.26	1.08	1.36

Table 4.9-3 Edge Plank Composite Section

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS torsion (kN)
T44	747	152	21
OSOM	294	76	17
Speed Limit (km/hr)	-	-	-
RF	2.54	2.01	1.23

Table 4.9-4 Internal Plank Composite Section

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS torsion (kN)
T44	526	209	23
OSOM	427	133	18
Speed Limit (km/hr)	-	-	-
RF	1.23	1.57	1.27

Table 4.9-5 Abutment sill beam

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS torsion (kN)
T44	216	465	457
OSOM	190	290	354
Speed Limit (km/hr)	-	-	-
RF	1.14	1.60	1.29

Table 4.9-6 Pier head stock

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS torsion (kN)
T44	802	849	472
OSOM	696	780	400
Speed Limit (km/hr)	-	-	-
RF	1.15	1.09	1.18

Table 4.9-7 Pier blade wall

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS Axial (kN)
T44	1407	229	1849
OSOM	1305	211	1705
Speed Limit (km/hr)	-	-	-
RF	1.08	1.08	1.08

The elastomeric bearings are designed for SLS only in AS5100-2017 because the rubber can carry a lot more load under ULS. Therefore, it is not necessary to check the strip bearings for ULS.

The bridge structure is adequate for the OSOM loading. The critical structure member is Abutment A Piles with an RF of 1.01 at a speed limit of 30km/hr.

The rating factor has decreased by 4% while the speed limit has been increased from 10kn/hr since Revision A assessment.

4.10 Bridge over Sportsmans Hollow Creek at Ch33300

4.10.1 Structure Description

Some design drawings are available. The bridge was designed in 1969, the applicable standard is National Association of Australian State Road Authorities, Bridge Design Specification, 1965.

It is a four-span bridge containing two traffic lanes, each span is 9.14m long, the carriageway between faces of traffic barriers is 7.32m. The superstructure consists of 14 number 603mmx381mm deep precast prestressed concrete deck unit composite with 140mm thick deck slab. The pier substructure consists of 610mmx762mm deep headstock beam supported on 4 number 406mmx406mm square precast reinforced concrete driven piles, each abutment consists of a 914mmx762mm deep sill beam supported on 4 number 406mmx406mm precast reinforced concrete driven piles. All spans are simply supported on headstock/sill beam through elastomeric bearing strips. The bridge has no skew.

According to the available drawings, the minimum 28-day compressive strength for concrete is 3,000 P.S.I. (~21MPa). There is no reinforcement grade noted on the available drawings, according to 1965 Specification and AS5100.7-2017 (providing information of historical reinforcement and strands), the reinforcement has allowable tensile strength of 18,000 lb. per sq. in. (124MPa) or 22,500 lb. per sq. in. (155MPa), the strands are likely to be 7 wire 15.2mm diameter regular grade with tensile strength of 1634MPa.

Site inspection confirms there is no identified defects undermining the structure integrity and the original designed capacity.

Figure 4.10-1 Bridge over Sandy Hollow-Ulan Railway at Ch33300

4.10.2 Original Design Load

Designed traffic specified in NAASRA 1965 is H and H-S trucks as shown below:

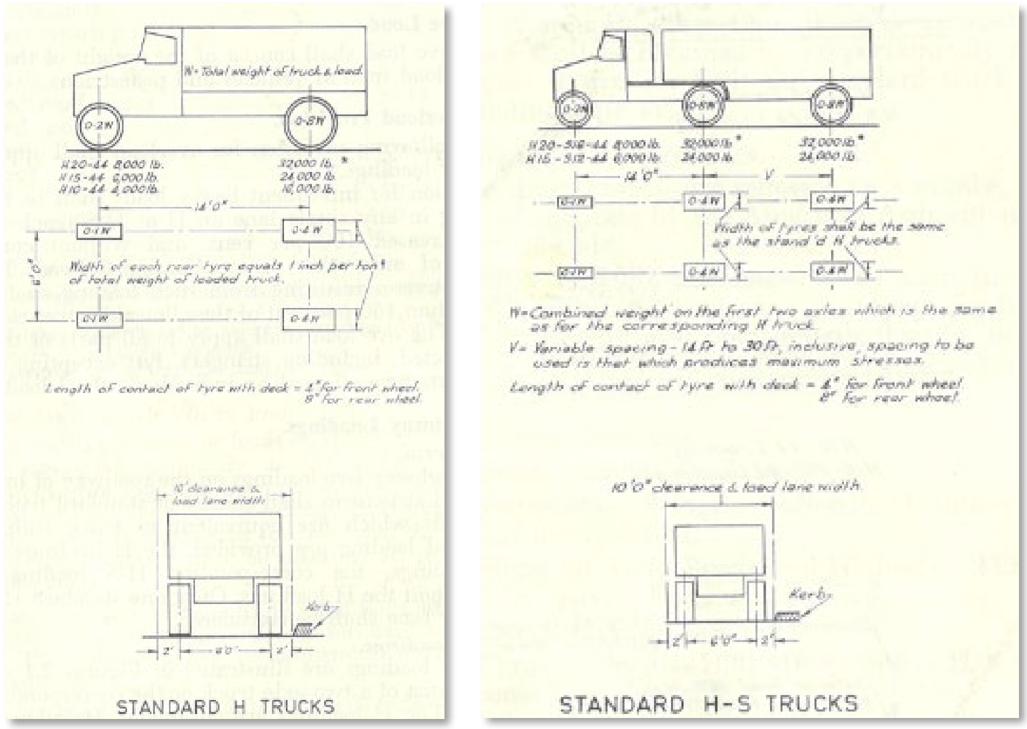


Figure 4.10-2 Standard H and H-S Trucks Load

The traffic load shall be place in 3.05m wide design lanes located between face of traffic barriers. The accompanying lane factor for two-lane bridge is 1.0. The applicable DLA shall be calculated based on span length and type, 0.3 has been determined for this structure.

The NAASRA 1965 adopts allowable stress method for reinforced concrete structures, with reduction factor of 0.4 for concrete, 0.45 for structural grade reinforcement. The equivalent ULS factor used in the latest Australia Bridge Standard, with strength reduction factor of 0.8, is 1.78.

The ultimate limit state design is required for prestressed precast reinforced concrete members, the ULS load factor for live load is 2.5 with reduction factor 0.9 to member strength. The equivalent ULS factor used in the latest Australia Bridge Standard, with strength reduction factor of 0.8, is 2.22.

4.10.3 Structure Model

A complete 3D global model presented in Figure 4.10-3 has been created to determine the design actions due to gravity loads in the structure. The model incorporated the correct geometry, material properties and section properties of the bridge structures.

The following elements have been included in the model:

- Abutment – bearings, sill beam and piles;
- Pier – bearings, headstock and piles; and

- Deck – PSC Deck units composite with deck slab as longitudinal member, transverse member as deck slab, all members with equivalent flexural and axial stiffness.

The line beams representing the bridge deck is connected to the substructure via the bearings only. This approach correctly models the interaction between superstructure and substructure.

Lateral soil springs have been applied along the lengths of the piles. Spring stiffness values have estimated based on past project experiences. The accuracy of the spring value will not affect the qualitative conclusion in comparing gravity load effects.

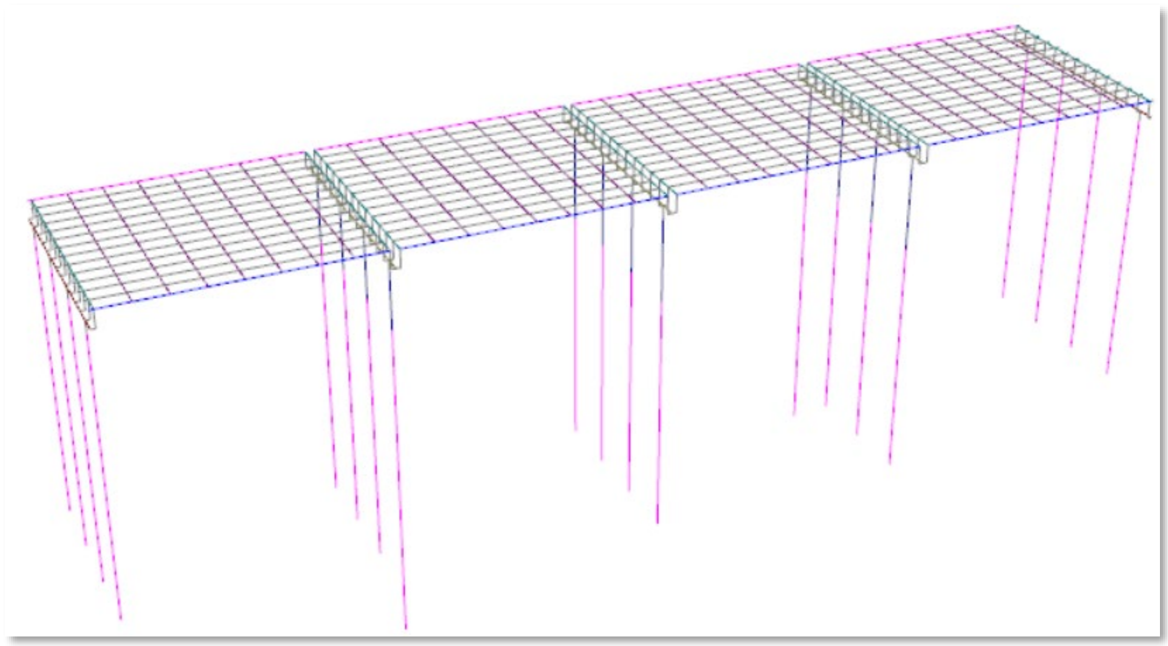


Figure 4.10-3 Global Structural Analysis Model

4.10.4 Analysis Results

Gravity load effects are presented in the following tables:

Table 4.10-1 Piles

Location	Live Load	ULS bending moment (kNm)	ULS axial (kN)	ULS shear (kN)
Abutment	H-S Trucks	32	294	14
	OSOM	24	242	13
	Speed Limit (km/hr)	-	-	-
	RF	1.36	1.21	1.10
Pier	H-S Trucks	16	338	9
	OSOM	4	329	6
	Speed Limit (km/hr)	10	10	10
	RF	3.68	1.03	1.68

Table 4.10.4-2 Transverse Deck Slab

Live Load	ULS bending moment (kNm)	ULS bending moment (kNm)	ULS shear (kN)
H-S Trucks	65	-21	88
OSOM	42	-15	57
Speed Limit (km/hr)	-	-	-
RF	1.54	1.35	1.53

Table 4.10.4-3 Edge Deck Unit Composite Section

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS torsion (kN)
H-S Trucks	312	107	20
OSOM	249	71	14
Speed Limit (km/hr)	-	-	-
RF	1.25	1.50	1.44

Table 4.10.4-4 Internal Deck Unit Composite Section

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS torsion (kN)
H-S Trucks	176	107	3
OSOM	98	70	1
Speed Limit (km/hr)	-	-	-
RF	1.80	1.53	2.06

Table 4.10.4-5 Abutment Sill Beam

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS torsion (kN)
H-S Trucks	49	192	56
OSOM	31	130	29
Speed Limit (km/hr)	-	-	-
RF	1.58	1.48	1.89

Table 4.10.4-6 Pier Head Stock

Live Load	ULS bending moment (kNm)	ULS shear (kN)	ULS torsion (kN)
H-S Trucks	46	229	25
OSOM	34	222	14
Speed Limit (km/hr)	30	30	30
RF	1.37	1.03	1.82

The elastomeric bearings are designed for SLS only in AS5100-2017 because the rubber can carry a lot more load under ULS. Therefore, it is not necessary to check the strip bearings for ULS.

The bridge structure is adequate for the OSOM loading. The critical structure member is Pier Piles with an RF of 1.03 at a speed limit of 10km/hr.

The rating factor has increased by 3% and speed limit has increased from 5km/hr since Revision A assessment.

4.11 Culverts at Ch37200

4.11.1 Structure Description

There is no design drawing available for this structure. It is conservatively assumed that the structure was designed circa 1969 the oldest bridge with available drawings, the applicable standard is National Association of Australian State Road Authorities, Bridge Design Specification, 1965.

It is a three single-cell culverts structure carrying two traffic lanes, there are no traffic barriers installed at this location, the culvert is 10.75m long, the marked carriageway is 6.65m wide. Each box culvert is measured to be 1.2m wide x 0.6m high. The roof slab and the side walls are 120mm thick, the base slab can't be accessed during site inspection, it is assumed to be same as roof slab, 120mm thick. The fill/grout between internal leg is 300mm. The road pavement above the roof slab is 300mm.

According to 1965 Specification, the min 28-day compressive strength for concrete is 3,000 P.S.I. (~21MPa). The reinforcement has allowable tensile strength of 18,000 lb. per sq. in. (124MPa) or 22,500 lb. per sq. in. (155MPa).

Site inspection confirms there is no identified defects undermining the structure integrity and the original designed capacity.

Figure 4.11-1 Three single - cell culverts at Ch37200

4.11.2 Original Design Load

Designed traffic specified in NAASRA 1965 is H and H-S trucks as shown below:

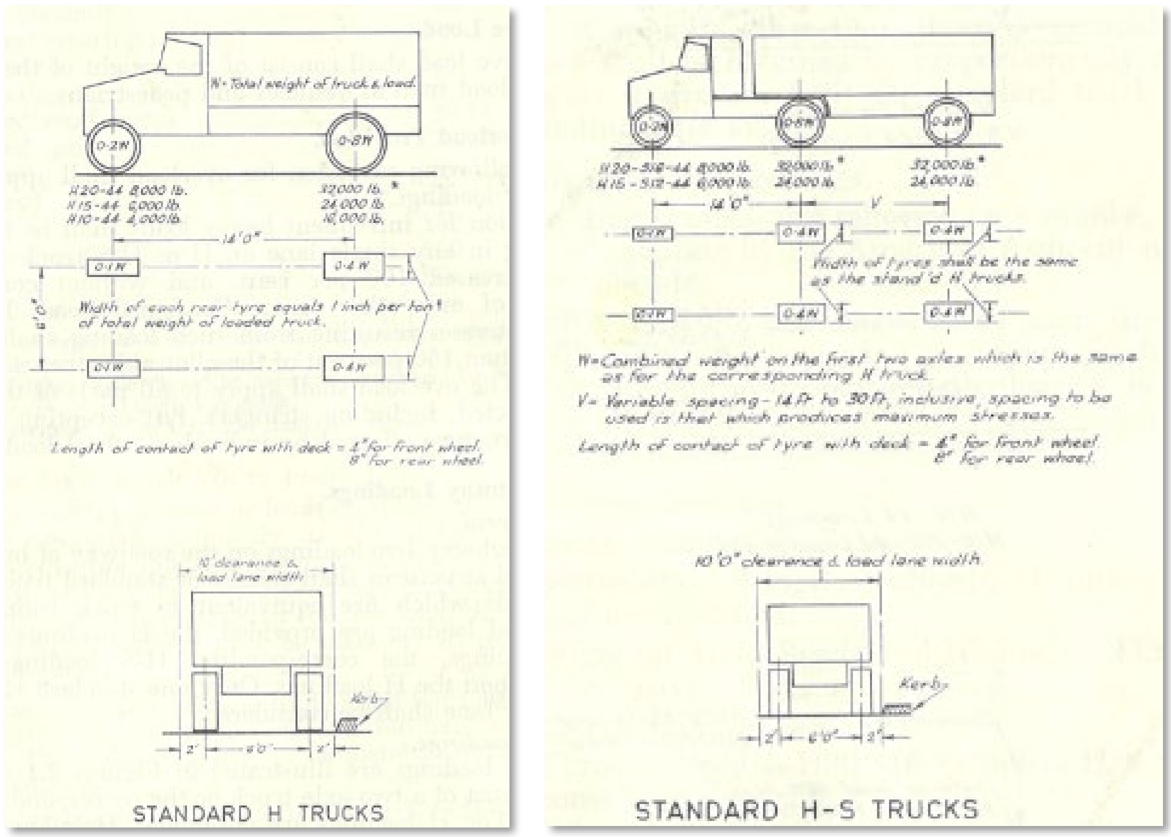


Figure 4.11-2 Standard H and H-s Trucks Load

The traffic load shall be place in 3.05m wide design lanes located between face of traffic barriers. The accompanying lane factor for two-lane bridge is 1.0. The applicable DLA shall be calculated based on span length and type, 0.3 has been determined for this structure.

The NAASRA 1965 adopts allowable stress method for reinforced concrete structures, with reduction factor of 0.4 for concrete, 0.45 for structural grade reinforcement. The equivalent ULS factor used in the latest Australia Bridge Standard, with strength reduction factor of 0.8, is 1.78.

4.11.3 Structure Model

A complete 3D global model presented in Figure 4.8-3 has been created to determine the design actions due to gravity loads in the structure. The model incorporated the correct geometry, material properties and section properties of the bridge structures.

The roof slab, side wall, intermediate legs and base slab are modelled at grillage. The vertical walls are pin connected to the base slab to transfer shear forces only. Adjacent side walls are connected through compression only members. Lateral and vertical soil springs have been applied along the height of the side walls and length of the base slab. Spring stiffness values have estimated based on past project experiences. The accuracy of the spring value will not affect the qualitative conclusion in comparing gravity load effects.

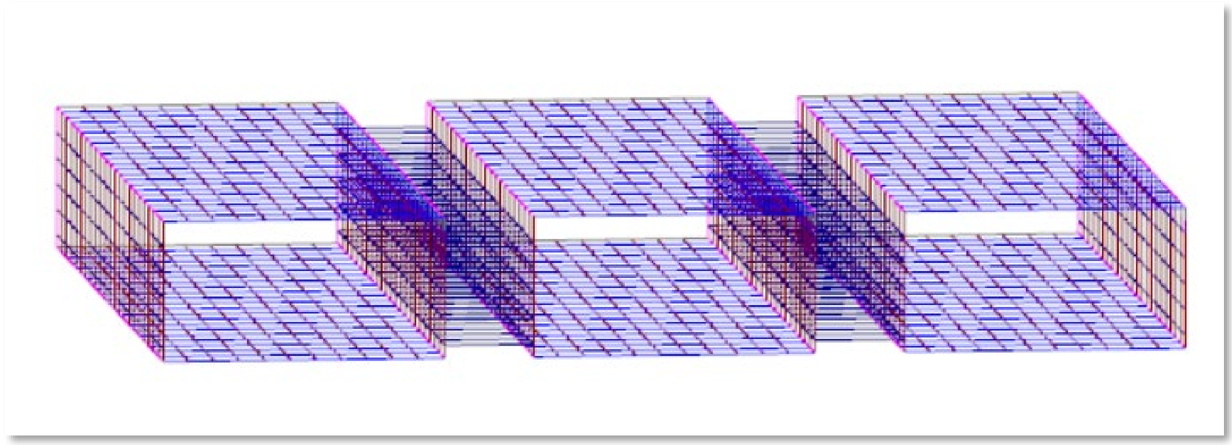


Figure 4.11-3 Global Structural Analysis Model

4.11.4 Analysis Results

Gravity load effects are presented in the following tables:

Table 4.11-1 Roof Slab

Live Load	ULS bending moment (kNm)	ULS shear (kN)
H-S Trucks	5	30
OSOM	3	28
Speed Limit (km/hr)	-	-
RF	1.65	1.07

Table 4.11-2 Outside Wall

Live Load	ULS bending moment (kNm)	ULS axial (kN)	ULS shear (kN)
H-S Trucks	5	42	9
OSOM	1	22	6
Speed Limit (km/hr)	-	-	-
RF	3.31	1.86	1.65

Table 4.11-3 Internal Wall

Live Load	ULS bending moment (kNm)	ULS axial (kN)	ULS shear (kN)
H-S Trucks	5	44	19
OSOM	1	22	6
Speed Limit (km/hr)	-	-	-
RF	3.31	1.96	3.31

Table 4.11-4 Base Slab

Live Load	ULS bending moment (kNm)	ULS shear (kN)
H-S Trucks	2	7
OSOM	1	4
Speed Limit (km/hr)	-	-
RF	1.65	1.65

The bridge structure is adequate for the OSOM loading. The critical structure member is Roof Slab with an RF of 1.07.

The rating factor has increased by 10% since Revision A assessment.

4.12 Culverts at Sportsman Hollow Bridge at Ch37900

4.12.1 Structure Description

There is no design drawing available for this structure. It is conservatively assumed that the structure was designed circa 1969 the oldest bridge with available drawings, the applicable standard is National Association of Australian State Road Authorities, Bridge Design Specification, 1965.

It is a four single-cell culverts structure carries two traffic lanes, the distance between the internal faces of the traffic barriers is 7.6m, the culvert is 8.2m long, the marked carriageway is 6.5m wide. Each box culvert is measured to be 1.8m wide x 1.2m high. The roof slab is 280mm thick and the side walls are 150mm thick, the culvert is supported on a 300mm thick base slab. The gap between internal legs is 200mm. The road pavement above the roof slab is 500mm – 800mm.

According to 1965 Specification, the min 28-day compressive strength for concrete is 3,000 P.S.I. (~21MPa). The reinforcement has allowable tensile strength of 18,000 lb. per sq. in. (124MPa) or 22,500 lb. per sq. in. (155MPa).

Site inspection confirms there is no identified defects undermining the structure integrity and the original designed capacity.

Figure 4.12-1 Four single-cell culverts at Ch37900

4.12.2 Original Design Load

Designed traffic specified in NAASRA 1965 is H and H-S trucks as shown below:

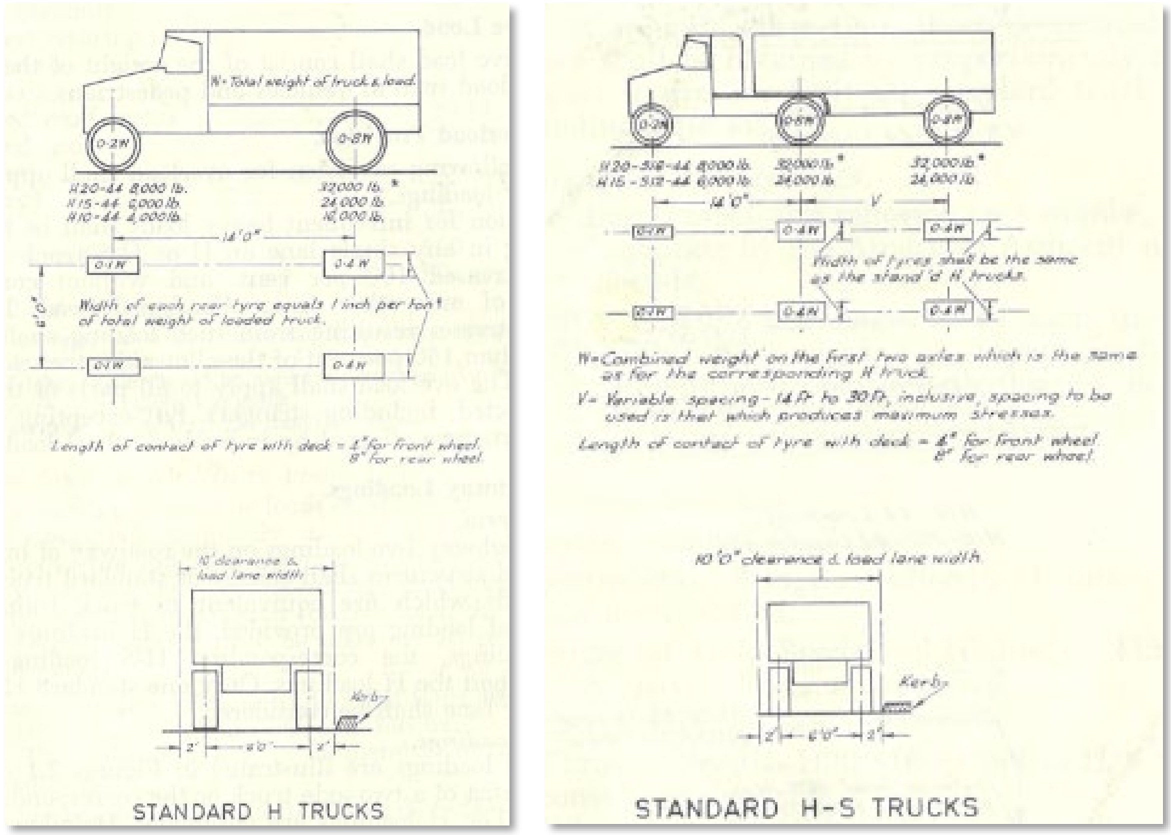


Figure 4.12-2 Standard H and H-S Trucks Load

The traffic load shall be place in 3.05m wide design lanes located between face of traffic barriers. The accompanying lane factor for two-lane bridge is 1.0. The applicable DLA shall be calculated based on span length and type, 0.3 has been determined for this structure.

The NAASRA 1965 adopts allowable stress method for reinforced concrete structures, with reduction factor of 0.4 for concrete, 0.45 for structural grade reinforcement. The equivalent ULS factor used in the latest Australia Bridge Standard, with strength reduction factor of 0.8, is 1.78.

4.12.3 Structure Model

A complete 3D global model presented in Figure 4.12-3 has been created to determine the design actions due to gravity loads in the structure. The model incorporates the correct geometry, material properties and section properties of the bridge structures.

The roof slab, side wall, intermediate legs and base slab are modelled at grillage. The vertical walls are pin connected to the base slab to transfer shear forces only. Adjacent side walls are connected through compression only members. Lateral and vertical soil springs have been applied along the height of the side walls and length of the base slab. Spring stiffness values have estimated based on past project experiences. The accuracy of the spring value will not affect the qualitative conclusion in comparing gravity load effects.

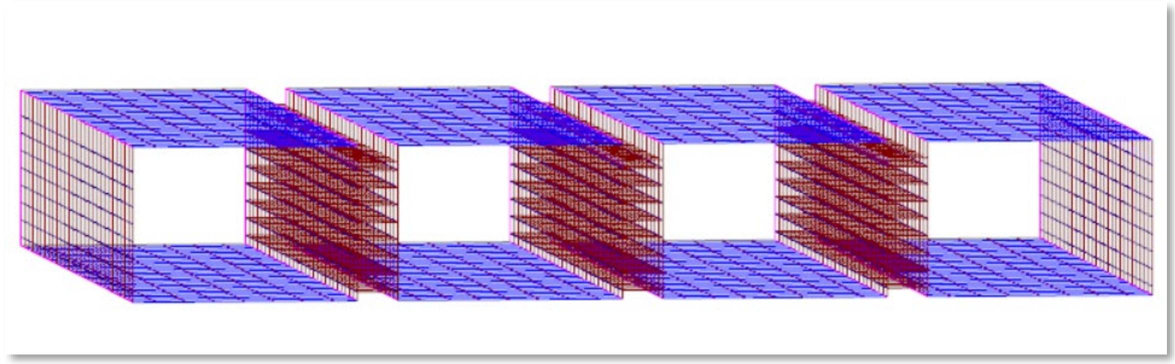


Figure 4.12-3 Global Structural Analysis Model

The wheel load distributes along a spread slope of 1V:0.725H, as shown in Figure 4.12-4.

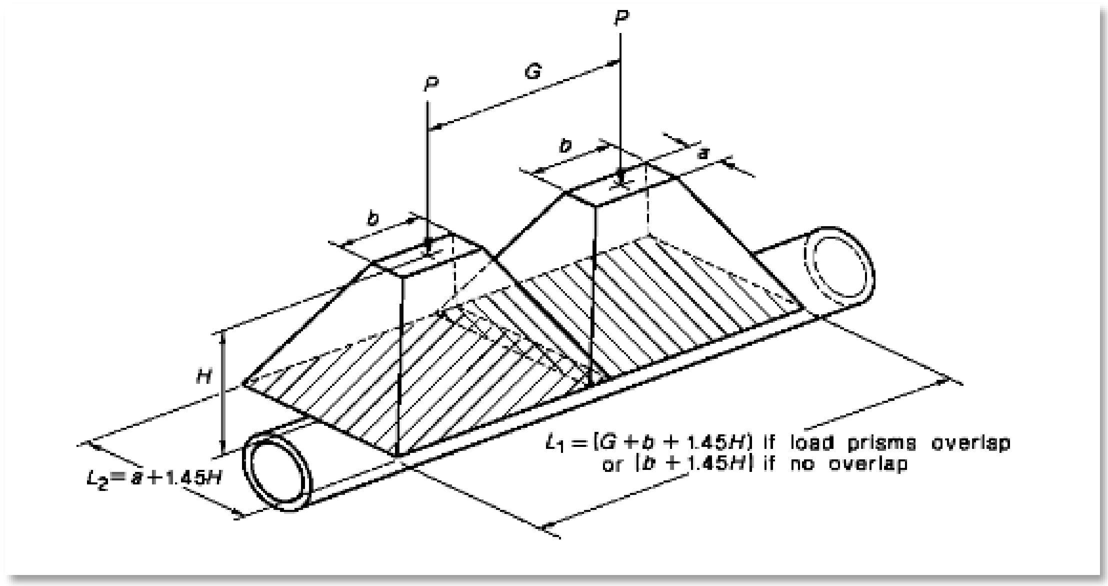


Figure 4.12-4 Wheel Loads Through Fill

4.12.4 Analysis Results

Gravity load effects are presented in the following tables:

Table 4.12-1 Roof Slab

Live Load	ULS bending moment (kNm)	ULS shear (kN)
H-S Trucks	9	30
OSOM	3	30
Speed Limit (km/hr)	30	30
RF	2.80	1.01

Table 4.12-2 Outside Wall

Live Load	ULS bending moment (kNm)	ULS axial (kN)	ULS shear (kN)
H-S Trucks	2	25	5
OSOM	2	17	2
Speed Limit (km/hr)	30	30	30
RF	1.05	1.54	2.10

Table 4.12.4-3 Internal Wall

Live Load	ULS bending moment (kNm)	ULS axial (kN)	ULS shear (kN)
H-S Trucks	5	35	12
OSOM	2	24	5
Speed Limit (km/hr)	-	-	-
RF	1.95	1.46	2.44

Table 4.12.4-4 Base Slab

Live Load	ULS bending moment (kNm)	ULS shear (kN)
H-S Trucks	2	2
OSOM	1	2
Speed Limit (km/hr)	30	30
RF	2.10	1.05

The bridge structure is adequate for the OSOM loading. The critical structure member is Roof Slab with an RF of 1.01 at a speed limit of 30km/hr.

The rating factor has increased by 2% and speed limit has increased from 10km/hr since Revision A assessment.

4.13 Culverts at Ch39700

4.13.1 Structure Description

There is no design drawing available for this structure. It is conservatively assumed that the structure was designed circa 1969 the oldest bridge with available drawings, the applicable standard is National Association of Australian State Road Authorities, Bridge Design Specification, 1965.

It is a three single-cell culverts structure carrying two traffic lanes, there are no traffic barriers installed at this location, the culvert is 13.0m long, the marked carriageway is 6.5m wide. Each box culvert is measured to be 1.2m wide x 0.6m high. The roof slab is 150mm thick and the side walls are 100mm thick, the culvert is supported on a 150mm thick base slab. The gap between internal legs is 350mm. The road pavement above the roof slab is 700mm.

According to 1965 Specification, the min 28-day compressive strength for concrete is 3,000 P.S.I. (~21MPa). The reinforcement has allowable tensile strength of 18,000 lb. per sq. in. (124MPa) or 22,500 lb. per sq. in. (155MPa).

Site inspection confirms there is no identified defects undermining the structure integrity and the original designed capacity.

Figure 4.13-1 Three single-cell culverts at Ch39700

4.13.2 Original Design Load

Designed traffic specified in NAASRA 1965 is H and H-S trucks as shown below:

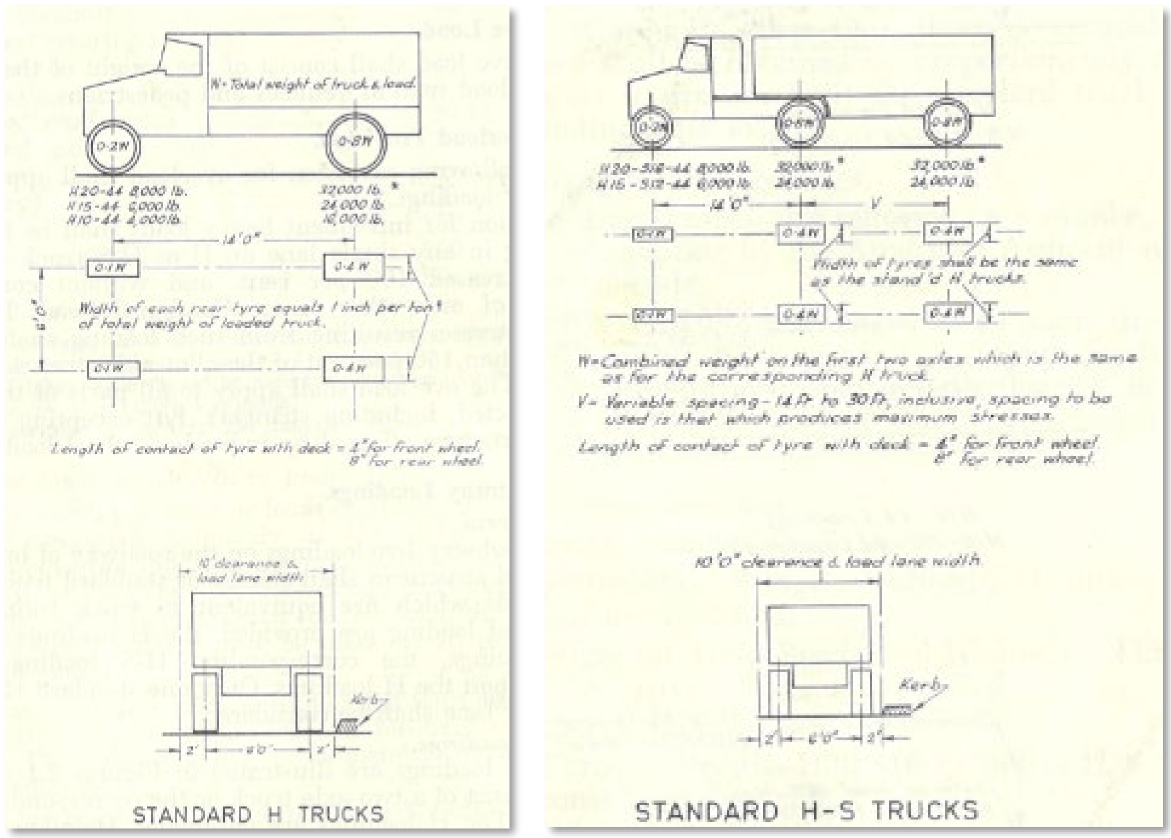


Figure 4.13-2 Standard H and H-S Trucks Load

The traffic load shall be place in 3.05m wide design lanes located between face of traffic barriers. The accompanying lane factor for two-lane bridge is 1.0. The applicable DLA shall be calculated based on span length and type, 0.3 has been determined for this structure.

The NAASRA 1965 adopts allowable stress method for reinforced concrete structures, with reduction factor of 0.4 for concrete, 0.45 for structural grade reinforcement. The equivalent ULS factor used in the latest Australia Bridge Standard, with strength reduction factor of 0.8, is 1.78.

4.13.3 Structure Model

A complete 3D global model presented in Figure 4.13-3 has been created to determine the design actions due to gravity loads in the structure. The model incorporated the correct geometry, material properties and section properties of the bridge structures.

The roof slab, side wall, intermediate legs and base slab are modelled at grillage. The vertical walls are pin connected to the base slab to transfer shear forces only. Adjacent side walls are connected through compression only members. Lateral and vertical soil springs have been applied along the height of the side walls and length of the base slab. Spring stiffness values have estimated based on past project experiences. The accuracy of the spring value will not affect the qualitative conclusion in comparing gravity load effects.

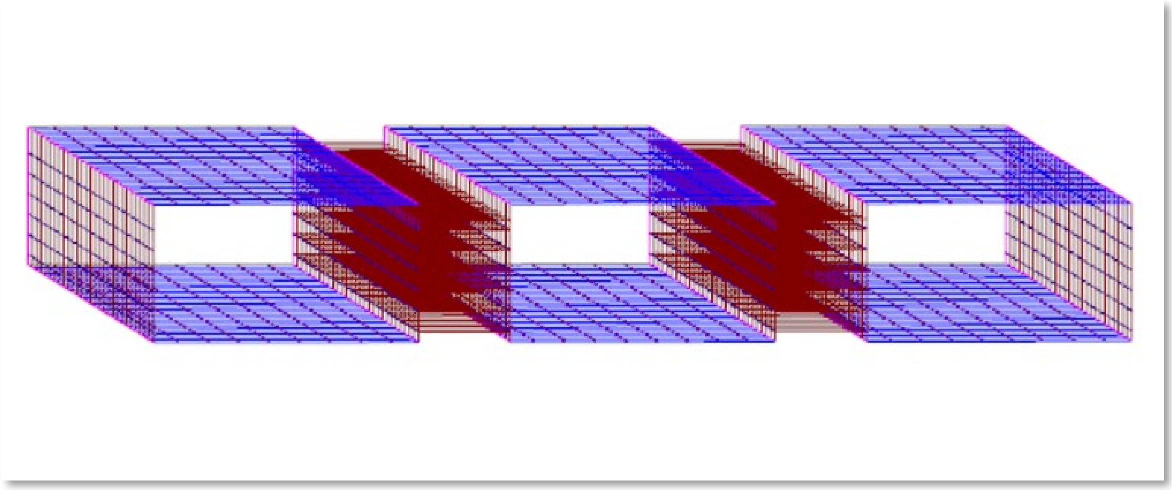


Figure 4.13-3 Global Structural Analysis Model

4.13.4 Analysis Results

Gravity load effects are presented in the following tables:

Table 4.13-1 Roof Slab

Live Load	ULS bending moment (kNm)	ULS shear (kN)
H-S Trucks	7	37
OSOM	4	25
Speed Limit (km/hr)	-	-
RF	1.55	1.51

Table 4.13-2 Outside Wall

Live Load	ULS bending moment (kNm)	ULS axial (kN)	ULS shear (kN)
H-S Trucks	5	37	7
OSOM	2	27	4
Speed Limit (km/hr)	-	-	-
RF	2.07	1.38	1.55

Table 4.13-3 Internal Wall

Live Load	ULS bending moment (kNm)	ULS axial (kN)	ULS shear (kN)
H-S Trucks	9	39	19
OSOM	3	31	12
Speed Limit (km/hr)	-	-	-
RF	2.76	1.26	1.51

Table 4.13-4 Base Slab

Live Load	ULS bending moment (kNm)	ULS shear (kN)
H-S Trucks	2	5
OSOM	1	3
Speed Limit (km/hr)	-	-
RF	2.07	1.38

The bridge structure is adequate for the OSOM loading. The critical structure member is Base Slab with an RF of 1.38.

The rating factor has increased by 38% and speed limit has been removed since Revision A assessment. The critical member, Roof Slab, in previous assessment is found to be sensitive the axle spacing and tyre load.

4.14 Pipes at Ch42400

4.14.1 Structure Description

There are no available drawings for this structure. There are four reinforced concrete pipes at this location, based on available information of bridges at other locations along the route, the applicable standard may be National Association of Australian State Road Authorities, Bridge Design Specification, 1965.

The four identical pipes have an internal diameter of 1.85m and wall thickness of 450mm, the clear spacing between two adjacent pipes is 65mm. The backfill measured from road surface to top of the pipe is 850mm at end of the pipe and 1000mm at centreline of the road. The total length of the pipe is 8.6m and the marked carriageway is 6.5m wide.

Site inspection confirms there is no identified defects undermining the structure integrity and the original designed capacity.

Figure 4.14-1 Four Pipes at Ch42400

4.14.2 Original Design Load

Designed traffic specified in NAASRA 1965 is H and H-S trucks as shown below:

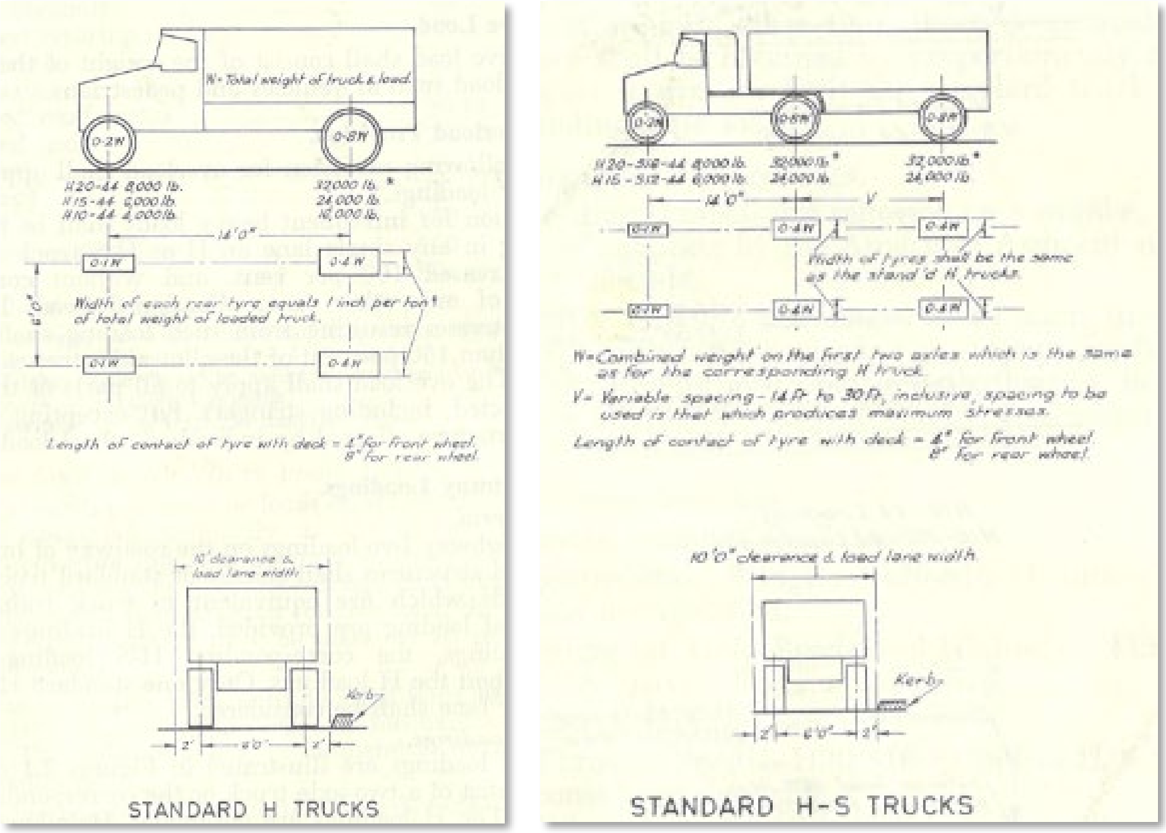


Figure 4.14-2 Standard H and H-S Trucks Load

The traffic load shall be place in 3.05m wide design lanes located between face of traffic. The applicable DLA shall be calculated based on span length and type, 0.3 has been determined for the pipes. The accompanying lane factor for two-lane bridge is 1.0.

4.14.3 Structure Assessment

The precast cast pipes would have been designed and manufactured to AS CA33 – 1962, which was superseded by AS 3725-1989 Loads on buried concrete pipes, and AS A124 1962, which was superseded by AS 4058-1992 Precast Concrete Pipes.

Similar to the latest bridge standard, in the above codes, the road vehicle loads are assumed to be distributed uniformly through a prism of fill or natural ground of height the base of which is horizontal and is concentric with and has dimensions 1.45H greater than the surface contact area of the wheel. Where multiple wheels, or vehicles in adjacent lands are being considered and the base of the load-prisms so formed overlap, see Figure 4.14-3, it may be further assumed the sum of the individual wheel loads is uniformly distributed over the area within the net periphery of the prism bases.

The precast pipe is designed and tested to the above working load pressure.

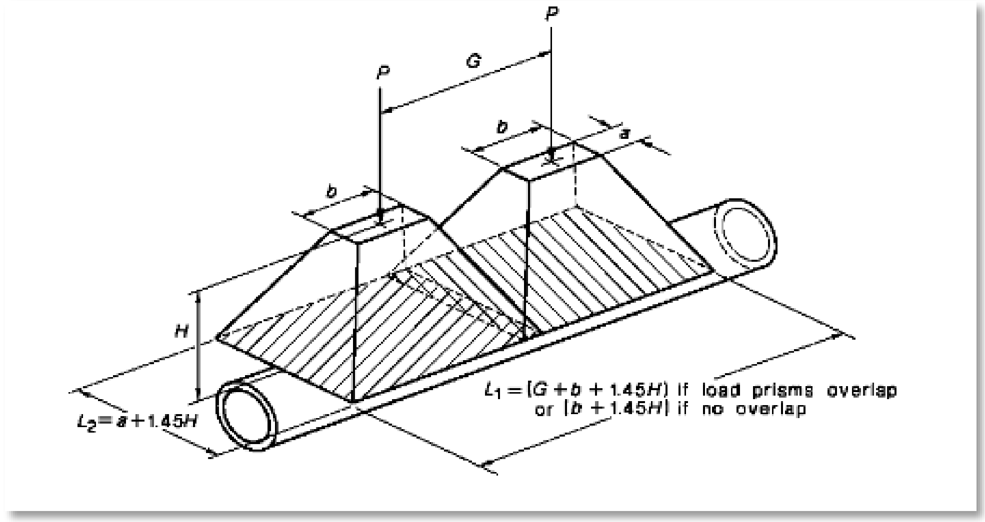


Figure 4.14-2 Distribution of Wheel Loads as per AS 3725

Therefore, a load rating factor can be derived by comparing the load pressure at the level of pipe top.

For a fill depth of 0.85m, the critical load pressure is under the adjacent wheels when two H-20 truck running side by side, which is 34kPa (unfactored).

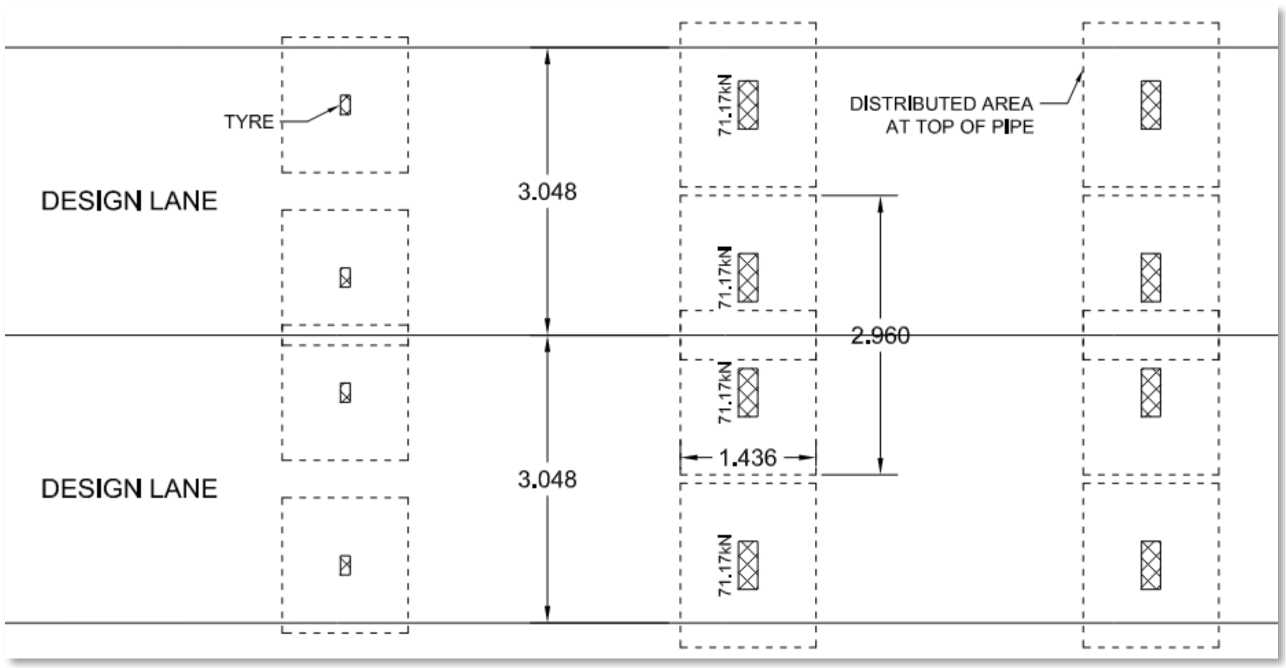
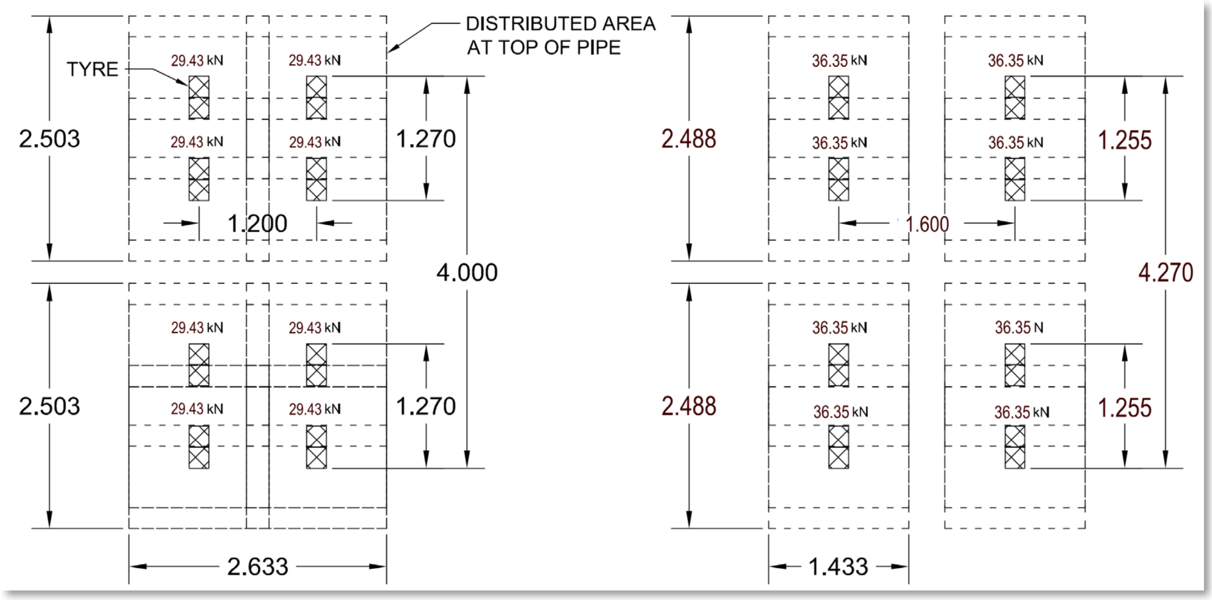


Figure 4.14-3 Distribution of H-20 truck load



First Trailer for EPEC Substation Building Typical Axles for EPEC Transformer

Figure 4.14-4 Distribution of OSOM load

The maximum load pressure under the axles of the OSOM transporter for EPEC Transformer. Each axle is 14.82ton (36.35kN each pair of tyres), the calculated pressure on top of pipes is 20kPa. This gives an RFsls = 1.54.

All transporters can safely travel across the pipes without any speed limitation. The rating factor has increased by 5% since Revision A assessment.

5.0 Summaries and Recommendations:

All structures have been assessed for OSOM loading based on the proposed method that comparing the load effects with the original design loadings. It has been concluded that all structures are adequate for the proposed OSOM loading with various speed limits applied at three locations. As a result of the reduced axle load and increased axle width since Revision A assessment, all rating factors and speed limit have been improved. Table 5-1 summarizes the calculated rating factors based on required speed limits.

The following actions are recommended:

- The vehicle load shall be controlled to ensure every axle is not greater than nominated in Section 2.
- All OSOM vehicles must travel along the centreline of the carriageway.
- Speed limits in Table 5-1 shall not be exceeded at each structure site.
- All structures shall be inspected after OSOM travelling to ensure any defects can be identified and rectified.

Table 5-1 Rating factors and speed limit

#	Km	Name	Speed Limit	RF
1	9+500	Murrumbline Creek Turill Bridge	-	1.05
2	12+600	Curryal Creek, Two Cells Concrete Bridge/Culvert	-	1.02
3	16+600	Single Cell Concrete Culvert 4.0m(h) x 2.5(w)	-	1.48
4	18+600	Three Cell Culvert/Bridge	-	1.28
5	22+700	Bridge over Goulburn River	-	1.25
6	24+300	Single Cell Concrete Culvert 4.0m(h) x 3.0m(w)	-	1.33
7	29+400	Bridge over Sandy Hollow-Ulan Railway	-	1.04
8	30+400	Five Box Culverts 2.0m(h) x 1.2m(w)	-	1.34
9	32+500	Bridge over Moolarben Creek	30	1.01
10	33+300	Bridge over Sportsman's Hollow Creek	10	1.03
11	37+200	Three Box Culverts 1.0m(h) x 0.6m(w)	-	1.07
12	37+900	Four Box Culverts at Sportsman Hollow	30	1.01
13	39+700	Three Box Culverts 1.2(h) x 0.6m(w)	-	1.38
14	42+400	Four Concrete Pipes at Deadmans Creek	-	1.54

Appendix M

Planning Secretary Approval Letter

Department of Planning and Environment

Our ref: SSD-10452-PA-36

David McKay
Project Controls Manager
ACEN Australia

18/12/2023

Subject: Stubbo Solar Farm – Request to Increase Heavy Vehicle Movements

Dear Mr McKay,

I refer to your request dated 10 November 2023 seeking the Planning Secretary's approval to increase heavy vehicle movements as they relate to Condition 2 of Schedule 3 of the development consent for Stubbo Solar Farm (SSD-10452).

The Department notes the Request for Increased Heavy Vehicle Movements:

- has been prepared in consultation with TfNSW and Mid-Western Regional Council; and
- contains the information required by the conditions of approval.

It is noted that the proposed revision of daily heavy vehicle movements from 60 to 80, while supported by TfNSW, Mid-western Regional Council and the Department, must also be incorporated within an updated Traffic Management Plan to be approved prior to additional movements being permissible in keeping with the advice received from TfNSW.

Accordingly, as nominee of the Planning Secretary, I approve the Request for Increased Heavy Vehicle Movements.

You are reminded that if there are any inconsistencies between the Request for Increased Heavy Vehicle Movements and the conditions of approval, the conditions prevail.

Please ensure you make the document publicly available on the project website at the earliest convenience.

If you wish to discuss the matter further, please contact Cameron Ashe on (02) 9995 5351.

Yours sincerely

Iwan Davies
Director
Energy Assessments

As nominee of the Planning Secretary