



APPENDIX L UPDATED TRAFFIC IMPACT ASSESSMENT



Traffic & Transportation Direction



Bendemeer Solar Farm

Oxley Highway, Bendemeer

Traffic Impact Assessment

April 2025

Reference: 382 rep 250403 final

Bendemeer Solar Farm

4409-4461 Oxley Highway, Bendemeer

Traffic Impact Assessment

Prepared for: ERM Australia Pty Ltd

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Contact

Website: www.amberorg.com.au

E: info@amberorg.com.au

Phone: 1800 022 363

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1. Background

1.1 Background

Amber Organisation Pty Ltd was engaged by ERM Australia Pty Ltd to conduct a Traffic Impact Assessment (TIA) of the Bendemeer Solar Farm (the Project) for Athena Energy Australia (Holdings) Pty Ltd (Applicant). Traffic impacts assessed from the construction, operation and decommissioning phases of the Project are addressed in this report in accordance with relevant regulatory requirements and guidelines.

This report supports a State Significant Development (SSD) Development Consent approval under Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (SSD-36651552), as part of the Environmental Impact Statement (EIS) for the Project.

The Bendemeer Solar Farm Environmental Impact Statement (EIS) was submitted to the (then) NSW Department of Planning and Environment (DPE; now Department of Planning, Housing and Infrastructure (DPHI)) and publicly exhibited between 27 July 2023 and 23 August 2023. Following the public exhibition of the EIS, a total of 244 submissions relating to the Project EIS were received from government agencies, local council, organisations and members of the public. A Submissions Report has been prepared to respond to matters raised in these submissions and agency advice, as well as an Amendment Report to assess impacts associated with the amended Project.

1.2 Project Description

The Project is situated about 1.8 kilometres (km) east of the Bendemeer town centre, represented by the Bendemeer Hotel, and is located 46 km (by road) north-east of the Tamworth Post Office to the Project access. The Project is located within the New England Renewable Energy Zone (REZ), in the Tamworth Regional Council Local Government Area (LGA) in the New England Region of NSW. The Project Area extends across an area of approximately 606.9 hectares (ha), over three freehold land parcels, on land that is predominately used for agricultural activities.

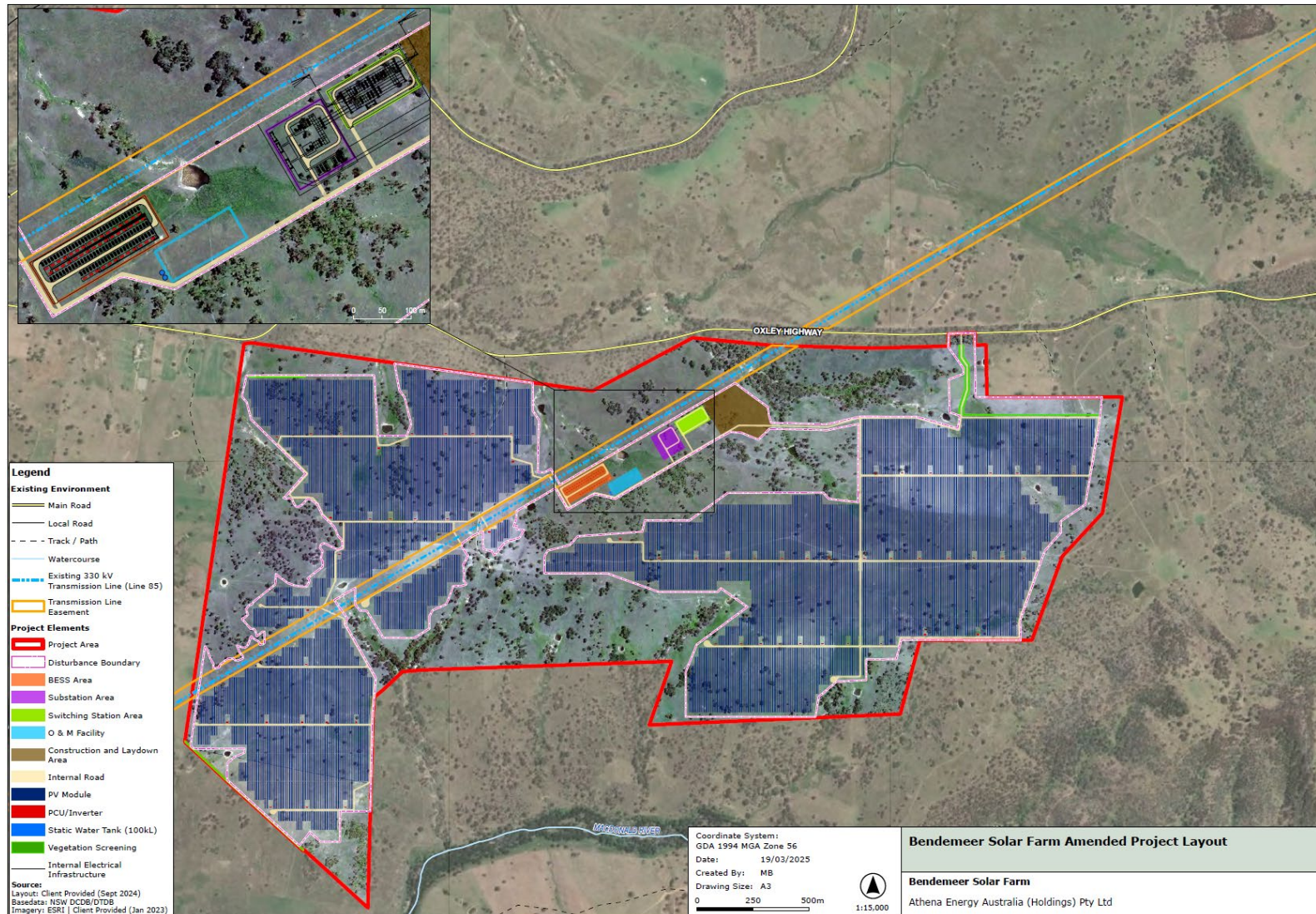
The Project will involve the construction, operation and decommissioning of a photovoltaic (PV) solar farm, Battery Energy Storage System (BESS) and associated infrastructure. The Project includes:

- Solar Arrays with a Capacity of approximately 255 Megawatts (MW) Direct Current (DC) and registered connection capacity of 200 MW Alternating Current (AC);
- BESS with a capacity of up to 150 MW / 300 MWh;
- Electricity infrastructure:
 - Power Conversion Units (PCU) housing up to 60 inverters;
 - One 33/330 kV collector substation and associated internal structures;
 - Switching station;
 - Electrical reticulation infrastructure including underground and overhead 33 kV cables;
 - Direct grid connection to existing 330 kV line 85 Armidale-Tamworth Transmission line;
- On-site permanent supporting infrastructure:

- Site access road, entry and internal access roads;
 - Operations and Maintenance (O&M) Facility including control room, meeting facilities, storage facilities, SCADA facilities, workshop, parking, ablutions buildings, septic, static water supply, waste management facilities, lighting and maintenance facility, fencing and asset protection zones;
- Off-site supporting infrastructure:
 - Tamworth waste and wastewater disposal facilities;
 - Existing public road network; and
- 24 hours a day, seven days per week operation with up to 15 Full Time Equivalent (FTE) personnel.

The Amended Project layout is shown on Figure 1. Table 1 provides a comparison between the Project as presented in the EIS and the proposed amendment, as relevant to this assessment. The amended Project description and summary address the matters raised in submissions of the Project EIS and outcomes of ongoing engagement with the community, government agencies, landowners, and other stakeholders.

Figure 1: Amended Project Layout



Source: ERM

Table 1: Amended Project Summary

Project Elements	EIS (original) Project	Amended Project	Difference between EIS and Amended Project
Project Area	606.4 ha	606.9 ha	Negligible (0.08% increase)
Disturbance Footprint	476.6 ha	369.2 ha	Reduction by 107.4 ha (23%)
Solar Arrays	280 MW DC 430,000 PV modules 350.8 ha 4.2 m panel height	255 MW DC 354,330 PV modules 301.0 ha 2.66 m panel height	- Capacity reduced by 25 MW (9%) - PV modules reduced by 75,670 modules (18%) - Area reduced by 49.8 ha (14%) - Panel height reduced by 1.54 m
BESS	150 MW/ 300 MWh 3.2 ha 120 BESS units - LFP or NMC battery technology - Lot 2 DP 1211502 4 m high noise walls in the BESS Layout	150 MW/ 300 MWh 1.9 ha 264 BESS units - LFP battery technology - Lot 2 DP 1211502 4 m high noise walls in the BESS Layout	- No change in capacity - Area reduced by 1.3 ha (41%) - BESS make and model refined with individual BESS units of a smaller MWh capacity selected for the amended project. Due to the smaller capacity of the BESS, the number of BESS units increased by 144 (120%) - Commitment to LFP battery technology - No change in location - No change in noise walls mitigation measure
Solar PV Power Conversion Units (PCU)	60 PCUs housing up to 60 inverters (within main solar area) - Lots 1, 2 and 3 of DP 1211502 3.5 m high noise walls for 14 inverters within solar array area	60 PCUs housing up to 60 inverters (within main solar area) - Lots 1, 2 and 3 of DP 1211502 3.5 m high noise walls for 28 inverters within solar array area - Noise attenuation kits for all 60 inverters within solar array area	- No change in number of PCUs or inverters (within main solar area) - Construction of noise walls for 14 additional inverters - Addition of noise attenuation kits to all inverters

Project Elements	EIS (original) Project	Amended Project	Difference between EIS and Amended Project
Inverters	40 inverters within BESS	44 inverters within BESS with noise attenuation kits	Inverters increased by 4 units (10%) due to refinement in BESS and inverter proposed makes and models and to achieve National Electricity Rule compliance at the proposed 150 MW capacity
Substation and Switching station	200 MW AC registered capacity - One 33/330 kV collector substation and associated structures 330 kV switching station 2.9 ha	200 MW AC registered capacity - One 33/330 kV collector substation and associated structures 330 kV switching station 2.37 ha 6 m high noise walls around the substation transformers	- No change in AC registered capacity - Reduced by 0.53 ha (18%) and slightly relocated 25 m further east - Addition of 6 m high noise walls around the substation transformers
Electrical Reticulation Infrastructure	- Internal underground high-voltage (HV) cables between solar arrays, BESS and transformers and overhead 330 kV conductors - Approximately 100 m distance between the switching station and existing 330 kV line - Direct grid connection to existing 330 kV line	- Internal underground HV cables between solar arrays, BESS and transformers and overhead 330 kV conductors - Approximately 48 m distance between the switching station and existing 330 kV line - Direct grid connection to existing 330 kV line	No change
	Site access road, entry and internal roads		

Project Elements	EIS (original) Project	Amended Project	Difference between EIS and Amended Project
On-site Permanent Supporting Infrastructure	- APZ of minimum 10 m (PV modules), 17 m (BESS and Substation) and 12 m (associated infrastructure) - Internal roads 29.7 ha - Perimeter and internal roads up to 6m wide, aligned on APZs and/or existing farm or other access tracks, where possible - Site access via B56 Oxley Highway	- APZ of minimum 10 m (PV modules), 12-31 m (BESS, Substation and associated infrastructure) - Internal roads 13.48 ha - Perimeter and internal roads up to 6m wide, aligned on APZs and/or existing farm or other access tracks, where possible - Site access via B56 Oxley Highway, with internal roads realigned to avoid existing vegetation	- No change in APZ minimum for PV modules - Allowance for a minimum 12-31 m APZ width for BESS, Substation and associated infrastructure based on surrounding vegetation categorisation, including slight disturbance footprint adjustment to accommodate minimum 31 m APZ adjacent to some areas of the BESS - Internal roads reduced by 16.22 ha (54%) - No change in maximum road width - Minor (approx. 10 m) adjustment of site access road location
Operations and Maintenance (O&M) Facility			
	- Located within the construction compound and laydown area, to the north of the substation and BESS compound 0.65 ha 12m APZ 100 kL static water tank	- Located within the substation and BESS compound 0.91 ha 12-31m APZ 2 x 100kL static water tanks	- Relocated south of existing transmission line - Area increased by 0.26 ha (40%) - Adjustment of APZ width based on vegetation adjacent to the new location - Addition of a static water tank, with total volume increased by 100 kL (100%)
Construction			
Construction Duration	- Approximately 18 months	- Approximately 18 months	- No change in duration

Project Elements	EIS (original) Project	Amended Project	Difference between EIS and Amended Project
Construction Workforce	Peak workforce of approximately 307 Full Time Equivalent (FTE) (some additional contractor personnel) and average annual workforce of 260 FTE for the peak 12-month of construction of the Project	Peak workforce of approximately 307 FTE (some additional contractor personnel) and average annual workforce of 250 FTE for the peak 12-month of construction of the Project	10 FTE reduction for peak 12-month average annual workforce (4%)
On-site Temporary Infrastructure	- Construction compound and laydown area located north of existing transmission line 11.6 ha	- Construction compound and laydown area located to south of existing transmission line 4.8 ha	- Relocated south of existing transmission line - Area reduced by 6.8 ha (59%)
Services and Utilities	Adjustment, protection or relocation of existing utilities	Adjustment, protection or relocation of existing utilities	No change
Ancillary Activities	Import of external gravel, aggregate and sand to site for on-site construction use	Import of external gravel, aggregate and sand to site for on-site construction use	No change
Traffic and Transport Route	- Main equipment deliveries via Port of Newcastle or Port of Brisbane 62 heavy vehicles and 48 light vehicles movements per day during peak construction - Associated external road upgrades (also used for operational maintenance or decommissioning activities)	- Main equipment deliveries via Port of Newcastle or Port of Brisbane or Port of Melbourne 94 heavy vehicles and 76 light vehicles movements per day during peak construction with an additional 36 shuttle bus movements - Associated external road upgrades (also used for operational maintenance or decommissioning activities)	- Port of Melbourne may also be used for deliveries of Project equipment - During peak construction increase in daily heavy vehicle movements by 32 (52%) and light vehicles by 28 (58%). - No upgrades to external roads required
Operations			
Duration	- Development Consent in perpetuity - Infrastructure life minimum of 30 years	- Development Consent in perpetuity - Infrastructure life minimum of 30 years	No change

Project Elements	EIS (original) Project	Amended Project	Difference between EIS and Amended Project
Hours of Operation	24 hours a day, seven days a week	24 hours a day, seven days a week	No change
Operational Workforce	Approximately 15 FTE	Approximately 15 FTE	No change



1.3 Environmental Assessment Requirements

DPE (at the time) issued Secretary's Environmental Assessment Requirements (SEARs) for the project. A response to each of the traffic related SEARS has been provided below which demonstrates the issued SEARs are suitably addressed within the report.

Table 2: Response to SEARs

SEARs	Response
An assessment of the peak and average traffic generation, including over-dimensional vehicles and construction worker transportation.	The analysis presented within Section 3.3 indicates the road network is expected to continue to operate with acceptable conditions during peak construction periods. During the middle of the day the traffic movements are expected to be predominantly associated with heavy vehicles with up to 8 vehicle movements per hour. This increase in traffic would be within the daily variation of traffic volumes on New England Highway and can be readily accommodated on the road network.
An assessment of the likely transport impacts to the site access route(s), site access point(s), any Crown land, particularly in relation to the capacity and condition of the roads, road safety and intersection performance.	The access routes utilise roads that are designated for B-Double vehicles as outlined within the TfNSW Restricted Access Vehicle Map and Queensland Department of Transport and Main Roads Heavy Vehicle Route Map. An assessment has been undertaken for the transformer access route which is expected to be the largest component delivered to site. The assessment demonstrates the vehicle is able to access the site with no road upgrades required. Accordingly, the roads along the access route are able to accommodate the loads and type of vehicle movement to be generated during construction of the BESS and the road network is expected to continue to operate in a safe manner with no road safety changes.
A cumulative impact assessment of traffic from nearby developments.	The traffic assessment provided within this report demonstrates that the road network is expected to continue to operate with a good level of service with ample spare capacity. As such, the combined increase in traffic generated by the solar farm and these projects is expected to have a minimal cumulative impact on the road network, including through Tamworth, Uralla, and Armidale. Further, it is noted that the peak traffic generated by these projects during construction occurs before 7:00am and after 6:00pm which is outside of the peak times of the road network. Accordingly, the combined increase in traffic generated by the site and these projects is expected to have a minimal cumulative impact on the road network in the surrounding area.

SEARs	Response
Provide details of measures to mitigate and / or manage potential impacts including a schedule of all required road upgrades (including resulting from heavy vehicle and over mass / over dimensional traffic haulage routes), road maintenance contributions, and any other traffic control measures, developed in consultation with the relevant road authorities.	No road upgrades are proposed on the external road network. The site access is proposed to be design with a Basic Right Turn treatment to allow vehicles to safely enter the site. The recommendations provided within Section 7 which should be included in the future TMP would ensure the construction traffic would create a minimal impact to the capacity and safety of the surrounding road network.

1.4 Purpose of Document

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

More specifically, the report addresses the following key matters:

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

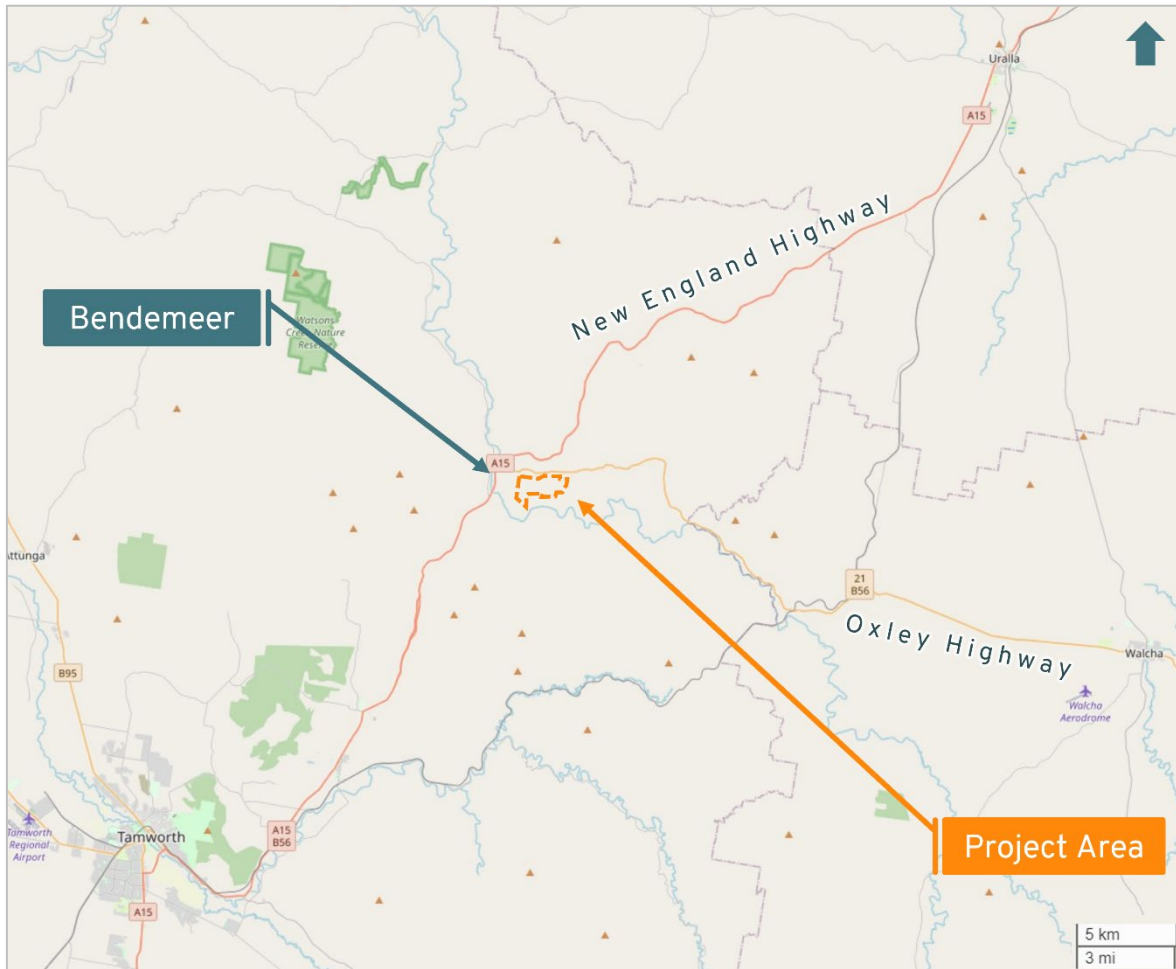
The traffic assessment has been informed by consultation with Transport for NSW (TfNSW) and Tamworth Regional Council (TRC).

2. Existing Conditions

2.1 Site Location

The site is located at 4409-4461 Oxley Highway approximately 1.8km east of Bendemeer. Figure 2 shows the location of the site in relation to the surrounding transport network.

Figure 2: Site Location



Source: OpenStreetMap

The Project Area and the surrounding area are zoned as RU1 - Primary Production and are occupied by agricultural land.

2.2 Road Network

Oxley Highway is a State Road which runs in a general east-west alignment. It links Port Macquarie and the Pacific Highway to the New England Highway near Bendemeer. The Oxley Highway continues west of Tamworth, through Gunnedah and extends to link with the Newell Highway near Coonabarabran. It terminates at its connection with the Mitchell Highway at Nevertire. Between the New England Highway and Walcha, it has a typical carriageway width of 9.0 metres (m) accommodating one lane of traffic in each direction. It has a speed limit of 100km/hr.

New England Highway is a State Road which runs in a northwest-southeast alignment from Newcastle to Muswellbrook, before running in a general northern alignment to its termination at the Queensland Border. Extending north from Tamworth it has a typical sealed carriageway width of approximately 13m accommodating one lane of traffic in each direction and sealed shoulders on both sides of the road. Two lanes are typically provided in each direction through the Moonbi Hills where it has a steep alignment, and intermittent passing lanes are provided in both directions between Tamworth and Armidale. It has a speed limit of 100km/hr which is reduced to 50km/hr within built up areas such as Moonbi.

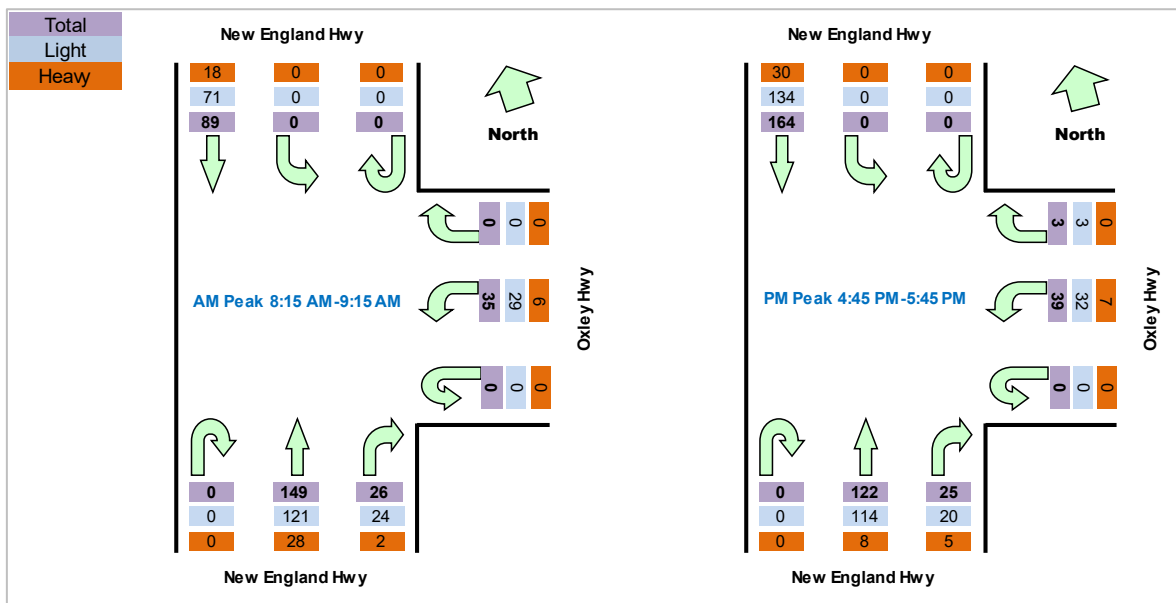
The intersection of Oxley Highway and New England Highway is priority controlled with vehicles exiting Oxley Highway provided with Give Way linemarking. A right turn lane and basic left turn facility are provided on New England Highway.

2.3 Traffic Volumes

2.3.1 Intersection Volumes

Amber commissioned a turning movement count survey at the intersection of New England Highway and Oxley Highway in order to determine the existing traffic conditions at the intersection. The survey was undertaken on Thursday 16 February 2023 from 6:00am to 9:30am and from 3:00pm to 7:00pm. The full survey results are presented within Appendix A and the peak hour survey results are illustrated below in Figure 3.

Figure 3: Turning Movement Count - Peak Hour Survey Results



The survey results indicate the intersection currently carries a moderate level of traffic in the order of 299 and 353 vehicle movements in the morning and evening peak hour, respectively. The morning peak hour was recorded from 8:15am to 9:15am and the evening peak hour was recorded from 4:45pm to 5:45pm.

The majority of vehicle movements are through movements on New England Highway. Oxley Highway accommodated 61 and 67 vehicle movements in the morning and evening peak hour which are predominantly to/from the south.

2.3.2 Midblock Volumes

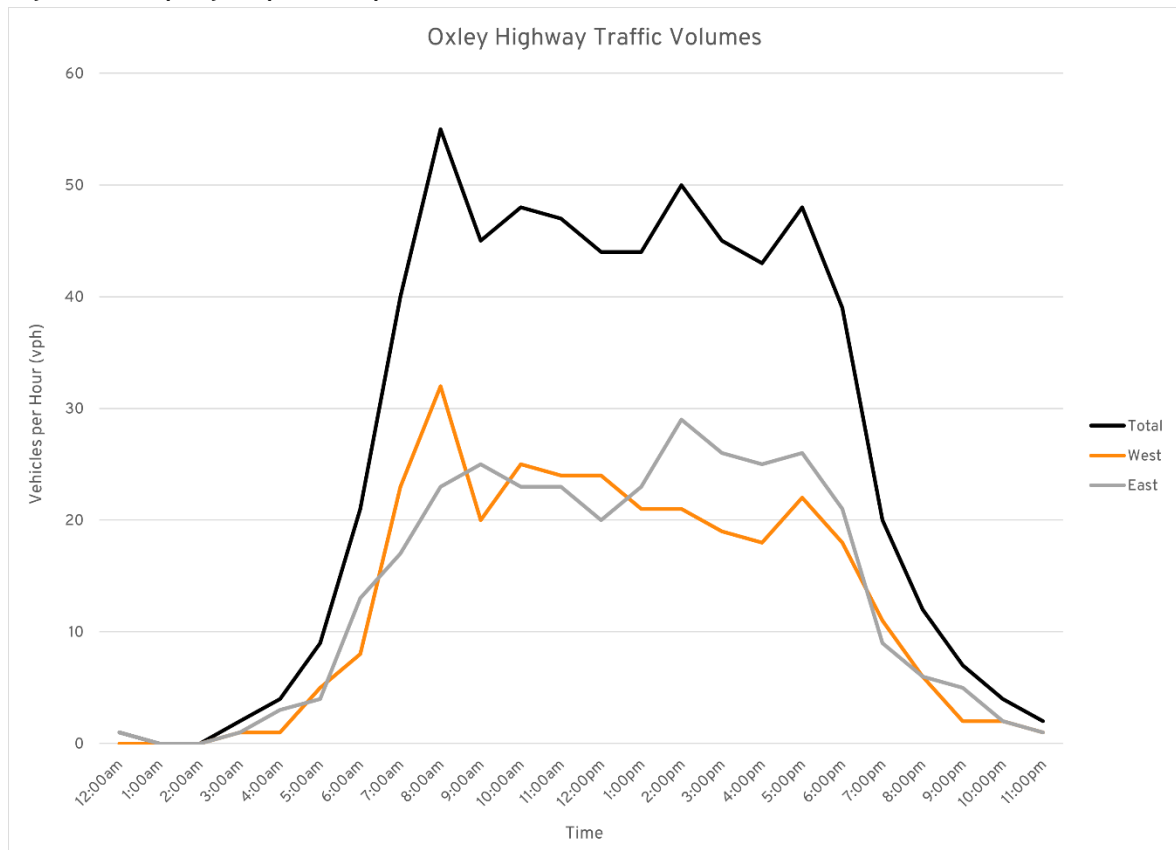
Amber commissioned a tube count on Oxley Highway at the site frontage in order to determine the existing road environment. The tube count was undertaken from Friday 3 November to Friday 10 November 2023. The survey results are presented in Appendix B with a summary provided in Table 3.

Table 3: Oxley Highway Traffic Volumes

	Weekday Traffic (vpd)	Weekday AM 8:00 (vph)	Weekday PM 14:00 (vph)	85 th Percentile Speed	Heavy Vehicle Percentage
Westbound	304	32	21	100.9 km/hr	38%
Eastbound	326	23	29	103.8 km/hr	
Both Directions	630	55	50	102.2 km/hr	

The hourly traffic volumes for Oxley Highway have been separated into east and westbound movements and are shown in Figure 4.

Figure 4: Oxley Highway Weekday Traffic Volume Data



The survey data indicates Oxley Highway currently experiences most traffic movements between the hours of 7:00am and 7:00pm. The data also indicates the road experiences a relatively even distribution of traffic across the day with a pronounced morning peak hour in the westbound direction. Overall, the survey data suggests that Oxley Highway currently accommodates a moderate level of traffic with a high proportion of heavy vehicles.

Traffic volume data has also been collected for New England Highway from the TfNSW Traffic Volume Viewer, which allows browsing and search for available traffic count data in NSW. Data is

available throughout NSW from 2006 up to the current year. The map provides the traffic volumes in vehicles per day (vpd) and at some site locations information is provided based on vehicles per hour (vph) and differentiates between light and heavy vehicles. A summary of the traffic volumes is provided within Table 4.

Table 4: State and Regional Road Traffic Volumes

Road	Survey Location	Station ID	Survey Year	Recorded Volume	Current Estimated Traffic Volume
New England Highway	140m south of Caroline Street	T0257	2021	3,803 vpd 78% light 22% heavy	3,860 vpd
			2019	4,301 vpd 78% light 22% heavy	4,497 vpd

Survey data has been provided for New England Highway for the year 2019 and 2021 which indicates the road network accommodated a reduced number of vehicle movements during 2021 which is likely due to changed travel behaviour caused by the COVID-19 pandemic.

The New England Highway data is the average over a month-long period. The data indicates it carries 22% heavy vehicles and approximately 4,300 vehicle movements per day.

The survey data for both the intersection and midblock locations for New England Highway and Oxley Highway indicates that the surrounding road network experiences a low to moderate level of traffic and is able to accommodate an increase in traffic movement.

2.4 Public Transport Services

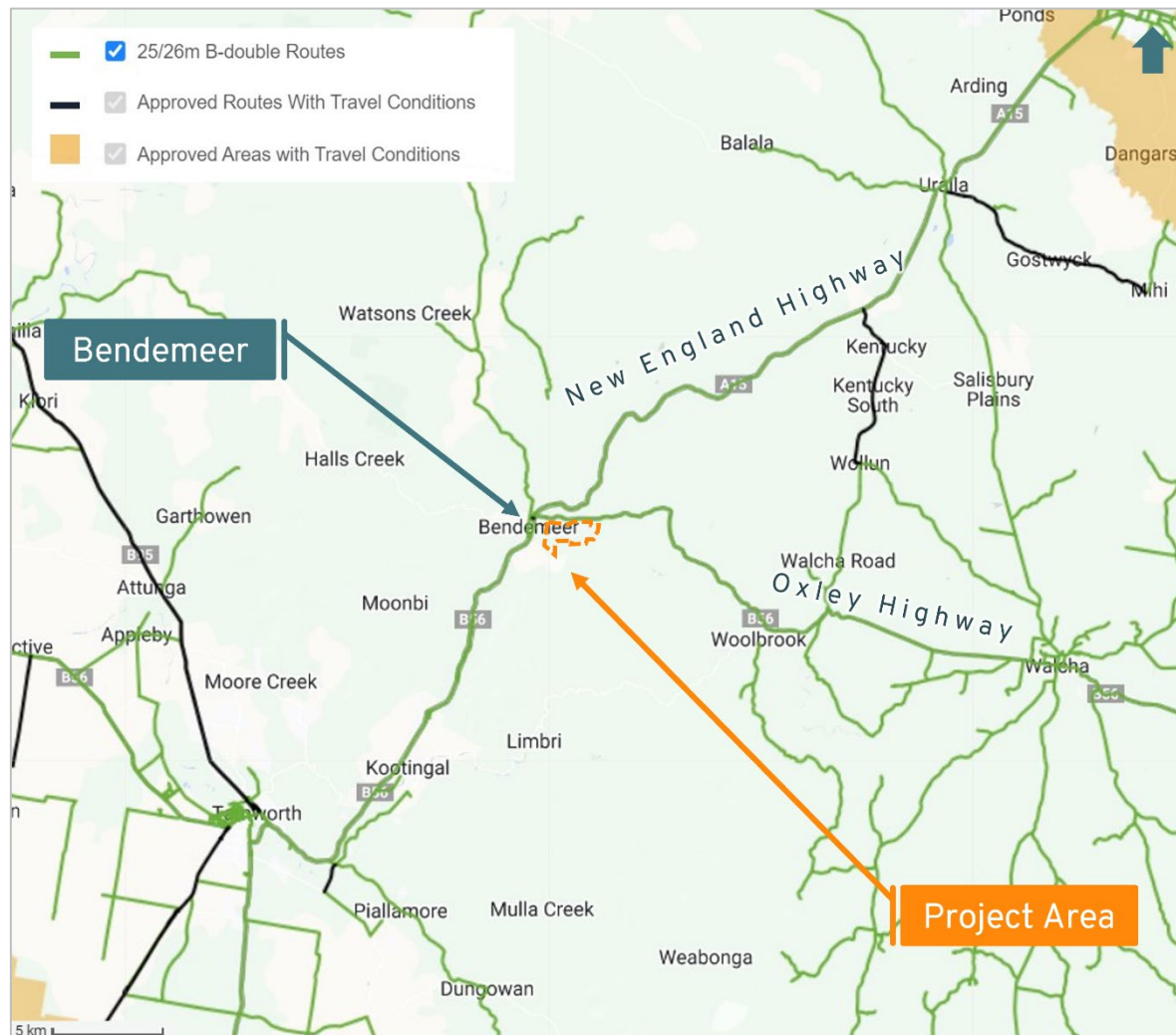
The public transport service that operates within the vicinity of the site is Bus Route 444 (Bendemeer to Tamworth) with the nearest bus stops located on Havannah Street in Bendemeer approximately 1.8km west of the Project Area. Seven bus services are provided each day Monday to Friday, which operate from 7:30am to 4:30pm. School buses also operate along Oxley Highway which are operated by Oxley Explorer.

2.5 Restricted Vehicle Access

2.5.1 B-Doubles

The NHVR 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. As can be seen from the figure, New England Highway and Oxley Highway are B-Double approved routes.

Figure 5: NHVR Restricted Access Vehicle Map



Source: NHVR Restricted Vehicle Access Map

2.5.2 Class 1 OSOM Vehicles

The TfNSW Oversize Overmass Load Carrying Vehicles Network map for the surrounding area is provided within Figure 6. The map shows approved routes for eligible vehicles operating under the Multi-State Class 1 Load Carrying Vehicles Mass and Mass Exemption Notices. A summary of allowances under each exemption notice are within New South Wales are provided below:

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

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

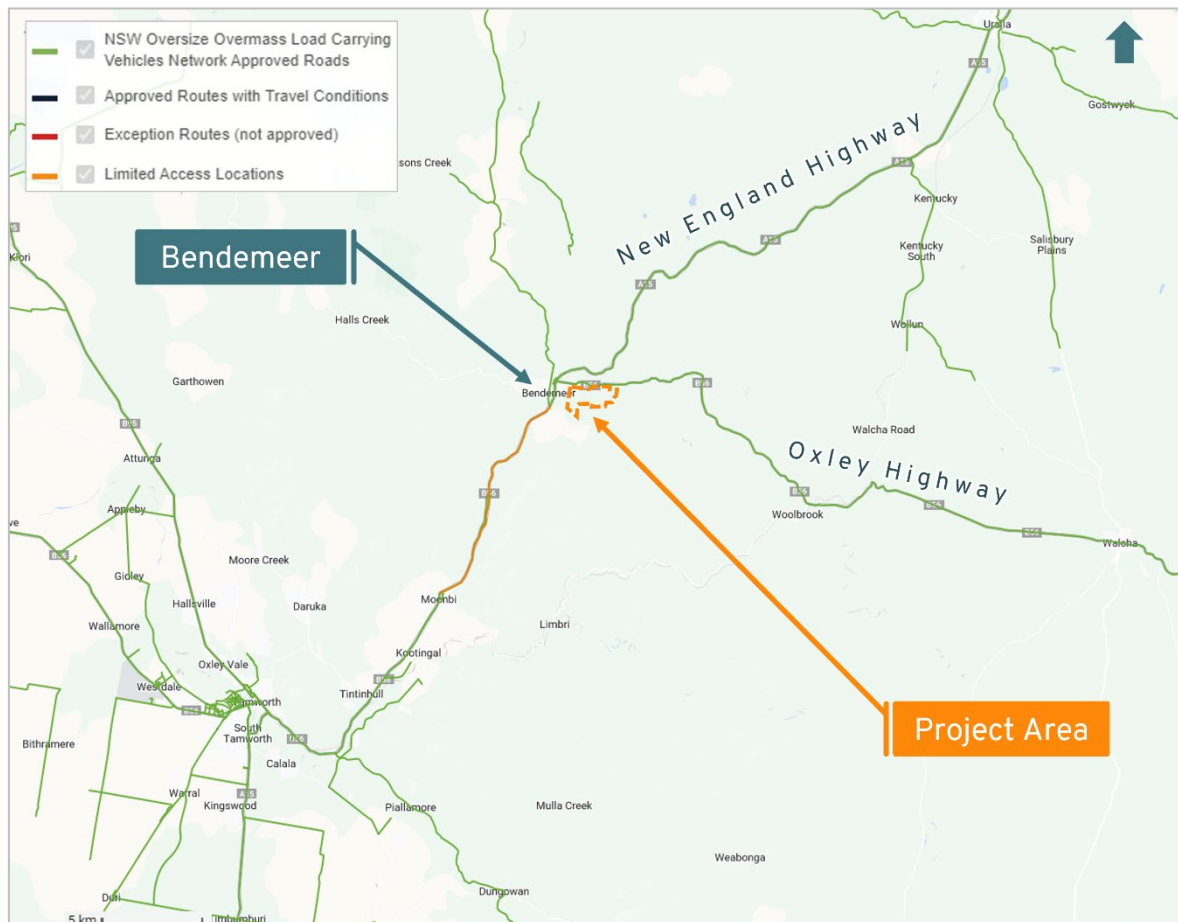
The green lines indicate approved routes while the black lines represent approved routes with travel conditions. As can be seen from the figure, New England Highway and Oxley Highway are Class 1 OSOM vehicle approved routes. A travel condition applies to the southbound direction

along New England Highway, between Caroline Street in Bendemeer and Charles Street in Moonbi as follows:

Condition applies to Southbound only. Police escort required when width exceeds 3.5 metres. Police contact details available at: www.nhvr.gov.au/access-contacts.

Accordingly, all vehicles exceeding 3.5m in width and travelling southbound along this section of road are subject to police escort.

Figure 6: NHVR Oversize Overmass Load Carrying Vehicles Network Approved Roads



Source: NHVR Class 1 OSOM Vehicle Access Map

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 along Oxley Highway between the site and New England Highway, and within 1.0 km of the intersection of New England Highway and Oxley Highway. The crash database provides the location and severity of all injury and fatal crashes for the five-year period from 2017 to 2021.

No crashes were recorded within the search area. Therefore, given the road classification and associated traffic volumes, it is concluded that the road network is currently operating in a relatively safe manner.

3. Traffic Assessment

3.1 Traffic Generation

3.1.1 Construction

The Project's construction is expected to take approximately 18 months, with the peak construction period expected to have a duration of 6-12 months. A maximum of 307 staff will be on-site during peak construction periods. Construction activities would be undertaken during standard daytime construction hours, as follows:

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

Any construction outside of these normal working hours would only be undertaken with approval from relevant authorities in accordance with any conditions of development consent.

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

- Light vehicles associated with transporting some staff to/from the site;
- Shuttle buses are expected to transport the majority of the workforce (the management and use of shuttle buses is discussed further in Section 7.5). The available fleet of shuttle buses includes vehicles up to a 12.5m rigid bus (57 seat capacity) and it has been assumed that each vehicle would transport an average of approximately 30 staff.
- Truck and Dog vehicles consist of a rigid truck towing either a dog trailer or a pig trailer and are not more than 19 metres in length. A dog trailer is a trailer with axles at either end of the trailer, a pig trailer has the axles centred on the trailer. These vehicles will be utilised to transport the majority of materials and smaller plant to/from the site; and
- Articulated Vehicles and B-Doubles (AV and B-Double as defined within AS 2890.2:2018) will be used to transport larger plant.

Restricted Access Vehicles / OSOM vehicles will be required for the delivery of larger plant to the site such as the substation transformer and are subject to additional permit applications and regulations. The impacts of the OSOM vehicles are discussed within Section 5 with the following assessment focusing on the impacts of the light and heavy vehicles which generate the bulk of the traffic and represent the typical traffic impact of the project on a day-to-day basis.

The construction traffic volumes for the Project have been provided by the Applicant. It is anticipated that during peak construction the site could generate up to 94 heavy and 76 light vehicle movements per day, with an additional 36 shuttle bus movements. It is noted that a vehicle movement is classified as a vehicle travelling in one direction (i.e. a vehicle accessing the Project would generate one movement towards the site and one movement away from the site when it departs).

For the purposes of this assessment a conservative vehicle occupancy of 1.2 people per car has been adopted to calculate the light vehicle traffic generation, with staff to be encouraged to carpool. Table 5 summarises the traffic movements generated during the construction period of the Project.

Table 5: Traffic Generation During Construction Period

Vehicle Type		Average Vehicle Movements		Peak Vehicle Movements	
		Daily (vpd)	Peak Hour (vph)	Daily (vpd)	Peak Hour (vph)
Light Vehicles		20	8	76	38
Shuttle Bus		24	6	36	9
Heavy Vehicles	Truck and Dog	16	4	50	12
	AV/B-Double	12	4	44	10
Total		72	22	206	69

Overall, the site is expected to generate approximately 69 vehicle movements during the morning and evening peak hours during the peak construction period, which will reduce to 22 peak hour vehicle movements over the typical construction periods.

3.1.2 Operational Traffic

During operation the Project is expected to generate a minimal level of traffic associated with maintenance and operation services. The Project is expected to be operated by up to 15 staff resulting in a traffic generation of up to 30 vehicle movements per day which would result in a negligible change to the traffic environment. There will also be occasional light commercial and heavy vehicles delivering parts to the Project area but only as required for maintenance.

3.1.3 Decommissioning Traffic

At the end of the operational life of the Project all above ground infrastructure will be dismantled and removed. Internal roads, if not required for ongoing farming purposes or fire access, would be removed and the Project area reinstated as close as possible to its original state.

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

3.2 Traffic Distribution

The vast majority of the Project traffic is expected to arrive along Oxley Highway from the west as staff and materials will be located within the nearby regional centres including Tamworth, Kootingal, Moonbi, Nemingha, Uralla and Armidale, all of which are accessed via New England Highway to the west. The only township located east of the site within a two hour drive is Walcha which has a small population of around 3,500 people. The workforce and accommodation available within the town during the construction period is expected to be limited.

All plant is expected to be delivered from the Port of Newcastle, Port of Brisbane or Port of Melbourne, and would also arrive at the site along Oxley Highway from the west.

The following provides a breakdown of the access distributions for each of the vehicle classifications outlined within Table 5:

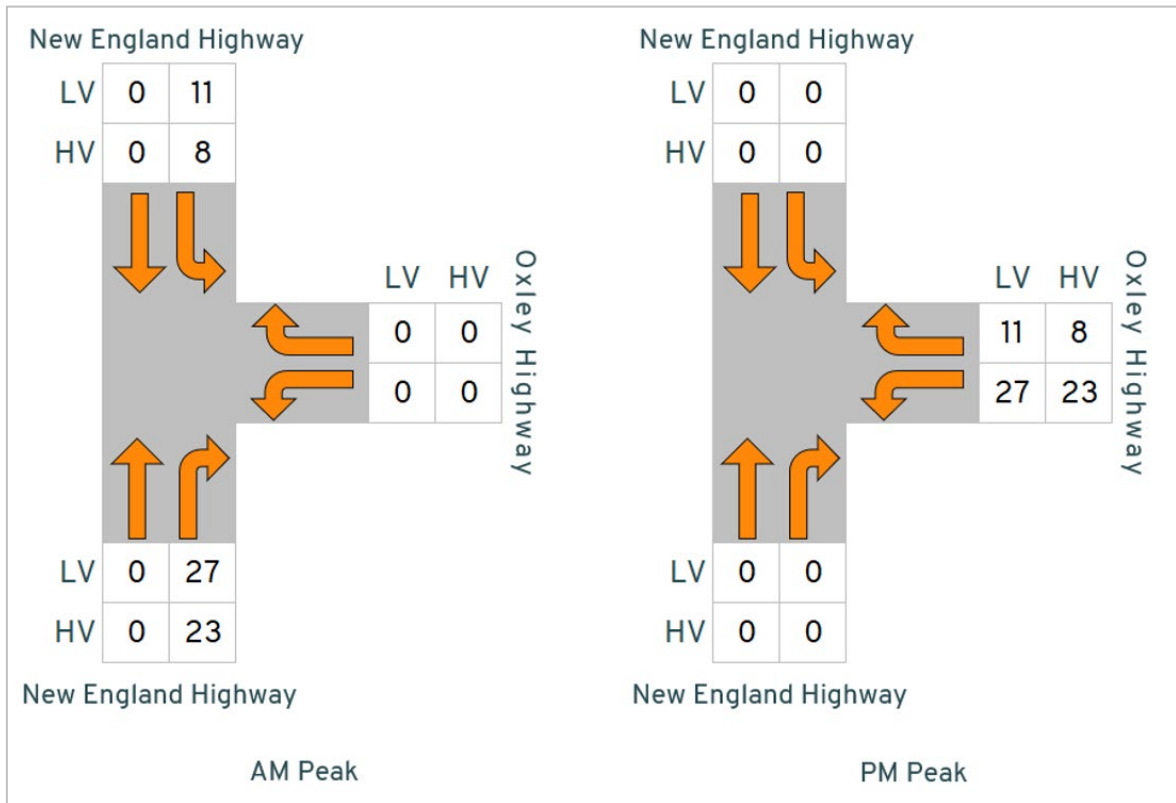
- **Light Vehicles:** Staff will travel from nearby surrounding towns and will travel to/from the west along Oxley Highway. 70% of all vehicles would travel along New England Highway from the south (Tamworth, Kootingal, Moonbi, Nemingha), and 30% of would travel from the north (Uralla, Armidale).
- **Shuttle Buses:** It is anticipated that shuttle buses will be provided from the towns of Armidale and Tamworth. It is expected that all buses will travel to/from the west of the site with 30% travelling from the north along New England Highway (Armidale) and 70% travelling from the south (Tamworth).
- **Truck and Dog:** These vehicles will predominantly be water trucks and vehicles transporting smaller plant and materials such as gravel, concrete and fencing supplies which will be sourced within the surrounding area. It is expected that all vehicles will travel to/from the west with 75% of all vehicles travelling from the south along New England Highway (Tamworth, Kootingal, Moonbi, Nemingha), and 25% of all vehicles traveling from the north (Uralla, Armidale).
- **AV and B-Doubles:** Plant will be transported from Port of Newcastle or Port of Brisbane to the site along New England Highway and Oxley Highway to/from the west.

The peak hour for construction will occur at the start and end of the day when staff are transported to/from the site. Most staff will typically arrive on-site between 6:00am and 7:00am. However, staff generally have staggered finish times which results in the evening peak hour being less pronounced. During the morning peak all vehicle movements will be towards the site and in the evening peak all vehicle movements will be away from the site. Heavy vehicle movements will be distributed throughout the day and will be split evenly between inbound and outbound movements.

3.2.1 New England Highway and Oxley Highway Intersection

The peak hour traffic movements generated by the project during peak construction at the intersection of New England Highway and Oxley Highway are shown within Figure 7. It is expected that there would be a negligible number of truck movements generated to/from the port during the peak hour as this is when staff arrive and depart the site. As such, the traffic volumes reflect the adoption of either delivery port. Shuttle buses have been included within the heavy vehicle volumes.

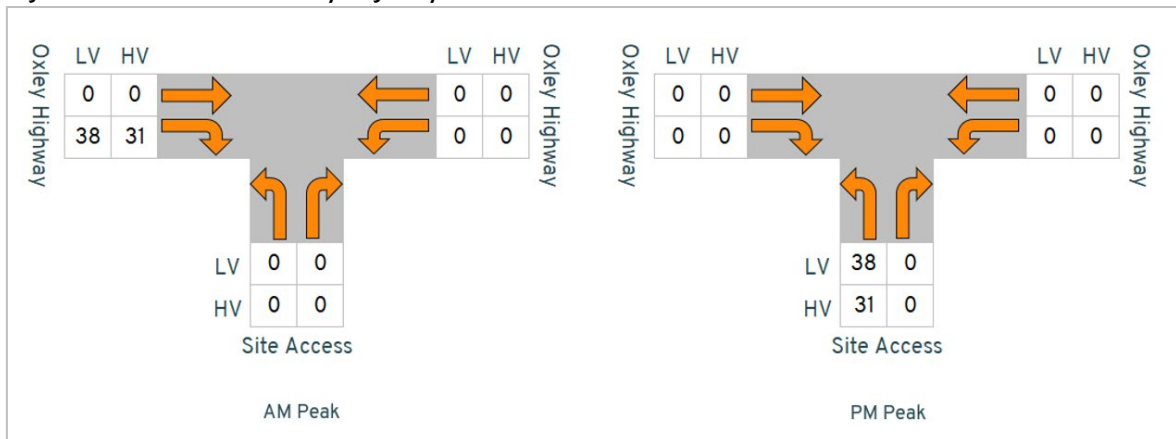
Figure 7: New England Highway / Oxley Highway Peak Hour Construction Traffic Movements



3.2.2 Site Access on Oxley Highway

The peak hour traffic movements generated by the project during peak construction at the site access on Oxley Highway are shown within Figure 8.

Figure 8: Site Access on Oxley Highway Construction Traffic Movements



3.3 Cumulative Traffic Impacts

The primary traffic impact of the Project is generated during construction which is anticipated to start in the coming years. An assessment of the cumulative impacts of major projects that are proposed within 100km of the site is provided within Table 6, which provides a description of each project to determine the potential overlap of construction traffic.

Table 6: Assessment of Cumulative Impacts of Nearby Developments

Project	Description	Potential Vehicle Conflict
New England REZ Transmission Project (Prepare EIS)	Development of new transmission lines between Bayswater Power Station Substation and the New England REZ, new energy hubs within the New England REZ, and ancillary infrastructure.	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Armidale, Uralla, and Tamworth.
Thunderbolt Wind Farm (Approved)	The proposed Thunderbolt Energy Hub is located in the Kentucky Area approximately 40km northeast of Tamworth adjacent to New England Highway. The Thunderbolt Energy Hub is proposed to include wind electricity generation and battery storage. The overall capacity of the Thunderbolt Energy Hub will be approximately 500MW plus a 400MW battery.	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Armidale, Uralla, and Tamworth and will utilise the same transport route to deliver plant from the Port of Newcastle.
Oxley Solar Farm (Approved)	Amber Organisation has assisted in the preparation of a Traffic Assessment for the solar farm, which is located approximately 10km southeast of Armidale, to the south of Waterfall Way. Construction workers are proposed to be located in Armidale, with access proposed via Waterfall Way and Gara Road.	There is potential for construction of both projects to overlap. Construction traffic generated by the projects may interact within the township of Armidale where staff for both projects are proposed to be located. The project may utilise New England Highway as a haulage route to transport solar panels and specialist equipment from the delivery port. During operation, the projects are both expected to generate a minimal level of traffic.
Tilbuster Solar Farm (Approved)	Amber Organisation has prepared a Traffic Assessment for the solar farm, which is located approximately 13km north of Armidale. Construction workers are proposed to be located in Armidale and Guyra, with access proposed via New England Highway.	There is potential for construction of both projects to overlap. The traffic generated by the projects may interact within the township of Armidale where staff for both projects are proposed to be located.
Tilbuster 2 Solar Farm (Prepare EIS)	Development of a solar farm adjacent to Tilbuster Solar Farm with access anticipated to be similar.	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Armidale.
New England Solar Farm (Stage 1 Operational, Stage 2 Under Construction)	New England Solar Farm is located approximately 6 kilometres east of the township of Uralla. Construction will take approximately 32-36 months and the project's construction workforce will be in the order of 300 people. The project is expected to generate 912 daily vehicle movements (760 by light vehicles and 152 by heavy vehicles) during the peak construction periods.	There is potential for construction of both projects to overlap. The traffic generated by the projects may interact within the township of Uralla and Armidale where staff for both projects are proposed to be located.

Project	Description	Potential Vehicle Conflict
Nottingham Park Solar Farm (Prepare EIS)	Development of a 250 MW solar farm, BESS and ancillary infrastructure in Winton, approximately 15km west of Tamworth. Construction will take approximately 12-18 months and is anticipated to start in Q1 of 2024.	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Tamworth and will utilise the same transport route to deliver plant from the Port of Newcastle.
Lambruk Solar Farm	Development of a 500 MW solar farm and 300 MW / 1,200 MWh BESS.	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Tamworth.
Deeargee Solar Farm	Development of a 320MW solar farm, ancillary infrastructure, and BESS with a capacity of either 1,400 MW / 2,800 MWh or 700 MW / 2,800 MWh.	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Armidale and Uralla.
Kingswood Battery Energy Storage System (Response to Submissions)	Development of a 500 MW/ 1000 MWh battery energy storage system, grid connection and associated infrastructure in Kingswood, approximately 6km southeast of Tamworth. Construction is anticipated to start in Q4 of 2024 and will take approximately 18 months for Stage 1 and 12 months for Stage 2.	There is potential for construction of both projects to overlap. The traffic generated by the projects may interact within the township of Tamworth and along New England Highway.
Middlebrook Solar Farm (Approved)	Amber Organisation has prepared a Traffic Assessment for the solar farm, which is located approximately 16km south of Tamworth. Construction workers are proposed to be located in Tamworth, with access proposed via Middlebrook Road which will connect with New England Highway.	There is potential for construction of both projects to overlap. The traffic generated by the projects may interact within the township of Tamworth where staff for both projects are proposed to be located. Upgrades are proposed to the intersection of Middlebrook Road / New England Highway to allow vehicle to turn safely from the state road.
Tamworth Solar Farm (Approved)	The solar farm will gain access from Soldiers Settlement Road which connects with Oxley Highway west of Tamworth. Construction workers are proposed to be located within Tamworth.	There is potential for construction of both projects to overlap. The traffic generated by the projects may interact within the township of Tamworth where staff for both projects are proposed to be located.
Hills of Gold Wind Farm (Approved)	The wind farm is located approximately 60km southeast of Tamworth and will provide approximately 65 turbines. Vehicles accessing the site will utilise the local road network that connects with New England Highway.	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Tamworth and will utilise the same transport route to deliver plant for the Port of Newcastle.

Project	Description	Potential Vehicle Conflict
Hillview Solar Farm (Prepare EIS)	Development of a 272 MW solar farm and ancillary infrastructure.	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Armidale and Uralla.
Hillview Wind Farm (Prepare EIS)	Development of a 200-300 MW wind farm with up to 55 WTGs and associated infrastructure.	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Armidale and Uralla.
Winterbourne Wind Farm (Response to Submissions)	Amber Organisation has recently prepared a Traffic Impact Assessment for the project, which will accommodate 119 turbines and is located northeast of Walcha in the Northern Tablelands.	The construction periods for the projects would not overlap.
Tamworth Battery Energy Storage System (Response to Submissions)	Development of a 200 MW battery energy storage facility with ancillary infrastructure.	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Tamworth and will utilise the same transport route to deliver plant from the Port of Newcastle.
Armidale Battery Energy Storage System (Assessment)	Development of a 150 MW battery energy storage facility with ancillary infrastructure	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Armidale and will utilise the same transport route to deliver plant from the Port of Newcastle.
Armidale East Battery Energy Storage System (Prepare EIS)	Development of a 500 MW / 1000 MWh battery energy storage facility with ancillary infrastructure. Construction is anticipated to commence in Q1 2026 and take approximately 18 months. The project is located approximately 75km northeast of Bendemeer Solar Farm.	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Armidale.
Oven Mountain Pumped Hydro Energy Storage Project (Assessment)	Development of a 600 MW pumped hydro energy storage and generation project and ancillary infrastructure.	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Armidale.
Metz Solar Farm (Operating)	Development of a 100 MW solar farm and ancillary infrastructure.	The construction periods of the projects are not expected to overlap.
Eathorpe Battery Energy Storage System (Prepare EIS)	Development of a 100 MW battery energy storage facility with ancillary infrastructure	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Armidale.
Eastern Hub Firming Battery (Prepare EIS)	Development of a 1000 MW battery energy storage system and associated infrastructure.	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Armidale and Uralla.

Project	Description	Potential Vehicle Conflict
Gara Battery Energy Storage System (Prepare EIS)	Development of a 400 MW / 1,760 MWh battery energy storage facility and associated infrastructure.	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Armidale.
Wallabadah Battery Energy Storage System (Prepare EIS)	Development of a 400 MW / 800 MWh battery energy storage facility and ancillary infrastructure.	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Tamworth.
Calala Battery Energy Storage System (Approved)	Development of a battery energy storage system (300 MW / 1200 MWh) and underground transmission lines connecting to Tamworth substation plus ancillary works.	The construction periods for the projects could potentially overlap. Both projects are anticipated to have staff located in Tamworth and will utilise the same transport route to deliver plant from the Port of Newcastle.
Bendemeer Wind Farm (Prepare EIS)	Development of a wind farm, with up to 51 turbines, as part of the Bendemeer Renewable Energy Hub, with ancillary infrastructure.	The construction period for the wind farm is expected to occur following construction of the solar farm. Both projects are anticipated to have staff located in Tamworth and Armidale and will utilise the same transport route to deliver plant from the Port of Newcastle.
Orange Grove Solar Farm (Approved)	Development of a 110 MW solar farm and ancillary infrastructure.	Peak construction period is likely to be completed prior to peak construction of the proposal.
Gunnedah Solar Farm (Operating)	Development of a 153 MW solar farm and ancillary infrastructure.	Is operational and as such, is currently expected to be generating a minimal number of vehicle movements on the road network.

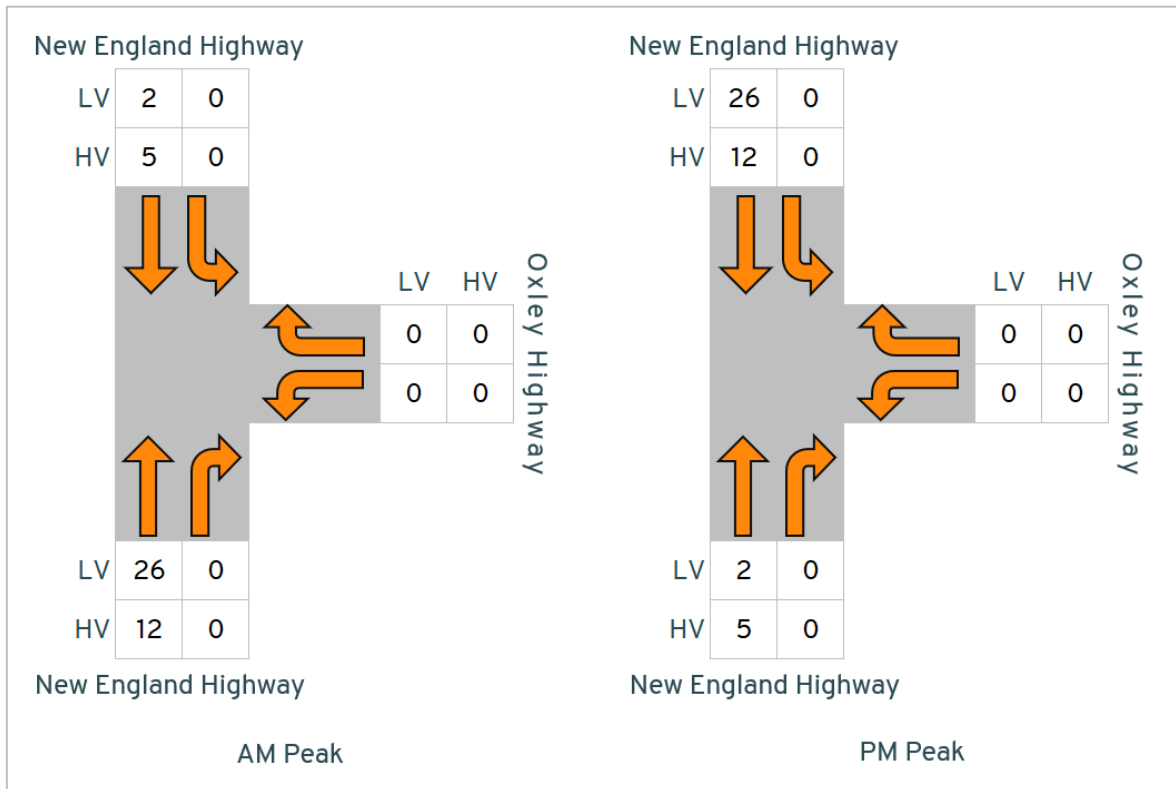
The above assessment indicates that a number of the projects are expected to generate additional vehicle movements within nearby regional centres such as Tamworth, Uralla, and Armidale. These vehicle movements would be distributed on the surrounding road network and are expected to have a minimal cumulative impact on the operation of the road network.

The review indicates that the following projects have the potential to generate additional vehicle movements along New England Highway and Oxley Highway within the vicinity of the site:

- Thunderbolt Wind Farm: Traffic data sourced from the TIA as part of the EIS.
- Tilbuster Solar Farm: The project may utilise New England Highway as a haulage route to transport plant from the delivery port. Traffic data has been sourced from the TIA as part of the EIS.
- Oxley Solar Farm: The project may utilise New England Highway as a haulage route to transport solar panels and specialist equipment from the delivery port however no traffic data is currently available for these trips.
- New England REZ Transmission Project, Tilbuster 2 Solar Farm, Nottingham Park Solar Farm, Lambruk Solar Farm, Deeargee Solar Farm, Hillview Solar Farm and Wind Farm, Gara BESS, Wallabadah BESS, Armidale East BESS, Eastern Hub Firming Battery and Eathorpe BESS: No traffic data is currently available as the EIS has not yet been prepared for these projects.

Figure 9 shows the additional cumulative traffic generated by the Thunderbolt Wind Farm and Tilbuster Solar Farm projects at the New England Highway / Oxley Highway intersection based on the information available. The traffic movements are provided for both the AM and PM construction peak hours (i.e. 6:00am and 5:00pm).

Figure 9: New England Highway / Oxley Highway Peak Hour Cumulative Construction Traffic Movements



No cumulative traffic impacts have been identified along Oxley Highway near the site access.

3.4 Traffic Assessment

In order to determine the ability of the road network to accommodate the traffic expected to be generated during peak construction periods a traffic modelling exercise has been undertaken for the intersection of New England Highway and Oxley Highway using the SIDRA intersection modelling software.

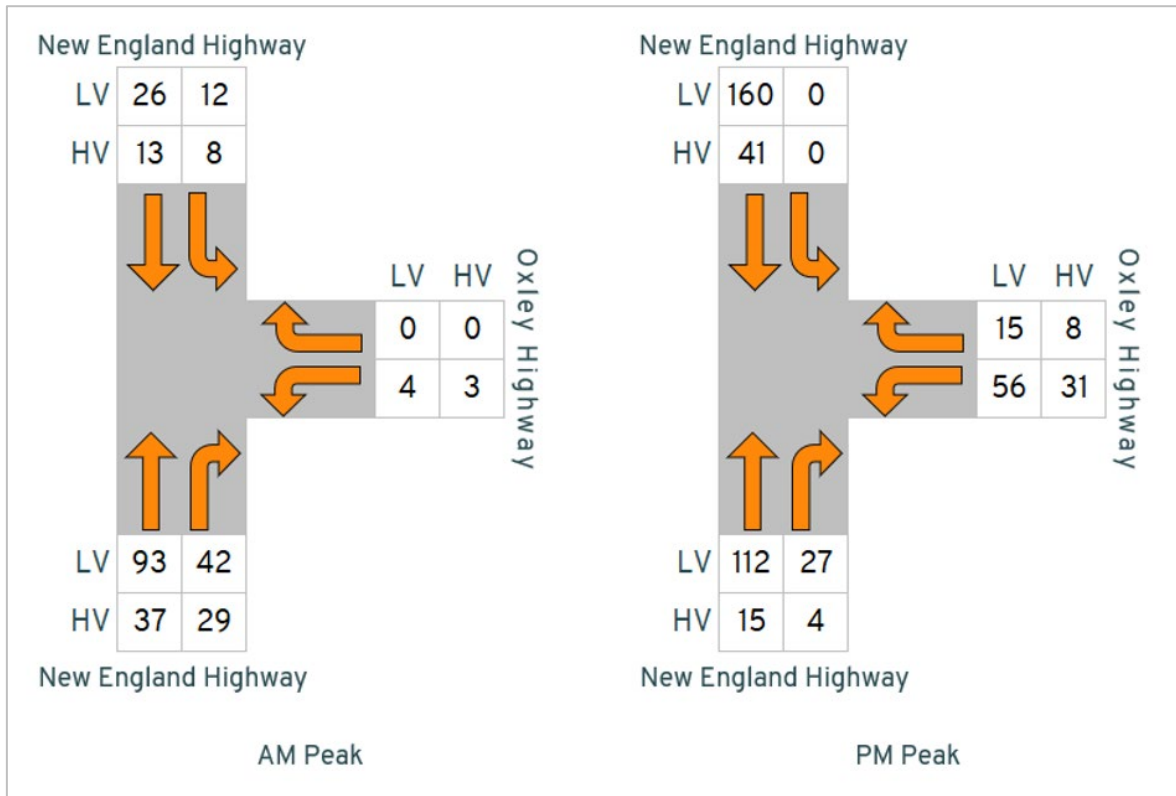
Level of Service is a qualitative measure used to describe the operating conditions of a section of road or an intersection. Levels of Service are designated from A to F from best (free flow conditions) to worst (forced flow with stop start operation, long queues and delays) and represent the perception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

The modelled traffic volumes at the intersection have been based on the morning peak hour of construction (6:00am to 7:00am) and evening peak hour of construction (5:00pm to 6:00pm). The traffic volumes consist of the sum of the following:

- Existing surveyed traffic volumes in Appendix A adjusted by a 1.5% compounding annual growth rate over 3 years to reflect the construction period in 2026. The growth rate is based on data provided by TfNSW;
- Construction traffic volumes outlined within Figure 7; and
- Cumulative traffic volumes from nearby projects outlined in Figure 9.

The resulting total traffic volumes used for the assessment are provided in Figure 10.

Figure 10: Peak Hour Volumes During Peak Construction - New England Highway / Oxley Highway



The results of the SIDRA analysis for the morning and evening peak hour are provided within Appendix C and summarised in Table 7.

Table 7: SIDRA Analysis Results Summary

Movement		Morning Peak Hour			Evening Peak Hour		
		Average Delay (sec)	95% Queue (m)	Level of Service	Average Delay (sec)	95% Queue (m)	Level of Service
New England Highway South	Through	0.0	0.0	A	0.0	0.0	A
	Right Turn	6.3	2.4	A	6.5	0.8	A
Oxley Highway	Left Turn	6.2	0.3	A	7.1	4.7	A
	Right Turn	7.1		A	10.2		A
New England Highway North	Left Turn	6.0	0.0	A	5.6	0.0	A
	Through	0.0	0.0	A	0.0	0.0	A

The SIDRA analysis indicates the following:

- The intersection is expected to operate with minimal queue lengths on all legs of the intersection;
- The overall average delay at the intersection is 2.3 seconds in the morning and evening peak hour; and
- The intersection is expected to continue to operate with good level of service (LOS A).

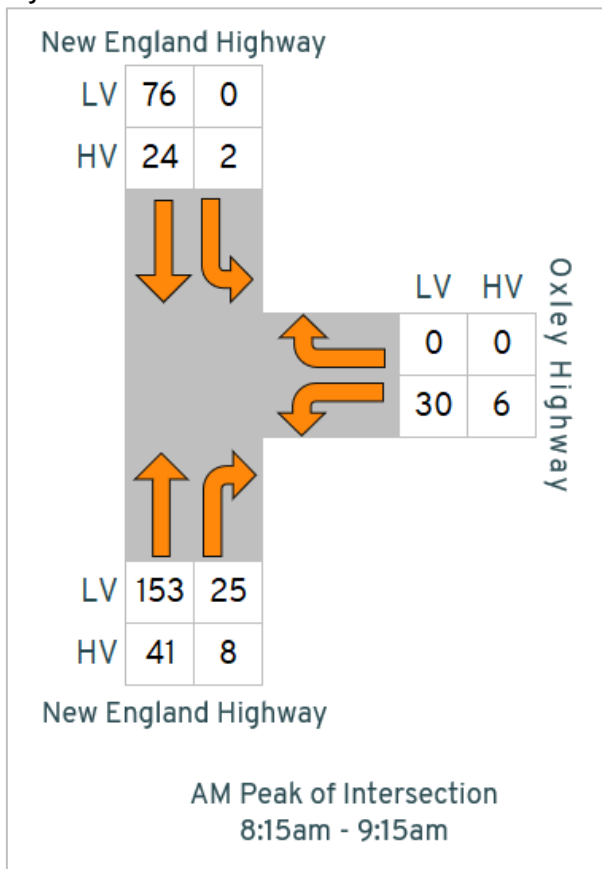
Accordingly, the intersection is expected to continue to operate with a good level of service and minimal queues and delays during peak construction.

An assessment has also been undertaken for the 2026 morning peak hour of the intersection which occurs from 8:15 to 9:15am based on the surveyed traffic volumes. During this time the traffic movements are expected to be predominantly associated with heavy vehicles with up to 8 vehicle movements per hour.

TfNSW also requested an assessment of the evening peak hour of the road network, however, the evening peak hour would be 5:00pm which has been assessed above.

For the purposes of the morning peak assessment, the same cumulative traffic volumes from nearby developments have been conservatively applied. The resulting total traffic volumes used for the assessment are provided in Figure 11.

Figure 11: Traffic Volumes – 2026 AM Peak of Intersection



The results of the SIDRA analysis for the morning peak hour are provided within Appendix C and summarised in Table 8.

Table 8: SIDRA Analysis Results Summary – AM Peak of Intersection (8:15am-9:15am)

Movement		Morning Peak Hour		
		Average Delay (sec)	95% Queue (m)	Level of Service
New England Highway South	Through	0.0	0.0	A
	Right Turn	6.2	0.9	A
Oxley Highway	Left Turn	6.1	0.9	A
	Right Turn	7.8		A
New England Highway North	Left Turn	6.7	0.0	A
	Through	0.0	0.0	A

The SIDRA analysis indicates the intersection is expected to operate with similar operating conditions to the peak construction hour and the intersection is expected to continue to operate with good level of service. Accordingly, the road network is able to accommodate the traffic generated by the project during the road network peak hour.

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

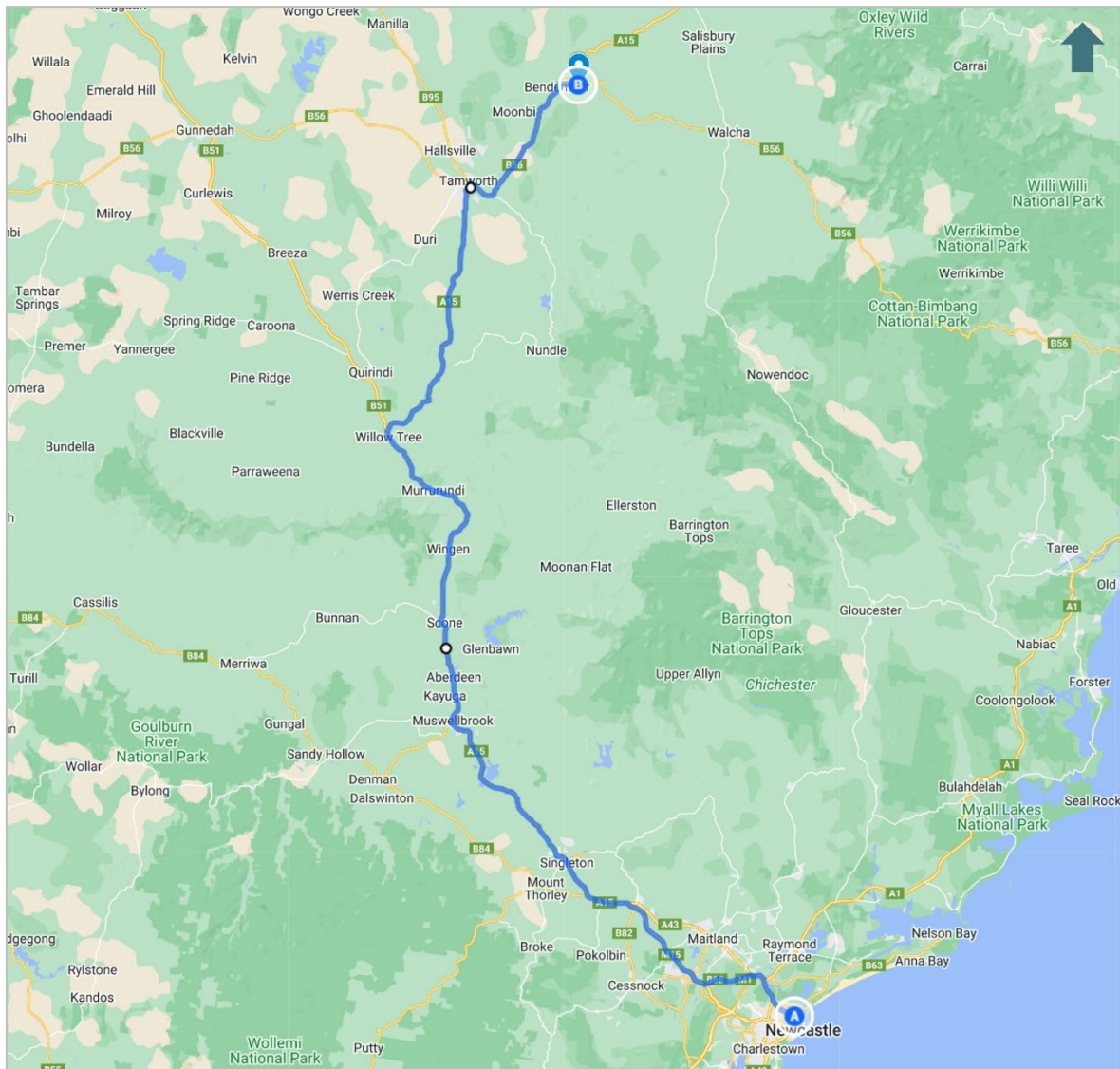
4. Heavy Vehicle Route Assessment

All plant is expected to be delivered from Port of Newcastle, Port of Brisbane or Port of Melbourne with use of each delivery port to be determined prior to construction. The following provides a review of the potential access routes from each of the ports associated with heavy vehicles (excluding OSOM vehicles).

4.1 Port of Newcastle

The access route will utilise the local road network from the Port of Newcastle to access the State road network. Vehicles will then travel northeast via Industrial Drive, John Renshaw Drive, and the Hunter Expressway, before accessing New England Highway. All vehicles are then proposed to use New England Highway through Tamworth to reach Oxley Highway. The access route is shown within Figure 12.

Figure 12: Access Route from Port of Newcastle to Site



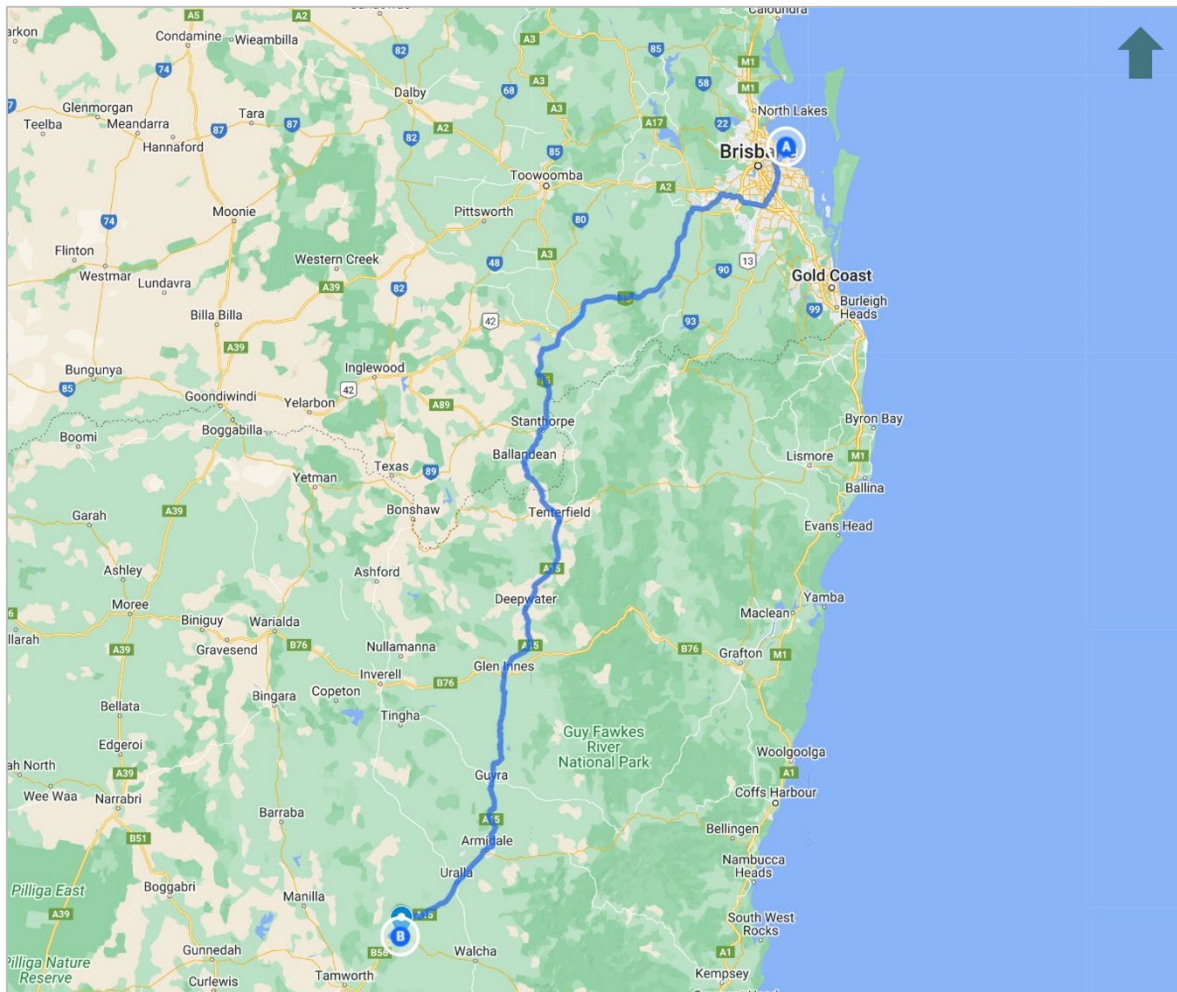
Source: Google Maps

The access route utilises roads that are designated for B-Double vehicles as outlined within the TfNSW Restricted Access Vehicle Map. Accordingly, the access route can accommodate the heavy vehicle movements expected to be generated during construction of the Project.

4.2 Port of Brisbane

The access route will utilise the local road network from the Port of Brisbane to access Port of Brisbane Motorway (M4). Vehicles will then travel south via Gateway Motorway (M1) to access the M2 and Cunningham Highway (M15) to access New England Highway. Vehicles will then travel south into NSW on the New England Highway and access the site via Oxley Highway. The access route is shown within Figure 13.

Figure 13: Access Route from Port of Brisbane to Site



Source: Google Maps

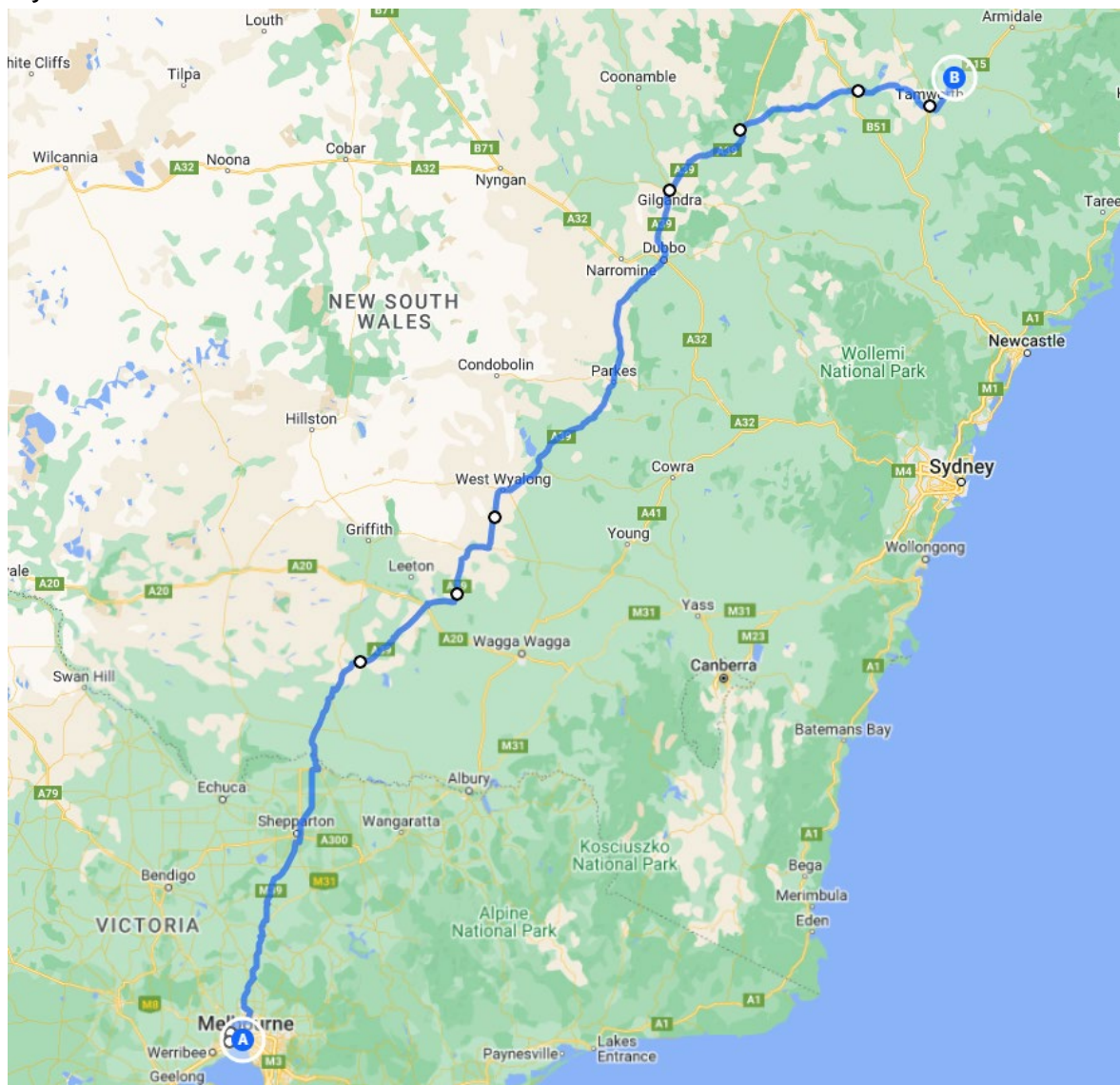
The access route utilises roads that are designated for B-Double vehicles as outlined within the TfNSW Restricted Access Vehicle Map and the Queensland Department of Transport and Main Roads (TMR) Heavy Vehicle Route Map. Accordingly, the access route can accommodate the heavy vehicle movements expected to be generated during construction of the Project.

4.3 Port of Melbourne

The access route from Port of Melbourne is shown in Figure 14 and will utilise the following roads:

- Docklink Road / Appleton Dock Road,
- Docklands Highway,
- M2 (CityLink),
- M80 (Ring Road),
- M31 (Hume Freeway),
- Goulburn Valley Highway,
- A39 (Newell Highway),
- B56/A15 (Oxley Highway and New England Highway)

Figure 14: Access Route from Port of Melbourne to Site



Source: Google Maps

The access route utilises roads that are designated for B-Double vehicles as outlined within the TfNSW Restricted Access Vehicle Map and Victoria's Gazetted B-Double Network Map. Accordingly, the access route can accommodate the heavy vehicle movements expected to be generated during construction of the Project.

5. OSOM Vehicle Route Assessment

Oversize and overmass vehicles will be required to deliver larger plant to the site such as the substation transformer and earthmoving equipment. The OSOM vehicles expected to access the site can be separated into two categories:

- Vehicles that comply with the Multi-State Class 1 Load Carrying Vehicles Mass Exemption Notice and the Multi-State Class 1 Load Carrying Vehicles Dimension Exemption Notice and are able to operate on the approved NSW Oversize Overmass Load Carrying Vehicles Network; and
- The OSOM vehicles that are not compliant with the NSW Oversize Overmass Load Carrying Vehicles Network and require traffic management measures such as an escort.

The Applicant has advised that the following OSOM vehicles are expected to access the site:

- 2 x vehicles to transport the main transformers which would result in an OSOM vehicle movement in one direction only (loaded) during construction and decommissioning;
- 6 x vehicles to transport the modular buildings resulting in an OSOM vehicle movement in one direction only for both construction and decommissioning; and
- 10 x OSOM vehicle movements associated with the transportation of large civil plant including trenchers, excavators, dozers or scrapers, which would occur when vehicles access the site and depart the site during construction.

The project is expected to generate 18 OSOM vehicle movements during construction and 10 OSOM vehicle movements during decommissioning. The vehicles are subject to specific road permits that will be applied for by the contractor once the dimensions of the load and the specific delivery vehicle are known.

5.1 Special Purpose Vehicles (SPVs)

Vehicles built for a purpose other than carrying goods such as a mobile crane, a concrete pump or drill rig are defined as Special Purpose Vehicles (SPVs) and are considered Class 1 restricted access vehicles if they exceed one or more of the general mass and dimension limits. The following SPVs are expected to access the site:

- 2 x 500 tonne 8 axle cranes would access the site for unloading of the main transformers and would generate a movement when accessing and egressing the site during both construction and decommissioning;
- 8 x 200 tonne 6 axle cranes would access the site for construction of the substation, Transgrid switchyard primary equipment and 330kV overhead line, and would generate a movement when accessing and egressing the site during both construction and decommissioning; and
- 20 x 150 tonne 5 axle cranes would access the site for unloading and installing power conversion units and BESS units, and would generate a movement when accessing and egressing the site during both construction and decommissioning.

5.2 Complying Vehicles

It is anticipated that the majority of the OSOM vehicles would comply with the exemption notices and be able to operate on the approved NSW Oversize Overmass Load Carrying Vehicles Network. The surrounding road network, including New England Highway and Oxley Highway, are rated to

accommodate complying vehicles. Accordingly, the State roads along the access route can accommodate the OSOM vehicle movements expected to be generated during construction of the Project.

5.3 Vehicles Requiring an Escort

The vehicles that would not comply with the exemption notice include:

- Transformer delivery vehicle; and
- Modular building delivery vehicles.

The following provides a review of each of these components:

5.3.1 Transformer Vehicle

The largest component to be delivered to the site is expected to be the transformer. The Applicant has advised that the transformer model is expected to be 150-200 tonnes with dimensions of approximately 10.0m long, 4.0m wide and 5.0m tall. An OSOM vehicle configuration has been identified based on the transformer model specifications provided by the Applicant. The vehicle used for the assessment is shown within Figure 15 and is based on feedback from a transport company which confirmed that the vehicle specification would be suitable for the weight and size of the transformer. It is noted that additional prime movers may be required at the front and/or rear depending on the final weight of the load however they would generally fit within the turning envelope of the vehicle configuration shown in the figure and can be disconnected if required for access into the site and at other critical locations.

The technical drawings illustrate the SCS 336T trailer's dimensions and specifications. The top view shows a rectangular trailer with a width of 4200mm and a length of 25200mm. The side view shows a trailer with a height of 820mm (minimum) to 1540mm (maximum). The trailer is equipped with 11R22.5 X 2 tires (T 6.0T, P 0.0T, G 6.0T) and 11R22.5 X 8 tires (T 18.0T, P 0.0T, G 18.0T). The trailer's gross weight is 336T, with a tare weight of 50.4T and a payload of 285.6T. The trailer is shown in a side view with dimensions: 1370mm (cab to front axle), 6265mm (front axle to front of trailer), 1800mm (front axle to first set of axles), and 23400mm (total length). The trailer is also shown in a top view with dimensions: 25200mm (length), 4200mm (width), and a 45.00° angle. The trailer is shown in a side view with dimensions: 1370mm (cab to front axle), 6265mm (front axle to front of trailer), 1800mm (front axle to first set of axles), and 23400mm (total length). The trailer is also shown in a top view with dimensions: 25200mm (length), 4200mm (width), and a 45.00° angle. The trailer is shown in a side view with dimensions: 1370mm (cab to front axle), 6265mm (front axle to front of trailer), 1800mm (front axle to first set of axles), and 23400mm (total length). The trailer is also shown in a top view with dimensions: 25200mm (length), 4200mm (width), and a 45.00° angle.

Top View Dimensions:

- Length: 25200
- Width: 4200

Side View Dimensions:

- Height: 820 MIN, 1540 MAX
- Length: 1370, 6265, 1800, 23400

Tire Specifications:

- 11R22.5 X 2
 - T 6.0T
 - P 0.0T
 - G 6.0T
- 11R22.5 X 8
 - T 18.0T
 - P 0.0T
 - G 18.0T

Weight Specifications:

- 215/75 R 17.5 X 112
- TARE 50.4T
- PAYLOAD 285.6T
- GROSS 336T

Top View Details:

- Length: 25200
- Width: 4200
- Angle: 45.00°
- Radius: R19885, R11025
- Angles: 40.24°, 34.70°, 28.30°, 21.04°, 12.99°

Side View Details:

- Height: 820 MIN, 1540 MAX
- Length: 1370, 6265, 1800, 23400

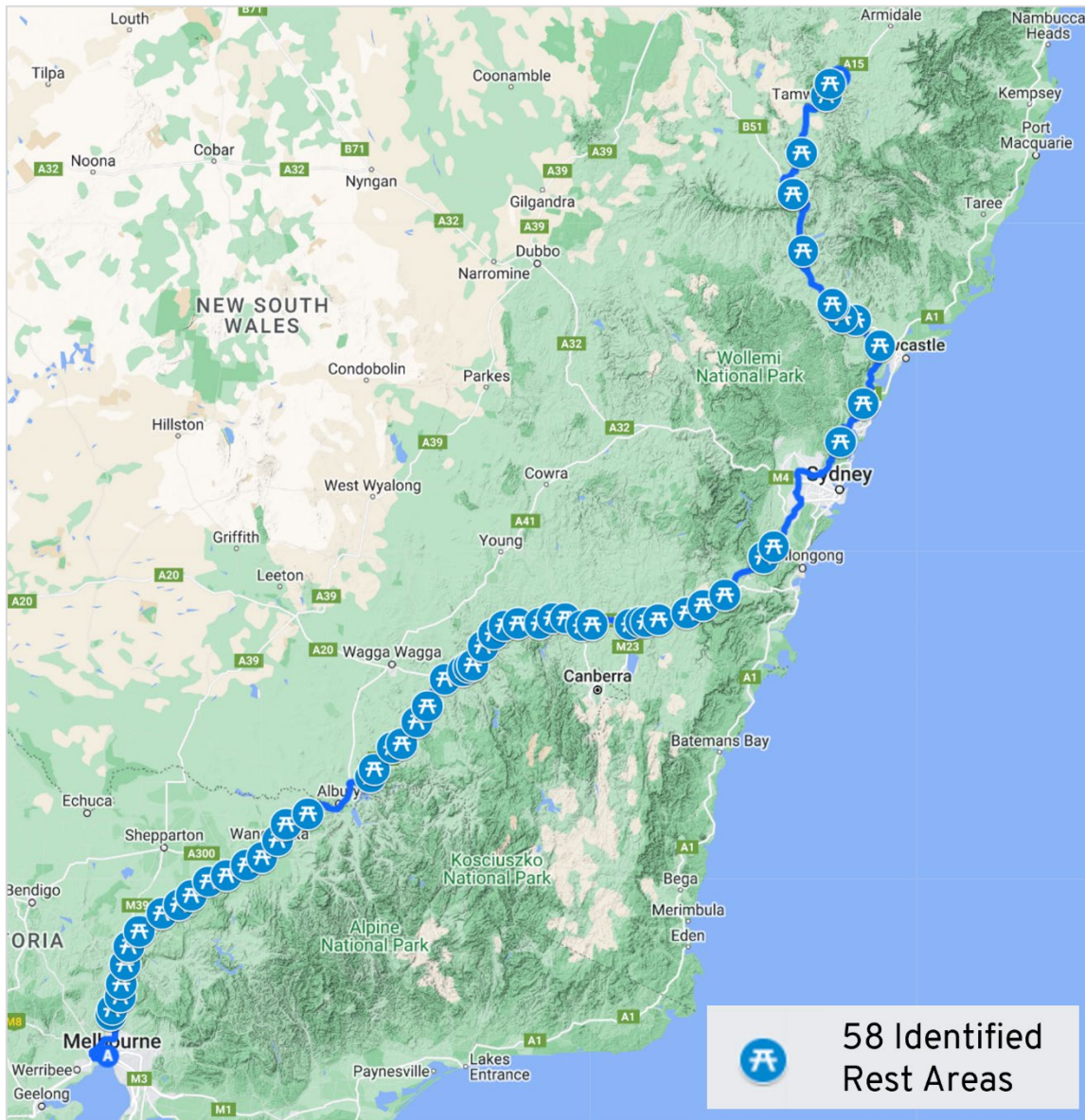
Prime Mover Position:

- PRIME MOVER POSITION CAN BE ALTERED OR MOVED TO REAR OF VEHICLE

The proposed OSOM route between Port of Melbourne and the site has a total length of 1338 kilometres. The route would utilise the following roads to access the site.

- The access route, along with the 58 identified truck rest areas that could be used along the route, are shown in Figure 16. A total of 14 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 D.

Figure 16: Melbourne OSOM Route



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.

5.3.2 Modular Building Delivery Vehicles

The modular buildings would potentially be delivered from Port of Newcastle and Port of Brisbane and are expected to utilise the routes outlined within Figure 12 and Figure 13.

The OSOM vehicles are expected to be able to suitably travel to the intersection of New England Highway and Oxley Highway given the routes have been utilised by a number of other renewable projects in the wider area or more detailed route assessments have been provided for larger OSOM vehicles. Examples of these projects are provided below:

- Port of Newcastle: The Winterbourne Wind Farm provides a route assessment for the transport vehicles from the Port of Newcastle to Walcha which would utilise the same

route and travel past the site. The assessment for the components (excluding the blade transport vehicle) identified that no road upgrades were required.

- Port of Brisbane: The access route has been utilised by Glen Innes Wind Farm and White Rock Wind Farm between Port of Brisbane and Glen Innes and as such, it is considered that this section of the route would be suitable to accommodate the project OSOM vehicles without the need for road upgrades. A Route Assessment has been prepared between Guyra and Port of Newcastle for Doughboy Wind Farm which indicates the route is able to accommodate the OSOM vehicles identified without road upgrades (excludes blade transport vehicles). The route between Glen Innes and Guyra travels along New England Highway and a desktop review of the route indicates there are no intersections or bends that warrant further assessment.

The Route Assessments for the above wind farms assessed similar OSOM vehicle configurations to the expected modular building delivery vehicles and are considered to provide confidence that the access route is able to accommodate the OSOM vehicles generated by the project.

Accordingly, it is concluded that the routes are able to be utilised by OSOM vehicles associated with the project with permits to be applied for as part of the TMP. It is recommended that any OSOM movements be timed so they do not coincide with other OSOM vehicles within the surrounding area to limit the impact to the road network, which can be undertaken as part of the permit application.

6. Intersection Assessment

The requirement to provide turn facilities is primarily generated during the morning when staff and construction vehicle movements are generally toward the site. An assessment has been undertaken for the intersection of New England Highway and Oxley Highway as well as the site access. The following scenarios have been utilised for the assessment:

- The peak traffic generation hour for the project which occurs when staff access the site from 6:00am to 7:00am; and
- The morning peak hour of the road which occurs later in the morning. During this time the traffic associated with the Project is expected to be predominantly associated with heavy vehicles with approximately 8 vehicle movements generated per hour.

Austrroads Guide to Traffic Management Part 6: Intersections, Interchanges, and Crossings specifies the turning treatments required at intersections. Figure 3.25 of the guide specifies the required turn treatments on the major road at unsignalised intersections. An assessment of the required turn treatments is provided below.

6.1 New England Highway / Oxley Highway

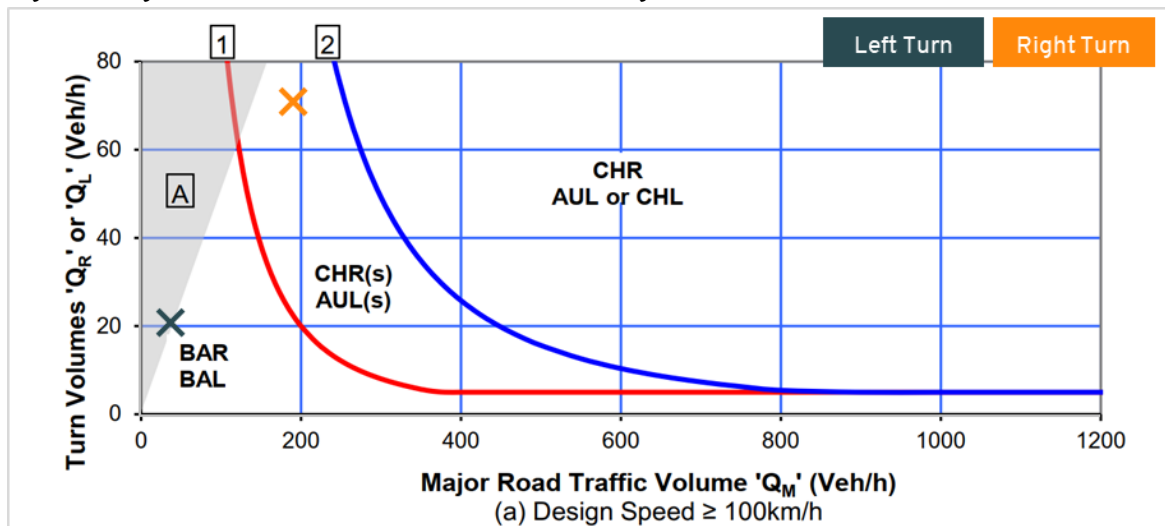
6.1.1 Project Peak Hour (6:00am – 7:00am)

The traffic volumes used for the assessment are presented in Table 9 and are plotted on Figure 17. The assessment indicates the intersection would require a Basic Left Turn (BAL) and a Channelised Right Turn (CHR) treatment. As there is already a BAL and CHR facility provided at the intersection, no intersection upgrades are required.

Table 9: Site Peak Hour Turning Volumes – New England Highway / Oxley Highway

Turning Treatment	Traffic Volume (vph)		Requirement
	Turn Volume	Major Road	
Right Turn	71	190	CHR
Left Turn	21	39	BAL

Figure 17: Figure 3.25 of Austrroads Guide to Traffic Management Part 6



6.1.2 Road Network AM Peak Hour (8:15am – 9:15am)

An assessment has also been undertaken for the morning peak hour of the road network which occurs between 8:15am and 9:15am based on the intersection survey data provided in Appendix A. Figure 18 and Table 10 identify the required turning treatments based on the expected traffic volumes at the intersection which are outlined in Figure 11.

Figure 18: Figure 3.25 of Austroads Guide to Traffic Management Part 6

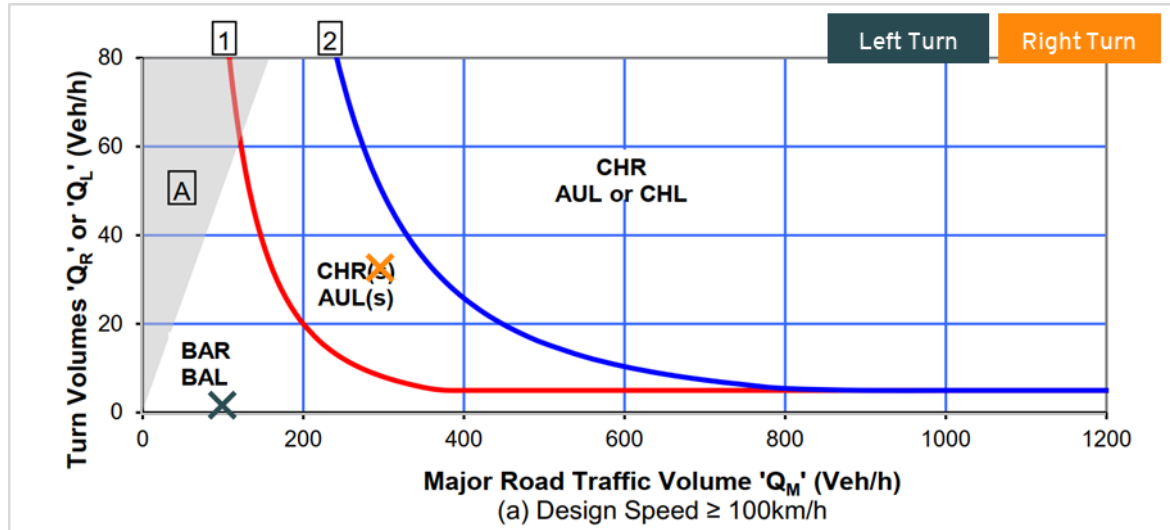


Table 10: Road Network AM Peak Hour Turning Volumes – New England Highway / Oxley Highway

Turning Treatment	Traffic Volume (vph)		Requirement
	Turn Volume	Major Road	
Right Turn	33	296	CHR
Left Turn	2	100	BAL

The assessment indicates the intersection would require a Basic Left Turn (BAL) and a Channelised Right Turn (CHR) treatment based on the above assessment. As there is already a BAL and CHR facility provided at the intersection, no intersection upgrades are required.

6.2 Site Access

6.2.1 Project Peak Hour (6:00am – 7:00am)

An assessment has been undertaken for the intersection of Oxley Highway and the site access during the peak traffic generation hour for the site which occurs when staff access the site from 6:00am to 7:00am.

Figure 19: Intersection Traffic Volumes

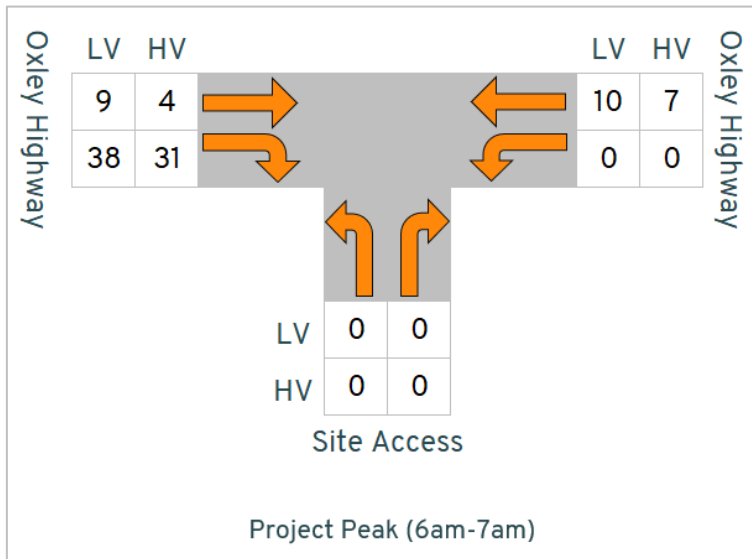


Figure 20 and Table 11 identify the required turning treatments based on the expected traffic volumes at the site access intersection which are outlined in Figure 19 above. The existing surveyed traffic volumes along Oxley Highway from the tube count data in Appendix B have been adjusted by a 1.5% compounding annual growth rate over 3 years to reflect the construction period in 2026.

Figure 20: Figure 3.25 of Austroads Guide to Traffic Management Part 6

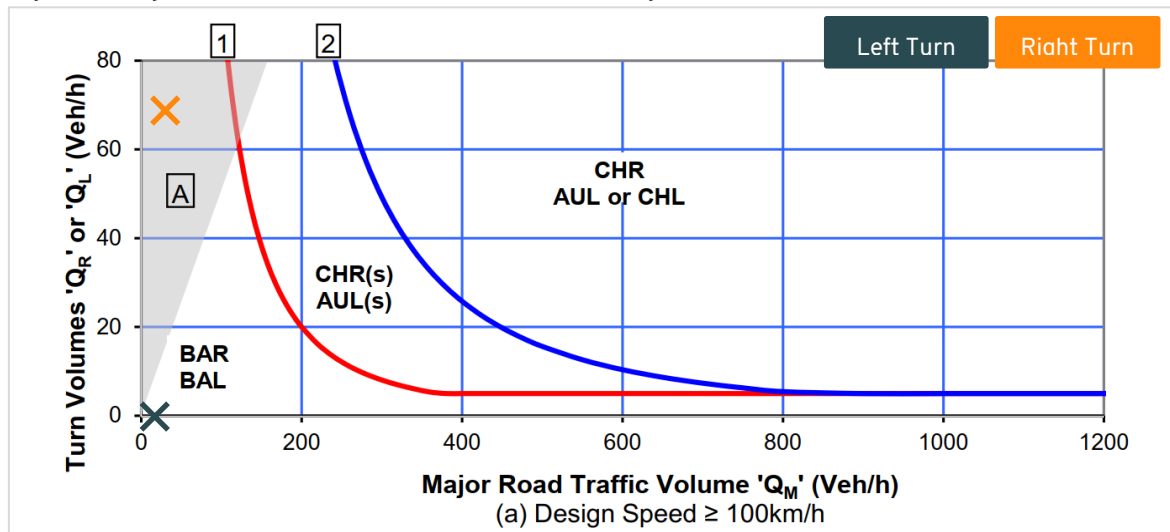


Table 11: Site Peak Hour Turning Volumes – Oxley Highway / Site Access

Turning Treatment	Traffic Volume (vph)		Requirement
	Turn Volume	Major Road	
Right Turn	69	30	BAR
Left Turn	0	17	-

Based on the analysis, the intersection would require a Basic Right Turn (BAR) treatment. It is proposed to provide a BAR turn treatment at the site access. No left turn treatment is proposed based on the following:

- The above assessment indicates that there would be no regular left turn movements and only 17 westbound movements resulting in a low probability of vehicle conflict;
- There are not expected to be any left turn movements at the site access on a typical day given there are no towns to the east that would be suitable for accommodation of staff or provide suitable facilities to supply construction materials;
- The access would have a lower or similar level of left turn traffic to the existing farm access resulting in no change to the current arrangement which is considered to operate in a safe manner; and
- The site access location ensures there is excellent sight distance for following vehicles to see a vehicle turning into the site.

Therefore, the access is expected to operate in a safe manner with the provision of a BAR. It is noted that the provision of no left turn treatment has been confirmed with TfNSW. A summary of the consultation undertaken with TfNSW for the project is provided within Section 8.

6.2.2 Road Network AM Peak Hour (8:00am – 9:00am)

An assessment has also been undertaken for the morning peak hour of the road network which occurs between 8:00am and 9:00am based on the tube count survey data for Oxley Highway provided in Appendix B. The expected traffic volumes at the intersection consist of the sum of the following:

- Existing surveyed traffic volumes along Oxley Highway from the tube count data in Appendix B adjusted by a 1.5% compounding annual growth rate over 3 years to reflect the construction period in 2026;
- Construction traffic movements are expected to be predominantly associated with heavy vehicles with up to 8 vehicle movements per hour. All vehicles would arrive from the west and turn right into the site; and
- For the purposes of the assessment, the same cumulative traffic volumes from nearby developments as outlined in Figure 9 have been conservatively applied.

The resulting traffic volumes are outlined in Figure 21, while Figure 22 and Table 12 identify the required turning treatments.

Figure 21: Intersection Traffic Volumes

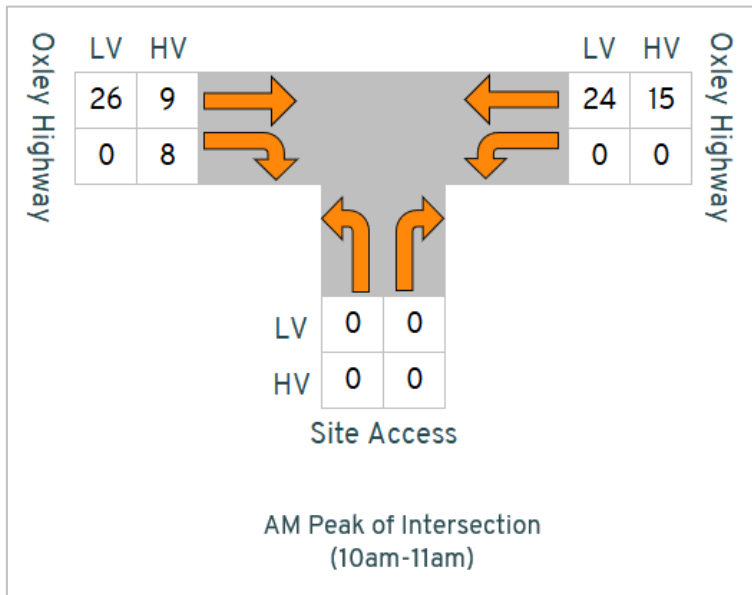


Figure 22: Figure 3.25 of Austroads Guide to Traffic Management Part 6

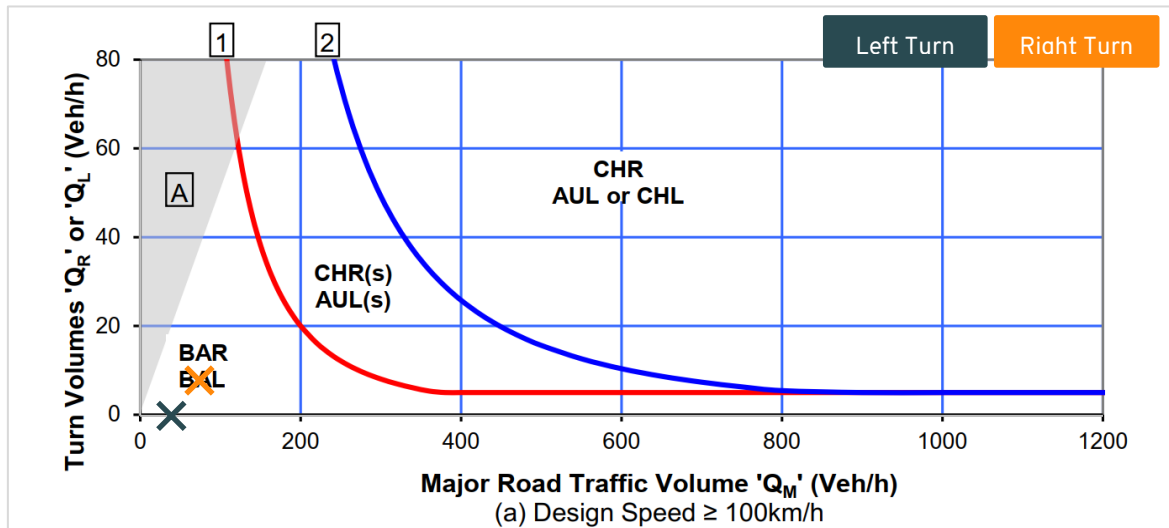


Table 12: Road Network AM Peak Hour Turning Volumes – New England Highway / Oxley Highway

Turning Treatment	Traffic Volume (vph)		Requirement
	Turn Volume	Major Road	
Right Turn	8	74	BAR
Left Turn	0	39	-

Based on the analysis for the morning peak hour of the road network, the intersection would require a BAR treatment. It is proposed to provide a BAR turn treatment at the site access.

6.3 Site Access Design

The design for the site access is provided within Appendix E which shows the BAR turn treatment has been provided in accordance with the Austroads Guidelines.

To confirm the access can accommodate B-Double vehicles a swept path assessment has been provided within Appendix F using the Autodesk Vehicle Tracking software. The assessment demonstrates that the vehicle can suitably turn to/from Oxley Highway with the inclusion of the proposed turn treatment.

It is noted that the provision of swept paths for B-Double vehicles to/from the east has been included following comments from TfNSW. However, it is not anticipated that there would be any truck movements from the east.

Accordingly, it is concluded that the site access has been suitably designed and is able to accommodate the vehicles expected to access the site.

6.4 Sight Distance

Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections specifies the Safe Intersection Sight Distance (SISD) as the minimum sight distance which should be provided along the major road at any intersection. Table 3.1 of the guide specifies the SISD required for various design speeds. Given Oxley Highway has a speed limit of 100km/hr, a design speed of 110km/hr has been adopted which requires an SISD of 300m based on a 2.5 second reaction time.

The available sight distance at the intersection exceeds the requirements of the Austroads Guide given the relatively flat and straight alignment of the road network as shown with Appendix G. Accordingly, vehicles are expected to be able to safely enter the State road network (Oxley Highway) from the site access.

7. Traffic Management Plan

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

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

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

7.1 Information and Communication

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

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

7.2 Signage

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

7.3 Management of Vehicular Access

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. The following code is to be implemented as a measure to maintain safety within the site:

- Utilisation of only the designated transport routes.
- Construction vehicle movements are to abide by finalised schedules as agreed by the relevant authorities.

All heavy vehicle movements are to arrive from the west of the site. Materials will be sourced from nearby regional centres including Tamworth, Kootingal, Moonbi, Nemingha, Uralla and Armidale, all of which are accessed via New England Highway to the west. All drivers are to be advised of the turn restriction (i.e. no left turn in to the site for heavy vehicles) which is to be included in the Driver Code of Conduct as outlined in Section 7.7.

The only township located east of the site within a two hour drive is Walcha which has a small population of around 3,500 people. The workforce, materials and accommodation available within Walcha is expected to be limited. Accordingly, it is anticipated that the light vehicle traffic arriving from the east of the site would be minimal with approximately one left turn movement approaching from the east of the site per day.

This level of traffic is similar to that of a single residential dwelling, and based on the survey data it is expected that there would be only up to 40 hourly westbound movements along the road resulting in a very low probability of vehicle conflict. The site access location ensures there is excellent sight distance for following vehicles to see a vehicle turning into the site from the east.

A swept path assessment is provided in Appendix G which shows that simultaneous turning manoeuvres for B-Doubles can occur in the unlikely event that vehicles are approaching from and departing to the east.

Accordingly, the proposed access arrangements for the site are considered acceptable.

7.4 Emergency Access

All vehicles associated with the Project construction, operation and/or decommissioning will enter and exit the Project Area via the designated site access on Oxley Highway in the northeastern corner of the Project Area (as shown in Figure 1).

There is an existing track which connects with Oxley Highway approximately 2 km west of the designated site access. This track will only be used if required for emergency purposes and does not connect with the proposed internal roads through the site.

There will be no pedestrian or vehicles access from this existing track during construction works. The existing gate will be locked at the commencement of the Project. This gate will remain locked

once the Project is constructed for security purposes and would only be used as required for an emergency response.

Site management documentation during construction and operation, such as the Project specific emergency management plan, will identify this location as 'emergency access only'. There are no internal tracks leading to this access point during operation, which will deter any use except in the case of emergency.

The emergency access would be used during emergency situations such as bushfire or flooding, and emergency procedures will be outlined in the Project's specific emergency management plan. During an emergency the access would be utilised by light vehicles associated with the Project workforce, landowners and emergency response vehicles.

The emergency access gate is set back approximately 19 metres from the edge of Oxley Highway which would allow an emergency vehicle to safely pull off the road when unlocking the gate in an emergency situation.

7.5 Shuttle Buses

Shuttle buses would be used to transport workers to and from the Project Area from the nearby towns of Armidale and Tamworth. Proposed pick-up and drop off locations are outlined below:

- Armidale Showground car park - Dumaresq Street between Kennedy Street and Canambe Street, Armidale.
- Solander Drive car park, Tamworth.

These locations have been selected based on the number of car parks available, close proximity to the State road network, limited impacts on other essential car parking requirements, and distance from residential areas. The Applicant has contacted each relevant Council to seek approval for the proposed shuttle bus pick-up/drop-off locations with the correspondence received from Council provided in Appendix H confirming in-principle support for the proposed locations.

Edwards Coaches and Tamworth Buslines have also confirmed availability to provide the shuttle bus transport services as required to suit the proposed construction work hours for the site. Correspondence from each of the bus service providers is provided in Appendix I. The available fleet of shuttle buses includes vehicles up to a 12.5m rigid bus (57 seat capacity) and it has been assumed that each vehicle would transport an average of approximately 30 staff.

Measures to ensure the shuttle bus program can be practically achieved and monitored will be included within the Construction Environmental Management Plan and/or TMP. Recommended measures include:

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

7.6 On-Site Mitigation Measures

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

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

7.7 Driver Protocols

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

- All vehicles would enter and exit the site in a forward direction;
- All heavy vehicle movements are to arrive from the west and turn right in to the site with drivers to be advised of the turn restriction (i.e. no left turn in to the site for heavy vehicles);
- Heavy vehicle movements should avoid peak school bus times to limit the interaction of larger vehicles and vulnerable road users;
- Safety initiatives for impacts to residential areas and/or school bus zones;
- Utilisation of only the designated transport routes;
- Construction vehicle movements are to abide by finalised schedules as agreed by the relevant authorities; and
- All permits for working within the road reserve must be received from the relevant authority prior to works commencing.

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

8. Road Authority Consultation

8.1 Consultation

The traffic assessment has been undertaken in conjunction with consultation with Transport for NSW and Tamworth Regional Council. A summary of the consultation is provided below.

Table 13: Road Authority Consultation

Stakeholder	Date and Tool	Purpose and Outcome
Tamworth Regional Council	Phone Call: 9 December 2022	- To introduce the Project and describe traffic volumes. During discussion it was noted that the road network seemed to have a lot of capacity, and as such no traffic impacts on the road network are anticipated because of the Project. No changes to the New England Highway or Oxley Highway intersection are being proposed, as the TIA indicated the current design was adequate to support the Project vehicles accessing the Project. - Tamworth Regional Council noted there were currently works going on at the intersection and further engagement in this regard should be undertaken with TfNSW. Council did not raise any concern or issue during engagement.
	Email: 6 November 2023, 5 December 2023	- To request endorsement of proposed pickup locations of the Project's construction workforce within Tamworth LGA for shuttle bus and carpooling. - Tamworth Regional Council supports the use of Solander Drive carpark (Oxley Highway, West Tamworth NSW 2340) as a designated pickup location for shuttle bus and carpooling for the Project's construction workforce. The second proposed location Carter Street/Plain Street car park is not preferred by Tamworth Regional Council due to the relatively high use from about 3.30 pm each afternoon and Saturday mornings. Tamworth Regional Council also offered a third option which is the less formal car park directly underneath the viaduct, between the old Netball Courts and sports fields. - Tamworth Regional Council requested further consultation prior to construction work commencing, to confirm if the proposed pickup locations are still appropriate or whether new alternative carparks are to be considered.
	Submission Comments	Tamworth Regional Council provided a traffic related comment in relation to turn treatments at the intersection of New England Highway and Oxley Highway. No changes are proposed to the turn treatments at the intersection as the current layout is compliant. A response to their comment is provided within Appendix J.

Stakeholder	Date and Tool	Purpose and Outcome
Armidale Regional Council	Email: 6 November 2023, 23 November 2023	- To request endorsement of proposed pickup locations within Armidale LGA for the Project's construction workforce transportation (shuttle buses and carpooling). - Armidale Regional Council recognises the potential cumulative impacts of other renewable energy projects occurring in the region and understands the importance of the provision of alternative transportation option for the construction workforce. As such, Armidale Regional Council has no objections to the use of the Armidale Showground (Dumaresq St, Armidale NSW 2350) as a designated pickup location for shuttle bus and carpooling for the Project's construction workforce. - Armidale Regional Council also advised that the carpark next to the Monckton Aquatic Centre may also be used if there is an event at the showgrounds and it is not being used for patrons and events.
TfNSW	Email and Phone: 14 November 2022, 23 January 2023	- To introduce the Project and describe traffic volumes. During discussion it was noted turn treatments at New England Highway and Oxley Highway intersection and requested whether road upgrades were occurring. - TfNSW advised that that further traffic assessment associated with the Project will occur at the EIS stage in accordance with the SEARs. TfNSW will provide a comprehensive review of the design and provide the best direction forward.
	Email: 10 February 2023	- To provide an update on the Project following receipt of the Project SEARs, seek feedback, identify concerns, and offer online or phone meeting. A Project Layout updated figure was included in the email indicating Project key elements. - TfNSW responded to the letter with no further comments provided prior to EIS submission.
	Submission Comments	- TfNSW provided comments on the Traffic Report and EIS. A subsequent meeting was held with TfNSW and DPE (at the time) on 13 November 2023 to discuss the comments. A response to the comments is provided within Appendix K. - TfNSW also indicated that shuttle buses would be acceptable to transport the majority of the workforce if endorsement of the pick-up/drop-off locations is provided by the relevant Councils and the bus companies are able to confirm the availability of their fleet.
TfNSW	BAL Consultation	- Further information was provided by the Applicant to TfNSW in relation to the provision of no BAL treatment at the site access on 29 November 2023. - TfNSW responded via email on 29 November 2023 confirming acceptance of the provision of no BAL. - A follow up meeting was held to confirm TfNSW comments on 4 December 2023 and it was agreed that no U-turn facility was required as long as B-Double vehicles were shown to be able to suitably access the site to/from the west via swept paths. - Final consultation with TfNSW in relation to the provision of no BAL treatment is provided within Appendix L.

A response has also been provided to the Agency Comments received from TfNSW within Appendix M.

9. Conclusion

Amber Organisation has assessed the traffic impacts of the 255MW solar farm located at 4409-4461 Oxley Highway, Bendemeer. Access to the site is proposed via a new connection with Oxley Highway. Staff are expected to primarily be located in Tamworth and Armidale, with plant expected to be delivered from Port of Newcastle, Port of Brisbane or Port of Melbourne. The above assessment determined the following:

- The site is expected to generate up to 206 vehicle movements per day during peak construction times consisting of 94 truck movements, 36 shuttle bus movements and 76 light vehicle movements;
- The road network can accommodate the traffic generated by the Project during the construction, operation and decommissioning stages. Further, the cumulative impact of the site traffic with nearby developments is expected to be minimal;
- The proposed construction traffic access routes from Port of Newcastle, Port of Brisbane and Port of Melbourne are designated for B-Double vehicles and as such, the access routes are able to accommodate the loads and type of vehicle movements to be generated during construction of the Project;
- It is noted that some oversize and overmass vehicles will be required to deliver larger plant to the site such as the substation transformer and earthmoving equipment. The vehicles are subject to specific road permits that will be applied for by the contractor once the dimensions of the load and the specific delivery vehicle are known. A swept path assessment for an example vehicle, that would be similar to the expected transformer transport vehicle, has been provided which indicates the vehicle is able to travel from the intersection of New England Highway and Oxley Highway to the site without any road upgrades;
- The intersection of Oxley Highway and the site access is proposed to be provided with a BAR turn treatments and is provided with adequate sight distance to allow vehicles to safely enter and exit the State road network; and
- To mitigate the impacts of the development during construction a TMP will be prepared which should include the recommendations provided within this document in order to ameliorate the impacts of site traffic generated along the proposed transport route.

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

Appendix A

Intersection Survey Results



TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

trafficsurvey.com.au



Intersection of New England Hwy and Oxley Hwy, Bendemeer

GPS -30.878525, 151.159948

Date:	Thu 16/02/23
Weather:	Fine
Suburban:	Bendemeer
Customer:	Amber

North:	New England Hwy
East:	Oxley Hwy
South:	New England Hwy
West:	N/A

Survey	AM:	6:00 AM-9:00 AM
Period	PM:	9:00 AM-1:00 PM
Traffic	AM:	8:15 AM-9:15 AM
Peak	PM:	4:45 PM-5:45 PM

All Vehicles

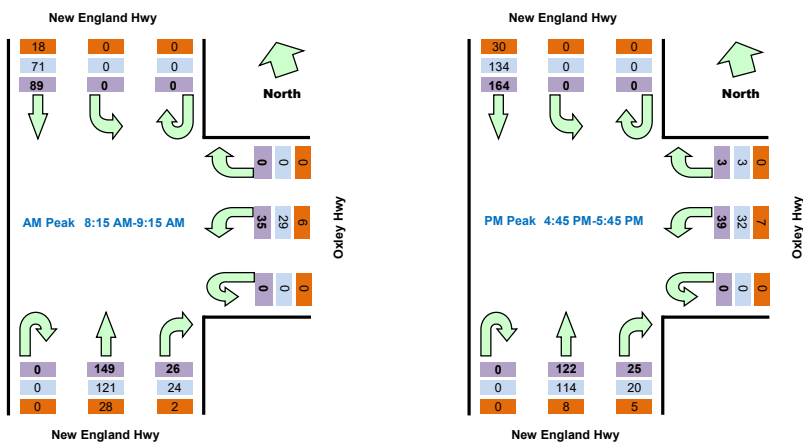
Time		North Approach New England Hwy			East Approach Oxley Hwy			South Approach New England Hwy			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
6:00	6:15	0	6	0	0	0	2	0	6	25	148	
6:15	6:30	0	6	0	0	0	3	0	5	21	156	
6:30	6:45	0	10	0	0	0	2	0	5	22	176	
6:45	7:00	0	9	1	0	0	0	0	5	20	200	
7:00	7:15	0	9	0	0	0	8	0	3	27	242	
7:15	7:30	0	20	2	0	1	6	0	2	24	254	
7:30	7:45	0	16	0	0	0	10	0	9	28	265	
7:45	8:00	0	26	1	0	0	7	0	7	36	284	
8:00	8:15	0	28	0	0	0	1	0	7	23	296	
8:15	8:30	0	15	0	0	0	12	0	4	35	299	Peak
8:30	8:45	0	20	0	0	0	6	0	10	46	291	
8:45	9:00	0	34	0	0	0	10	0	9	36		
9:00	9:15	0	20	0	0	0	7	0	3	32		
9:15	9:30	0	18	0	0	0	8	0	6	26		
15:00	15:15	0	21	0	0	0	10	0	11	38	300	
15:15	15:30	0	37	0	0	0	4	0	12	27	318	
15:30	15:45	0	25	0	0	1	4	0	4	30	325	
15:45	16:00	0	33	0	0	0	9	0	6	28	337	
16:00	16:15	0	50	0	0	0	4	0	3	41	340	
16:15	16:30	0	39	3	0	0	4	0	13	28	349	
16:30	16:45	0	41	1	0	1	7	0	3	23	345	
16:45	17:00	0	31	0	0	0	10	0	7	31	353	Peak
17:00	17:15	0	58	0	0	0	7	0	10	32	340	
17:15	17:30	0	35	0	0	1	11	0	3	33	285	
17:30	17:45	0	40	0	0	2	11	0	5	26	250	
17:45	18:00	0	23	0	0	0	7	0	12	24	211	
18:00	18:15	0	29	0	0	0	6	0	6	11	180	
18:15	18:30	0	26	0	0	0	1	0	8	13		
18:30	18:45	0	18	0	0	0	3	0	3	21		
18:45	19:00	0	15	0	0	0	4	0	3	13		

Peak Time	North Approach New England Hwy			East Approach Oxley Hwy			South Approach New England Hwy			Peak total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
8:15	9:15	0	89	0	0	0	35	0	26	149
16:45	17:45	0	164	0	0	3	39	0	25	122

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

Graphic

Total
Light
Heavy

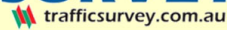


Appendix B

Oxley Highway Tube Count Results



TRANS TRAFFIC SURVEY



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

AUTOMATIC COUNT SUMMARY

Street Name :	Oxley Hwy	Location :	Approx. 4.65km East of New England Hwy
Suburb :	Bendemeer	Start Date :	00:00 Fri 03/November/2023
Machine ID:	YB54ZAK3	Finish Date :	00:00 Fri 10/November/2023
Site ID:	2755	Speed Zone :	100 km/h
Prepared By :	Vo Son Binh	Email:	binh@trafficsurvey.com.au

GPS information		Direction of Travel		
		Both directions	Westbound	Eastbound
Lat	30° 52' 51.39 South			
Long	151° 12' 27.05 East			
Traffic Volume : (Vehicles/Day)	Weekdays Average	630	304	326
	7 Day Average	624	309	315
Weekday AM	08:00	56	32	23
Peak hour start PM	14:00	50	21	29
Speeds : (Km/Hr)	85th Percentile	102.2	100.9	103.8
	Average	94.3	92.7	95.4
Classification % :	Light Vehicles up to 5.5m	62.2%	62.6%	61.8%

Location

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

(Latitude, Longitude) -30.880941, 151.207513



[Speed Data](#)

[Speed Graph](#)

[Speed Bin](#)

[Volume Data](#)

[Volume Graph](#)

[Classification](#)



QUALITY ASSURED COMPANY BY ISO 9001:2015

OH&S SYSTEM CERTIFIED TO ISO 4801:2001

ENVIRONMENT MANAGEMENT SYSTEM CERTIFIED TO ISO14001:2015

Site Oxley Hwy

Direction ▼

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	6/11/2023	7/11/2023	8/11/2023	9/11/2023	3/11/2023	4/11/2023	5/11/2023	Total	Average	Total	Average	Total	Average
AM Peak	10:00	08:00	08:00	11:00	09:00	11:00	11:00	N/A	11:00	N/A	09:00	N/A	11:00
PM Peak	14:00	14:00	15:00	16:00	17:00	12:00	13:00	N/A	14:00	N/A	14:00	N/A	13:00
00:00	0	1	0	2	0	1	1	5	1	3	1	2	1
01:00	0	0	0	0	1	0	1	2	0	1	0	1	1
02:00	0	1	0	0	1	0	0	2	0	2	0	0	0
03:00	1	2	0	0	0	0	1	4	1	3	1	1	1
04:00	2	3	3	5	1	1	0	15	2	14	3	1	1
05:00	8	5	2	2	5	5	1	28	4	22	4	6	3
06:00	13	12	19	12	9	12	3	80	11	65	13	15	8
07:00	24	15	11	18	18	22	12	120	17	86	17	34	17
08:00	23	26	24	23	21	23	14	154	22	117	23	37	19
09:00	27	17	21	18	42	22	14	161	23	125	25	36	18
10:00	34	18	19	14	31	17	27	160	23	116	23	44	22
11:00	21	18	21	24	30	24	31	169	24	114	23	55	28
12:00	26	16	13	20	25	25	26	151	22	100	20	51	26
13:00	25	25	19	19	25	25	29	167	24	113	23	54	27
14:00	28	26	25	28	37	20	25	189	27	144	29	45	23
15:00	23	21	29	23	36	23	24	179	26	132	26	47	24
16:00	25	16	16	35	31	22	18	163	23	123	25	40	20
17:00	23	13	17	27	49	14	25	168	24	129	26	39	20
18:00	12	19	25	18	29	8	12	123	18	103	21	20	10
19:00	10	7	8	11	10	9	9	64	9	46	9	18	9
20:00	5	5	6	11	4	4	4	39	6	31	6	8	4
21:00	6	4	5	7	5	4	2	33	5	27	5	6	3
22:00	4	3	1	1	1	1	2	13	2	10	2	3	2
23:00	2	1	1	1	0	2	0	7	1	5	1	2	1
Total	342	274	285	319	411	284	281	2196	315	1631	326	565	288
% Heavy	39.18%	41.97%	41.40%	36.68%	36.74%	37.32%	33.45%	38.02%		38.93%		35.40%	

Site Oxley Hwy

Direction ▼

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	6/11/2023	7/11/2023	8/11/2023	9/11/2023	3/11/2023	4/11/2023	5/11/2023	Total	Average	Total	Average	Total	Average
AM Peak	10:00	08:00	08:00	11:00	08:00	08:00	11:00	N/A	08:00	N/A	08:00	N/A	11:00
PM Peak	12:00	12:00	12:00	14:00	17:00	12:00	15:00	N/A	14:00	N/A	12:00	N/A	14:00
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	1	1	0	0	2	0	2	0	0	0
03:00	0	1	2	1	1	1	0	6	1	5	1	1	1
04:00	2	1	1	1	2	1	0	8	1	7	1	1	1
05:00	8	5	3	5	4	1	3	29	4	25	5	4	2
06:00	17	8	4	2	7	7	0	45	6	38	8	7	4
07:00	31	23	21	15	25	14	8	137	20	115	23	22	11
08:00	32	36	30	31	33	34	7	203	29	162	32	41	21
09:00	22	13	25	18	20	27	15	140	20	98	20	42	21
10:00	38	23	13	22	27	30	11	164	23	123	25	41	21
11:00	24	20	23	35	20	27	24	173	25	122	24	51	26
12:00	37	26	22	15	20	30	32	182	26	120	24	62	31
13:00	24	22	16	20	22	16	48	168	24	104	21	64	32
14:00	26	15	22	25	19	28	55	190	27	107	21	83	42
15:00	15	15	17	22	24	19	60	172	25	93	19	79	40
16:00	25	16	17	18	15	21	30	142	20	91	18	51	26
17:00	24	13	12	20	41	15	26	151	22	110	22	41	21
18:00	16	17	16	22	21	10	16	118	17	92	18	26	13
19:00	11	7	8	12	19	2	7	66	9	57	11	9	5
20:00	5	4	7	7	6	3	5	37	5	29	6	8	4
21:00	4	3	2	3	0	0	3	15	2	12	2	3	2
22:00	5	2	0	1	2	3	1	14	2	10	2	4	2
23:00	0	3	0	2	0	0	1	6	1	5	1	1	1
Total	366	273	261	298	329	289	352	2168	309	1527	304	641	327
% Heavy	40.71%	42.12%	36.78%	40.60%	35.26%	33.56%	33.81%	37.50%		39.10%		33.70%	

Site Oxley Hwy

Direction Both directions ▼

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	6/11/2023	7/11/2023	8/11/2023	9/11/2023	3/11/2023	4/11/2023	5/11/2023	Total	Average	Total	Average	Total	Average
AM Peak	10:00	08:00	08:00	11:00	09:00	08:00	11:00	N/A	08:00	N/A	08:00	N/A	11:00
PM Peak	12:00	13:00	14:00	14:00	17:00	12:00	15:00	N/A	14:00	N/A	14:00	N/A	14:00
00:00	0	1	0	2	0	1	1	5	1	3	1	2	1
01:00	0	0	0	0	1	0	1	2	0	1	0	1	1
02:00	0	1	0	1	2	0	0	4	1	4	1	0	0
03:00	1	3	2	1	1	1	1	10	1	8	2	2	1
04:00	4	4	4	6	3	2	0	23	3	21	4	2	1
05:00	16	10	5	7	9	6	4	57	8	47	9	10	5
06:00	30	20	23	14	16	19	3	125	18	103	21	22	11
07:00	55	38	32	33	43	36	20	257	37	201	40	56	28
08:00	55	62	54	54	54	57	21	357	51	279	56	78	39
09:00	49	30	46	36	62	49	29	301	43	223	45	78	39
10:00	72	41	32	36	58	47	38	324	46	239	48	85	43
11:00	45	38	44	59	50	51	55	342	49	236	47	106	53
12:00	63	42	35	35	45	55	58	333	48	220	44	113	57
13:00	49	47	35	39	47	41	77	335	48	217	43	118	59
14:00	54	41	47	53	56	48	80	379	54	251	50	128	64
15:00	38	36	46	45	60	42	84	351	50	225	45	126	63
16:00	50	32	33	53	46	43	48	305	44	214	43	91	46
17:00	47	26	29	47	90	29	51	319	46	239	48	80	40
18:00	28	36	41	40	50	18	28	241	34	195	39	46	23
19:00	21	14	16	23	29	11	16	130	19	103	21	27	14
20:00	10	9	13	18	10	7	9	76	11	60	12	16	8
21:00	10	7	7	10	5	4	5	48	7	39	8	9	5
22:00	9	5	1	2	3	4	3	27	4	20	4	7	4
23:00	2	4	1	3	0	2	1	13	2	10	2	3	2
Total	708	547	546	617	740	573	633	4364	625	3158	633	1206	607
% Heavy	39.97%	42.05%	39.19%	38.57%	36.08%	35.43%	33.65%	37.76%		39.01%		34.49%	

Appendix C

SIDRA Results

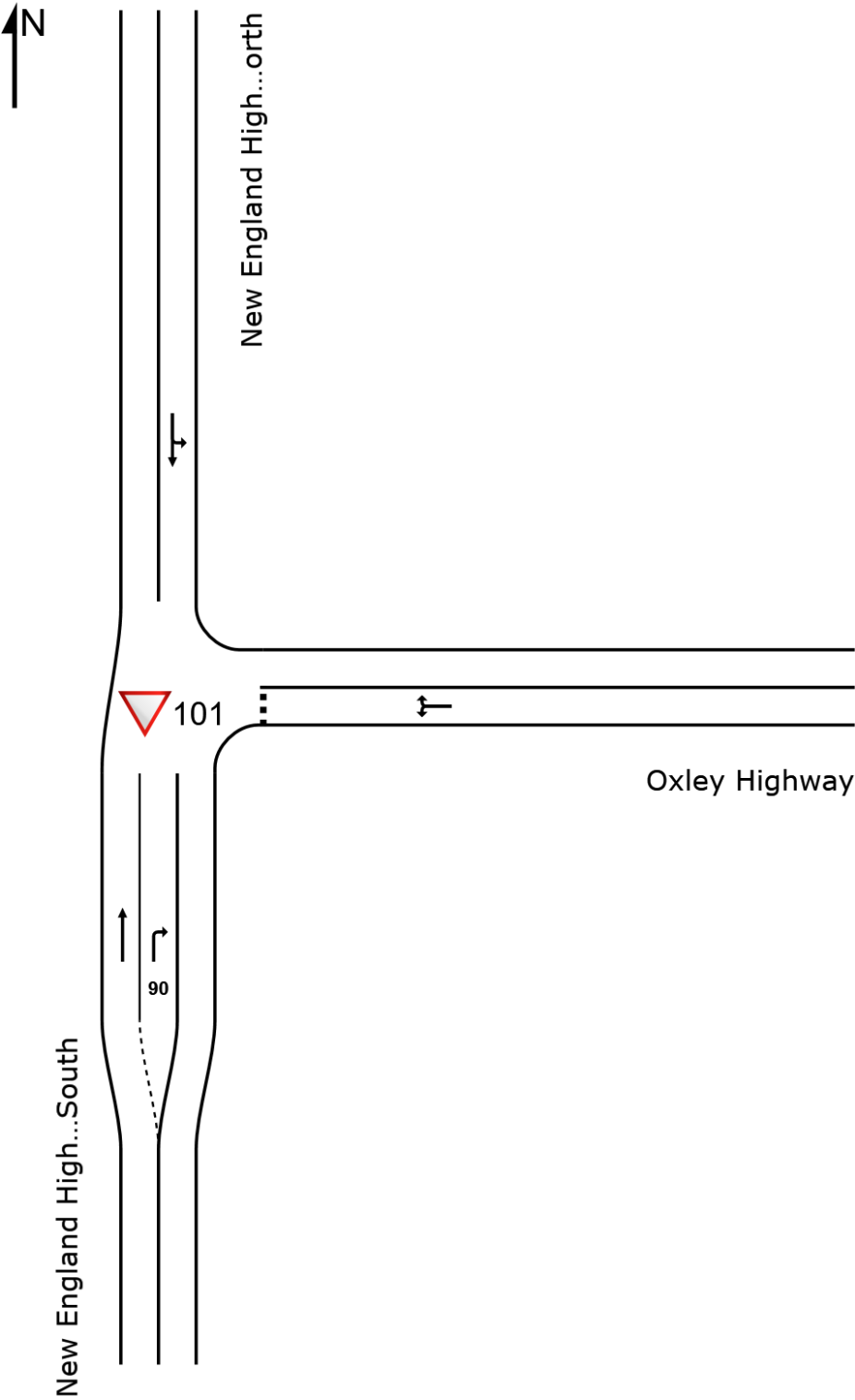


SITE LAYOUT

▼ Site: 101 [New England Highway / Oxley Highway - AM Peak
Project (6am-7am) (Site Folder: General)]

AM Peak - Peak Construction Period (6:00am-7:00am)
Site Category: (None)
Give-Way (Two-Way)

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



MOVEMENT SUMMARY

▼ Site: 101 [New England Highway / Oxley Highway - AM Peak
Project (6am-7am) (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

AM Peak - Peak Construction Period (6:00am-7:00am)

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh Dist] m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: New England Highway South															
2	T1	All MCs	137	28.5	137	28.5	0.082	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
3	R2	All MCs	75	40.8	75	40.8	0.054	6.3	LOS A	0.2	2.4	0.19	0.56	0.19	50.4
Approach			212	32.8	212	32.8	0.082	2.2	NA	0.2	2.4	0.07	0.20	0.07	56.2
East: Oxley Highway															
4	L2	All MCs	7	42.9	7	42.9	0.007	6.2	LOS A	0.0	0.3	0.15	0.53	0.15	50.7
6	R2	All MCs	1	0.0	1	0.0	0.007	7.1	LOS A	0.0	0.3	0.15	0.53	0.15	52.2
Approach			8	37.5	8	37.5	0.007	6.3	LOS A	0.0	0.3	0.15	0.53	0.15	50.9
North: New England Highway North															
7	L2	All MCs	21	40.0	21	40.0	0.040	6.0	LOS A	0.0	0.0	0.00	0.20	0.00	54.1
8	T1	All MCs	41	33.3	41	33.3	0.040	0.0	LOS A	0.0	0.0	0.00	0.20	0.00	58.3
Approach			62	35.6	62	35.6	0.040	2.0	NA	0.0	0.0	0.00	0.20	0.00	56.8
All Vehicles			282	33.6	282	33.6	0.082	2.3	NA	0.2	2.4	0.05	0.21	0.05	56.2

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

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: C:\Users\olive\OneDrive - Amber Organisation Pty Ltd\Amber\Jobs\382 - Bendemeer Renewable Energy Hub - Solar Farm\Traffic Modelling\SIDRA\382 - NEH OH 240124.sip9

MOVEMENT SUMMARY

Site: 101 [New England Highway / Oxley Highway - PM Peak (5pm-6pm) (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

PM Peak - Peak Construction Period (5:00pm-6:00pm)

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh Dist] m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: New England Highway South															
2	T1	All MCs	134	11.8	134	11.8	0.073	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
3	R2	All MCs	33	12.9	33	12.9	0.024	6.5	LOS A	0.1	0.8	0.34	0.57	0.34	51.2
Approach			166	12.0	166	12.0	0.073	1.3	NA	0.1	0.8	0.07	0.11	0.07	58.0
East: Oxley Highway															
4	L2	All MCs	92	35.6	92	35.6	0.128	7.1	LOS A	0.5	4.7	0.40	0.63	0.40	50.1
6	R2	All MCs	24	34.8	24	34.8	0.128	10.2	LOS B	0.5	4.7	0.40	0.63	0.40	49.9
Approach			116	35.5	116	35.5	0.128	7.8	LOS A	0.5	4.7	0.40	0.63	0.40	50.1
North: New England Highway North															
7	L2	All MCs	1	0.0	1	0.0	0.122	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	57.4
8	T1	All MCs	212	20.4	212	20.4	0.122	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			213	20.3	213	20.3	0.122	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles			495	21.1	495	21.1	0.128	2.3	NA	0.5	4.7	0.12	0.19	0.12	56.7

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

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [New England Highway / Oxley Highway - AM Peak Intersection (8:15am-9:15am) (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

AM Peak - Peak Intersection Period (8:15am-9:15am)

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: New England Highway South															
2	T1	All MCs	204	21.1	204	21.1	0.118	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	35	24.2	35	24.2	0.024	6.2	LOS A	0.1	0.9	0.24	0.55	0.24	51.0
Approach			239	21.6	239	21.6	0.118	0.9	NA	0.1	0.9	0.03	0.08	0.03	58.4
East: Oxley Highway															
4	L2	All MCs	38	16.7	38	16.7	0.029	6.1	LOS A	0.1	0.9	0.22	0.54	0.22	51.5
6	R2	All MCs	1	0.0	1	0.0	0.029	7.8	LOS A	0.1	0.9	0.22	0.54	0.22	52.0
Approach			39	16.2	39	16.2	0.029	6.2	LOS A	0.1	0.9	0.22	0.54	0.22	51.6
North: New England Highway North															
7	L2	All MCs	2	100.0	2	100.0	0.064	6.7	LOS A	0.0	0.0	0.00	0.01	0.00	52.8
8	T1	All MCs	105	24.0	105	24.0	0.064	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
Approach			107	25.5	107	25.5	0.064	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.6
All Vehicles			385	22.1	385	22.1	0.118	1.2	NA	0.1	0.9	0.04	0.11	0.04	58.0

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

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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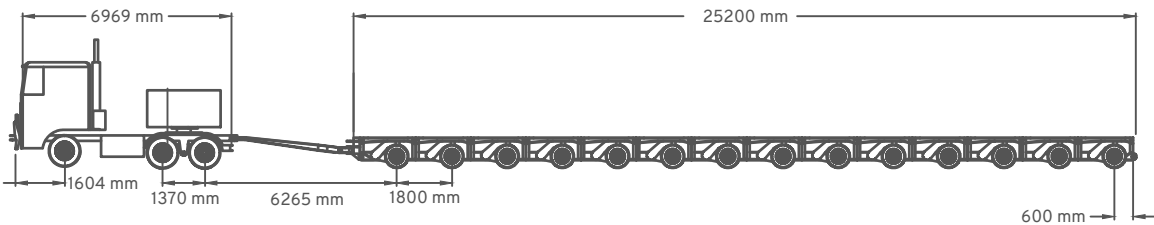
Project: C:\Users\olive\OneDrive - Amber Organisation Pty Ltd\Amber\Jobs\382 - Bendemeer Renewable Energy Hub - Solar Farm\Traffic

Modelling\SIDRA\382 - NEH OH 240124.sip9

Appendix D

OSOM Route – Port of Melbourne

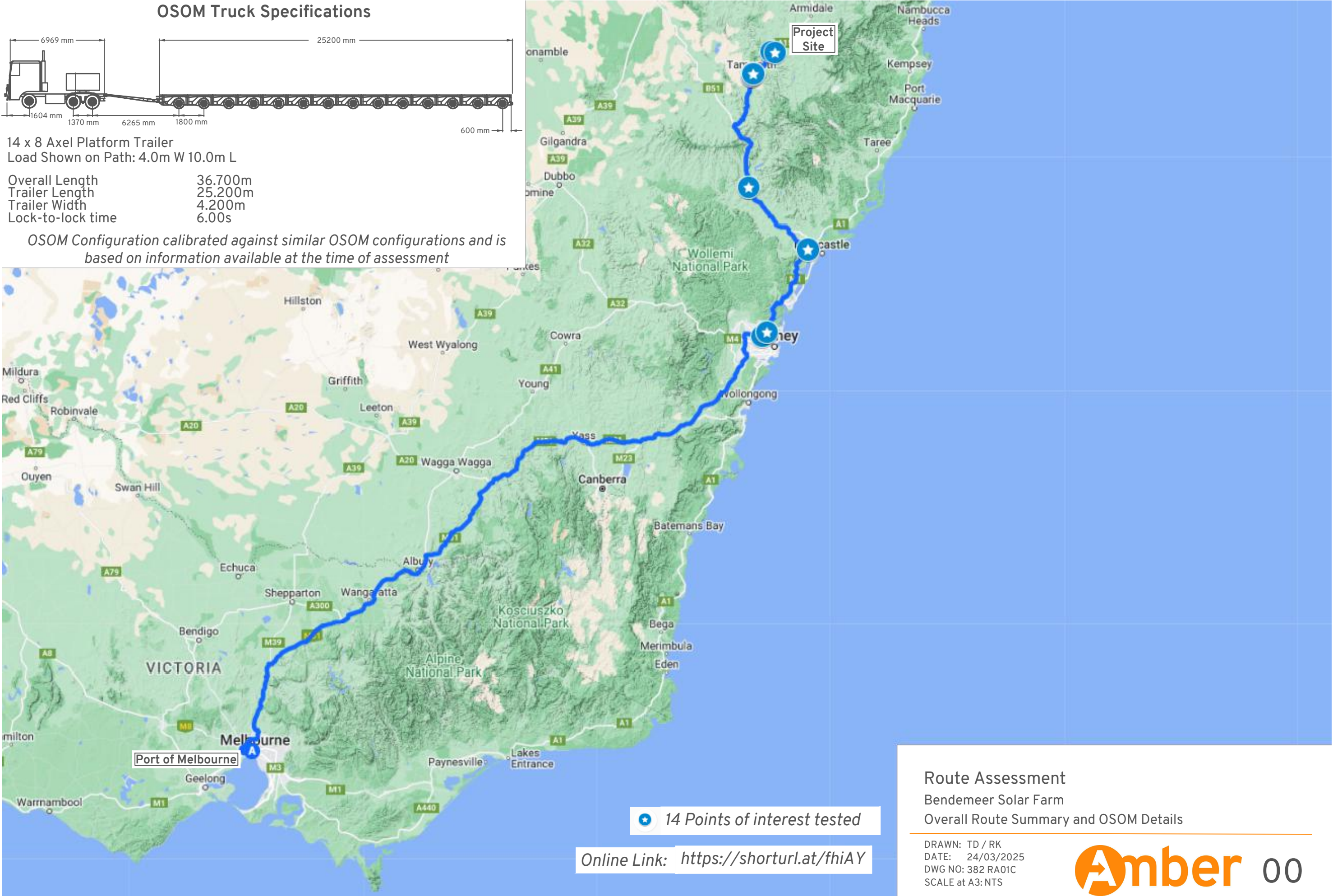
OSOM Truck Specifications



14 x 8 Axel Platform Trailer
Load Shown on Path: 4.0m W 10.0m L

Overall Length 36.700m
Trailer Length 25.200m
Trailer Width 4.200m
Lock-to-lock time 6.00s

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

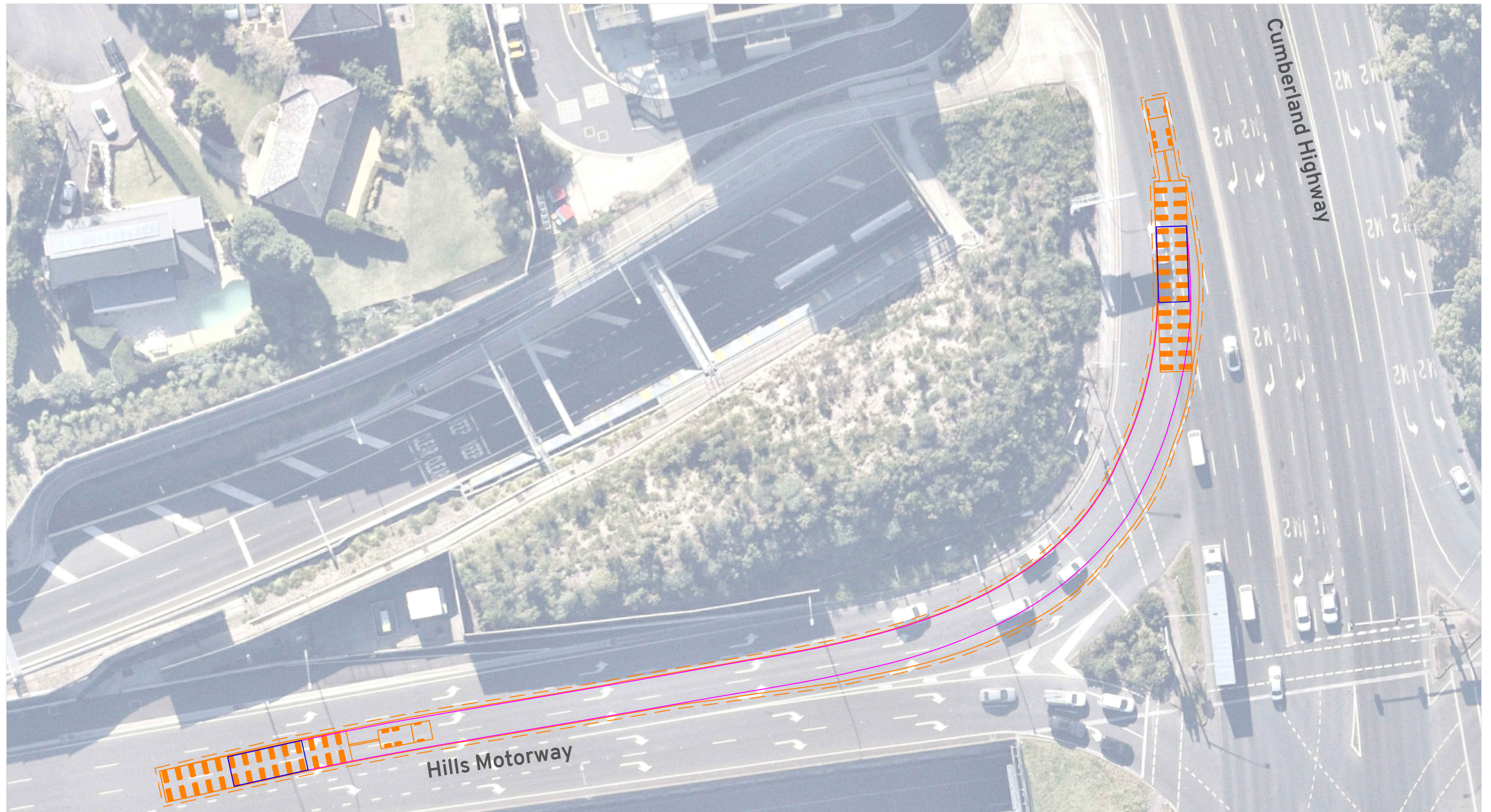


Route Assessment
Bendemeer Solar Farm
Overall Route Summary and OSOM Details

DRAWN: TD / RK
DATE: 24/03/2025
DWG NO: 382 RA01C
SCALE at A3: NTS



Online Link: <https://shorturl.at/fhiAY>



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>

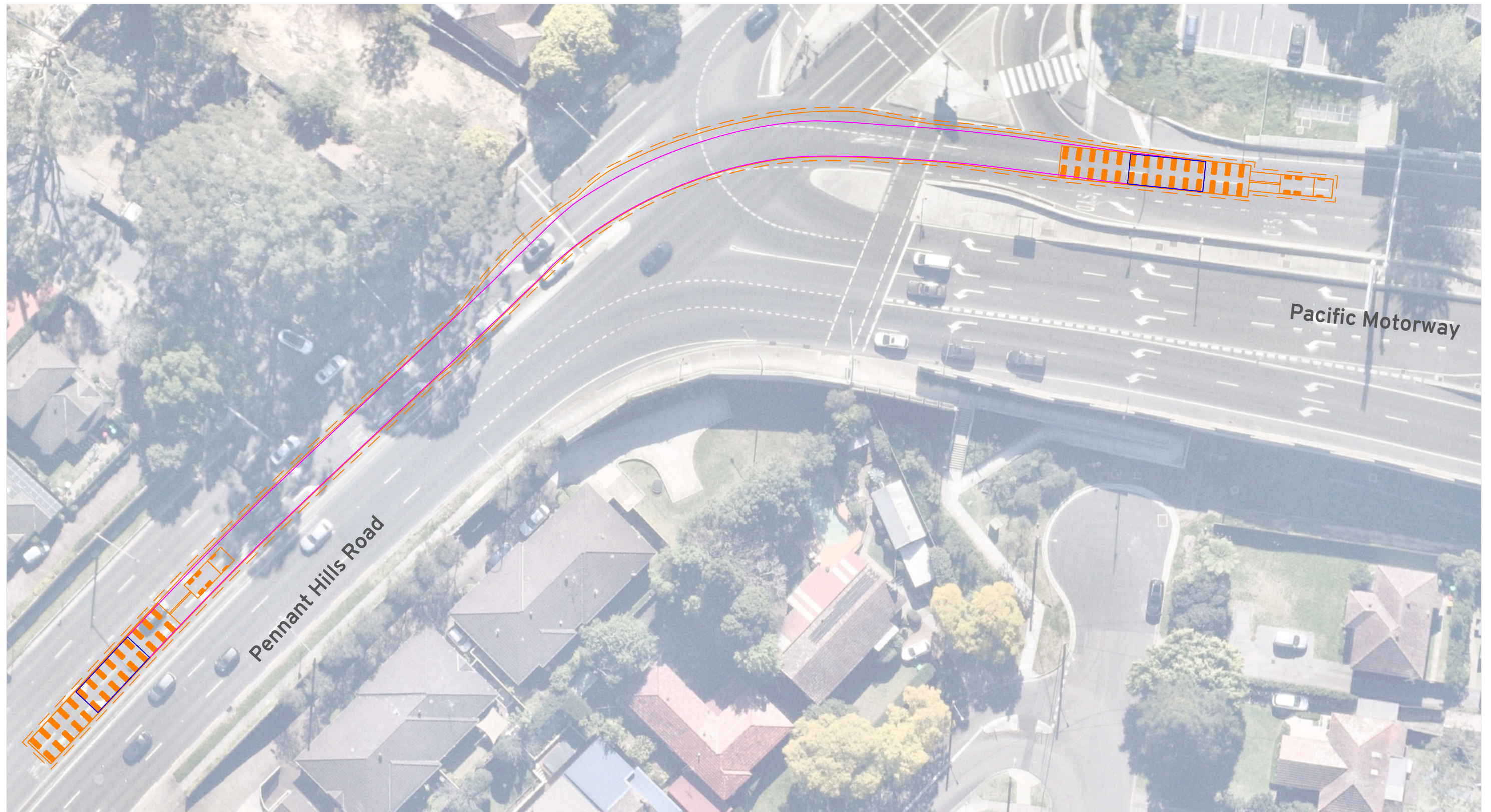
Route Assessment

Bendemeer Solar Farm

Swept Path Assessment

DRAWN: TD / RK
DATE: 24/03/2025
DWG NO: 382 RA01C
SCALE at A3: 1:500





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>

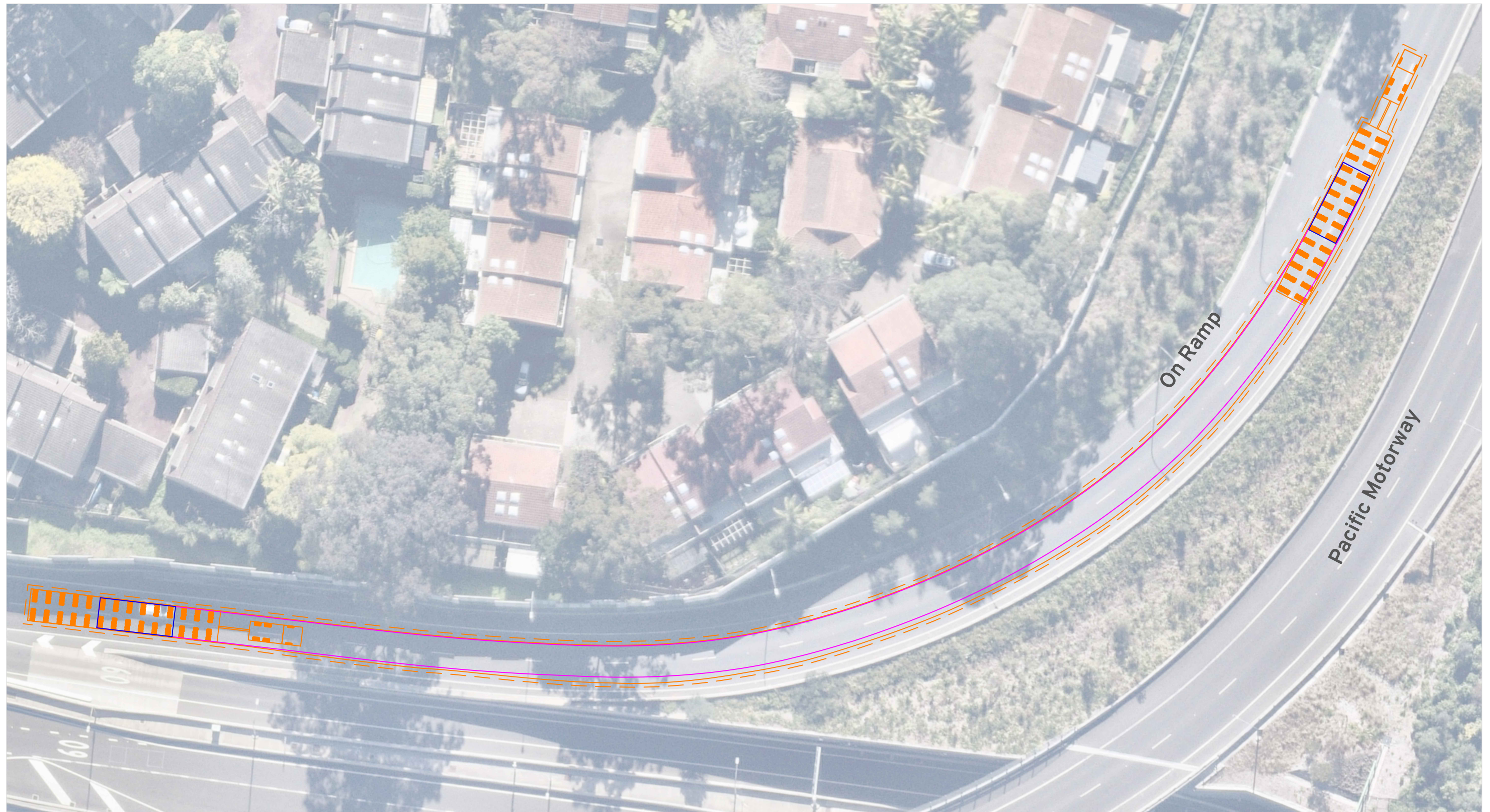
Route Assessment

Bendemeer Solar Farm

Swept Path Assessment

DRAWN: TD / RK
DATE: 24/03/2025
DWG NO: 382 RA01C
SCALE at A3: 1:500





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

Bendemeer Solar Farm
Swept Path Assessment



DRAWN: TD / RK
DATE: 24/03/2025
DWG NO: 382 RA01C
SCALE at A3: 1:500



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
Bendemeer Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 24/03/2025
DWG NO: 382 RA01C
SCALE at A3: 1:1000



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:

Muswellbrook NSW 2333

<https://maps.app.goo.gl/sxuyfckarqxrX9ta6>

Route Assessment

Bendemeer Solar Farm

Swept Path Assessment



DRAWN: TD / RK
DATE: 24/03/2025
DWG NO: 382 RA01C
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

Use kerb guards on mountable roundabout section

Location:

Muswellbrook NSW 2333

<https://maps.app.goo.gl/7f7HWQf126pnZgqU9>

Route Assessment

Bendemeer Solar Farm

Swept Path Assessment



DRAWN: TD / RK
DATE: 24/03/2025
DWG NO: 382 RA01C
SCALE at A3: 1:500



Vehicle Envelope
500mm Clearance
Load Outlines
Load Path

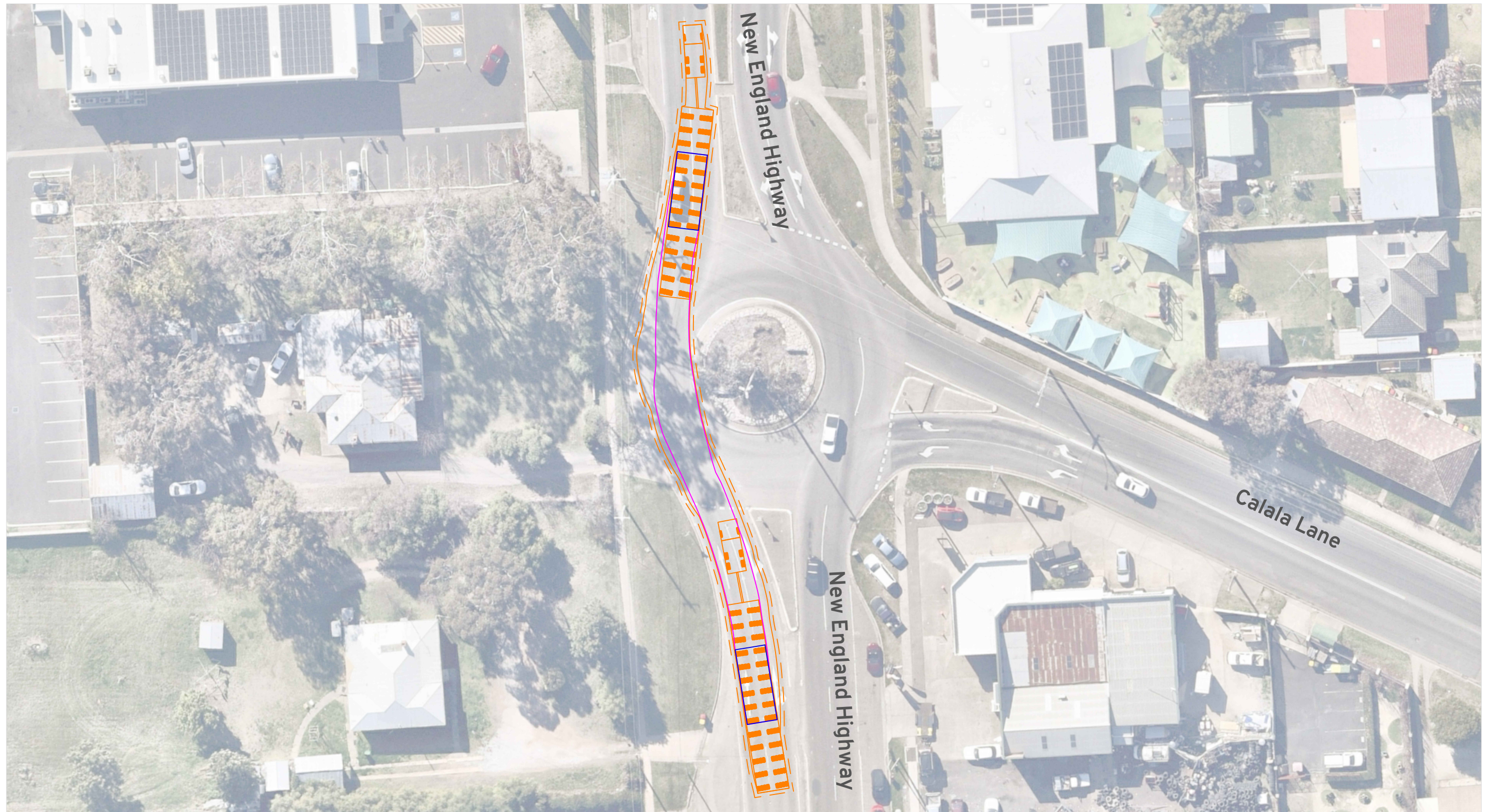
Notes:
Spotter/s to assist to ensure load is clear of infrastructure
Escorts to control traffic as required

Location:
Hillvue NSW 2340
<https://maps.app.goo.gl/gJT3EycpPdQe7Kkx8>



Route Assessment
Bendemeer Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 24/03/2025
DWG NO: 382 RA01C
SCALE at A3: 1:500



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

Use kerb guards on mountable roundabout section

Location:

Hillvue NSW 2340

<https://maps.app.goo.gl/pWc8Srv2mYyxVjNq8>

Route Assessment

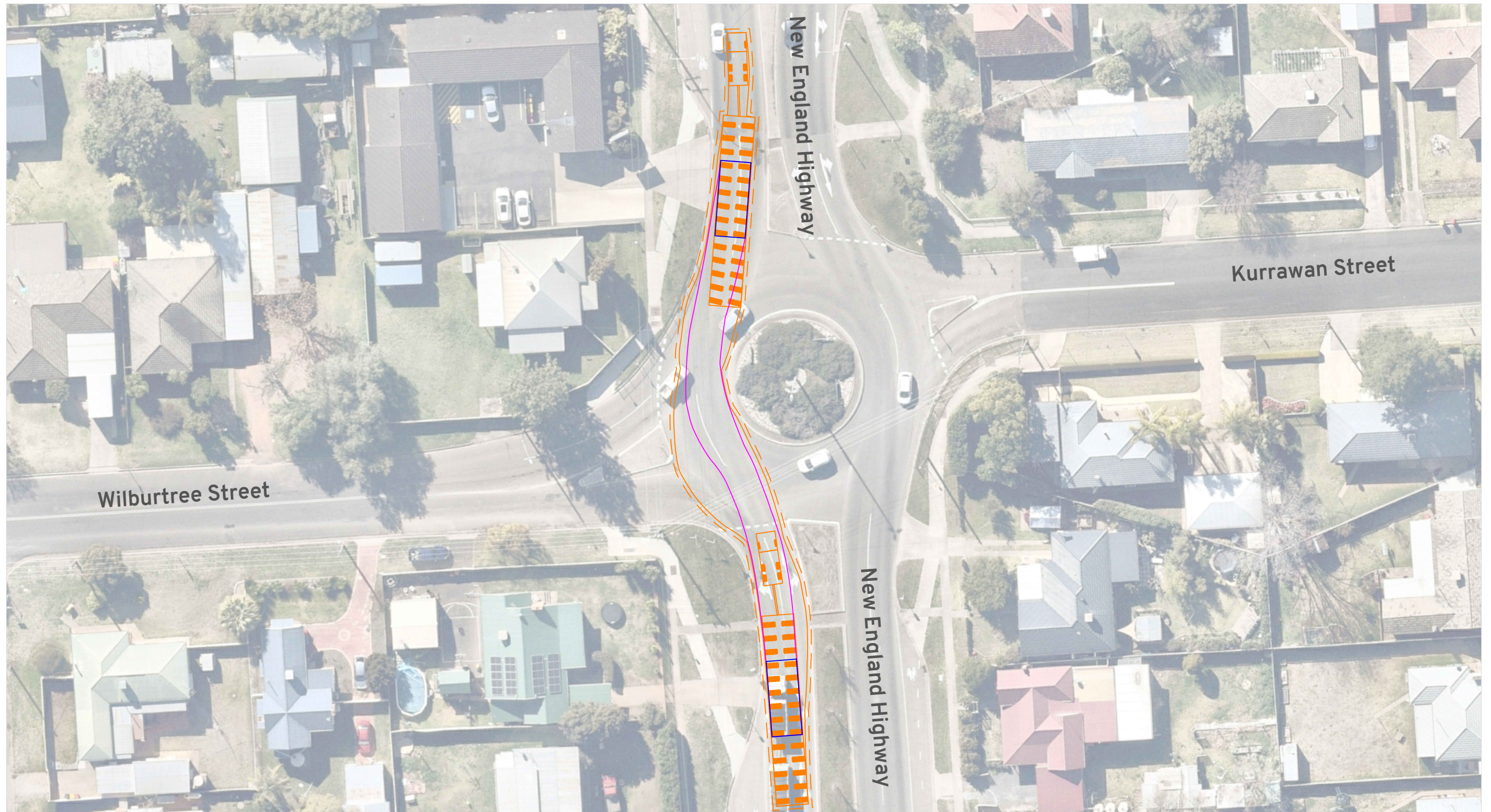
Bendemeer Solar Farm

Swept Path Assessment



DRAWN: TD / RK
DATE: 24/03/2025
DWG NO: 382 RA01C
SCALE at A3: 1:500

Amber 08



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:

South Tamworth NSW 2340

<https://maps.app.goo.gl/pGkzK2Tzj5hKmJXo9>

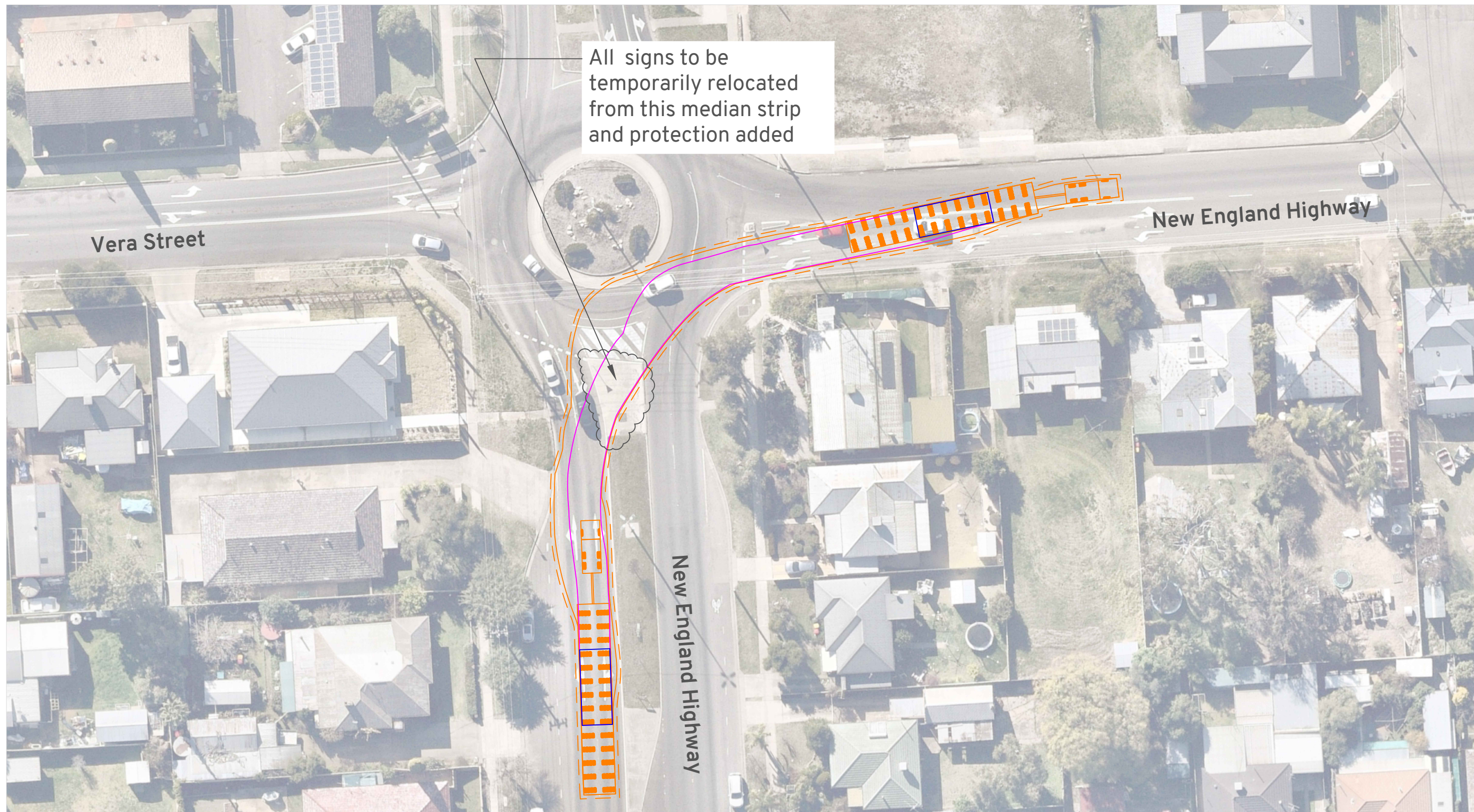
Route Assessment

Bendemeer Solar Farm

Swept Path Assessment

DRAWN: TD / RK
DATE: 24/03/2025
DWG NO: 382 RA01C
SCALE at A3: 1:500





Vehicle Envelope

500mm Clearance

Load Outlines

Load Path

Notes:

Escorts to facilitate use of opposing traffic lanes
Spotter/s to assist to ensure load is clear of infrastructure

Signs to be temporarily relocated

Median strip to have extra hardstand added

Location:

South Tamworth NSW 2340

<https://maps.app.goo.gl/XNk3vxb9DPCKfMX4A>

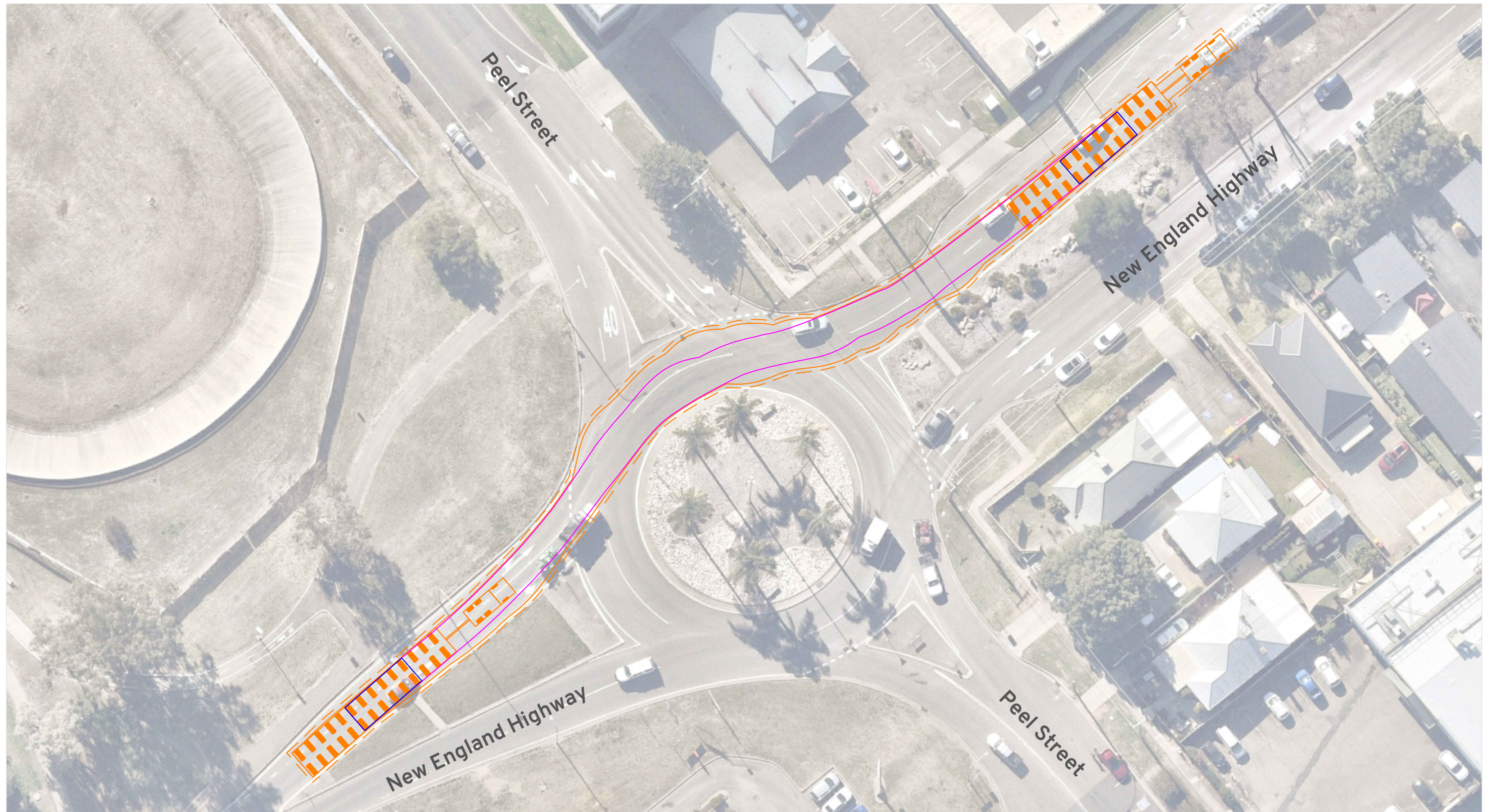
Route Assessment

Bendemeer Solar Farm

Swept Path Assessment

DRAWN: TD / RK
DATE: 24/03/2025
DWG NO: 382 RA01C
SCALE at A3: 1:500





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:

Tamworth NSW 2340

<https://maps.app.goo.gl/3nnQctEAUWmaV4Gb9>

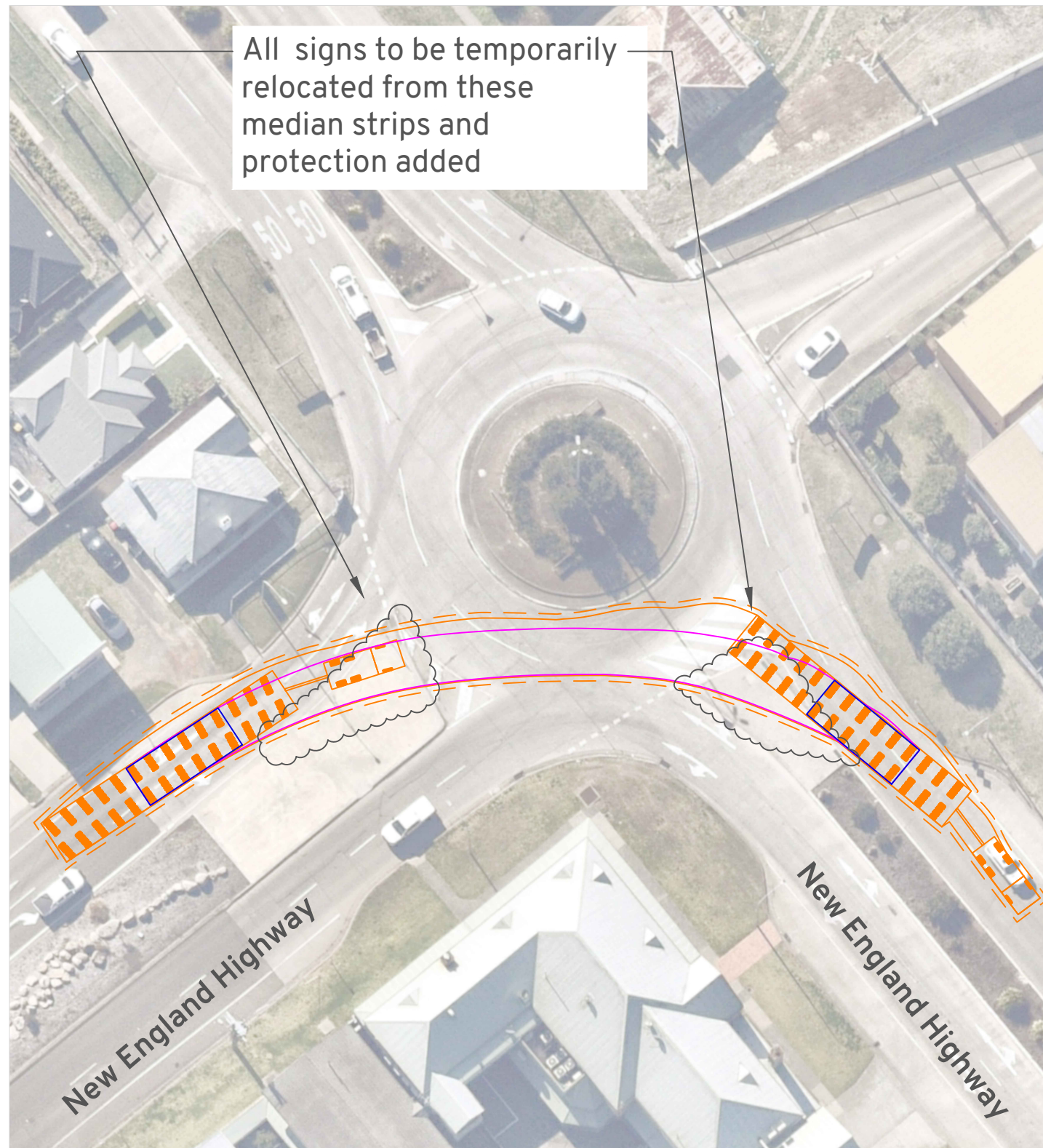
Route Assessment

Bendemeer Solar Farm

Swept Path Assessment

DRAWN: TD / RK
DATE: 24/03/2025
DWG NO: 382 RA01C
SCALE at A3: 1:500





Option 1

Vehicle Envelope
500mm Clearance
Load Outlines
Load Path

Notes:

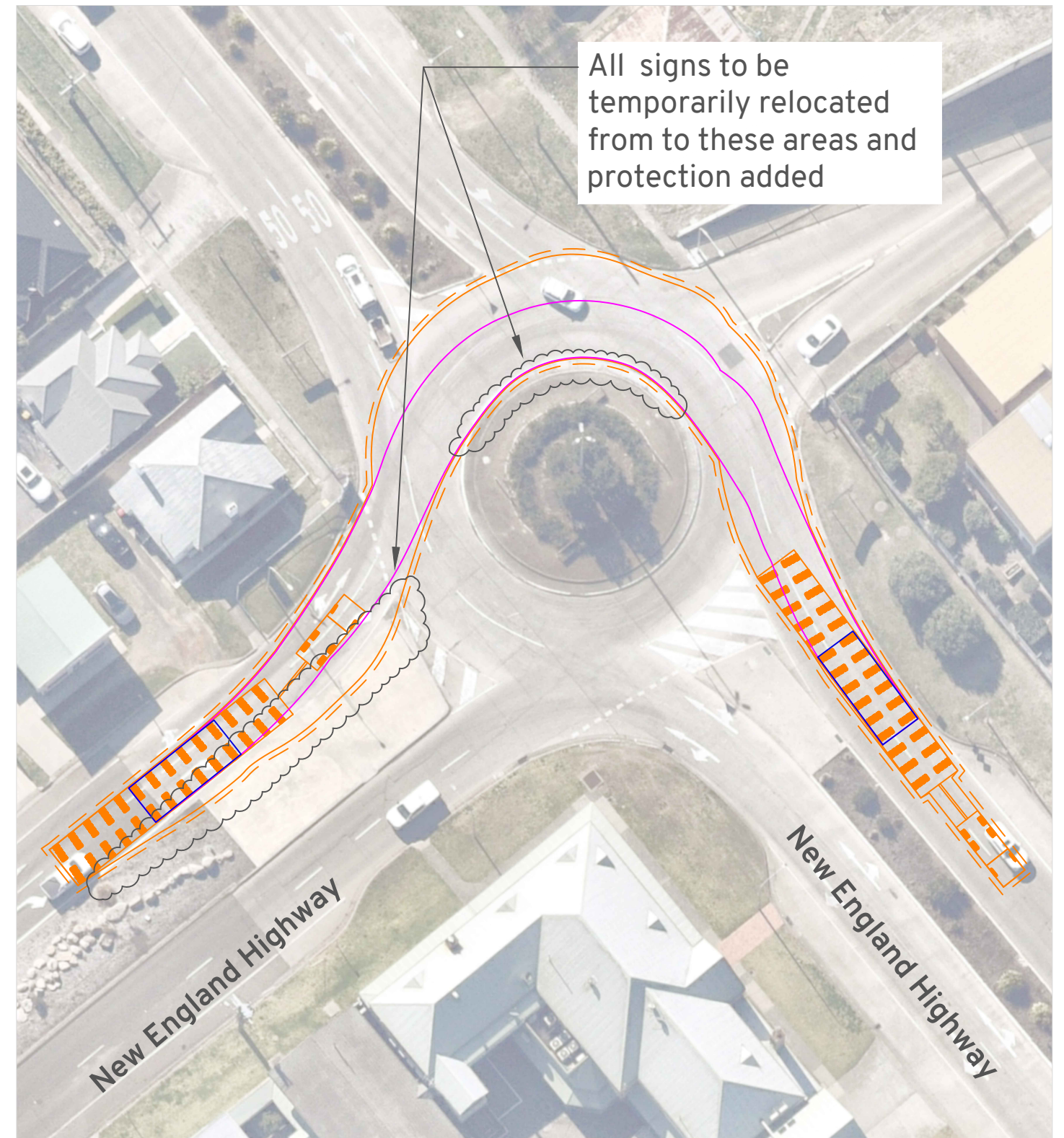
Option 1:
Escorts to facilitate use of opposing traffic lanes
Spotter/s to assist to ensure load is clear of infrastructure
Signs to be temporarily relocated
Median strips to have extra hardstand added

Option 2:

Spotter/s to assist to ensure load is clear of infrastructure
Escorts to control traffic as required
Signs to be temporarily relocated
Median and nature strips to have extra hardstand added

Location:

South Tamworth
NSW 2340
<https://maps.app.goo.gl/xFButLKrDSTDUi2ZA>



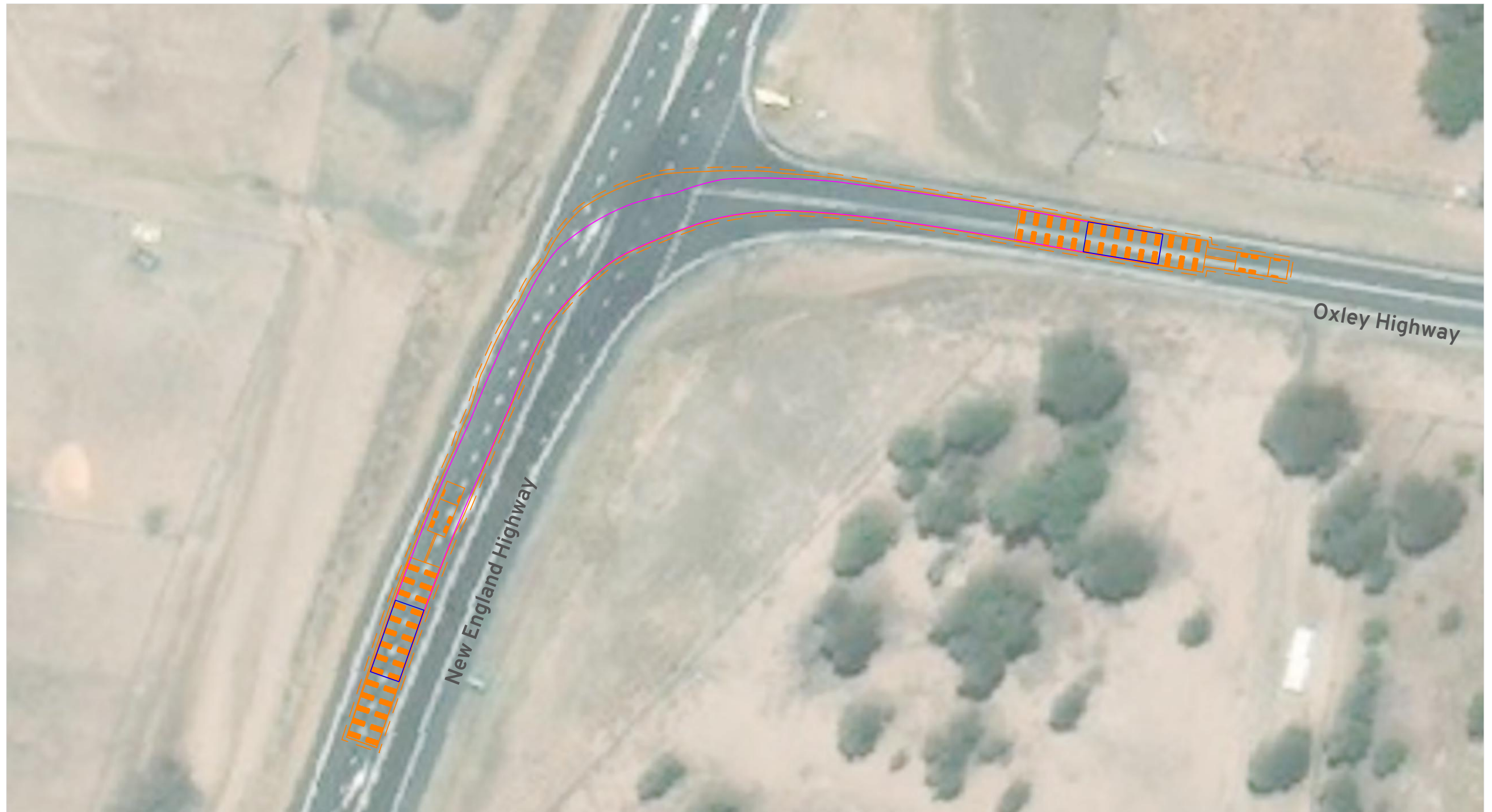
Option 2

Route Assessment

Bendemeer Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 24/03/2025
DWG NO: 382 RA01C
SCALE at A3: 1:500





Vehicle Envelope
500mm Clearance
Load Outlines
Load Path

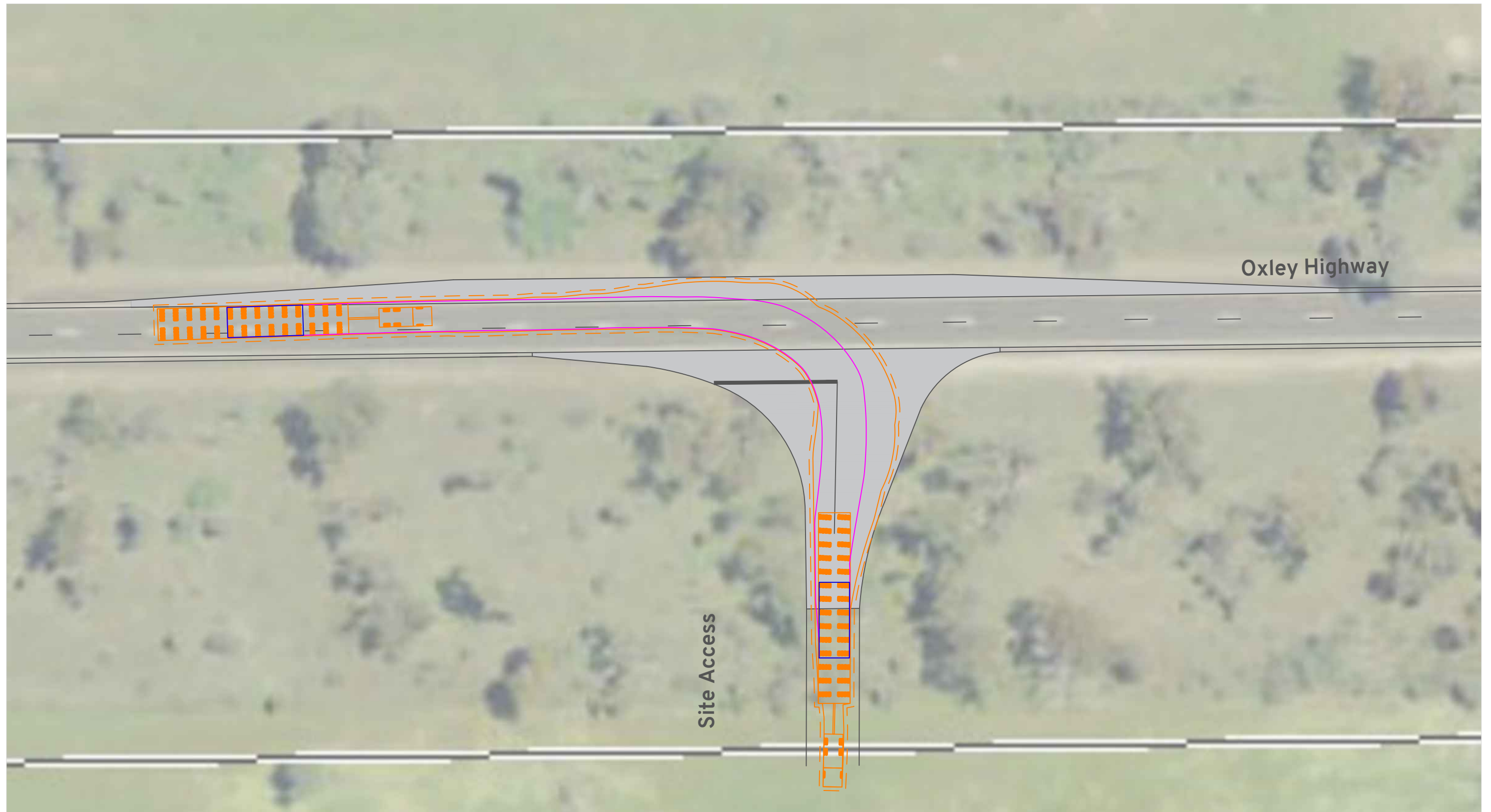
Notes:
Escorts to control traffic as required

Location:
Bendemeer NSW 2355
<https://maps.app.goo.gl/NBphtVM9JU4N9uf4A>



Route Assessment
Bendemeer Solar Farm
Swept Path Assessment

DRAWN: TD / RK
DATE: 24/03/2025
DWG NO: 382 RA01C
SCALE at A3: 1:500



Vehicle Envelope
 500mm Clearance
 Load Outlines
 Load Path

Notes:
 Escorts to control traffic as required

Location:
 Bendemeer NSW 2355
<https://maps.app.goo.gl/h9VYLE9eS3tSf2bc7>

Route Assessment
 Bendemeer Solar Farm
 Swept Path Assessment



DRAWN: TD / RK
 DATE: 24/03/2025
 DWG NO: 382 RA01C
 SCALE at A3: 1:500

Appendix E

Site Access Design



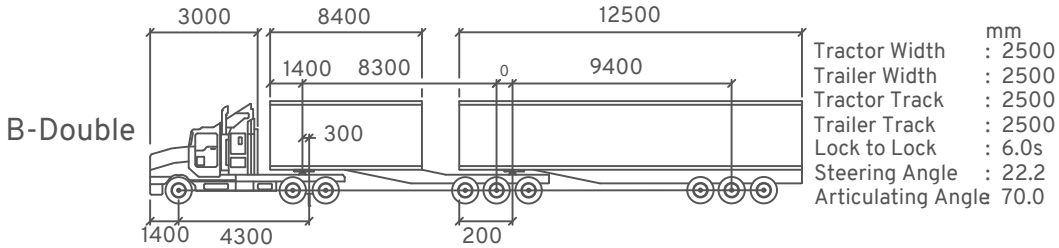
Appendix F

Swept Path Assessment





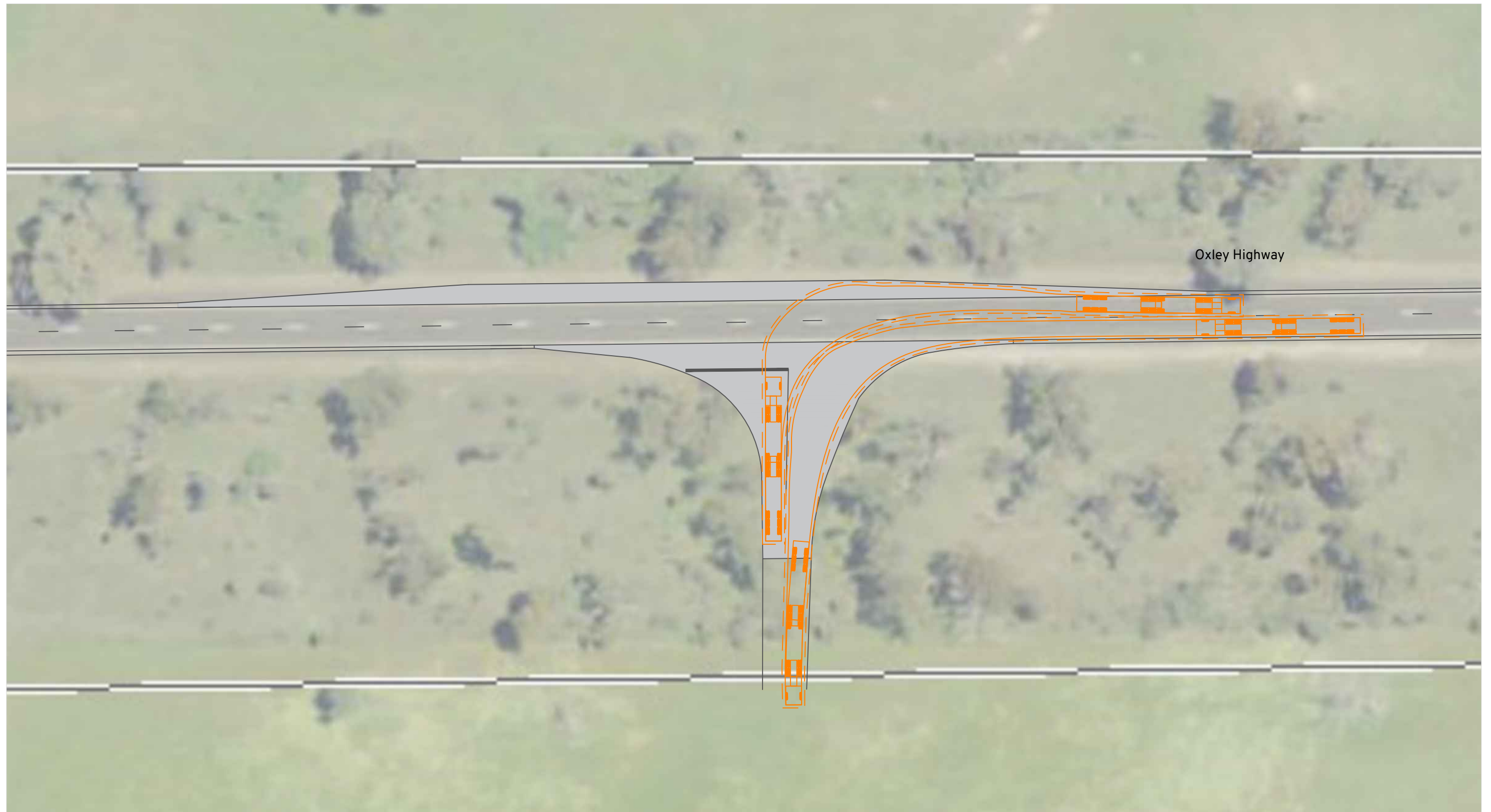
Vehicle Envelope
500mm Clearance
Reverse Manoeuvre



Bendemeer Solar Farm
4409-4461 Oxley Highway, Bendemeer
Swept Path Assessment

DRAWN: MW
DATE: 24/03/2025
DWG NO: 382-S03B
SCALE at A3: 1:600

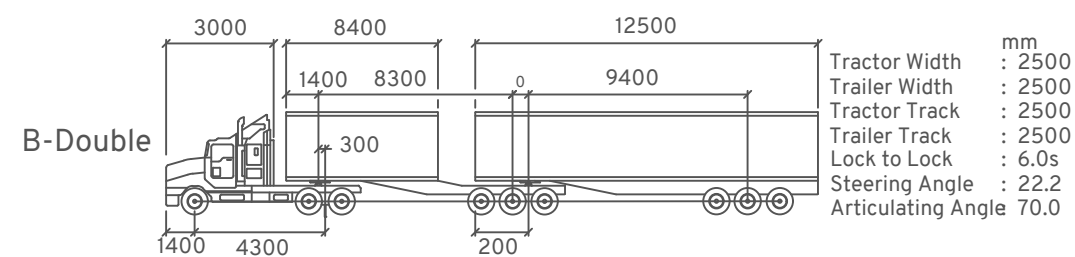




Vehicle Envelope

500mm Clearance

Reverse Manoeuvre



Bendemeer Solar Farm
 4409-4461 Oxley Highway, Bendemeer
 Swept Path Assessment

DRAWN: MW
 DATE: 24/03/2025
 DWG NO: 382-S03B
 SCALE at A3: 1:600

Amber SP2

Appendix G

Sight Distance Assessment



Sight Distance

Sight Line



Bendemeer Solar Farm
4409-4461 Oxley Highway, Bendemeer
Sight Distance Assessment

DRAWN: MW
DATE: 24/03/2025
DWG NO: 382-S03B
SCALE at A3: 1:1600



Appendix H

Shuttle Buses – Council Correspondence

22 November 2023

Our ref: JG:ARC23/5571:AI/2023/18577

Mr Llewellyn Owens
Metis Energy Limited
1/403 Peel Street
TAMWORTH NSW 2340

Dear Mr Owens,

RE: CONFIRMATION OF SHUTTLE BUS PICKUP LOCATIONS FOR BENDEMEER SOLAR FARM

I refer to your letter of 6 November 2023, requesting Council's endorsement of proposed designated pickup locations within the Armidale Regional LGA (ARLGA) for the purposes of shuttle bus services and carpooling of workers to the Bendemeer Solar Farm site.

As you may be aware, ARLGA is located within the New England REZ, with a number of developments having already been granted approval and a number of others currently under assessment with DPE. Additionally, the New England REZ extends across a number of adjoining LGAs, which are also witnessing similar development opportunities for renewables.

With this in mind, Council are cognisant of the likelihood that a number of these developments will be under construction concurrently or may overlap and as such, the potential cumulative impacts this may have on services, the availability of workers and providing suitable carparking locations within the LGA for the purposes of shuttle bus and carpooling to these sites.

Given this, it is advised that Council has no objections to the use of the public carparking area located in Dumaresq Street adjoining the Armidale Showground, as shown in Figure 1 below, as a designated pickup location for shuttle bus and carpooling for workers to the Bendemeer Solar Farm site.

Should other developments commence construction concurrently and/or carparking at the showground location is required for activities related to the showground use itself, such as the Armidale Show, Council reserves the right to advise that in these instances alternative arrangements may need to be negotiated.

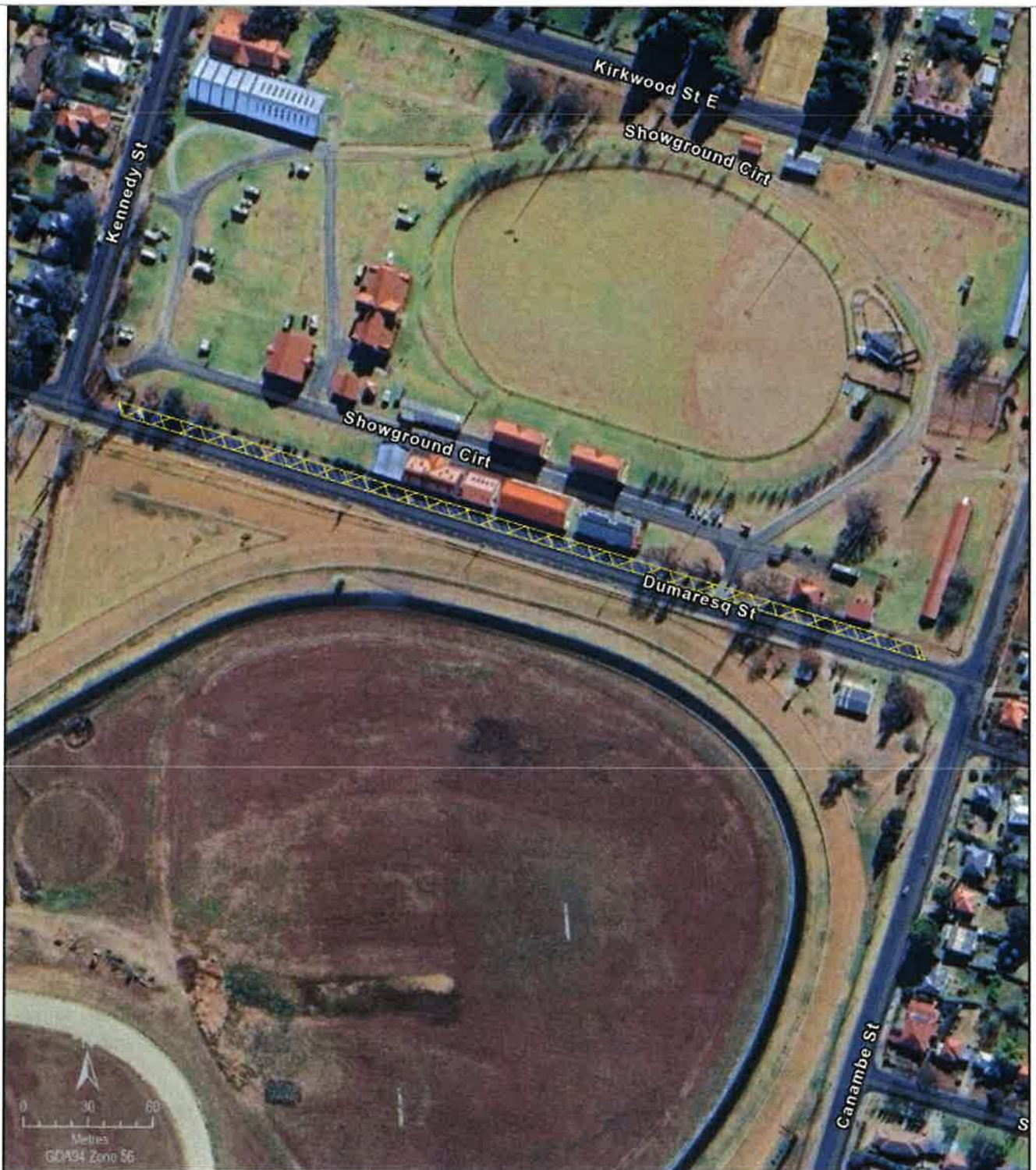
In regard to the carparking located adjoining the Armidale Pool, Council would like to advise that these spaces are at times required for patrons to the pool and may also be required for events and school carnivals, so this area can not be guaranteed but could provide an overflow or alternative location, if the showground is being used for another purpose.

Please contact me on (02) 6770 3802 or by email at jgoodall@armidale.nsw.gov.au if I can be of further assistance.

Yours sincerely



John Goodall
Manager Land Use Planning



LEGEND

 Designated worker pick up area

BENEMEER RENEWABLE ENERGY HUB

Figure 1

From: [Lobsey, Sam](#)
To: [Mark Vile](#)
Cc: [Vereker, Gina](#); [Rennie, Lisa](#); [Brake, Steve](#); [Jeremy Every](#)
Subject: RE: Pickup locations for Bendemeer Solar Farm SSD – 36651552
Date: Tuesday, 5 December 2023 4:50:07 PM
Attachments: [image006.png](#)
[image007.png](#)
[image008.png](#)
[image009.png](#)
[image010.png](#)
[image011.png](#)

Hi Mark,

I forwarded your request to Council's Roads and Parks & Horticulture Manager who both flagged that there were no big issues but believed the Carter Street/Plain Street car park adjacent to Minor League fields will be less appropriate as it sees relatively high use from about 3.30pm each afternoon and Saturday mornings. So the preferred carpark would be Solander Drive site over Carter St.

The only other possibility (depending on the volume of people expected) is the less formal car park directly underneath the viaduct, between the old Netball Courts and sports fields on the norther side.

Therefore, Council agrees in principle to the use of the Solander Drive carpark as a Pick Up Locations for the Proposed Bendemeer Solar Farm workers. Council would also like to request that prior to construction work commencing, Council be contacted again to confirm if the above carpark locations are still deemed appropriate or whether new alternative carparks are to be considered.

Regards,

Sam Lobsey

Manager, Development
Liveable Communities

P (02) 6767 5432 | **M** 0418 859 136 | **E** s.lobsey@tamworth.nsw.gov.au
474 Peel Street
PO Box 555 Tamworth NSW 2340
www.tamworth.nsw.gov.au



SEE YOU IN
TAMWORTH
19 - 28 JANUARY 2024
TCMF.COM.AU • #TCMF2024

TOYOTA TAMWORTH COUNTRY MUSIC FESTIVAL 2024

Tamworth REGIONAL COUNCIL

Tamworth Regional Council acknowledges the Gamilaroi/Kamilaroi people, who are the Traditional Custodians of this land. We would like to pay respect to Elders past and present, and extend that respect to other Aboriginal and Torres Strait Islander peoples living in and visiting our Region.

From: Mark Vile <mark.vile@metisenergy.com>
Sent: Wednesday, 22 November 2023 1:53 PM
To: Vereker, Gina <g.vereker@tamworth.nsw.gov.au>; Lobsey, Sam <s.lobsey@tamworth.nsw.gov.au>
Cc: Jeremy Every <jeremy.every@metisenergy.com>
Subject: RE: Pickup locations for Bendemeer Solar Farm SSD – 36651552

Good afternoon Gina.

I am following up on the below request for Council endorsement of pickup locations for the Bendemeer Solar Farm workforce.

Are you able to provide an update on status or estimated timeframe for response?

Please do not hesitate to contact me if you would like to discuss.

Thank you

Mark

From: Mark Vile

Sent: Monday, November 6, 2023 3:22 PM

To: Vereker, Gina <g.vereker@tamworth.nsw.gov.au>; Lobsey, Sam <s.lobsey@tamworth.nsw.gov.au>

Cc: Jeremy Every <jeremy.every@metisenergy.com>

Subject: Pickup locations for Bendemeer Solar Farm SSD – 36651552

Dear Gina

RE: BENDEMEER SOLAR FARM (SSD – 36651552)

As discussed with Sam Lobsey, the Bendemeer Solar Farm (the Project) is currently in the 'response to submissions' phase of assessment. As part of the submission from Transport for New South Wales, the Applicant has been requested to provide further information on proposed carpooling and shuttle buses, specifically:

'...provide the requisite measures/protocols/procedures to justify how the carpooling and shuttle bus will be practicably achieved, enforced, monitored to achieve compliance with the traffic generation assumption...'

Proposed locations for shuttle bus and carpool pick up are:

- Solander Drive carpark; and
- Plain / Carter Street carpark.

Please see attached formal letter kindly requesting endorsement from Council that these are appropriate pick-up locations for the Project. If possible, are you able to provide a response by **10 November 2023** to allow us to meet our timing for lodgement of Submissions Report?

Please do not hesitate to contact me if you have any queries.

sincerely

Mark



Mark Vile

Environment Manager – Bendemeer Renewable Energy Hub

M +61 437645419

E mark.vile@metisenergy.com

Metis Energy Limited

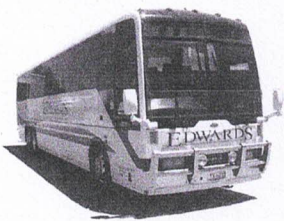
1/403 Peel Street,
Tamworth, NSW 2340

www.medisenergy.com



Appendix I

Shuttle Buses – Provider Correspondence



EDWARDS COACHES

ABN 14 001 298 684

2 Drew Street, Armidale NSW 2350
(Brad Edwards, Proprietor)

Phone: (02) 6772 3116
Fax: (02) 6771 1023

Seat Belt Equipped Coaches Available

29 November 2023

Llewellyn Owens
Project Director
Bendemeer Solar Farm
Metis Energy Ltd
Level 1, 403 Peel Street
Tamworth NSW 2340

Dear Llewellyn

RE: BENDEMEER SOLAR FARM – WORKER TRANSPORT

Thank you for your interest in engaging our bus transport services to assist with worker transport for the Bendemeer Solar Farm.

We understand that you require transport for approximately 75 workers from Armidale and Uralla to the Bendemeer Solar Farm site, located at 4409-4461 Oxley Highway, over an approximate 18 month period commencing in the first half of 2025. We understand these services would be required to arrive onsite no later than 6:45am Monday to Saturday, and leave site for the return between 5:30pm – 6:00pm Monday to Friday, and between 1:00pm and 1:30pm on Saturday. There would be no requirement for transport on Sunday.

Edwards Coaches confirms it is able to provide bus transport services for the above proposal. We understand that Metis Energy would continue to engage with Edwards Coaches closer to the time of construction to work through specific details of the bus transport service arrangements.

Sincerely



James Cross

Edwards Coaches– Depot Manager

29 November 2023

Llewellyn Owens
Project Director
Bendemeer Solar Farm
Metis Energy Ltd
Level 1, 403 Peel Street
Tamworth NSW 2340

Dear Llewellyn

RE: BENDEMEER SOLAR FARM – WORKER TRANSPORT

Thank you for your interest in engaging our bus transport services to assist with worker transport for the Bendemeer Solar Farm.

We understand that you require transport for approximately 215 workers from Tamworth to the Bendemeer Solar Farm site, located at 4409-4461 Oxley Highway, over an approximate 18 month period commencing in the first half of 2025. We understand these services would be required to arrive onsite no later than 6:50am Monday to Saturday, and leave site for the return between 5:30pm – 6:00pm Monday to Friday, and between 1:00pm and 1:30pm on Saturday. There would be no requirement for transport on Sunday.

Tamworth Buslines confirms it is able to provide bus transport services for the above proposal. We understand that Metis Energy would continue to engage with Tamworth Buslines closer to the time of construction to work through specific details of the bus transport service arrangements.

Sincerely



Phillip Ferguson | Manager

Appendix J

Tamworth Regional Council Comments

A response has been provided to the comment received from Tamworth Regional Council.

Council Comment	Response
Council has reviewed the Traffic Impact Assessment (TIA) for this development noting that there was some consultation with TRC officers prior to this TIA being available. Proposed access routes, whether from Brisbane in the north or Newcastle in the south, are primarily via the State Road network. The proposed site access is directly off Oxley Highway, with a recommendation for the construction of a BAR treatment, with the vast majority of movements into the site coming from the west. The TIA has concluded that the existing road network has the capacity to cater for the projected project traffic without the need for any other upgrades. It is noted that the intersection of Oxley Highway with New England Highway may benefit from the addition of a left-turn slip lane off the New England Highway if project components are to be transported from Brisbane, especially given the 100kph speed zone. It is acknowledged that this matter is ultimately the domain of Transport for NSW.	An assessment of the required turn treatments at the intersection to cater for the additional project traffic is provided in Section 6.1 and is based on the <i>Austroads Guide to Traffic Management Part 6: Intersections, Interchanges, and Crossings</i>. The assessment considers the existing and additional traffic volumes as well as the speed limit along New England Highway. The recommended treatment to cater for the left turn traffic from the north is a Basic Left Turn (BAL), which is provided as part of the existing intersection.

Appendix K

Response to TfNSW Submission (WST23/00100/01)



TfNSW Comment	Response
The actual sizes and configurations of the OSOM vehicles need to be identified in order for TfNSW to make an assessment on whether the proposed vehicles can be accommodated on the state road network. TfNSW notes that on Pages 20-21 of the TIA, the applicant states that the exact transformer model and vehicle configuration is yet to be determined and that a vehicle configuration from another project has been used to undertake the required swept path analysis. However, without the exact size and configuration, TfNSW is unable to assess the operational and physical impacts and issues that will result from the proposed OSOM movements.	The largest component to be delivered to the site is expected to be the transformer. The Applicant has advised that the transformer model is expected to be 150-200 tonnes with dimensions of approximately 10.0m long, 4.0m wide and 5.0m tall. The vehicle configuration to transport the transformer is a 14 x 8 Axle Platform Trailer. The route assessment and discussion of OSOM movements is outlined in Section 5.
The swept path assessments will need to be re-undertaken using the largest OSOM vehicle that will be utilised.	Revised swept paths for the largest OSOM vehicle are provided in Appendix F.
‘Minor deliveries’ from alternative ports as described on Page 44 of the EIS will need to be detailed if heavy or OSOM vehicles are involved.	The route assessment and discussion of OSOM movements is outlined in Section 5. Travel routes from all potential delivery ports including Port of Newcastle, Port of Brisbane and Port of Melbourne have been assessed.
The TIA identifies that the majority of the workforce during will be required to be transported to site via shuttle buses and carpooling to be able to achieve the light vehicle assumptions identified within the TIA. No measures/protocols/procedures have been provided within the TIA to identify how compliance with the shuttle buses and carpooling numbers will be practicably achieved, monitored and enforced. At this point the carpooling and shuttle bus as a method for reducing the light vehicle numbers is not considered viable. • The TIA must be revised to either: - o Address the above point to provide the requisite measures/protocols/procedures to justify how the carpooling and shuttle bus will be practicably achieved, enforced, monitored to achieve compliance with the traffic generation assumptions, or • TfNSW requests the TIA and the traffic modelling (SIDRA modelling for the New England Highway/Oxley Highway intersection and the turn warrants assessment for the Oxley Highway/site access) be updated to account for the most conservative scenario with one worker per vehicle at the AM/PM peak during peak of construction. The SIDRA files will need to be forwarded to TfNSW as a part of the RTS submission.	The light vehicle traffic volumes have been updated to reflect a conservative rate of 1.2 persons per vehicle. This is considered to represent a conservative estimate of staff carpooling to and from the site. Additional information regarding the operation of the proposed shuttle buses is provided in Section 7.5.

TfNSW Comment	Response
A section of the Oxley Highway to the east of the subject site between Yarrowitch and Wauchope is not approved for heavy vehicles. TfNSW notes that OSOM vehicles will be utilising the New England Highway and will therefore be approaching the development from the west. The TIA is required to be amended to address how OSOM vehicles will achieve approval for heavy vehicle access or provide an alternative route that is approved for heavy vehicles.	No heavy vehicles are proposed to travel along Oxley Highway east of the site.
The TIA does not identify the background growth rate of traffic volumes on the New England Highway and Oxley Highway. Also, there is no indication that a growth rate has been applied to the background traffic data in the SIDRA modelling or the turn warrants analysis. The TIA and traffic modelling will need to include background growth in projected traffic volumes because construction will not begin until Q2 2025 and will continue until late 2026.	The TIA and traffic modelling provided in Section 3 have been updated to include a 1.5% annual growth rate for existing traffic. The growth rate is based on data provided by TfNSW. The growth rate has been applied to factor up the recorded traffic volumes for the anticipated construction period in 2026.
How accumulative traffic from nearby projects has been factored into the background traffic for the assessment is unclear. The TIA needs to be updated to identify the projects and traffic volumes, ideally in a table, that were used to calculate the background traffic volumes for the Oxley Highway.	An updated breakdown of the cumulative traffic volumes from each project is provided in Section 3.3.
The location of the traffic survey was undertaken at the New England Highway/Oxley Highway and not at the location of the proposed access to the Oxley Highway, which does not provide an accurate representation of the background traffic at the proposed access to the Oxley Highway. A further traffic survey at the location of the proposed access to the Oxley Highway is required to be prepared in accordance with Part 3 of Austroads Guide to Road Design. The TIA will be required to be amended based on the outcomes of the revised traffic survey, with the supporting raw data for the traffic survey to be provided as an appendix within the revised TIA.	Amber commissioned a tube count on Oxley Highway at the site frontage in order to determine the existing road environment. The tube count was undertaken from Friday 3 November to Friday 10 November 2023. The survey results are presented in Appendix B and the TIA has been updated reflecting the survey data.
A revised turn warrants assessment will be required to account for the background growth and accumulative traffic occurring at the AM/PM peak of the project during peak of construction. The turn warrants assessment should account for the peak period for the background traffic and the peak period for the construction traffic. Therefore, there will need to be two assessments in order to ascertain the appropriate treatment for the site access.	The turn warrants assessment is provided in Section 6 and includes the peak period for the background traffic and the peak period for the construction traffic.

TfNSW Comment	Response
The Safe Intersection Sight Distance (SISD) assessment for the proposed site access from Oxley Highway in Appendix H shows that there is 285m of sight distance available. Under Table 3.2 of Austroads Guide to Road Design Part 4A, this would be adequate if a reaction time of 2.0 seconds is assumed. However, TfNSW requires the application of the 2.5 second reaction time based on a design speed of 110km/h (100km/h posted speed limit + 10km/h) which requires 300m of SISD to be provided in each direction at the intersection. The TIA is required to be updated to provide a figure identifying how the required 300m of SISD is achieved in each direction at the proposed access to the Oxley Highway.	The SISD assessment is provided in Appendix G and has been updated to show 300m of sight distance is provided in each direction.
There is an existing track that can be accessed from Oxley Highway in the northwest corner of the site. This track will need to be physically closed off.	It is proposed to physically close off the access track as outlined in Section 7.
The Strategic Design provided within Appendix F of the TIA identifies a BAR and assumes that the minimal left turn movements can be safely undertaken within the high-speed environment and therefore does not require the provision of a BAL. The TIA has not sited justification for how the left turn into the site will be undertaken safely within the high-speed environment. To assess the revised scope for the provision of only a right turn intersection treatment, TfNSW would require the prohibition of the left turn movements into the site access from the Oxley Highway. • The TIA must be amended to identify how the left turn movements will be prohibited through either practicable and enforceable traffic mitigation measures; or • Through the provision of physical treatments to prohibit the left turn movements into the access. • The turn warrants assessment will be required to be reassessed based on the above matters identified within this letter and inclusive of the change turning movements due to the prohibition of the left turn into the site. • The strategic design is required to be revised based on the matters identified within this letter and the outcome of the prohibition of the left turn.	All heavy vehicle movements are to arrive from the west of the site. Materials will be sourced from nearby regional centres including Tamworth, Kootingal, Moonbi, Nemingha, Uralla and Armidale, all of which are accessed via New England Highway to the west. The only township located east of the site within a two hour drive is Walcha which has a small population of around 3,500 people. The workforce, materials and accommodation available within Walcha is expected to be limited. Accordingly, it is anticipated that the light vehicle traffic arriving from the east of the site would be minimal with approximately one left turn movement approaching from the east of the site per day. This level of traffic is similar to that of a single residential dwelling, and based on the survey data it is expected that there would be only up to 40 hourly westbound movements along the road resulting in a very low probability of vehicle conflict. The site access location ensures there is excellent sight distance for following vehicles to see a vehicle turning into the site from the east. Accordingly, the proposed access arrangements for the site are considered acceptable.
The Strategic Design provided within Appendix F of the TIA identifies that the storage length has been based on one 19m design vehicle while the swept paths have been prepared on a 25m B-double as the design vehicle. The strategic design and potentially the swept paths are required to be amended to reflect the correct design vehicle and associated storage length.	The design is provided in Appendix E and has been updated to reflect a storage length of 26 metres based on a B-Double vehicle.

TfNSW Comment	Response
The swept paths provided within Appendix G identifies the design vehicle (25m B-double) propped at the hold line of the proposed intersection while the design vehicle turns left into the access from the Oxley Highway, which is intended to represent that simultaneous manoeuvring of the design vehicle at the proposed intersection. The swept paths must be revised to demonstrate that the design vehicle can pass simultaneously without conflict when entering and egressing the access via the Oxley Highway in an east and westbound direction.	The swept path assessment is provided in Appendix F and has been updated to show simultaneous turning manoeuvres in and out of the site.

Appendix L

TfNSW Correspondence – Turn Treatments

From: [Mike Willson](#)
To: [Development West](#); [Alexandra Power](#); [Steven Yuan](#)
Cc: [Oliver Mihaila](#); [Jai Reid](#); [Elohanna Levi](#); [Tom Parry](#); [Mark Davey](#)
Subject: RE: Bendemeer Solar Farm
Date: Tuesday, 5 December 2023 4:40:00 PM
Attachments: [image002.png](#)
[image003.png](#)
[382-S02C.pdf](#)

Hi Alex,

Thanks for your time at the meeting yesterday.

We understand from your comments below and at the meeting that you are supportive of the provision of no BAL at the site access given there are not expected to be any left turn vehicles during construction.

From your comments we also understand that the U-turn facility was only suggested in the event trucks couldn't physically turn left into the site. We have prepared an updated swept path assessment (refer attached) which shows the simultaneous movement in each direction is achieved to allow B-Doubles to access the site from either direction in the unlikely event a truck accessed the site from the east.

Could you please confirm you are happy with the swept paths and associated design and that no U-turn provisions are required? It would be great to confirm prior to us submitting our updated report.

We note that we have updated the traffic volumes in the Traffic Impact Assessment in line with what you have noted below and are currently preparing the additional information requested in relation to the emergency access.

Happy to chat through as needed.

Mike Willson

BE (Hons) CPEng RPEV RPEQ

Director

Ph: +61 432 022 363



*We will close for the holiday period on
22 December and return on 8 January*

From: Development West <development.west@transport.nsw.gov.au>
Sent: Wednesday, November 29, 2023 9:59 AM
To: Mike Willson <mike@amberorg.com.au>; Alexandra Power <Alexandra.Power@transport.nsw.gov.au>; Steven Yuan <Steven.Yuan2@transport.nsw.gov.au>; Development West <development.west@transport.nsw.gov.au>
Cc: Oliver Mihaila <omihaila@amberorg.com.au>; Jai Reid <jai.reid@planning.nsw.gov.au>
Subject: RE: Bendemeer Solar Farm

Hello Mike,

- The no left turn will need to be enforced through conditions of development consent and signage (identifying right turn only).
- There will likely need to be a U-Turn for any displaced left turns that are required.
- Have you reassessed the distribution changes to identify all the right turn traffic during the AM/PM peaks given that there will be no left turn traffic? you will need to incorporate all the accumulative traffic volumes for projects (at EIS stage) within the background (without development) traffic volumes that are overlapping as a part of the turn warrant assessment utilising the Oxley Highway.

In relation to the discussion regarding the emergency access the following will need to be addressed:

- Must identify how the emergency access will be managed (i.e gates) to prevent the use of the access for other vehicles associated with the development during peak of construction and operation.
- Identify the emergency design vehicle and provide a swept path analysis identifying concurrent movements can occur into and out of the access.
- Provision of sufficient storage at the throat of the access, to allow for the emergency vehicle to store within the access and not within the through lane or shoulder.
- Provide a [strategic design](#) of the emergency access.

Kind regards

Alexandra Power
Team Leader Development Services-Renewables
West
Regional and Outer Metropolitan Division | TfNSW
T 02 6861 1428

Please be advised that I work flexible hours.

Roads and Maritime Services



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OFFICIAL

From: Mike Willson <mike@amberorg.com.au>
Sent: Wednesday, 29 November 2023 8:40 AM
To: Alexandra Power <Alexandra.Power@transport.nsw.gov.au>; Steven Yuan <Steven.Yuan2@transport.nsw.gov.au>; Development West <development.west@transport.nsw.gov.au>
Cc: Oliver Mihaila <omihaila@amberorg.com.au>
Subject: Bendemeer Solar Farm

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Hi Alex,

Thanks for your time at the meeting for this project the other day.

We have been looking at the BAL turn treatment requirement in more detail and have provided some further justification below as to why we don't believe the treatment is required at the site access. As we discussed at the meeting, it would be great to get feedback on your position before we submit an updated report to prevent the need for another back and forth.

At this stage we still propose to not provide a BAL. The primary reason is we don't anticipate vehicles to typically come from the east along Oxley Highway.

Importantly, there are not expected to be any heavy vehicles accessing the site from the east with all plant and materials expected to arrive via New England Highway from the west. The main plant would be delivered from Port of Newcastle, Port of Brisbane, or Melbourne. General materials would arrive from nearby towns such as Tamworth, Uralla, and Armidale and would subsequently utilise New England Highway as well.

Light vehicle movements would be associated with staff. The only township located east of the site within a two hour drive is Walcha which has a small population of around 3,500 people. The workforce and accommodation available within the town during the construction period is expected to be extremely limited as the town is proposed to cater for staff from other nearby major projects including Salisbury Solar Farm and Winterbourne Wind Farm.

The construction workforce is expected to be located within Tamworth, Uralla, and Armidale and would subsequently utilise New England Highway to access the site from the west.

It is also worth noting that Oxley Highway only accommodates 18 westbound movements in the AM peak based on the tube count survey which is a very low level of traffic.

Overall, we consider the likelihood of vehicle conflict associated with any left turning vehicles at the site access to be very low given the existing low traffic volumes on Oxley Highway and the low likelihood of any vehicles approaching from the east. The site access is expected to generate less left turn movements than a residential dwelling which wouldn't require a turn treatment.

Based on the above we are proposing to not provide a BAL. We would appreciate your comments on this matter as we try and wrap up our design and associated report.

At this point in time we do not propose any specific traffic management measures or consent conditions

as the left turn demand itself is low. In the unlikely event someone does need to turn left into the site they are expected to be able to do so safely. However, if there are measures we can put in place to give you further confidence on this matter we would be open to discussing those with you.

I note we are hoping to get back to you soon with shuttle bus information as the client is collection the relevant details.

We look forward to hearing from you.

Kind Regards

Mike Willson

BE (Hons) CPEng RPEV RPEQ

Director

Ph: +61 432 022 363



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Appendix M

Response to TfNSW SEARs Agency Advice

TfNSW Comment	Response
The TIA should be tailored to the scope of the proposed development and include, but not be limited to, the following: A map of the surrounding road network identifying the site access, nearby accesses, intersections, relevant transport route/s, transport related facilities and connections to the classified (State) road network.	Access to the Project Area during construction and operations is proposed via the existing road network, namely the Oxley Highway, which borders the northern boundary of the Project Area. The ongoing maintenance of the Project will be accessed through internal access tracks within the Project area, that will be connected to the Oxley Highway. A map of the road network is provided within Figure 2 of the report. A description of the site and the surrounding transport environment is provided within Section 2 of the report.
Detailed assessment of all relevant vehicular transport routes, relevant intersections and connections to the classified (State) road network for access to / from the proposed development site/s (including ancillary sites). Vehicle types to be considered: • Commuter (employee and contractor) light vehicles and pool vehicles, • Heavy (haulage) vehicles, • Over size and over mass (OSOM) vehicles.	An assessment of the traffic impacts of the project are provided within Section 3.4 of the report which concludes that the road network is expected to readily accommodate the traffic generated by the development during the construction and operational periods. An assessment is provided for the proposed access route within Section 4 and 5 which indicates the State roads along the access route can accommodate the loads and type of vehicle movement to be generated during construction of the Project.
The total impact of existing and proposed development on the road network with consideration for a 10 year horizon. This should include;	The assessment within this report has focused on the construction traffic impacts of the project which is when the majority of the traffic movements would be generated. The site would be operation at the 10-year horizon when it is expected to generate a low level of traffic (in the order of 30 vehicle movements per day) which can be readily accommodate on the road network.
Identify Annual Average Daily Traffic (AADT) volumes with percentage heavy vehicles along the transport route/s and diagrammatically demonstrate AM and PM peak hour movements at key intersections.	The daily (AADT) and peak hour traffic volumes for the road network are described within Section 3. Figure 7 diagrammatically shows the site traffic peak hour movements at the intersection of New England Highway and Oxley Highway.
Background traffic data from published sources and/or recent survey data. The source of data and any assumptions are to be clearly explained and justified, including the growth rate applied to the future horizon. Due to the impact of COVID-19 on travel patterns, traffic counts undertaken at this time may not be representative of normal volumes. Alternative approaches to understanding the impact of COVID-19 on traffic patterns should be discussed with TfNSW.	Background data has been provided within Section 2.3 which provides a comparison between data collected before and after COVID-19 indicating the vehicle movements on New England Highway were lower during the pandemic. Recent traffic surveys were undertaken at the intersection of New England Highway and Oxley Highway and used for the purposes of this assessment which are not impacted by the pandemic.
The volume and distribution of any existing and proposed trips to be generated by the construction, operational and decommission phases of the development. This should identify the maximum daily and hourly demands generated by the development, particularly where they coincide with the network peak hour.	The traffic volumes expected to be generated by the project are discussed within Section 3.1.



TfNSW Comment	Response
The type and frequency of design vehicles accessing the development site.	The type and traffic volumes expected to be generated by the project are discussed within Section 3.1.
Assessment of any ancillary infrastructure works of the development. Including but not limited to impacts of construction, haulage/transportation routes, traffic generation (individual and cumulative with all of the project's components) and distribution for the transportation of staff/personnel and materials during construction, operation and decommissioning stages.	An assessment of the traffic impacts of the project are provided within Section 3 of the report which concludes that the road network is expected to readily accommodate the traffic generated by the development during the construction and operational periods. An assessment is provided for the proposed access route within Section 4 and 5 which indicates the State roads along the access route can accommodate the loads and type of vehicle movement to be generated during construction of the Project.
Traffic analysis of any major / relevant intersections impacted, using SIDRA or similar traffic model, including: • Current traffic counts and 10-year traffic growth projections • With and without development scenarios • 95th percentile back of queue lengths • Delays and level of service on all legs for the relevant intersections • Electronic data for TfNSW review.	An assessment of the operation of the road network during construction is provided within Section 3 utilising the SIDRA software indicates that road network is expected to operate with a LOS A. A without analysis has not been undertaken given the with development traffic scenario indicates the road network would continue to operate with good conditions. The site would be in operation at the 10-year horizon when it is expected to generate a low level of traffic (in the order of 30 vehicle movements per day) which can be readily accommodate on the road network.
Details of the road geometry and alignment along the identified transport route/s, including existing formations, crossings, intersection treatments and any identified hazards. This should include;	
Available sight distances at intersections along the proposed transport routes, the site access and any constraint to achieving the required sight distance for the posted speed limit.	The access route is proposed to utilise the State road network to access the site which is provided with suitable sight distance. A sight distance assessment (refer Appendix G) has been provided for the site access which demonstrates the sight distance complies with the requirements of the Austroads Guide.
An assessment of turn treatment warrants in accordance with the Austroads Guide to Traffic Management Part 6 and Austroads Guide to Road Design Part 4A for intersections along the identified transport route/s, including connections to the classified (State) road network, identifying the existence of the minimum basic turn treatments and addressing the need for any warranted higher order treatments.	A turn warrants assessment is provided within Section 5.1. The assessment for the intersection of New England Highway suggests the current turn treatments are adequate and meet the requirements of the Austroads Guide. The site access is proposed to be provided with a BAR which meets the requirements of the Austroads Guide. No BAL is proposed given the minimal traffic volumes expected to access the site from the east.
Swept path analysis demonstrating the largest design vehicle entering and leaving the development, and moving in each direction through intersections along the proposed transport route/s.	A swept path assessment has been provided within Appendix F.

TfNSW Comment	Response
Identify any necessary road network infrastructure upgrades that are required to maintain existing levels of service on both the local and classified road network for the development. Strategic (2D) design drawings for any proposed road upgrades and the site access should demonstrate the scope, estimated cost and constructability of works required to mitigate the impacts of the development on road safety, traffic efficiency and the integrity of transport infrastructure. All proposed works must be: • Designed in accordance with Austroads Guidelines, Australian Standards and TfNSW Supplements • Appropriately designed for the existing posted speed limit. • To the satisfaction of TfNSW and/or Council in accordance with relevant Roads Act functions. • Submitted with the EIS and TIA.	No road upgrades are proposed. However, it is noted that the access is proposed to be designed with a BAR treatment in accordance with the Austroads Guide to allow vehicles to safely enter the site.
Details of measures to ameliorate the impacts of road traffic noise, dust, and/or glare generated along the proposed transport route/s.	The recommendations provided within Section 7, which should be included in the future TMP, would ensure the construction traffic would create a minimal impact to the capacity and safety of the surrounding road network.
Site plan demonstrating site access, internal manoeuvring, servicing and parking areas consistent with the relevant parts of AS2890 and Council requirements.	The site plan is provided within Figure 1. The car parking areas are anticipated to be provided as an unsealed surface. The car parking is proposed to be suitably designed for their intended purpose and comply with AS2890 and Council requirements. The specific designs for the parking areas are proposed to be provided as part of the future TMP.
Consideration of cumulative impacts:	
Identify and assess the implications of any road and / or rail projects that will potentially be occurring simultaneously with the scheduling of the OSOM movements along the proposed OSOM routes.	Comment has been sought from TfNSW and ARTC who have advised that prior to construction and as part of preparation of the TMP TfNSW and ARTC should be consulted to confirm if any road upgrades would be occurring during OSOM movements.

- An assessment should be undertaken as a part of the EIS and TIA, to identify where projects will have overlapping construction periods within the vicinity of the project site. The assessment should consider the following: - The cumulative impacts from traffic generated from the construction workforces in terms of the routes, access, AM/PM peaks where there is overlap with other projects. - The cumulative impacts of heavy vehicle movements in terms of AM/PM peaks and routes where there is an overlap with other projects. - Cumulative impacts and consideration in relation to the timing of movements of OSOMs where other projects will be utilising the same routes as proposed for this development. - Any potential for future expansion of the subject development and the potential impacts any such expansion would have on the development, the broader road network and the AM/PM peaks. It should be noted, any future expansion beyond the scope of the subject application, will require additional applications and approvals.	An assessment of the cumulative traffic impacts of nearby projects is provided within Section 3.3. The cumulative traffic has been included within the traffic assessment for the Project outlined in Section 3.4.
Details of measures to address impacts and/or provide connections for public transport services and active transport modes, such as, public and school bus services, walking and cycling.	Heavy vehicle movements should avoid peak school bus times to limit the interaction of larger vehicles and vulnerable road users.
A review of crash data along the identified transport route/s for the most recent 5 year reporting period and an assessment of road safety along the proposed transport route/s considering the safe systems principles adopted under Future Transport 2056.	A crash search is provided within Section 2.6 and an assessment of the road safety implications of the project are provided throughout the report.
Details of any Traffic Management Plan (TMP) proposed to address the construction and operation phases of the proposed development. The TMP should be prepared and implemented in accordance with Australian Standard 1742.3 and the Work Health and Safety Regulation 2017. It is recommended that any TMP include, but not necessarily limited to, the following; - A map of the primary transport route/s highlighting critical locations. - An induction process for vehicle operators and regular toolbox meetings. - Procedures for travel through residential areas, school zones and/or bus route/s. - any proposed temporary measures such a Traffic Guidance Scheme (TGS) - A Driver Code of Conduct for heavy vehicle operators. - A complaint resolution and disciplinary procedure. - Community consultation measures proposed for peak periods.	The recommendations provided within Section 7, which should be included in the future TMP, would ensure the construction traffic would create a minimal impact to the capacity and safety of the surrounding road network.