Amber

Traffic & Transportation Direction

Burroway Solar Farm

Eumungerie Road, Narromine

Traffic Impact Assessment

July 2023

Reference: 662 rep 230720 final

Burroway Solar Farm

Eumungerie Road, Narromine

Traffic Impact Assessment

Prepared for: Edify Energy Pty Ltd

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Contact

Website: www.amberorg.com.au E: info@amberorg.com.au Phone: 1800 022 363

Executive Summary

Amber Organisation Pty Ltd has been engaged by Edify Energy Pty Ltd to conduct a review of the traffic and parking implications of the proposed Burroway Solar Farm and to prepare a Traffic Impact Assessment.

The project is proposed to have a capacity of up to 100MW and includes the construction of a substation transformer and a Battery Energy Storage System with a capacity of up to 100MW/400MWh. Access to the site is proposed via a connection with Eumungerie Road at the south-western corner of the site.

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

The construction period is expected to take approximately 12-18 months, with the peak construction period expected to take 6 months. A construction workforce of approximately 250 personnel would be on-site during the peak construction phase, with the workforce likely to be drawn primarily from Dubbo and Narromine.

It is anticipated that during peak construction the project could generate up to 96 heavy and 43 light vehicle movements per day. The project is expected to generate approximately 48 vehicle movements during the morning and evening peak hour during the peak construction period, which would reduce to 27 vehicle movements over the typical construction periods.

In order to determine the traffic impact generated during construction, an analysis of the operation of 4 nearby intersections was carried out using the SIDRA computer modelling program. The assessment also included allowance for the cumulative traffic movements on the road network generated by other major projects in the surrounding area. Overall, the construction traffic is expected to have a minimal impact on the operation of the intersections. Accordingly, it is concluded that the road network is able to accommodate the traffic generated by the development during the construction period.

All plant is expected to be delivered via Port Botany or the Port of Newcastle. Amber has undertaken an assessment of the expected access route from the port/point of origin to the site which identified a Basic Right Turn treatment should be provided at the site access on Eumungerie Road.

In order to mitigate the impacts of the project during construction a Construction Traffic Management Plan would be prepared which outlines a range of traffic management measures in order to ensure the construction traffic would have a minimal impact to the capacity and safety of the surrounding road network.

Based on the assessment, it is concluded that the proposed access arrangements for the project are suitable to accommodate the expected vehicle types and traffic volumes during the construction, operation, and decommissioning phases of the project.

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1. Background

1.1 Introduction

Amber Organisation Pty Ltd has been engaged by Edify Energy Pty Ltd to conduct a review of the traffic implications of the Burroway Solar Farm and prepare a Traffic Impact Assessment. The solar farm is proposed to have a capacity of 100MW and would also include a Battery Energy Storage System (BESS) with a capacity of up to 100MW/400MWh.

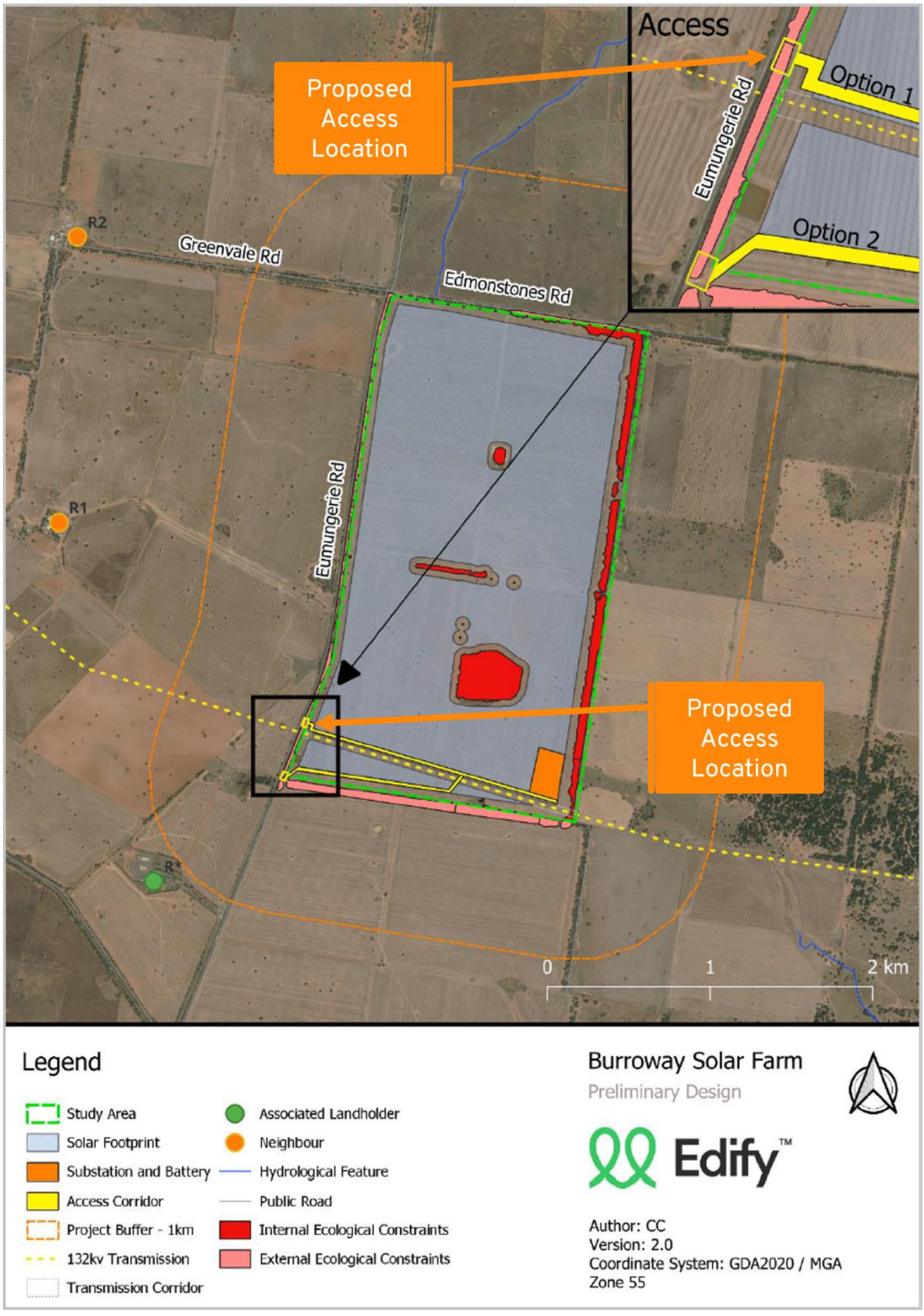
The site is located on the south-eastern corner of the Eumungerie Road / Edmonstones Road intersection, approximately 17.5 kilometres north of Narromine and 27 kilometres west of Dubbo. Figure 1 shows the proposed layout of the site in relation to the road network, access locations and existing infrastructure.

Access to the site is proposed via a connection with Eumungerie Road at the location marked Option 1 in the figure, along the western boundary of the site.

Construction is expected to commence in 2025 and take approximately 12-18 months, with the peak construction period expected to take 6 months. A maximum workforce of 250 people would be on-site during peak construction periods with the workforce expected to be primarily located in Dubbo and Narromine.

All plant is expected to be delivered via Port Botany or the Port of Newcastle.

Figure 1. Site Layout



Source: Edify Energy Pty Ltd

1.2 Environmental Assessment Requirements

NSW Department of Planning & Environment issued Secretary's Environmental Assessment Requirements (SEARs) for the project. The required traffic and transport matters are provided within Table 1 along with the relevant response to each matter.

Table 1: SEARs and Relevant Response

SEARs	Response
An assessment of the peak and average traffic generation, including over-dimensional vehicles / heavy vehicles requiring escort and construction worker transportation.	The SIDRA analysis presented within Section 3.4 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 approximately 3-4 vehicle movements per hour. This increase in traffic would be within the daily variation of traffic volumes on the road network and can be readily accommodated. It is anticipated that 3 oversize and overmass vehicles would access the site during construction. The vehicle movements would be undertaken outside of the peak periods and would be able to be accommodated on the road network with minimal impacts following the adoption of suitable road management strategies which would be confirmed as part of specific permits that would be applied for prior to construction.
An assessment of the likely transport impacts to the site access route(s), 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 route assessment is outlined within Section 5 of this report and considers general construction traffic as well as OSOM vehicle movements. The access routes utilise roads that are designated for B-Double and Class 1 OSOM vehicles as outlined within the TfNSW Restricted Access Vehicle Map and NSW Oversize Overmass Load Carrying Vehicles Network map. A swept path assessment was prepared which demonstrates the vehicles are able to suitably access the site from Eumungerie Road. The internal access road provides an unsealed surface width of 7.0 metres which is sufficient to safely allow two trucks to pass. 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 solar farm.

SEARs	Response
A cumulative impact assessment of traffic from nearby developments.	The assessment presented within Section 3.3 provides an assessment of the cumulative impacts of the project along with other major projects within the surrounding area. The assessment identifies some projects are expected to generate additional vehicle movements within Dubbo and Narromine. 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 Inland Rail (Narromine to Narrabri) project has the potential to generate additional vehicle movements along Eumungerie Road, Dubbo-Burroway Road, Warren Road, Mitchell Highway and Newell Highway, however the cumulative traffic impacts generated by the proposal and nearby developments are expected to be minimal. The road network is expected to continue to operate with an acceptable level of service during construction and it is recommended that any oversize and overmass vehicle movements be coordinated to reduce the impact to the road network.
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.	A Construction Traffic Management Plan (CTMP) is to be developed prior to construction of the project which should include the recommendations provided within this document. The adoption of the mitigation measures outlined within the CTMP would ensure construction traffic has a minimal impact to the capacity and safety of the surrounding road network.

1.3 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 solar farm. The assessment responds to the SEARs and details how road impacts of the project traffic, particularly from heavy vehicle use and oversize and overmass vehicles, would be avoided or managed using road-use management strategies.

More specifically, the report addresses the following key matters:

- Details of both light and heavy vehicle traffic volumes and proposed transport routes;
- An assessment of the potential traffic impacts of the project on road network function and safety;
- An assessment of the capacity of the existing road network to accommodate the type and volume of traffic generated by the project;
- Details of measures to mitigate and/or manage potential impacts, including construction traffic control, road dilapidation surveys and measures to control dust generated by traffic volumes; and

- Details of access roads and how these connect to the existing road network and ongoing operational maintenance.

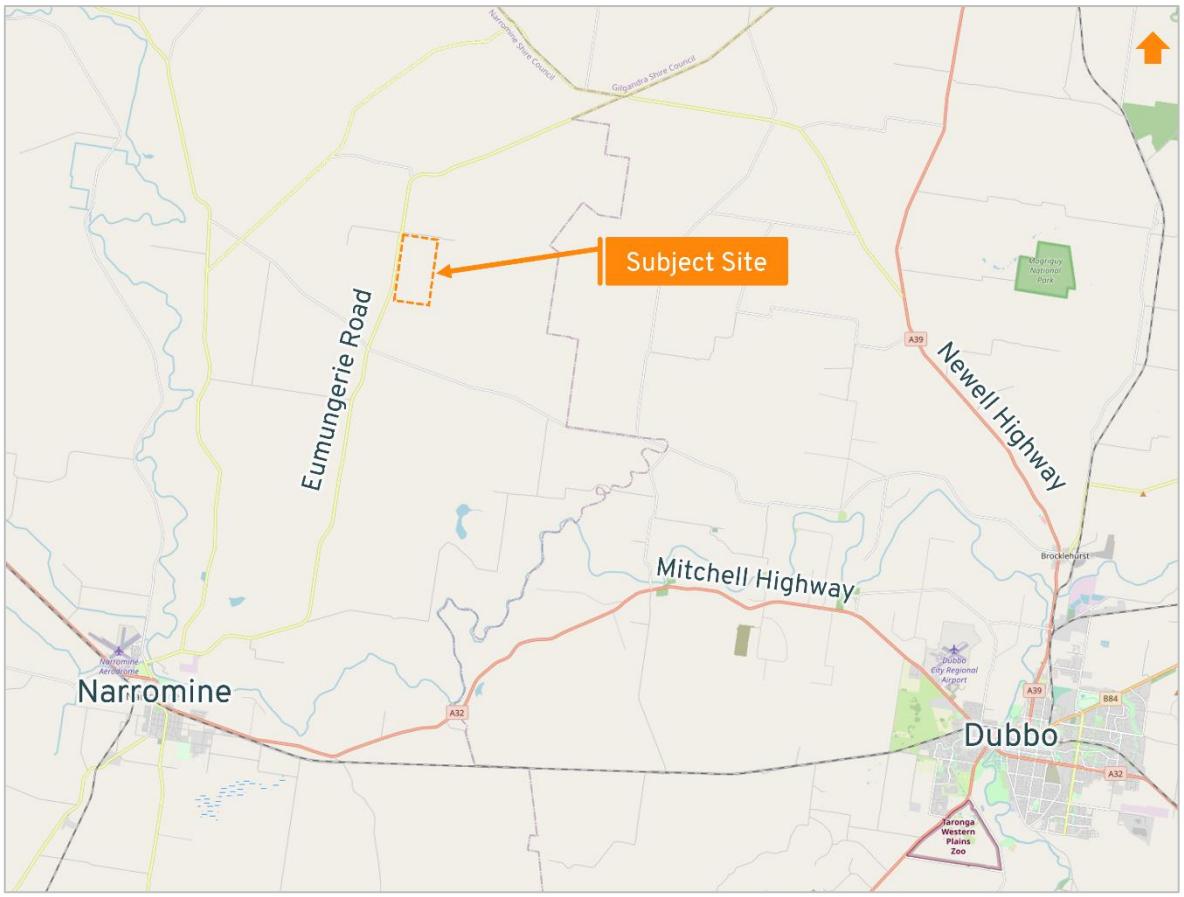
The traffic assessment has been undertaken in accordance with the *RTA Guide to Traffic Generating Developments* and relevant Austroads Guidelines. It has also been undertaken in conjunction with consultation with Transport for NSW, Narromine Shire Council and Dubbo Regional Council, which was carried out in April and May 2023.

2. Existing Conditions

2.1 Site Location

The site is located at Lot 70 in DP 1251856 on the south-eastern corner of the Eumungerie Road / Edmonstones Road intersection, approximately 17.5 kilometres north of Narromine and 27 kilometres west of Dubbo. The site is situated in the Central-West Orana Renewable Energy Zone of New South Wales. Figure 2 shows the location of the site in relation to the surrounding transport network.

Figure 2: Site Location



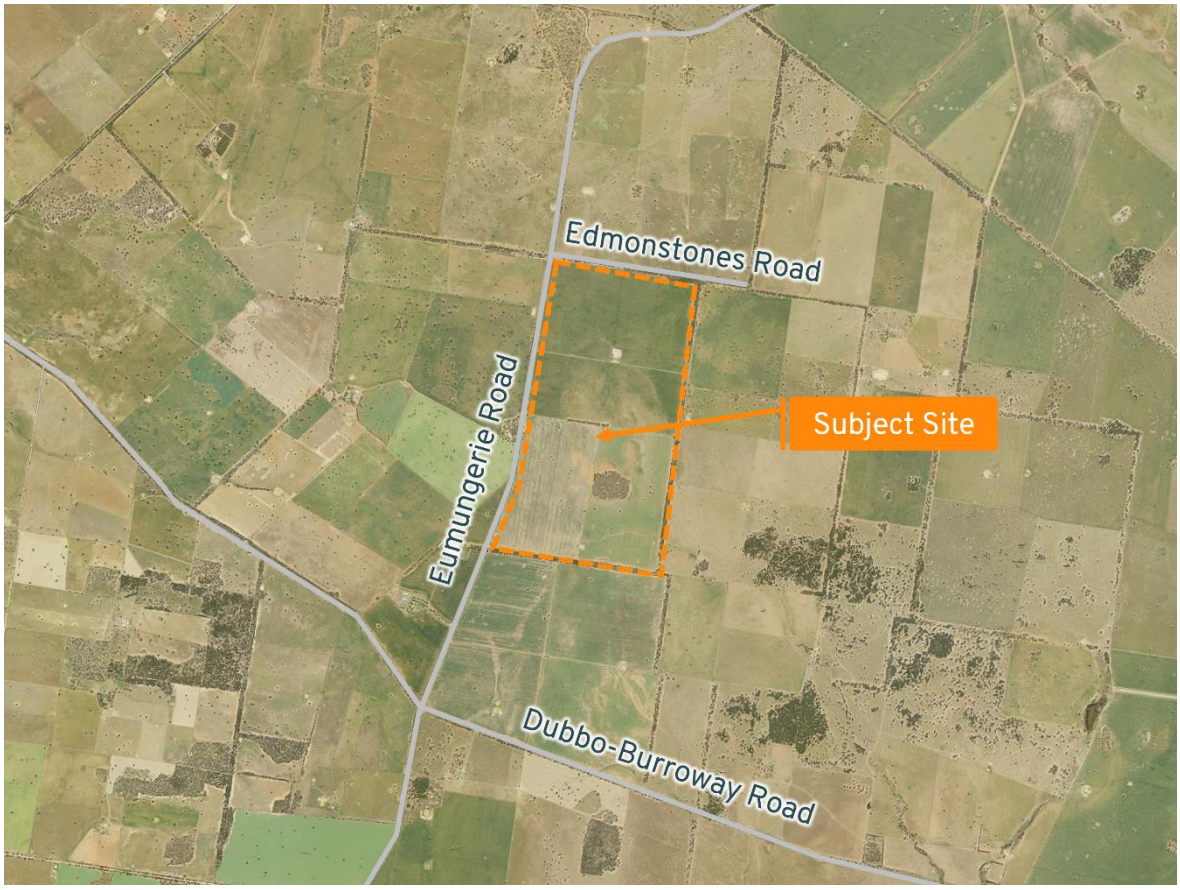
Source: Edify Energy Pty Ltd

The figure shows the site is well connected with the surrounding State and Regional road network with Eumungerie Road running along the western boundary of the site which provides access to the Narromine township.

The site and surrounding area are zoned RU1 - Primary Production and are primarily occupied by agricultural or vegetated land. The site has an area of approximately 495 hectares, is currently used for agricultural purposes, and has access to the road network via two connections with Eumungerie Road.

Figure 3 provides an aerial photograph of the site and the surrounding area.

Figure 3: Aerial Photograph of Site and Surrounding Area



Source: SixMaps

2.2 Road Network

An overview of the surrounding road network is provided in Table 2.

Table 2: Road Network

Road	Classification	Surface	Typical Width	Speed Limit	Alignment
Eumungerie Road	State / Regional[1]	Sealed	7.0m	100 km/hr	Northeast – southwest between Newell Highway in Eumungerie and Warren Road in Narromine
Dubbo-Burroway Road	Municipal	Sealed	6.0m	100 km/hr	East-west between Burroway Road in Burroway and its continuation as Burraway Road east of Rawsonville Bridge Road.
Newell Highway	State	Sealed	7.0m	90 km/hr	Northeast-southwest between Goondiwindi in QLD and the NSW/VIC border.

[1] Eumungerie Road is classified as a State road between Eumungerie and Kickabil and a Regional road between Kickabil and Narromine, although advice from Narromine Shire Council indicates that the entire length of the road is soon to be classified as a State road.

Road	Classification	Surface	Typical Width	Speed Limit	Alignment
Warren Road	Municipal	Sealed	7.0m	80 km/hr	Northwest-southeast between Trangie Collie Road in Gin Gin and Mitchell Highway in Narromine.
Mitchell Highway	State	Sealed	7.0m	50 km/hr in Narromine 110 km/hr (typical)	Northwest-southeast between Augathella in QLD and Bathurst in NSW.

The road network in the vicinity of the site consists of Eumungerie Road as a regional road which runs along the western boundary of the site and connects with Warren Road to the south which is a local road. Warren Road connects with Mitchell Highway in the town of Narromine. Newell Highway is located to the east of the site and connects with Eumungerie Road via Dubbo-Burroway Road which is a local road.

All roads have been designed to accommodate heavy vehicle movements. An overview of the relevant intersections is provided in Table 3.

Table 3: Intersection Summary

Intersection	Configuration	Control
Eumungerie Road / Dubbo-Burroway Road	Cross intersection	'Stop' linemarking and signage installed for both approaches from Dubbo-Burroway Road.
Newell Highway / Burraway Road / Burraway Street	Cross intersection	'Stop' linemarking and signage installed for Burraway Road and Burraway Street approaches.
Eumungerie Road / Warren Road	T-intersection	'Stop' linemarking and signage installed for Eumungerie Road approach.
Mitchell Highway / Warren Road	T-intersection	'Give Way' linemarking and signage installed for Warren Road approach.

2.3 Traffic Volumes

2.3.1 Intersection Volumes

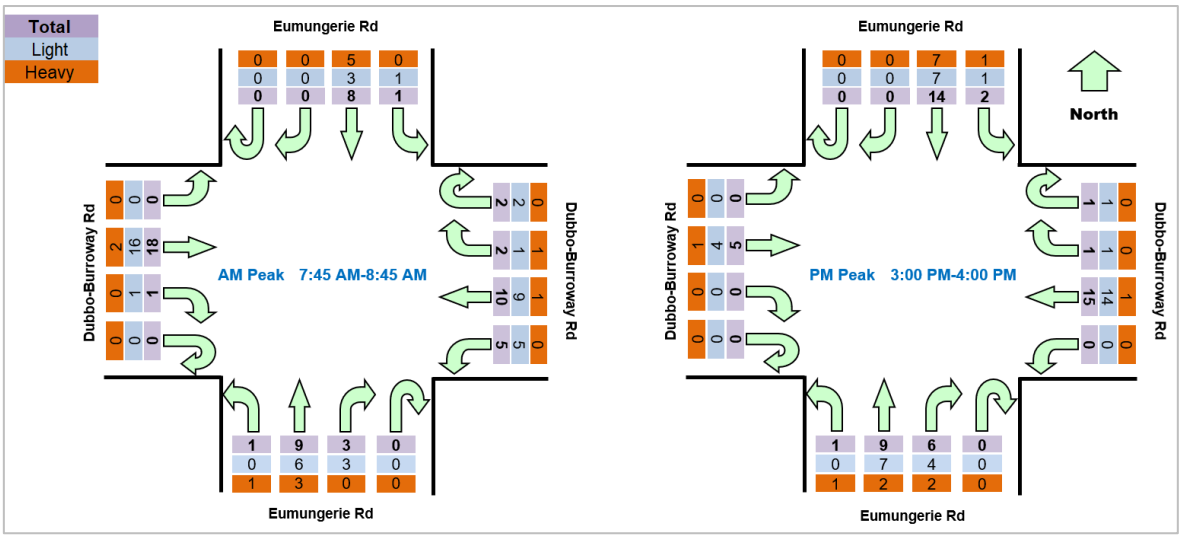
Amber commissioned turning movement count surveys at the following intersections in order to determine the existing traffic conditions in the area:

- Eumungerie Road / Dubbo-Burroway Road
- Newell Highway / Burraway Road
- Eumungerie Road / Warren Road
- Mitchell Highway / Warren Road

The surveys were undertaken on Tuesday 9 May 2023 and from 6:00am-10:00am and 3:00pm-7:00pm. A summary of the results for each site is provided below with the full survey results presented within Appendix A.

2.3.1.1 Eumungerie Road / Dubbo-Burroway Road

Figure 4: Turning Movement Count Peak Hour Survey Results

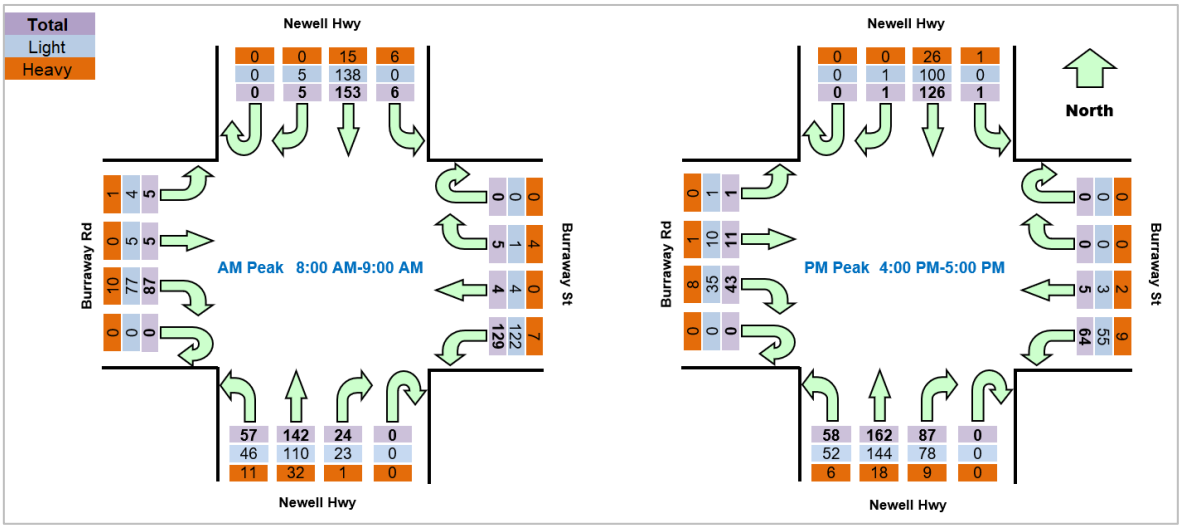


The survey results indicate the intersection currently carries a very low level of traffic in the order of 60 and 54 vehicle movements in the morning and evening peak hour, respectively. The morning peak hour was recorded from 7:45am to 8:45am and the evening peak hour was recorded from 3:00pm to 4:00pm.

The majority of vehicle movements in the morning peak are eastbound through movements on Dubbo-Burroway Road. In the vicinity of the site Eumungerie Road accommodated 20 and 26 vehicle movements in the morning and evening peak hours respectively. Overall, the results indicate both roads accommodate a very low level of traffic and are able to accommodate an increase in vehicle movement.

2.3.1.1 Newell Highway / Burraway Road / Burraway Street

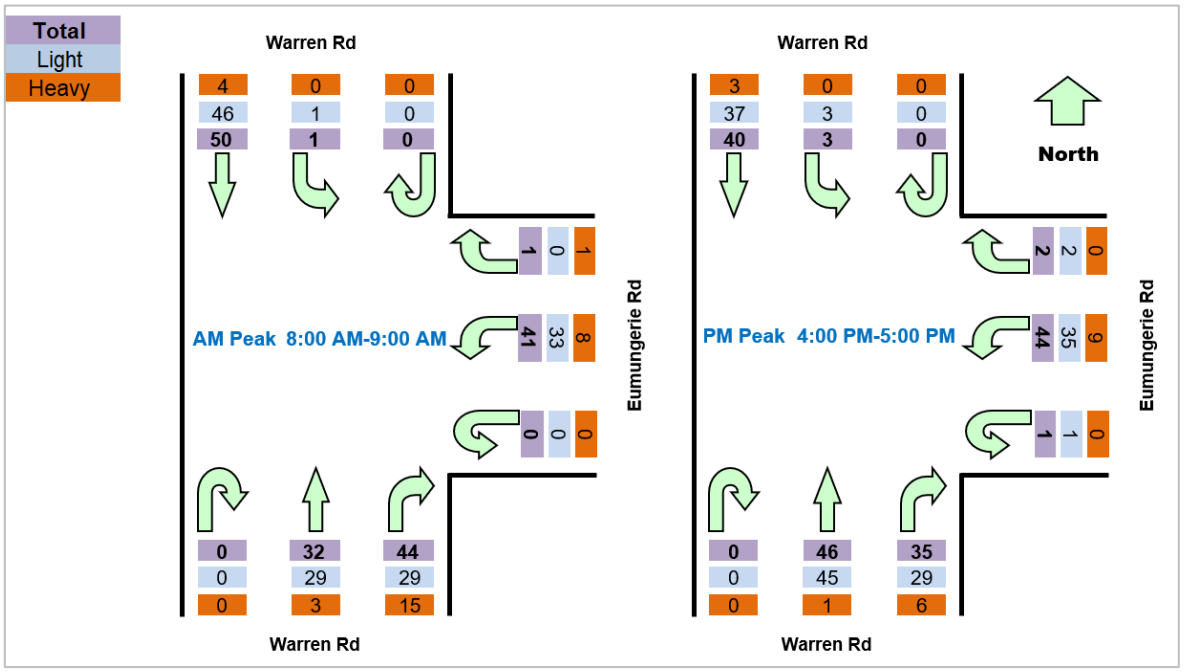
Figure 5: Turning Movement Count Peak Hour Survey Results



The survey results indicate that there are moderate through vehicle movements along Newell Highway which are generally southbound in the morning peak and northbound in the evening peak. Burroway Road accommodates 163 and 119 vehicle movements in the morning and evening peak hours respectively. There is a higher demand for the right turn movement out of Burroway Road toward the south, with comparatively lower demand for the left turn movement.

2.3.1.1 Eumungerie Road / Warren Road

Figure 6: Turning Movement Count Peak Hour Survey Results

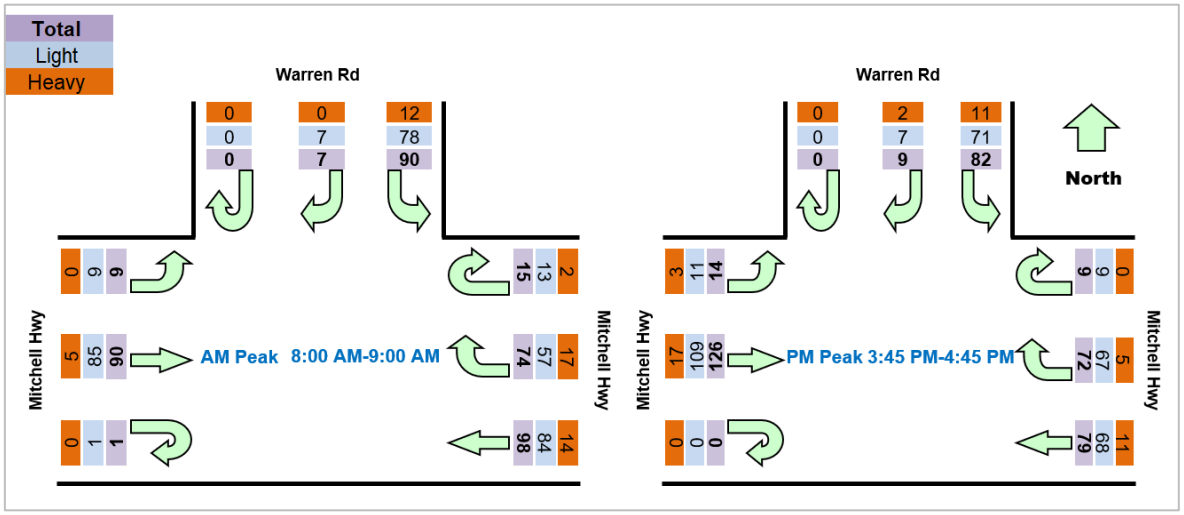


The survey results indicate the intersection currently carries a low level of traffic in the order of 169 and 171 vehicle movements in the morning and evening peak hour, respectively. The morning peak hour was recorded from 8:00am to 9:00am and the evening peak hour was recorded from 4:00pm to 5:00pm.

The majority of vehicle movements are split between through movements on Warren Road and movements between Eumungerie Road and the southern leg of Warren Road which provides access to the Narromine township. Overall, the results indicate both roads accommodate a low level of traffic and are able to accommodate an increase in vehicle movement.

2.3.1.1 Mitchell Highway / Warren Road

Figure 7: Turning Movement Count Peak Hour Survey Results



The survey results indicate that the majority of vehicle movements at the intersection are split between through movements along Mitchell Highway and movements between Warren Road and the eastern leg of Mitchell Highway which provides access to the Narromine township. The intersection carries a moderate level of traffic in the order of 384 and 391 vehicle movements in the morning and evening peak hour, respectively. The morning peak hour was recorded from 8:00am to 9:00am and the evening peak hour was recorded from 3:45pm to 4:45pm.

2.3.2 State Road Midblock Volumes

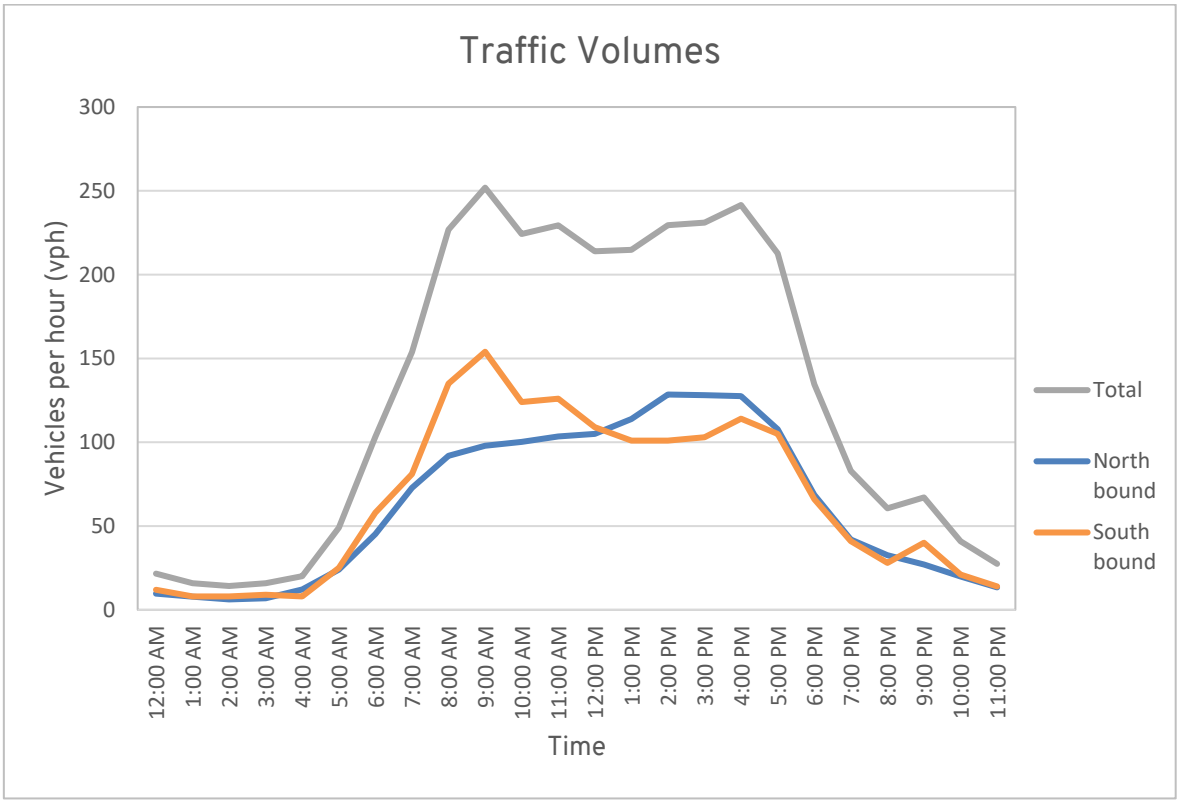
Traffic volume data has been collected from the TfNSW Traffic Volume Viewer for Newell Highway, the main highway leading to site from Dubbo. A summary of the traffic volumes is provided within Table 4.

Table 4: Newell Highway Traffic Volumes

Road	Survey Location	Station ID	Survey Date	Recorded Volume (vehicles / day)	Recorded Volume (vehicles / peak hour)
Newell Highway	1.71km North of Paintmine Road	6145	20/01/23	2,689 total vpd: 1,936 (72%) LV 753 (28%) HV	AM – 642 PM - 636

The traffic volumes for Newell Highway have also been provided for each hour and separated into north and southbound movements to show the daily traffic volume profile. The traffic volumes are shown in Figure 8.

Figure 8: Newell Highway Traffic Volume Data



The TfNSW survey data indicates that Newell Highway currently experiences most traffic movements between the hours of 8:00am and 5:00pm with a relatively flat distribution between the peak hours.

2.3.3 Summary

Overall, the survey results indicate the surrounding road network currently accommodates a low to moderate level of traffic for the respective road classifications and is able to accommodate an increase in vehicle movement.

2.4 Public Transport Services

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

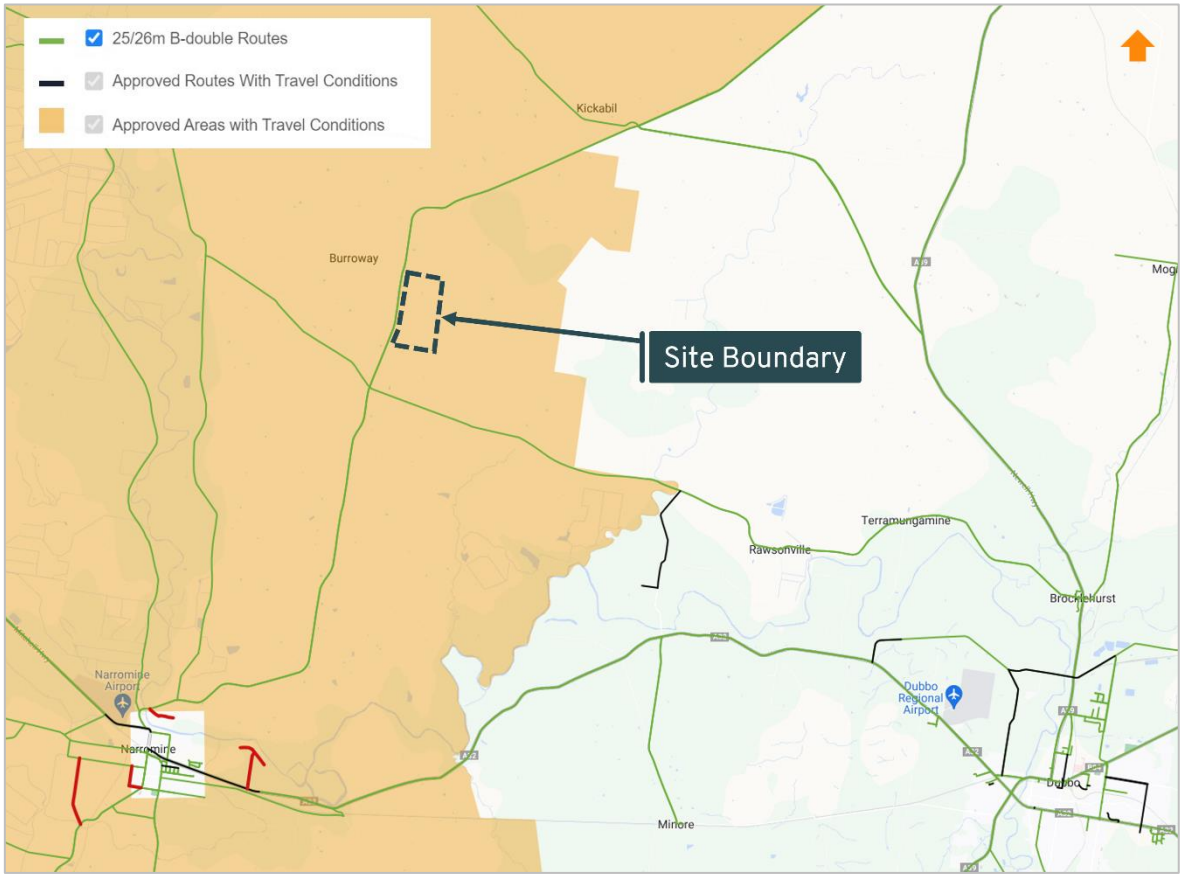
Several school bus services operated by Ogden's Coaches and Dubbo Buslines travel along Newell Highway which is a state highway designed to accommodate heavy vehicle movements. The following school bus routes operate along the local and regional roads in the vicinity of the site:

- The Rawsonville route operated by Ogden's Coaches travels along Burraway Road between Coolbaggie Road and Newell Highway from 7:40am to 8:05am and 4:05pm to 4:25pm.
- The Buddah route operated by Ogden's Coaches travels along Warren Road between Eumungerie Road and Mitchell Highway from 8:30am to 8:45am and 3:15pm to 3:30pm.

2.5 Restricted Vehicle Access

The TfNSW Restricted Vehicle Access Map for the surrounding area is provided within Figure 9. The green lines indicate approved B-Double routes while the black lines represent approved routes with travel conditions. The figure shows that Eumungerie Road and the surrounding State road network are B-Double approved routes although travel conditions are applicable in some areas.

Figure 9: TfNSW Restricted Access Vehicle Map



Source: TfNSW Restricted Vehicle Access Map

The travel conditions outlined within the portal are as follows:

> *1. Access to all Regional and Local roads within Narromine Shire Council area except for: (1) Regional and Local roads located east of HW17 Newell Highway; (2) Regional or Local roads within Narromine town; (3) Regional or Local roads within Trangie town; unless roads are separately listed.*
>
> *2. Alternative route for heavy vehicle through Narromine (Culling and Manildra Streets) must be used. Depot access in Narromine only to Council approved site.*

Accordingly, the site has access to the B-Double approved road network via Eumungerie Road with all heavy vehicles to utilise the alternative route via Culling Street and Manildra Street through the Narromine township.

2.6 Crash History

Amber has conducted a review of the TfNSW Centre for Road Safety Crash and Casualty Statistics database for all injury crashes within 2 kilometres of the subject site. The crash database provides the location and severity of all injury and fatal crashes for the five-year period from 2017 to 2021. The search revealed one 'off road to the left' crash at the site frontage which resulted in no casualties.

Accordingly, it is concluded that the road network is currently operating in a relatively safe manner given the road classification and associated traffic volumes.

3. Traffic Assessment

3.1 Traffic Generation

3.1.1 Construction

The solar farm construction is expected to commence in 2025 and take approximately 12-18 months, with the peak construction period expected to take 6 months. Construction activities would be undertaken during standard daytime construction hours, as follows:

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

Any construction outside of these normal working hours would only be undertaken with prior approval from relevant authorities. A maximum workforce of 250 people would be on-site during peak construction periods with one shift proposed per day.

A Construction Traffic Management Plan (CTMP) would be prepared prior to construction commencing by the appointed contractor as outlined in Section 6.

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

- Light vehicles associated with transporting the workforce to/from the site;
- Shuttle buses are proposed to transport the majority of the workforce between the site and nearby towns;
- Medium and Heavy Rigid Trucks (MRV and HRV) would be used to deliver raw materials and smaller plant;
- Truck and Dog vehicles would be used to transport earthwork material to/from the site; and
- 19 metre long Articulated Vehicles and 26 metre long B-Doubles (AV and B-Double) would be used to transport larger plant.

Restricted Access Vehicles / oversized and overmass (OSOM) vehicles would be required for the delivery of larger plant to the site such as the substation transformer and are subject to separate permit applications and regulations. The impacts of the OSOM vehicles are discussed within Section 5.5 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 96 heavy and 44 light vehicle movements per day. It is noted that a vehicle movement is classified as a vehicle travelling in one direction (i.e. a truck accessing the site would generate one movement towards the site and one movement away from the site when it departs).

Table 5 summarises the traffic movements generated during the construction period of the solar farm.

Table 5: Traffic Generation During Peak Construction Periods

Vehicle Type	Vehicle Size	Average Vehicle Movements per Day		Peak Vehicle Movements per Day	
		Daily (vpd)	Peak Hour (vph)	Daily (vpd)	Peak Hour (vph)
Light Vehicle	Light Vehicle (car / 4WD)	24	12	44	22
Heavy Vehicle	Shuttle Bus	10	5	12	6
	MRV/HRV	12	2	24	4
	Truck and Dog	8	2	18	4
	AV	10	2	28	4
	B-Double	6	2	14	8
Total		**70**	**25**	**140**	**48**

Overall, the site is expected to generate approximately 48 vehicle movements during the morning and evening peak hours during the peak construction period, which would reduce to 25 vehicle movements over the typical construction periods.

3.1.2 Operational Traffic

During operation, the solar farm is expected to generate a minimal level of traffic associated with maintenance and operation services. The solar farm is expected to be operated by up to 4 maintenance staff resulting in a traffic generation of up to 8 vehicle movements per day which would result in a negligible change to the traffic environment. There would also be occasional light commercial vehicles delivering parts to the site 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 would be dismantled and removed from the project site. Internal roads, if not required for ongoing farming purposes or fire access, would be removed and the site reinstated as close as possible to its original state.

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

3.2 Traffic Distribution

Traffic accessing the site would do so via Eumungerie Rd. The workforce would primarily be located in Dubbo and Narromine, with all plant expected to be delivered via Port Botany or the Port of Newcastle.

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

- Light Vehicles and Shuttle Buses: It is anticipated that 70% of the workforce would be located in Dubbo and would access the site from the south via Eumungerie Road, Dubbo-Burroway

Road and Newell Highway. The remaining 30% would be located in Narromine and would also access the site from the south via Eumungerie Road, Warren Road and Mitchell Highway.

- MRV and HRV: These vehicles would predominantly be water trucks and vehicles transporting materials such as concrete and fencing supplies which would be sourced from Dubbo. All vehicle movements would access the site from the south via Eumungerie Road, Dubbo-Burroway Road and Newell Highway.
- Truck and Dog: These vehicles would transport quarry material, with 70% expected to travel from Dubbo and access the site from the south via Eumungerie Road, Dubbo-Burroway Road and Newell Highway. The remaining 30% would travel from Narromine and would also access the site from the south via Eumungerie Road, Warren Road and Mitchell Highway.
- AV and B-Doubles: 90% of the plant would be transported from Port Botany or Port of Newcastle and would access the site from the south via Dubbo using Eumungerie Road, Dubbo-Burroway Road and Newell Highway. The remaining 10% would be expected to access the site from the south via Narromine using Eumungerie Road, Warren Road and Mitchell Highway.

It is noted that no vehicle movements are expected to/from the north as there are no large townships within a reasonable distance of the site.

The peak hour for construction would occur at the start and end of the day when the workforce is transported to the site. The majority of the workforce typically arrive on-site between 6:00am and 7:00am and depart between 5:00pm and 6:00pm.

During the morning peak all vehicle movements would be toward the site and in the evening peak all vehicle movements would be away from the site. The majority of heavy vehicle movements would be distributed throughout the day and would be split evenly between inbound and outbound movements.

Based on the traffic distribution above the estimated traffic movements generated by the site during the morning and evening peak hour are shown below with light vehicles in Figure 10 and heavy vehicles in Figure 11.

Figure 10: Expected Peak Hour Project Traffic Volumes During Peak Construction – Light Vehicles

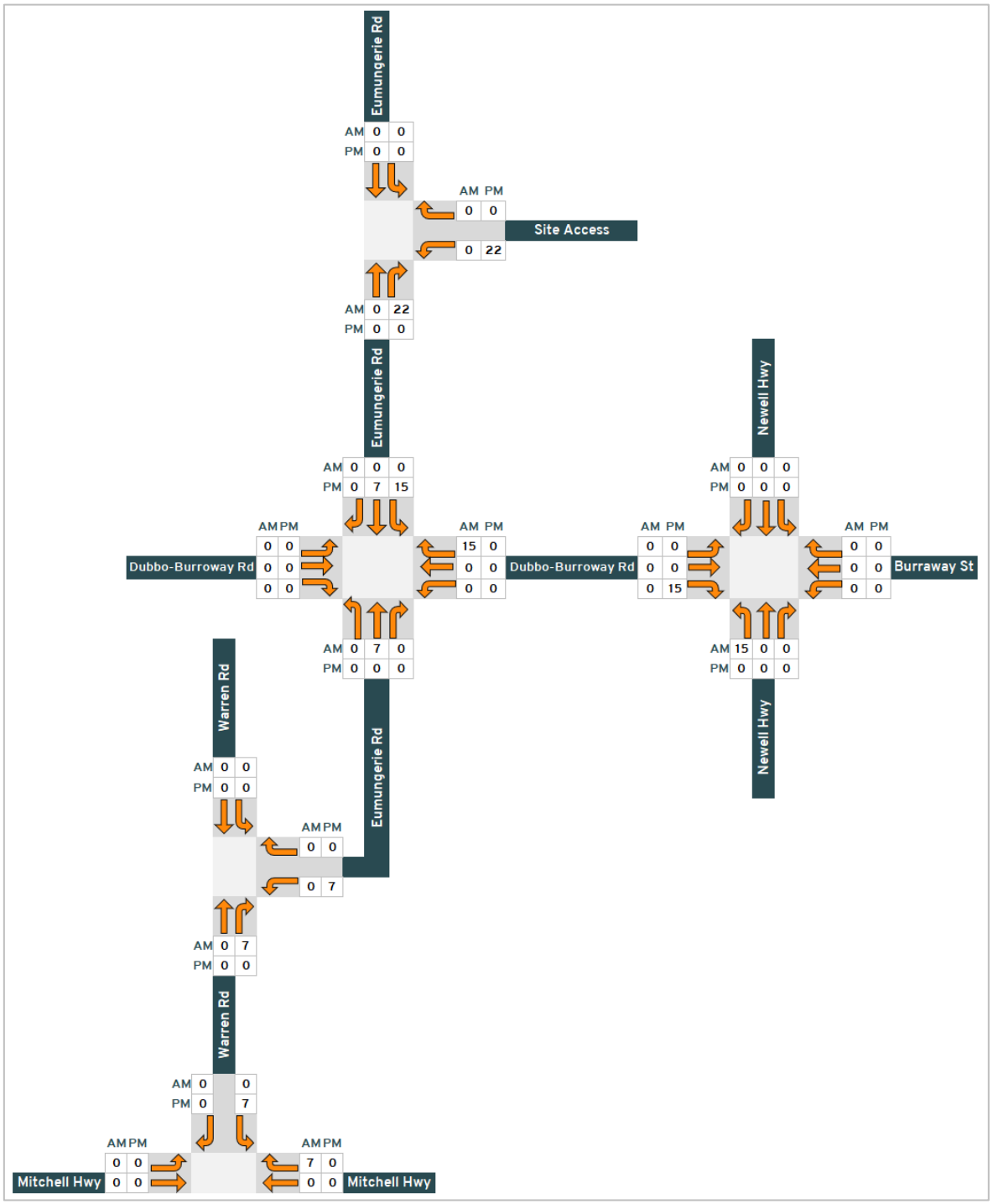
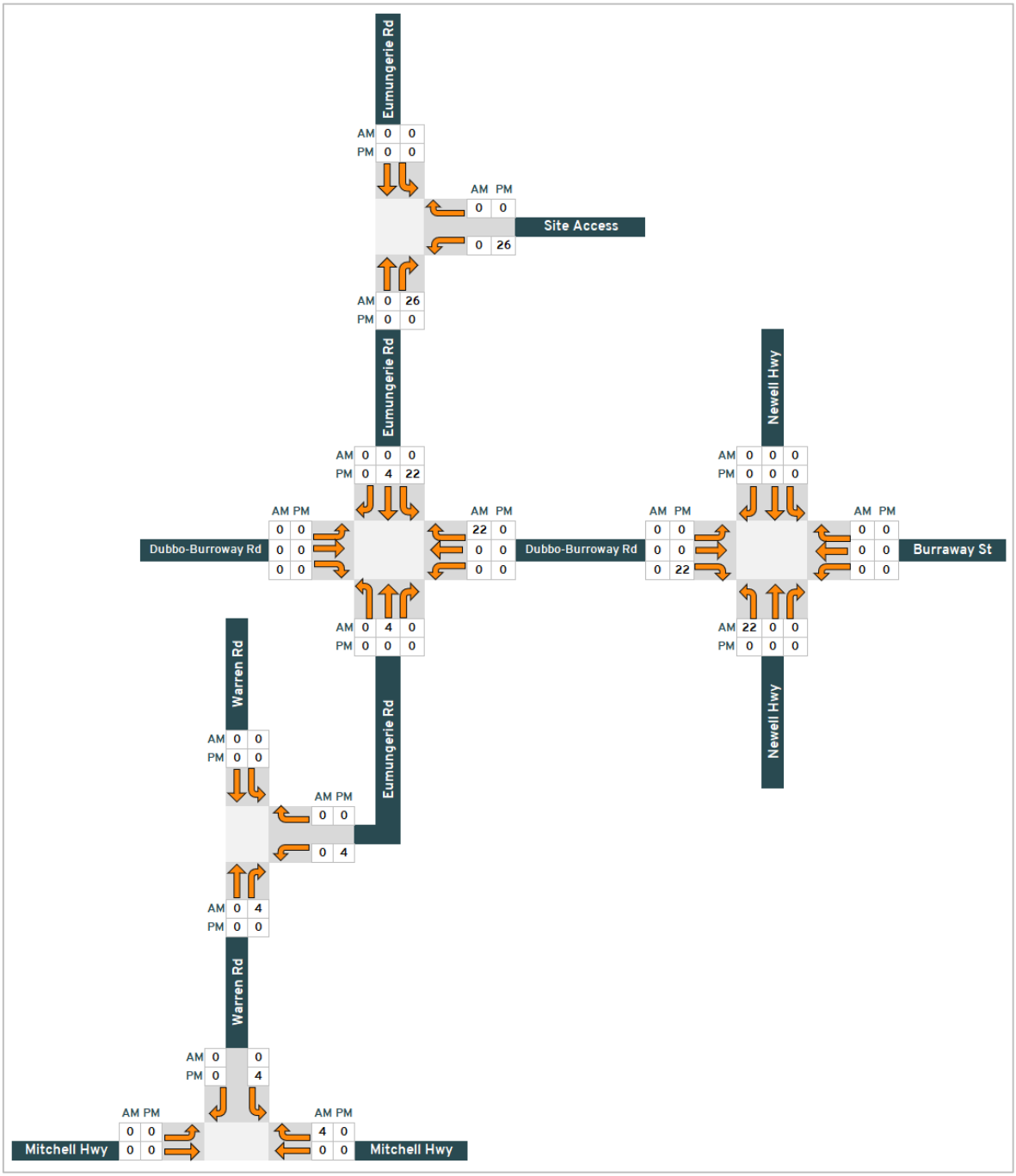


Figure 11: Expected Peak Hour Project Traffic Volumes During Peak Construction – Heavy Vehicles



3.3 Cumulative Traffic Impacts

The primary traffic impact of the solar farm is generated during construction which is anticipated to start in 2025 and take approximately 12-18 months. A summary of the major projects that are proposed in the surrounding area are identified in Table 6.

Table 6: Assessment of Cumulative Impacts of Nearby Developments

Project	Description	Potential Vehicle Conflict
Inland Rail – Narromine to Narrabri (Approved)	Construction of 306km of new rail corridor and track between Narromine and Narrabri as part of the greater Inland Rail freight network between Melbourne and Brisbane. The rail corridor runs along the western side of Eumungerie Road in the vicinity of the site and crosses Eumungerie Road approximately 6 kilometres north-east of Narromine.	There is potential for construction of both projects to overlap. The workforce from both projects are anticipated to be based in Narromine and Dubbo. The rail corridor runs along the western side of Eumungerie Road opposite the site frontage. It is anticipated that the project would generate up to 98 light vehicle movements and 326 heavy vehicle movements per day during peak construction. After completion, the operation of the rail line would generate a very low level of traffic for periodic maintenance.
Narromine Battery Energy Storage System (Prepare EIS)	Development of a 125 MW Battery Energy Storage System (BESS) with ancillary infrastructure, to be located around 3.5km south-east of Narromine, and 32km west of Dubbo.	There is potential for construction of both projects to overlap. Both projects are anticipated to have workforce located in Narromine and Dubbo. There is potential for construction vehicles to interact within Dubbo and Narromine.
Nevertire Solar Farm – Mod 4 BESS	Addition of a 50 MW /100 MWh BESS located in Nevertire, approximately 70 km northeast of Narromine.	There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the township of Narromine.
Forest Glen Solar Farm (Approved)	Development of a 90 MW solar farm with 25 MW of battery storage, located about 10km west of Dubbo and 23km east of Narromine.	There is potential for construction vehicles to interact within the township of Dubbo, although construction is likely to end before proposal's construction begins.
Dubbo Quarry Continuation Project (Approved)	An extension of an existing hard rock quarry, to increase production from 350,000 tpa to 500,000 tpa, located about 1.9km south-east of Dubbo.	Vehicles carrying plant and equipment may interact with the quarry-related vehicles on Mitchell Highway. Both projects are anticipated to have workforce located in Dubbo.
Dubbo Firming Power Station (Prepare EIS)	Development of a 64 MW dual fuel (gas and liquid) fired power station, a 17.5 MW hydrogen electrolysis plant and ancillary infrastructure, located in north Dubbo.	There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the township of Dubbo.
Gilgandra Solar Farm (Approved)	Development of 40 MW solar farm and ancillary infrastructure, located about 3km north of Eumungerie and 35km north of Dubbo, on the western side of the Newell Hwy.	The project is currently on hold.
Dunedoo Solar Farm (Approved)	Development of a 55 MW solar farm with 60 MW of battery storage, located about 77km north-east of Dubbo.	Construction is anticipated to be completed before construction of the subject site commences.

Project	Description	Potential Vehicle Conflict
Mod 1 – Project Layout and Processing Changes (Approved)	Development of a rare earth minerals mine and ancillary infrastructure to extract ore at a rate of up to 1 million tonnes per annum, located about 25km south of Dubbo.	The traffic generated from both projects may interact within the township of Dubbo, where the workforce are anticipated to be located. Once fully operational, the project would utilise rail as its primary transport.
Apsley Battery Energy Storage System (Approved)	Development of a 160 MW Battery Energy Storage System (BESS) with ancillary infrastructure, to be located about 60km south-east of Dubbo by road.	The construction periods for both projects could potentially overlap. Vehicles may interact within Dubbo.
Wellington Town Battery Energy Storage System (Prepare EIS)	Development of a 180 MW Battery Energy Storage System (BESS) with ancillary infrastructure, to be located within Wellington, about 52km south-east of Dubbo by road.	The construction periods for both projects could potentially overlap. Vehicles may interact within Dubbo.
Wellington North Solar Farm (Approved)	Development of a 300MW solar farm and ancillary infrastructure, located about 53km south-east of Dubbo by road.	Construction is anticipated to finish before the proposal's construction begins.
Spicers Creek Wind Farm (Prepare EIS)	A development of a 730 MW wind farm, battery storage facilities and ancillary infrastructure, located about 51km east of Dubbo by road.	There is potential for construction of both projects to overlap. Both projects may utilise the same transport route from the Port of Newcastle for delivery of plant and equipment.
Tallawang Solar Farm (Response to Submissions)	Development of a 500MW solar farm with 200 MW battery energy storage system and associated infrastructure, located about 107km east of Dubbo.	There is potential for construction of both projects to overlap. Both projects may utilise the same transport routes from the Port of Newcastle for delivery of plant and equipment.
Orana Battery Energy Storage System (Prepare EIS)	Development of a 200-400MW Battery Energy Storage System (BESS), located about 49km south-east of Dubbo by road.	Construction is anticipated to finish before the proposal's construction begins.
Maryvale Solar MOD 2 – Capacity increase (Assessment)	An increase in capacity to the proposed development of a 125MW solar farm up to 230MW, located about 42km south-east of Dubbo by road.	Construction is anticipated to finish before the proposal's construction begins.
Suntop Solar Mod 2 – Battery Storage System (Prepare Mod Report)	Development of a 200 MW Battery Energy Storage System (BESS) and ancillary infrastructure, located about 60km south-east of Dubbo.	Construction is anticipated to finish before the proposal's construction begins.
Wellington South Battery Energy Storage System (Response to Submissions)	Development of a 500 MW Battery Energy Storage System (BESS) and associated infrastructure, located about 50km south of Dubbo by road, and 3km north of Wellington.	Construction is anticipated to finish before the proposal's construction begins.

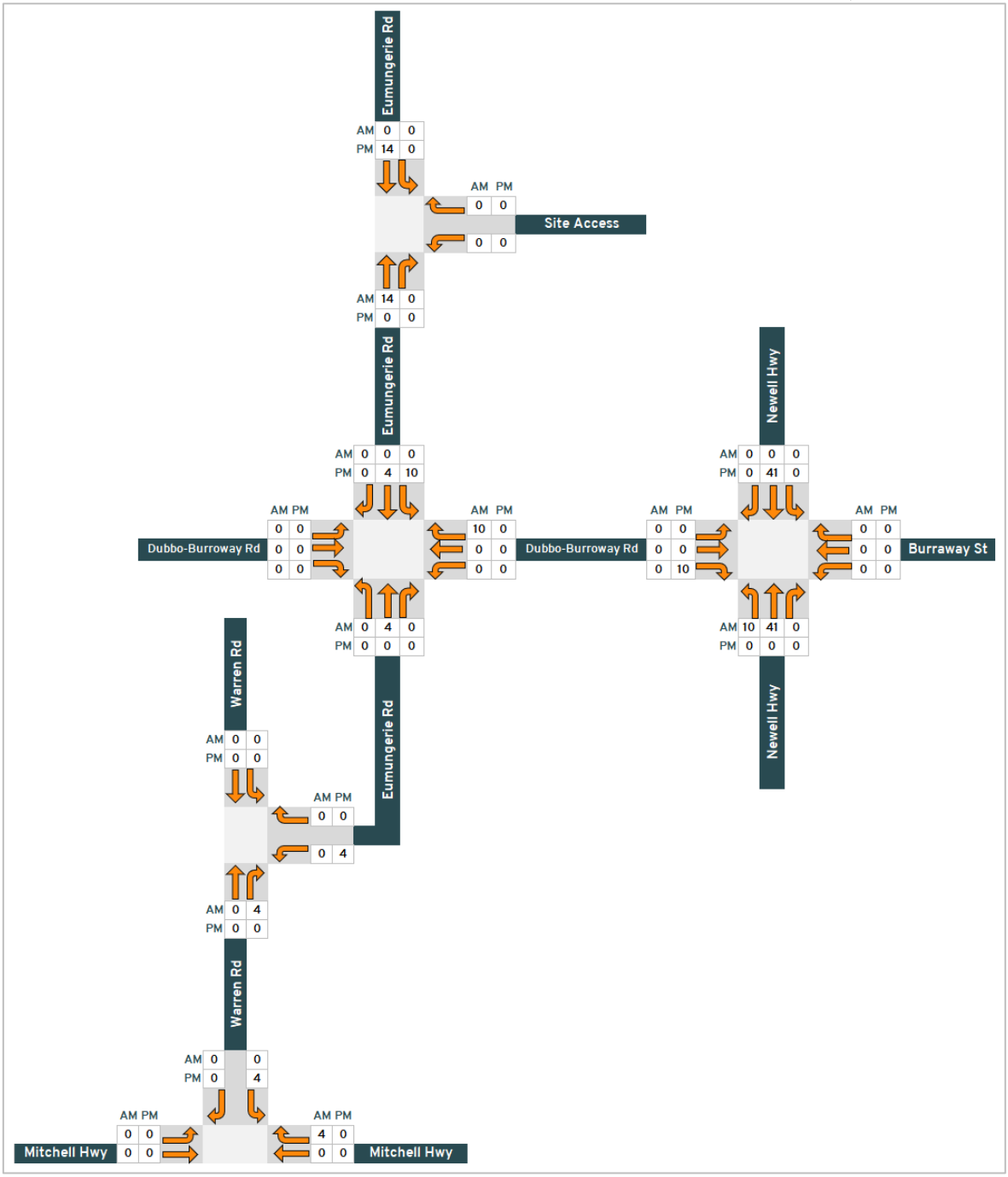
The above assessment indicates that a number of projects are expected to generate additional vehicle movements within Dubbo and Narromine. These vehicle movements would be distributed

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 Inland Rail (Narromine to Narrabri) project has the potential to generate additional vehicle movements along Eumungerie Road, Dubbo-Burroway Road, Warren Road, Mitchell Highway and Newell Highway. Traffic data has been obtained from the Environmental Impact Statement (EIS) Report prepared by Australian Rail Track Corporation (ARTC).

The vehicle movements generated by this project have been estimated based on the available information with the assumption that the peak construction periods coincide with the peak construction period of the proposed solar farm, and all vehicles accessing the site during the morning and afternoon peak hour are light vehicles. The vehicle movements are summarised within Figure 12.

Figure 12. Estimated Traffic Volumes Generated by Inland Rail (Narromine to Narrabri) Project



3.4 Traffic Assessment

The capacity of the road network can primarily be determined by the operation of the associated intersections. In order to determine the future operating conditions of the adjacent intersections following the development of the site, a SIDRA modelling exercise has been undertaken. The SIDRA software is an advanced lane-based micro-analytical tool for design and evaluation of individual intersections and networks of intersections including modelling of separate movement classes.

The intersection performance criteria are based on the TfNSW Traffic Modelling Guidelines. A key indicator of intersection performance is Level of Service which 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 best indicator of the level of service at an intersection is the average delay experienced by vehicles at that intersection. For priority control intersections (with Stop and Give Way signs or operating under the T-junction rule) the critical movement for level of service assessment should be the movement with the highest average delay. Table 7 sets out average delays for different levels of service.

Table 7: Level of Service Criteria for Intersections

Level of Service	Average Delay per Vehicle (sec/veh)	Give Way and Stop Signs
A	Less than 14	Good operation
B	15 – 28	Acceptable delays and spare capacity
C	29 – 42	Satisfactory, but accident study required
D	43 – 56	Near capacity and accident study required
E	57 - 70	At capacity, require other control mode

The traffic modelling exercise has been undertaken for the morning (6:00am) and evening (5:00pm) peak hour during the peak construction period for the following intersections:

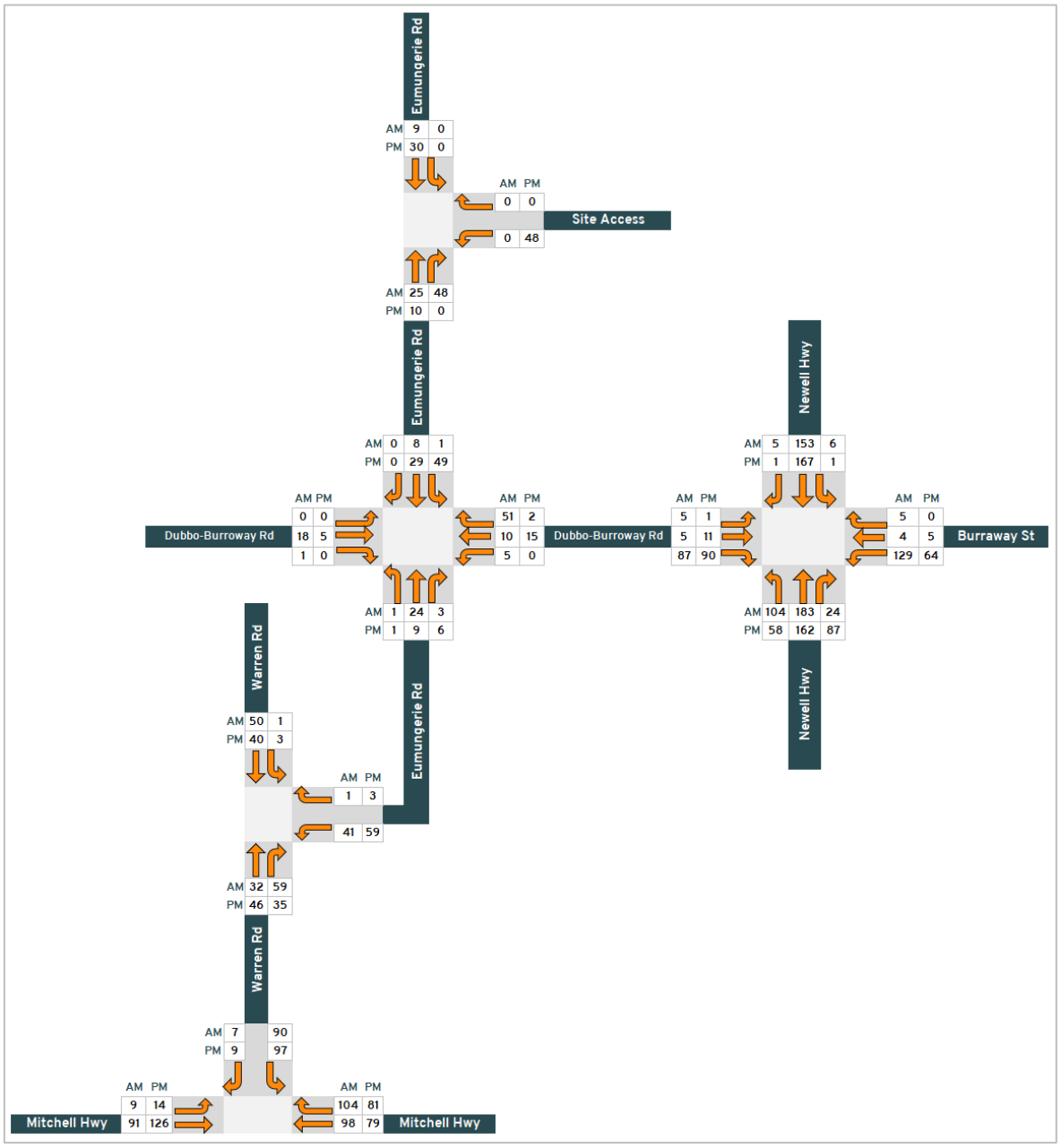
- Eumungerie Road / Site Access
- Eumungerie Road / Dubbo-Burroway Road
- Newell Highway / Burraway Road
- Eumungerie Road / Warren Road
- Mitchell Highway / Warren Road

The traffic volumes utilised for the assessment are the total volumes for the following:

- The survey traffic volumes presented within Appendix A;
- The peak construction project traffic volumes presented within Figure 10 and Figure 11; and
- The traffic volumes associated with other major projects presented within Figure 12.

The traffic volumes used for the assessment are provided within Figure 13 and represent the peak construction period.

Figure 13: Total Traffic Volumes - Peak Construction Period



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

Table 8: SIDRA Analysis Results Summary

Intersection	Morning Peak Hour			Evening Peak Hour		
	Average Delay (sec)	95% Queue (m)	Level of Service	Average Delay (sec)	95% Queue (m)	Level of Service
Site Access / Eumungerie Road	5.2	2.4	A	0.3	1.7	A
Eumungerie Road / Dubbo-Burroway Road	8.1	2.7	A	6.4	0.5	A

Newell Highway / Burraway Road	7.4	16.3	C	9.0	25.5	C
Eumungerie Road / Warren Road	4.2	2.5	A	4.6	1.8	A
Mitchell Highway / Warren Road	2.8	5.1	A	2.7	3.5	A

The SIDRA analysis indicates the following:

- All intersections are expected to continue to operate with minimal queue lengths;
- The average delay at intersections in the network is below 10 seconds; and
- All intersections are expected to operate with a good or satisfactory level of service.

Accordingly, the road network is expected to be able to readily accommodate the traffic movements generated during peak construction.

3.5 Summary

The solar farm is expected to generate the highest level of traffic during the peak construction period. The assessment presented above indicates that the road network is able to accommodate the project traffic during peak construction periods, including the cumulative traffic generated by other major projects within the surrounding area.

During construction the traffic movements through the middle of the day are expected to be predominantly associated with heavy vehicles with approximately 3-4 vehicle movements per hour. This increase in traffic would be within the daily variation of traffic volumes on the road network and can be readily accommodated.

It is anticipated that approximately 3 OSOM vehicles would access the site during construction. The vehicle movements would be undertaken outside of the peak periods and would be able to be accommodated on the road network with minimal impacts following the adoption of suitable road management strategies which would be confirmed as part of specific permits that would be applied for prior to construction.

During operation the periodic increase in traffic of up to 8 vehicle movements per day would result in a negligible change to the traffic environment.

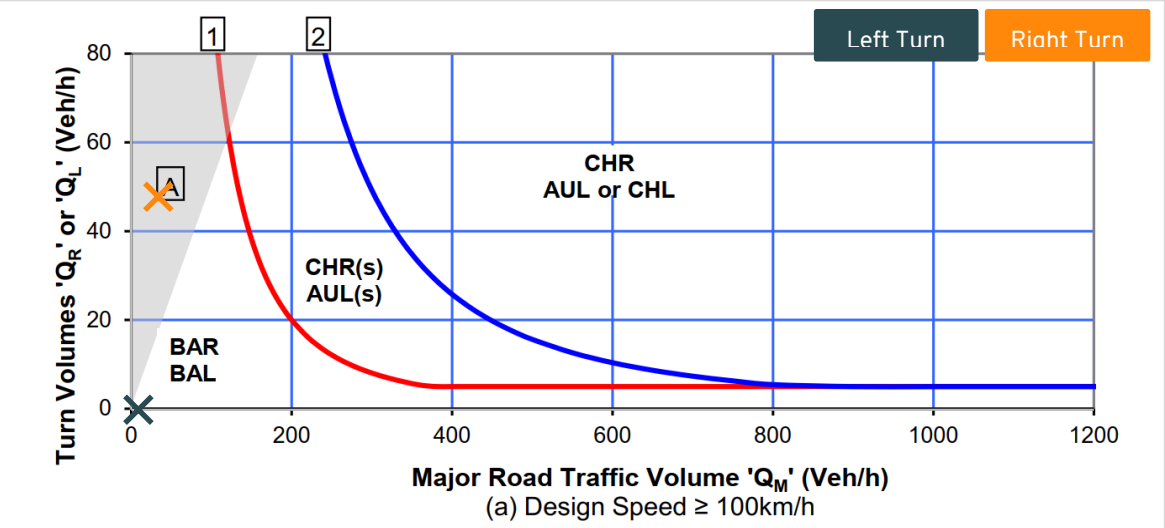
Accordingly, the road network is able to readily accommodate the traffic generated by the development during the construction and operational periods.

4. Intersection Assessment

4.1 Turn Treatments

Austroads Guide to Traffic Management Part 6: Intersections, Interchanges, and Crossings specifies the turning treatments required at intersections. Figure 3.25 of the guide specifies the required turn treatments on the major road at unsignalised intersections and is provided below in Figure 14 for a design speed of 100km/hr or greater.

Figure 14: Figure 3.25 of Austroads Guide to Traffic Management Part 6



The requirement to provide turn facilities at the site access on Eumungerie Road is primarily generated during the morning peak hour when the workforce access the site, which occurs from 6:00am to 7:00am. Table 9 identifies the required turning treatments based on the expected traffic volumes at the intersection and the associated volumes have been plotted within Figure 14.

Table 9: Turning Volumes for Turn Treatment Calculations – Eumungerie Road / Site Access

Turning Treatment	Traffic Volume (vph)		Requirement
	Turn Volume	Major Road	
Right Turn	48	34	BAR
Left Turn	0	9	-

Therefore, the intersection would require a Basic Right Turn (BAR) treatment. The design for the access intersection is provided within Appendix C which shows the required turn treatment can be provided in accordance with the Austroads Guidelines.

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

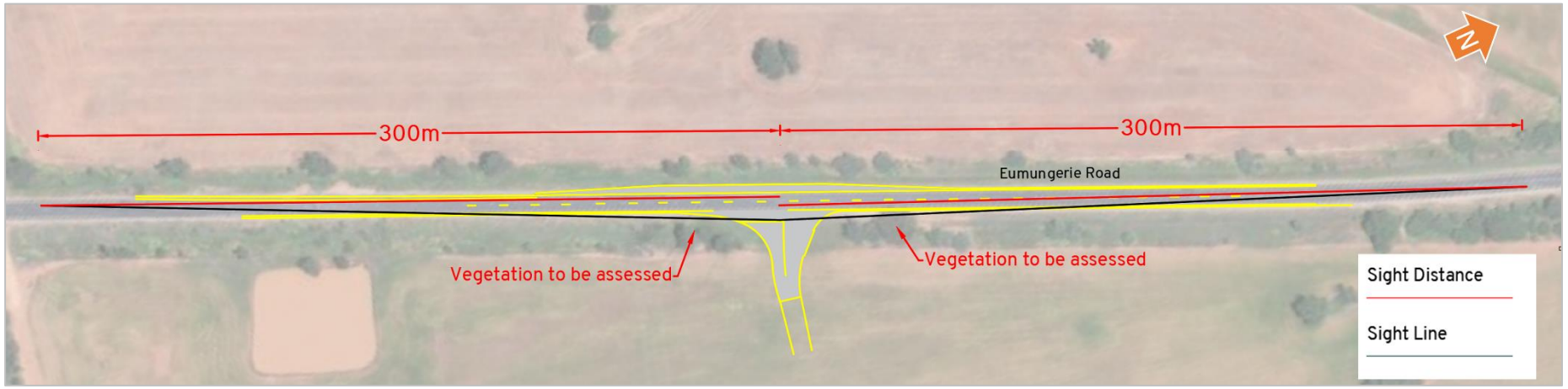
4.2 Sight Distance

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 Eumungerie Road has a speed limit of 100km/hr a design speed of 110km/hr has been adopted which requires an SISD of 300 metres based on a reaction time of 2.5 seconds.

The Applicant has advised that any roadside vegetation would be assessed and cleared to ensure the available sight distance at the access location exceeds the requirements of the Austroads Guide, as shown in Figure 15.

Accordingly, vehicles are expected to be able to safely enter Eumungerie Road from the site access subject to the assessment and clearing of roadside vegetation.

Figure 15: Sight Distance Assessment – Site Access



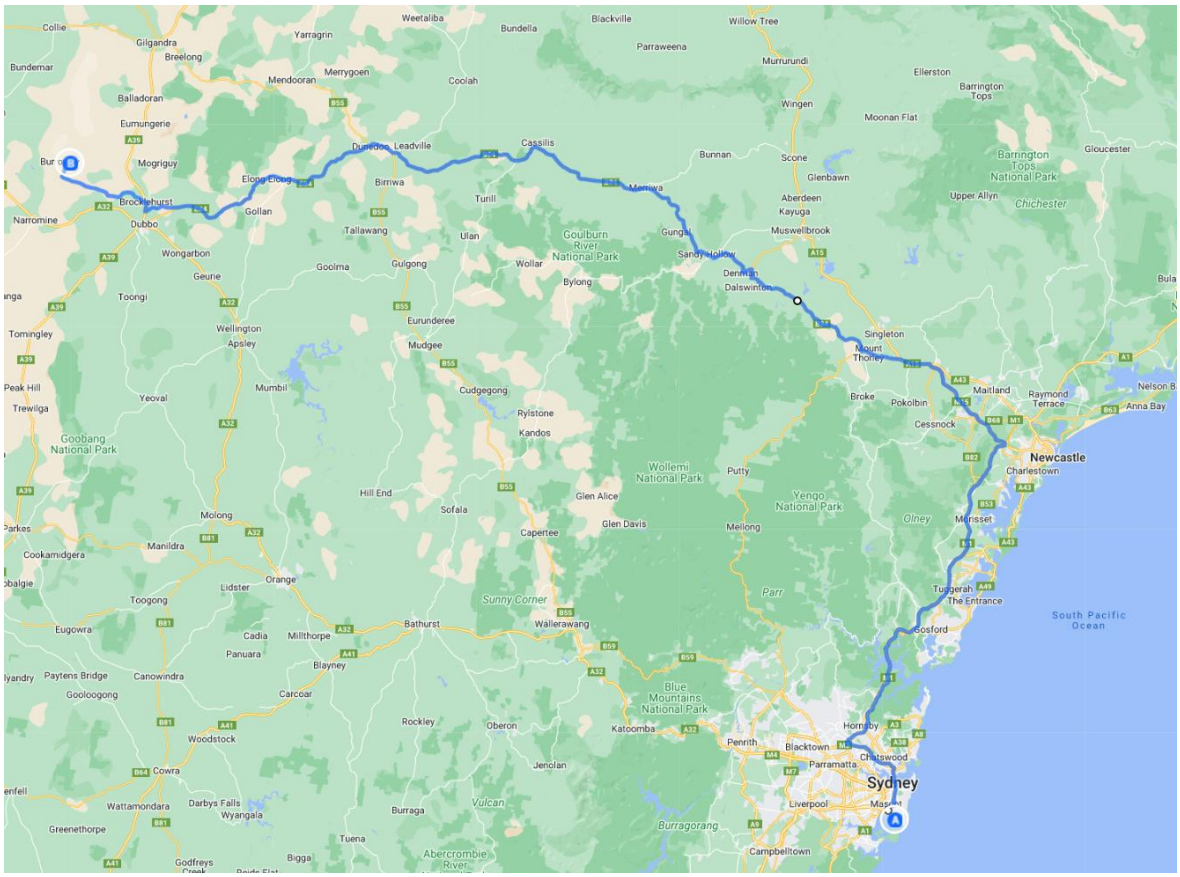
5. Route Assessment

All plant is expected to be delivered from Port Botany or the Port of Newcastle. The following provides a review of the potential access routes from both locations.

5.1 Port Botany Access Route

Figure 16 shows the proposed construction traffic access route from Port Botany to the site for all heavy vehicles.

Figure 16: Access Route from Port Botany to Site



Source: Google Maps - https://goo.gl/maps/PidsDMbBgcgq3T5HA

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

- Foreshore Road / Botany Road,
- Southern Cross Drive,
- Eastern Distributor,
- Warringah Freeway,
- Hills Motorway,
- North Connex,
- Pacific Motorway;
- Hunter Expressway;

- New England Highway;
- Golden Highway;
- Boothenba Road;
- Newell Highway;
- Burraway Road;
- Dubbo-Burroway Road;
- Eumungerie Road; and
- Site access driveway.

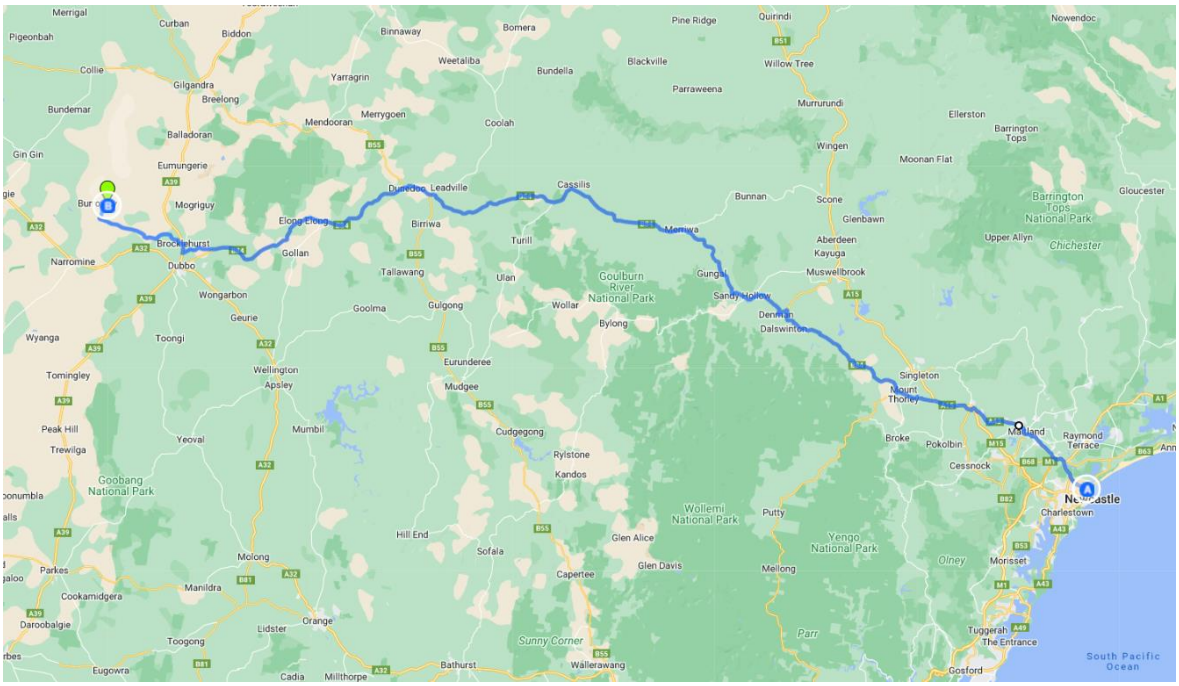
The access route utilises roads that are designated within the TfNSW Restricted Access Vehicle Map and NSW Oversize Overmass Load Carrying Vehicles Network Map. It is noted that an 80 km/hr speed restriction is applicable for B-Doubles on Boothenba Road between Newell Highway and Yarrandale Road.

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 solar farm.

5.2 Port of Newcastle Access Route

Figure 17 shows the proposed construction traffic access route from the Port of Newcastle to the site for all heavy vehicles.

Figure 17: Access Route from Port of Newcastle to Site



Source: Google Maps - https://goo.gl/maps/xtXy2ZiRXBnuPbXA8

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

- Selwyn Street;
- Industrial Drive;

- Pacific Highway;
- New England Highway;
- Hunter Expressway;
- New England Highway;
- Golden Highway;
- Boothenba Road;
- Newell Highway;
- Burraway Road;
- Dubbo-Burroway Road;
- Eumungerie Road; and
- Site access driveway.

The access route utilises roads that are designated within the TfNSW Restricted Access Vehicle Map and NSW Oversize Overmass Load Carrying Vehicles Network Map. It is noted that an 80 km/hr speed restriction is applicable for B-Doubles on Boothenba Road between Newell Highway and Yarrandale Road.

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 solar farm.

5.3 Narromine Access Route

Figure 18 shows the proposed access route to the site for any heavy vehicle movements generated within Narromine. The proposed route is as follows:

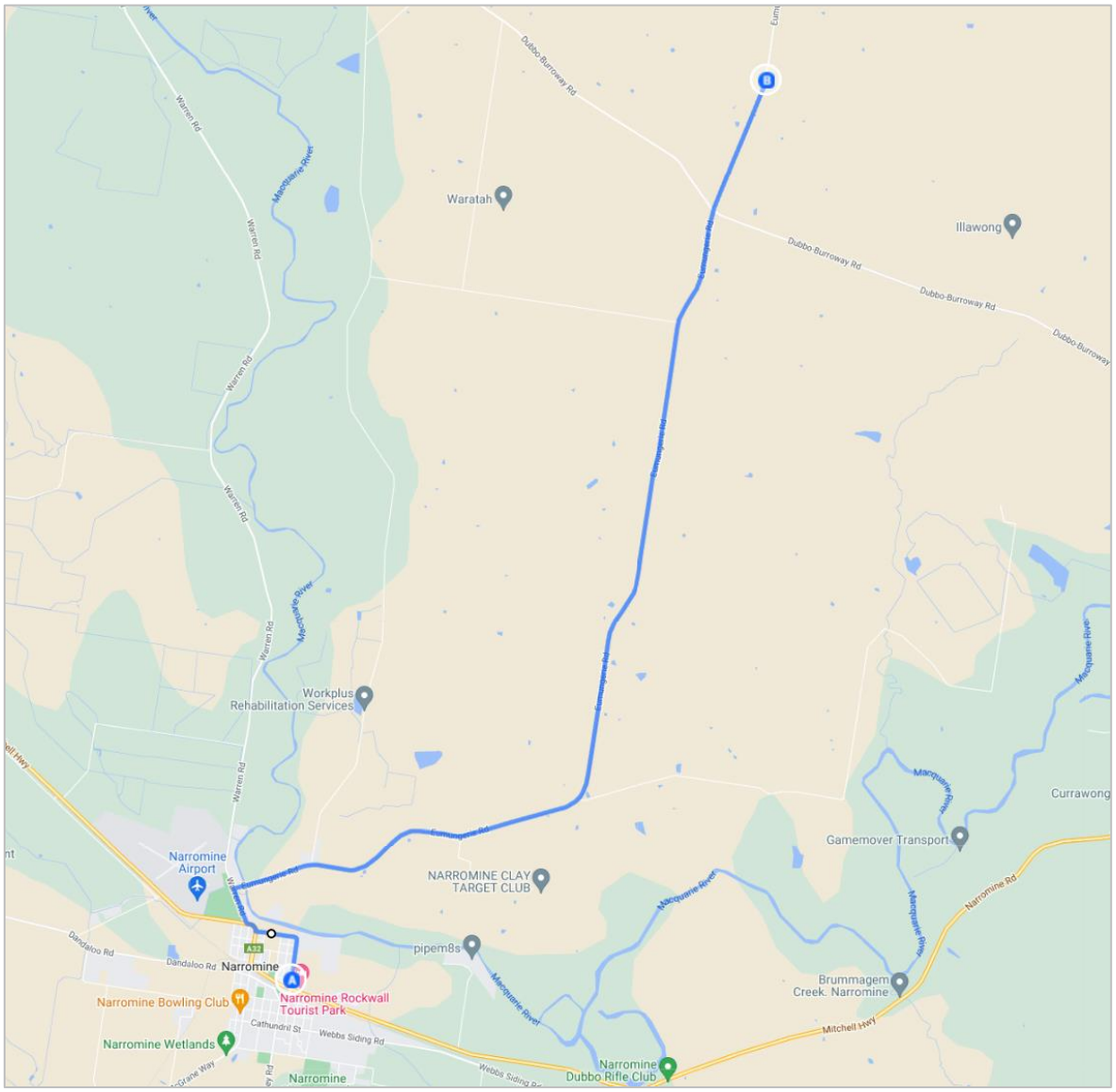
- Manildra Street;
- Culling Street;
- Mitchell Highway;
- Warren Road;
- Eumungerie Road; and
- Site access driveway.

The access route utilises roads that are designated for B-Double vehicles as outlined within the TfNSW Restricted Access Vehicle Map. It is noted that the following travel conditions are applicable within Narromine:

> *Alternative route for heavy vehicle through Narromine (Culling and Manildra Streets) must be used. Depot access in Narromine only to Council approved site.*

The requirement to utilise the alternative route through Narromine is recommended to be included within the Construction Traffic Management Plan (CTMP).

Figure 18: Access Route from Narromine to Site



Source: Google Maps - https://goo.gl/maps/5t8MvkNd5krzLYL6A

5.4 Mitigation Measures

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

- Prior to construction, a pre-condition survey of the relevant sections of the existing road network should be undertaken in consultation with Council. During construction the sections of the road network utilised by the proposal are to be monitored and maintained to ensure continued safe use by all road users, and any faults attributed to construction of the solar farm would be rectified. At the end of construction, a post-condition survey would be undertaken to ensure the road network is left in a condition equivalent to that at the start of construction.
- Neighbours of the solar farm are to be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.

- Heavy vehicle movements should avoid peak school bus times to limit the interaction of larger vehicles and vulnerable road users. The following school bus routes operate along the local and regional roads in the vicinity of the site:
    - The Rawsonville route operated by Ogden's Coaches travels along Burraway Road between Coolbaggie Road and Newell Highway from 7:40am to 8:05am and 4:05pm to 4:25pm.
    - The Buddah route operated by Ogden's Coaches travels along Warren Road between Eumungerie Road and Mitchell Highway from 8:30am to 8:45am and 3:15pm to 3:30pm.

Therefore, it is concluded that the surface and widths of the roads are suitable to accommodate the future light and heavy vehicle traffic volumes generated by the solar farm project.

5.5 OSOM Vehicles

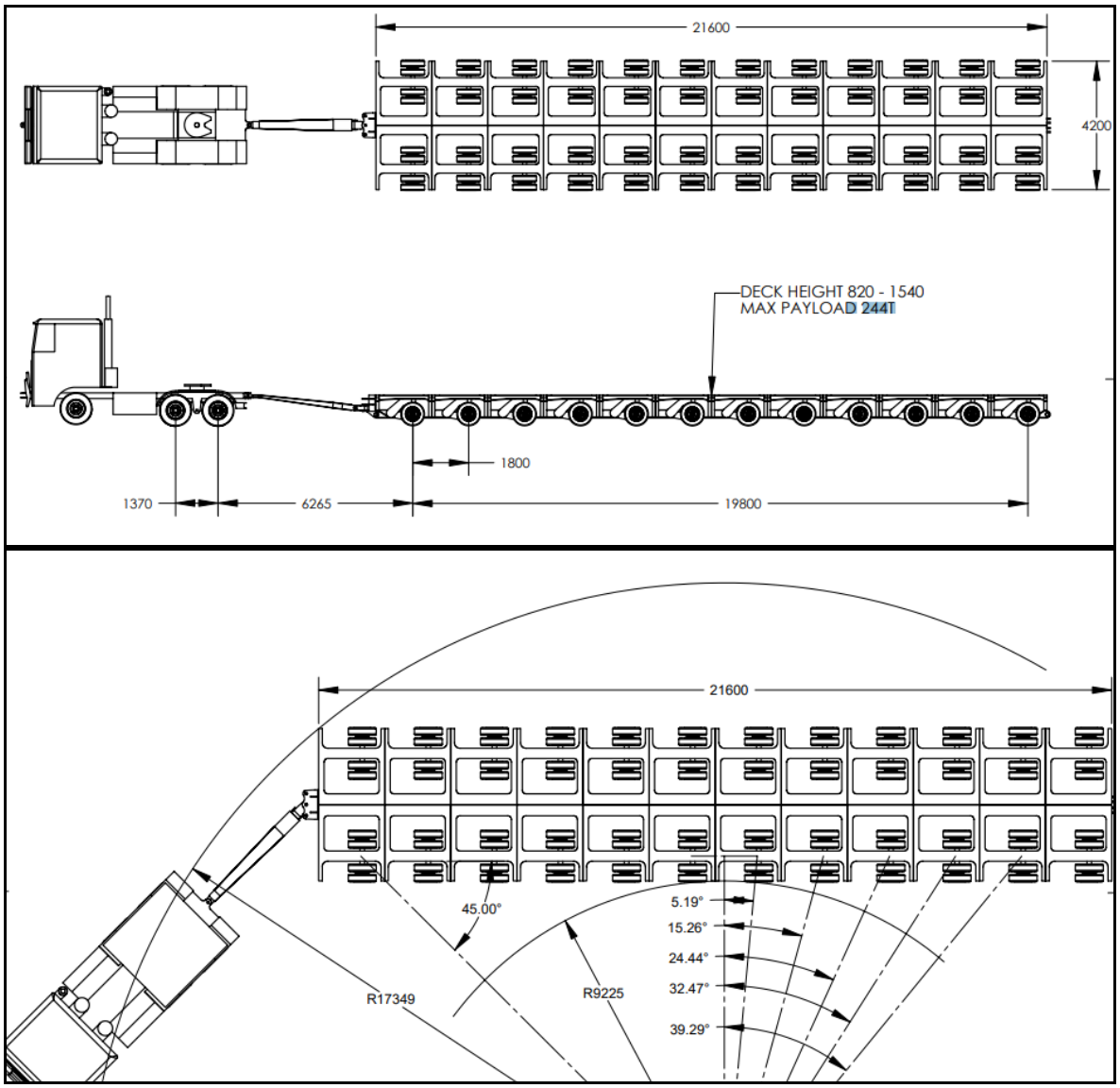
Oversize and overmass vehicles would be required to deliver larger plant to the site such as the substation transformer and earthmoving equipment. The Applicant has advised that the following OSOM vehicles are expected to access the site:

- 1 x vehicle to transport the main transformer;
- 1 x vehicle to transport the modular buildings;
- 1 x crane would access the site which are classified as OSOM vehicles.

All vehicles would generate a movement when accessing and egressing the site during both construction and decommissioning. As such, the project is expected to generate 6 OSOM vehicle movements during construction and 6 OSOM vehicle movements during decommissioning. The vehicles are subject to specific road permits that would be applied for by the contractor once the dimensions of the load and the specific delivery vehicle are known.

The largest component to be delivered to the site is expected to be the transformer. The Applicant has advised that the exact transformer model has yet to be determined and therefore the exact vehicle configuration is not yet known. However, a OSOM vehicle configuration has been used from a similar existing project which is considered to be as close as possible to what may be used for the Project. The vehicle used for the assessment is shown within Figure 19.

Figure 19: OSOM Vehicle



The OSOM vehicles would deliver plant from Port of Newcastle and are expected to utilise the route outlined within Figure 17 that would be used by standard heavy vehicles.

An assessment of the route has been undertaken to confirm whether there are any restrictions that may prevent the OSOM vehicles from accessing the site.

5.5.1 Dimensional Requirements

The OSOM vehicles are expected to be able to suitably travel to the intersection of Newell Highway and Burraway Road given the access route utilises roads that are designated within the TfNSW Restricted Access Vehicle Map and NSW Oversize Overmass Load Carrying Vehicles Network Map for 4.6m high vehicles.

A swept path assessment is provided within Appendix E for the remainder of the route from Newell Highway to the site. The assessment indicates that the OSOM vehicle is able to suitably access the site with no road upgrades required.

5.5.2 Bridges

An application will be lodged with TfNSW to assess the various load limits on all bridges along the route once the final OSOM vehicle and route has been confirmed.

5.5.3 Railway Level Crossings

The preferred transport route crosses the following railway level crossings with conditions as outlined within the TfNSW Oversize Overmass Load Carrying Vehicles Network Map.

Table 10: Railway Level Crossings

Line Section	Rail Authority	Location	Conditions
Dubbo – Coonamble	ARTC	Boothenba Road, approximately 150m east of Newell Highway.	Not listed.
Troy Junction – Merrygoen	ARTC	Golden Highway, approximately 140m southeast of Lesslies Road.	Vehicle must approach and traverse the designated level crossings at a speed not less than 35km/h. If the vehicle can not comply with this condition, the operator must contact Rail Infrastructure Manager.
Wallerawang – Gwabegar	ARTC	Golden Highway, approximately 70m northeast of Wargundy Street.	
Ulan	ARTC	Golden Highway, approximately 30m west of Mangoola Road.	

Consultation with the rail authority ARTC has been carried out with a summary provided in Section 7.

5.5.4 Summary

The road network is expected to be able to accommodate the OSOM vehicle movements generated by the project. OSOM vehicles would be subject to additional permit applications and regulations and the relevant permits would be applied for as part of the preparation of the CTMP.

It is recommended that any OSOM vehicle movements be timed so they do not coincide with other OSOM vehicles within the surrounding area to limit the impact to the road network, which can be undertaken as part of the permit application.

6. Construction Traffic Management Plan

A CTMP would be prepared prior to construction commencing by the appointed contractor. The CTMP 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 including rest areas and pullover bays.
- 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 CTMP to minimise the impact of construction traffic along the road network.

6.1 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 be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.

6.2 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.

6.3 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.

6.4 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;
- Heavy vehicle movements should avoid peak school bus times to limit the interaction of larger vehicles and vulnerable road users. The following school bus routes operate along the local and regional roads in the vicinity of the site:
    - The Rawsonville route operated by Ogden's Coaches travels along Burraway Road between Coolbaggie Road and Newell Highway from 7:40am to 8:05am and 4:05pm to 4:25pm.
    - The Buddah route operated by Ogden's Coaches travels along Warren Road between Eumungerie Road and Mitchell Highway from 8:30am to 8:45am and 3:15pm to 3:30pm.
- Safety initiatives for impacts to residential areas and/or school bus zones;
- Utilisation of only the designated transport routes;
- Compliance with fatigue management requirements including use of rest areas;
- 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 CTMP would be prepared in consultation with Transport for NSW, Dubbo Regional Council and Narromine Shire Council.

7. Road/Rail Authority Consultation

The traffic assessment has been undertaken in consultation with TfNSW, Dubbo Regional Council, Narromine Shire Council and ARTC. A summary is provided within the following table.

Table 11: Road Authority Consultation

Road Authority	Correspondence
Transport for NSW	TfNSW was contacted via phone in May 2023 with the following comments provided: • If a BESS is provided, the assessment will need to consider transport of the transformer to the site. The route assessment for OSOM vehicles should include swept paths at key intersections, as well as checking any bridges/structures along the route and height clearances. • The traffic assessment should consider light vehicles and heavy vehicles, including travel directions and AM/PM peak times. • A sensitivity analysis should be undertaken which considers traffic growth along Eumungerie Road. • The cumulative impacts assessment should be undertaken for the peak construction period. • The AM and PM peak hours are the hours immediately before and after construction. • If staggered start/finish times are proposed for the workforce, there needs to be a method to ensure compliance. • The route assessment should provide justification for not using local roads to access the site. • Intersection modelling should be undertaken for any intersections that are affected by the proposal. • If a worker's accommodation hub is proposed within an area, modelling may also be required to assess any traffic impacts within that area. • Old traffic data is not accurate and new traffic counts should be undertaken considering multiple days with all survey details provided in the report including survey location, timeframe etc. Refer Austroads Guide to Traffic Management Part 3 for traffic survey requirements. Accordingly, it is concluded that all of the matters identified by TfNSW have been addressed within this report.
Dubbo Regional Council	Council was contacted via phone in April 2023 with the following comments provided: • Noted the site and travel route from Narromine is located within Narromine Shire Council. • Provided in-principle support for the proposed travel route from Dubbo being Newell Highway, Dubbo-Burroway Road and Eumungerie Road. All roads are B-Double approved with no previous issues raised on these roads. • Speed restrictions apply along some bridges on Council roads and must be followed. • The project would require a CTMP and road dilapidation report for the access route. • Any OSOM movements are to go through the National Heavy Vehicle Regulator (NHVR) with a suitable survey of the route. Accordingly, it is concluded that all of the matters identified by Dubbo Regional Council have been addressed by way of traffic management recommendations within this report.
Narromine Shire Council	Council was contacted via phone in April 2023 with the following comments provided: • Provided in-principle support for both proposed travel routes from Narromine and Dubbo, noting Eumungerie Road is a major freight route and

	carries high volumes of interstate heavy vehicle traffic. • Inland rail is proposed in the area with Eumungerie Road being a potential route for construction traffic. • Eumungerie Road and Tomingley Road are in the process of being handed over to TfNSW, which is expected to be completed soon. • Mitchell Highway would be suitable for OSOM movements based on previous projects. • Carry out traffic modelling for the Eumungerie Road / Dubbo-Burroway Road and Eumungerie Road / Edmonstones Road intersections if affected by the site. Accordingly, it is concluded that all of the matters identified by Narromine Shire Council have been addressed within this report.
ARTC	ARTC was contacted via phone in June 2023 with the following comments provided: • Assessment of level crossings can be undertaken once the route is planned in the NHVR portal and a Route ID number is assigned. • Assessment would be based on the load dimensions with a risk assessment for each crossing determining the required action based on 3 levels: 1. Cross with Caution – typically applied for vehicles up to 26 metres long, 200t mass on highway or 150t on bitumen surface. 2. Stop and Report – required to call out to network control to confirm rail traffic when crossing. 3. Engage Trackforce Protection Officer – supervised crossing to ensure safety is maintained at all times. • All rail bridges are managed by UGL Limited. Accordingly, it is concluded that the level crossing assessment would be undertaken when the route is confirmed and lodged in the NHVR portal.

A response has also been provided to the traffic related matters within Agency Advice received from TfNSW and Narromine Shire Council within Appendix F and Appendix G, respectively.

8. Mitigation Measure Summary

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

- Prior to construction, a pre-condition survey of the relevant sections of the existing road network should be undertaken in consultation with Council. During construction the sections of the road network utilised by the proposal are to be monitored and maintained to ensure continued safe use by all road users, and any faults attributed to construction of the solar farm would be rectified. At the end of construction, a post-condition survey would be undertaken to ensure the road network is left in a condition equivalent to that at the start of construction.
- Neighbours of the solar farm are to be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.
- Heavy vehicle movements should avoid peak school bus times to limit the interaction of larger vehicles and vulnerable road users. Several school bus services operate along Newell Highway, Burraway Road and Warren Road.
- It is recommended that any OSOM vehicle movements be timed so they do not coincide with other OSOM vehicles within the surrounding area to limit the impact to the road network, which can be undertaken as part of the permit application.

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

- It is proposed to provide a Basic Right Turn treatment at the site access on Eumungerie Road as shown in Appendix C.

The surface and carriageway of the roads, with the inclusion of the proposed upgrades, are suitable to accommodate the future traffic volumes.

9. Conclusion

Amber Organisation has assessed the traffic impacts of the 100MW solar farm located on the south-eastern corner of the Eumungerie Road / Edmonstones Road intersection, approximately 17.5 kilometres north of Narromine and 27 kilometres west of Dubbo. Access to the site is proposed via a connection with Eumungerie Road at the western boundary of the site. The workforce primarily be located in Dubbo and Narromine, with all plant expected to be delivered via Port Botany or the Port of Newcastle.

The above assessment determined the following:

- The site is expected to generate up to 140 vehicle movements per day during peak construction times, including 96 heavy vehicle movements;
- The road network is able to accommodate the traffic generated by the development 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 route from Port Botany or Port of Newcastle to the site is 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 solar farm;
- It is noted that some oversize and overmass vehicles would be required to deliver larger plant and equipment to the site such as the substation transformer and earthmoving equipment. The vehicles are subject to specific road permits that would be applied for by the contractor once the dimensions of the load and the specific delivery vehicle are known. The swept path assessment provided within Appendix E indicates the largest design vehicle expected at this time is able to access the site without any required road upgrades, noting that the transformer model and configuration of the delivery vehicle would be confirmed following development consent approval;
- The site access on Eumungerie Road is proposed to be provided with a BAR turn treatment and is expected to provided with adequate sight distance to allow vehicles to safely enter and exit the site subject to the assessment and clearing of roadside vegetation; and
- In order to mitigate the impacts of the development during construction a CTMP would be prepared which should include the recommendations provided within this document.

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

Appendix A

Survey Results

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Dubbo-Burroway Rd and Eumungerie Rd, Burroway

GPS *-32.107404, 148.330245*

Date:	Tue 09/05/23
Weather:	Fine
Suburban:	Burroway
Customer:	Amber

North:	Eumungerie Rd
East:	Dubbo-Burroway Rd
South:	Eumungerie Rd
West:	Dubbo-Burroway Rd

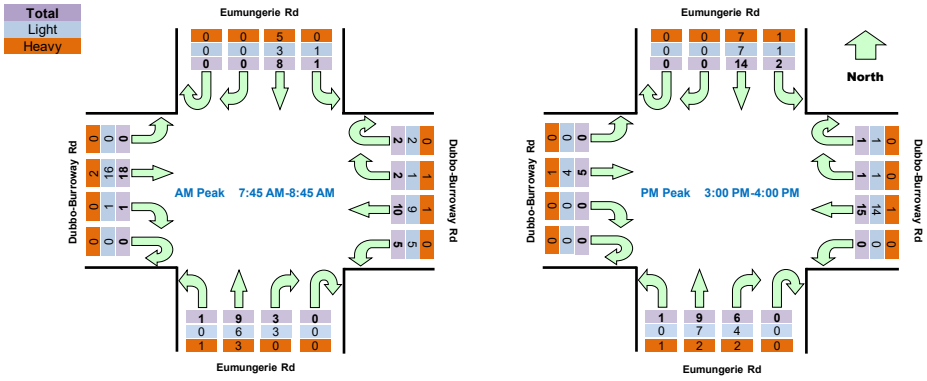
Survey Period	AM:	6:00 AM-10:00 AM
	PM:	3:00 PM-7:00 PM
Traffic Peak	AM:	7:45 AM-8:45 AM
	PM:	3:00 PM-4:00 PM

All Vehicles

Time		North Approach Eumungerie Rd				East Approach Dubbo-Burroway Rd				South Approach Eumungerie Rd				West Approach Dubbo-Burroway Rd				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
6:00	6:15	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	21	
6:15	6:30	0	0	0	0	0	0	3	0	0	0	2	0	0	0	2	0	25	
6:30	6:45	0	0	0	0	0	0	2	0	0	1	4	0	0	0	1	0	26	
6:45	7:00	0	0	0	0	0	0	1	0	0	1	0	0	0	0	2	0	27	
7:00	7:15	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	44	
7:15	7:30	0	0	2	0	0	0	1	1	0	0	0	0	0	0	4	0	58	
7:30	7:45	0	0	0	0	0	1	2	3	0	0	1	0	0	0	2	0	57	
7:45	8:00	0	0	2	0	1	0	2	3	0	1	4	1	0	0	7	0	60	Peak
8:00	8:15	0	0	1	1	1	2	5	1	0	1	2	0	0	1	5	0	50	
8:15	8:30	0	0	0	0	0	0	2	1	0	1	1	0	0	0	2	0	44	
8:30	8:45	0	0	5	0	0	0	1	0	0	0	2	0	0	0	4	0	51	
8:45	9:00	0	0	0	0	0	0	1	1	0	1	6	0	0	0	1	1	50	
9:00	9:15	0	0	2	0	0	0	1	2	0	1	4	0	0	0	4	0	49	
9:15	9:30	0	0	4	0	0	0	1	1	0	0	1	0	0	0	7	0		
9:30	9:45	0	0	0	0	0	0	3	1	0	0	4	0	0	0	3	0		
9:45	10:00	0	0	4	0	0	0	1	1	0	0	0	0	0	1	3	0		
15:00	15:15	0	0	2	0	0	0	5	0	0	4	2	0	0	0	1	0	54	Peak
15:15	15:30	0	0	3	1	0	1	2	0	0	0	2	0	0	0	1	0	53	
15:30	15:45	0	0	7	1	1	0	5	0	0	1	3	1	0	0	3	0	53	
15:45	16:00	0	0	2	0	0	0	3	0	0	1	2	0	0	0	0	0	41	
16:00	16:15	0	0	2	2	0	0	4	1	0	0	2	0	0	0	2	0	41	
16:15	16:30	0	0	2	0	0	1	1	0	0	0	3	0	0	0	3	0	43	
16:30	16:45	0	0	1	0	0	0	4	1	0	1	1	0	0	0	2	0	39	
16:45	17:00	0	0	1	0	0	0	0	2	0	1	2	0	0	0	2	0	44	
17:00	17:15	0	0	2	0	0	0	4	0	0	0	5	1	0	0	3	0	46	
17:15	17:30	0	0	0	0	0	0	3	0	0	0	2	0	0	0	1	0	40	
17:30	17:45	0	0	2	0	0	0	3	0	0	0	3	0	0	0	7	0	38	
17:45	18:00	0	0	3	0	0	0	2	0	0	0	1	0	0	0	4	0	27	
18:00	18:15	0	0	2	0	0	0	2	0	0	0	2	0	0	0	3	0	22	
18:15	18:30	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0		
18:30	18:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0		
18:45	19:00	0	0	1	0	0	0	1	0	0	0	2	0	0	0	1	0		

Peak Time		North Approach Eumungerie Rd				East Approach Dubbo-Burroway Rd				South Approach Eumungerie Rd				West Approach Dubbo-Burroway Rd				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
7:45	8:45	0	0	8	1	2	2	10	5	0	3	9	1	0	1	18	0	60
15:00	16:00	0	0	14	2	1	1	15	0	0	6	9	1	0	0	5	0	54

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



Light Vehicles

Time		North Approach Eumungerie Rd				East Approach Dubbo-Burroway Rd				South Approach Eumungerie Rd				West Approach Dubbo-Burroway Rd			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
6:00	6:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
6:15	6:30	0	0	0	0	0	0	3	0	0	0	1	0	0	0	2	0
6:30	6:45	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0

6:45	7:00	0	0	0	0	0	0	1	0	0	1	0	0	0	0	2	0
7:00	7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
7:15	7:30	0	0	2	0	0	0	1	1	0	0	0	0	0	0	4	0
7:30	7:45	0	0	0	0	0	1	2	2	0	0	0	0	0	0	2	0
7:45	8:00	0	0	2	0	1	0	2	3	0	1	3	0	0	0	6	0
8:00	8:15	0	0	0	1	1	1	4	1	0	1	1	0	0	1	4	0
8:15	8:30	0	0	0	0	0	0	2	1	0	1	0	0	0	0	2	0
8:30	8:45	0	0	1	0	0	0	1	0	0	0	2	0	0	0	4	0
8:45	9:00	0	0	0	0	0	0	1	1	0	1	2	0	0	0	1	1
9:00	9:15	0	0	2	0	0	0	1	2	0	1	3	0	0	0	4	0
9:15	9:30	0	0	2	0	0	0	1	1	0	0	1	0	0	0	7	0
9:30	9:45	0	0	0	0	0	0	3	1	0	0	2	0	0	0	3	0
9:45	10:00	0	0	3	0	0	0	1	1	0	0	0	0	0	0	3	0
15:00	15:15	0	0	0	0	0	0	5	0	0	3	1	0	0	0	1	0
15:15	15:30	0	0	3	1	0	1	2	0	0	0	1	0	0	0	1	0
15:30	15:45	0	0	4	0	1	0	5	0	0	0	3	0	0	0	2	0
15:45	16:00	0	0	0	0	0	0	2	0	0	1	2	0	0	0	0	0
16:00	16:15	0	0	1	2	0	0	4	0	0	0	1	0	0	0	2	0
16:15	16:30	0	0	1	0	0	1	1	0	0	0	2	0	0	0	3	0
16:30	16:45	0	0	0	0	0	0	4	1	0	1	0	0	0	0	2	0
16:45	17:00	0	0	0	0	0	0	0	2	0	1	1	0	0	0	2	0
17:00	17:15	0	0	1	0	0	0	4	0	0	0	2	1	0	0	3	0
17:15	17:30	0	0	0	0	0	0	3	0	0	0	2	0	0	0	1	0
17:30	17:45	0	0	2	0	0	0	3	0	0	0	1	0	0	0	6	0
17:45	18:00	0	0	1	0	0	0	2	0	0	0	1	0	0	0	4	0
18:00	18:15	0	0	2	0	0	0	2	0	0	0	2	0	0	0	3	0
18:15	18:30	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0
18:30	18:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0
18:45	19:00	0	0	0	0	0	0	1	0	0	0	2	0	0	0	1	0

Peak Time		North Approach Eumungerie Rd				East Approach Dubbo-Burroway Rd				South Approach Eumungerie Rd				West Approach Dubbo-Burroway Rd				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
7:45	8:45	0	0	3	1	2	1	9	5	0	3	6	0	0	1	16	0	47
15:00	16:00	0	0	7	1	1	1	14	0	0	4	7	0	0	0	4	0	39

Heavy Vehicles

Time		North Approach Eumungerie Rd				East Approach Dubbo-Burroway Rd				South Approach Eumungerie Rd				West Approach Dubbo-Burroway Rd			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
6:00	6:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
6:15	6:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
6:30	6:45	0	0	0	0	0	0	1	0	0	0	4	0	0	0	0	0
6:45	7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00	7:15	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
7:15	7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	7:45	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
7:45	8:00	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0
8:00	8:15	0	0	1	0	0	1	1	0	0	0	1	0	0	0	1	0
8:15	8:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
8:30	8:45	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45	9:00	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0
9:00	9:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
9:15	9:30	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30	9:45	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
9:45	10:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0
15:00	15:15	0	0	2	0	0	0	0	0	0	1	1	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
15:30	15:45	0	0	3	1	0	0	0	0	0	1	0	1	0	0	1	0
15:45	16:00	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0
16:00	16:15	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0
16:15	16:30	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
16:30	16:45	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
16:45	17:00	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
17:00	17:15	0	0	1	0	0	0	0	0	0	0	3	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0
17:45	18:00	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00	18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	19:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0

Peak Time		North Approach Eumungerie Rd				East Approach Dubbo-Burroway Rd				South Approach Eumungerie Rd				West Approach Dubbo-Burroway Rd				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
7:45	8:45	0	0	5	0	0	1	1	0	0	0	3	1	0	0	2	0	13
15:00	16:00	0	0	7	1	0	0	1	0	0	2	2	1	0	0	1	0	15

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Burraway St and Newell Hwy, Brocklehurst

GPS *-32.180615, 148.622635*

Date:	Tue 09/05/23
Weather:	Fine
Suburban:	Brocklehurst
Customer:	Amber

North:	Newell Hwy
East:	Burraway St
South:	Newell Hwy
West:	Burraway Rd

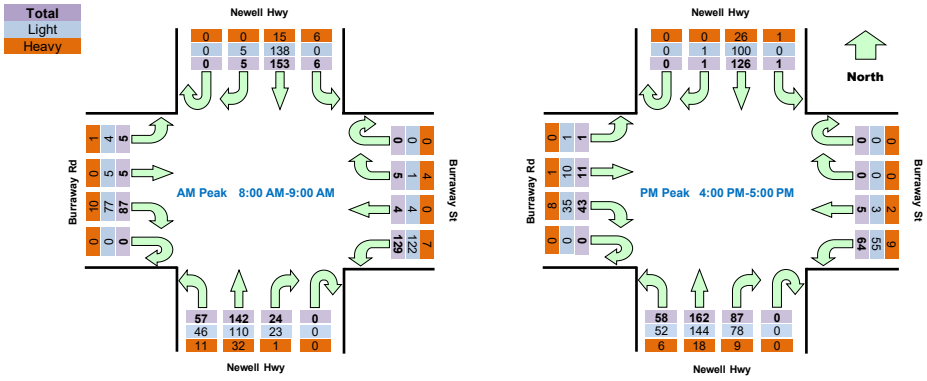
Survey Period	AM:	6:00 AM-10:00 AM
	PM:	3:00 PM-7:00 PM
Traffic Peak	AM:	8:00 AM-9:00 AM
	PM:	4:00 PM-5:00 PM

All Vehicles

Time		North Approach Newell Hwy				East Approach Burraway St				South Approach Newell Hwy				West Approach Burraway Rd				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
6:00	6:15	0	0	15	0	0	0	0	8	0	12	9	3	0	2	0	0	261	
6:15	6:30	0	0	18	1	0	0	1	7	0	5	10	5	0	8	0	0	296	
6:30	6:45	0	2	12	0	0	0	1	16	0	6	17	6	0	7	0	0	339	
6:45	7:00	0	0	19	1	0	2	2	9	0	13	26	11	0	7	0	0	387	
7:00	7:15	0	0	18	0	0	1	2	13	0	18	17	11	0	4	0	0	431	
7:15	7:30	0	0	24	0	0	3	0	16	0	9	21	14	0	9	2	0	493	
7:30	7:45	0	1	35	0	0	2	0	17	0	8	29	7	0	16	0	0	578	
7:45	8:00	0	0	28	1	0	2	4	19	0	8	33	17	0	20	2	0	608	
8:00	8:15	0	1	33	1	0	1	0	34	0	4	35	11	0	25	1	0	622	Peak
8:15	8:30	0	1	36	2	0	1	3	41	0	8	50	8	0	29	2	2	597	
8:30	8:45	0	2	42	0	0	1	0	37	0	5	24	18	0	14	1	1	523	
8:45	9:00	0	1	42	3	0	2	1	17	0	7	33	20	0	19	1	2	505	
9:00	9:15	0	1	41	0	0	1	4	8	0	17	26	10	0	12	1	0	461	
9:15	9:30	0	0	37	0	0	0	0	15	0	4	32	8	0	10	2	1		
9:30	9:45	0	0	47	1	0	1	2	24	0	11	22	6	0	10	2	1		
9:45	10:00	0	0	37	0	0	1	0	7	0	9	29	10	0	9	1	1		
15:00	15:15	0	0	32	1	0	2	1	16	0	16	41	11	0	7	2	0	513	
15:15	15:30	0	1	21	0	0	1	0	19	0	17	30	17	0	19	3	0	551	
15:30	15:45	0	3	21	0	0	1	1	8	0	22	33	17	0	20	2	2	539	
15:45	16:00	0	2	29	0	0	0	1	16	0	13	37	9	0	14	3	2	546	
16:00	16:15	0	0	39	1	0	0	3	19	0	26	48	17	0	11	3	0	559	Peak
16:15	16:30	0	0	23	0	0	0	1	14	0	19	39	14	0	4	1	1	531	
16:30	16:45	0	0	33	0	0	0	0	18	0	19	45	6	0	12	4	0	550	
16:45	17:00	0	1	31	0	0	0	1	13	0	23	30	21	0	16	3	0	536	
17:00	17:15	0	0	24	1	0	0	0	10	0	31	40	14	0	17	2	0	518	
17:15	17:30	0	2	25	0	0	0	0	12	0	26	31	9	0	24	5	1	461	
17:30	17:45	0	0	29	1	0	0	1	10	0	25	26	19	0	10	1	1	411	
17:45	18:00	0	0	26	1	0	1	0	18	0	24	27	12	0	6	3	3	364	
18:00	18:15	0	0	20	0	0	2	0	10	0	12	28	1	0	7	1	1	297	
18:15	18:30	0	1	25	0	0	0	0	15	0	16	21	5	0	2	0	0		
18:30	18:45	0	0	13	0	0	0	1	7	0	17	25	9	0	3	1	0		
18:45	19:00	0	0	13	1	0	0	0	6	0	10	15	6	0	2	0	1		

Peak Time		North Approach Newell Hwy				East Approach Burraway St				South Approach Newell Hwy				West Approach Burraway Rd				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	0	5	153	6	0	5	4	129	0	24	142	57	0	87	5	5	622
16:00	17:00	0	1	126	1	0	0	5	64	0	87	162	58	0	43	11	1	559

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



Light Vehicles

Time		North Approach Newell Hwy				East Approach Burraway St				South Approach Newell Hwy				West Approach Burraway Rd			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
6:00	6:15	0	0	14	0	0	0	0	8	0	10	5	2	0	2	0	0
6:15	6:30	0	0	17	1	0	0	0	6	0	2	8	5	0	6	0	0
6:30	6:45	0	1	12	0	0	0	1	15	0	5	9	4	0	7	0	0

6:45	7:00	0	0	15	1	0	0	1	7	0	6	17	10	0	6	0	0
7:00	7:15	0	0	15	0	0	1	2	11	0	16	11	6	0	4	0	0
7:15	7:30	0	0	21	0	0	1	0	13	0	6	16	13	0	8	2	0
7:30	7:45	0	1	33	0	0	0	0	17	0	7	22	6	0	12	0	0
7:45	8:00	0	0	24	0	0	1	4	17	0	7	27	16	0	18	2	0
8:00	8:15	0	1	31	0	0	0	0	32	0	4	25	10	0	22	1	0
8:15	8:30	0	1	31	0	0	1	3	39	0	7	42	4	0	24	2	2
8:30	8:45	0	2	39	0	0	0	0	34	0	5	19	14	0	14	1	0
8:45	9:00	0	1	37	0	0	0	1	17	0	7	24	18	0	17	1	2
9:00	9:15	0	1	37	0	0	1	4	8	0	17	20	10	0	11	1	0
9:15	9:30	0	0	33	0	0	0	0	13	0	4	16	7	0	9	2	1
9:30	9:45	0	0	42	0	0	0	2	21	0	10	19	5	0	8	1	0
9:45	10:00	0	0	31	0	0	1	0	7	0	7	25	7	0	9	1	1
15:00	15:15	0	0	25	0	0	2	1	14	0	15	37	8	0	7	2	0
15:15	15:30	0	1	18	0	0	1	0	14	0	14	29	15	0	16	3	0
15:30	15:45	0	2	17	0	0	0	1	7	0	20	30	17	0	19	2	2
15:45	16:00	0	1	24	0	0	0	0	14	0	12	33	9	0	12	3	2
16:00	16:15	0	0	29	0	0	0	1	17	0	19	39	16	0	8	2	0
16:15	16:30	0	0	19	0	0	0	1	10	0	19	35	13	0	3	1	1
16:30	16:45	0	0	27	0	0	0	0	15	0	19	41	6	0	11	4	0
16:45	17:00	0	1	25	0	0	0	1	13	0	21	29	17	0	13	3	0
17:00	17:15	0	0	16	1	0	0	0	10	0	30	38	13	0	14	2	0
17:15	17:30	0	1	21	0	0	0	0	12	0	26	23	9	0	24	5	1
17:30	17:45	0	0	24	1	0	0	1	10	0	17	26	19	0	10	1	1
17:45	18:00	0	0	22	1	0	1	0	18	0	21	25	12	0	5	3	3
18:00	18:15	0	0	18	0	0	2	0	10	0	12	23	1	0	7	1	1
18:15	18:30	0	1	22	0	0	0	0	15	0	11	15	5	0	2	0	0
18:30	18:45	0	0	9	0	0	0	1	7	0	15	21	9	0	3	1	0
18:45	19:00	0	0	6	1	0	0	0	6	0	10	12	6	0	2	0	1

Peak Time		North Approach Newell Hwy				East Approach Burraway St				South Approach Newell Hwy				West Approach Burraway Rd				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	0	5	138	0	0	1	4	122	0	23	110	46	0	77	5	4	535
16:00	17:00	0	1	100	0	0	0	3	55	0	78	144	52	0	35	10	1	479

Heavy Vehicles

Time		North Approach Newell Hwy				East Approach Burraway St				South Approach Newell Hwy				West Approach Burraway Rd			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
6:00	6:15	0	0	1	0	0	0	0	0	0	2	4	1	0	0	0	0
6:15	6:30	0	0	1	0	0	0	1	1	0	3	2	0	0	2	0	0
6:30	6:45	0	1	0	0	0	0	0	1	0	1	8	2	0	0	0	0
6:45	7:00	0	0	4	0	0	2	1	2	0	7	9	1	0	1	0	0
7:00	7:15	0	0	3	0	0	0	0	2	0	2	6	5	0	0	0	0
7:15	7:30	0	0	3	0	0	2	0	3	0	3	5	1	0	1	0	0
7:30	7:45	0	0	2	0	0	2	0	0	0	1	7	1	0	4	0	0
7:45	8:00	0	0	4	1	0	1	0	2	0	1	6	1	0	2	0	0
8:00	8:15	0	0	2	1	0	1	0	2	0	0	10	1	0	3	0	0
8:15	8:30	0	0	5	2	0	0	0	2	0	1	8	4	0	5	0	0
8:30	8:45	0	0	3	0	0	1	0	3	0	0	5	4	0	0	0	1
8:45	9:00	0	0	5	3	0	2	0	0	0	0	9	2	0	2	0	0
9:00	9:15	0	0	4	0	0	0	0	0	0	0	6	0	0	1	0	0
9:15	9:30	0	0	4	0	0	0	0	2	0	0	16	1	0	1	0	0
9:30	9:45	0	0	5	1	0	1	0	3	0	1	3	1	0	2	1	1
9:45	10:00	0	0	6	0	0	0	0	0	0	2	4	3	0	0	0	0
15:00	15:15	0	0	7	1	0	0	0	2	0	1	4	3	0	0	0	0
15:15	15:30	0	0	3	0	0	0	0	5	0	3	1	2	0	3	0	0
15:30	15:45	0	1	4	0	0	1	0	1	0	2	3	0	0	1	0	0
15:45	16:00	0	1	5	0	0	0	1	2	0	1	4	0	0	2	0	0
16:00	16:15	0	0	10	1	0	0	2	2	0	7	9	1	0	3	1	0
16:15	16:30	0	0	4	0	0	0	0	4	0	0	4	1	0	1	0	0
16:30	16:45	0	0	6	0	0	0	0	3	0	0	4	0	0	1	0	0
16:45	17:00	0	0	6	0	0	0	0	0	0	2	1	4	0	3	0	0
17:00	17:15	0	0	8	0	0	0	0	0	0	1	2	1	0	3	0	0
17:15	17:30	0	1	4	0	0	0	0	0	0	0	8	0	0	0	0	0
17:30	17:45	0	0	5	0	0	0	0	0	0	8	0	0	0	0	0	0
17:45	18:00	0	0	4	0	0	0	0	0	0	3	2	0	0	1	0	0
18:00	18:15	0	0	2	0	0	0	0	0	0	0	5	0	0	0	0	0
18:15	18:30	0	0	3	0	0	0	0	0	0	5	6	0	0	0	0	0
18:30	18:45	0	0	4	0	0	0	0	0	0	2	4	0	0	0	0	0
18:45	19:00	0	0	7	0	0	0	0	0	0	0	3	0	0	0	0	0

Peak Time		North Approach Newell Hwy				East Approach Burraway St				South Approach Newell Hwy				West Approach Burraway Rd				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	0	0	15	6	0	4	0	7	0	1	32	11	0	10	0	1	87
16:00	17:00	0	0	26	1	0	0	2	9	0	9	18	6	0	8	1	0	80

TRANS TRAFFIC SURVEY

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TURNING MOVEMENT SURVEY

Intersection of Warren Rd and Eumungerie Rd, Narron

GPS -32.219961, 148.236049

Date:	Tue 09/05/23
Weather:	Fine
Suburban:	Narromine
Customer:	Amber

North:	Warren Rd
East:	Eumungerie Rd
South:	Warren Rd
West:	N/A

Survey	AM:	6:00 AM-10:00 AM
Period	PM:	3:00 PM-7:00 PM
Traffic	AM:	8:00 AM-9:00 AM
Peak	PM:	4:00 PM-5:00 PM

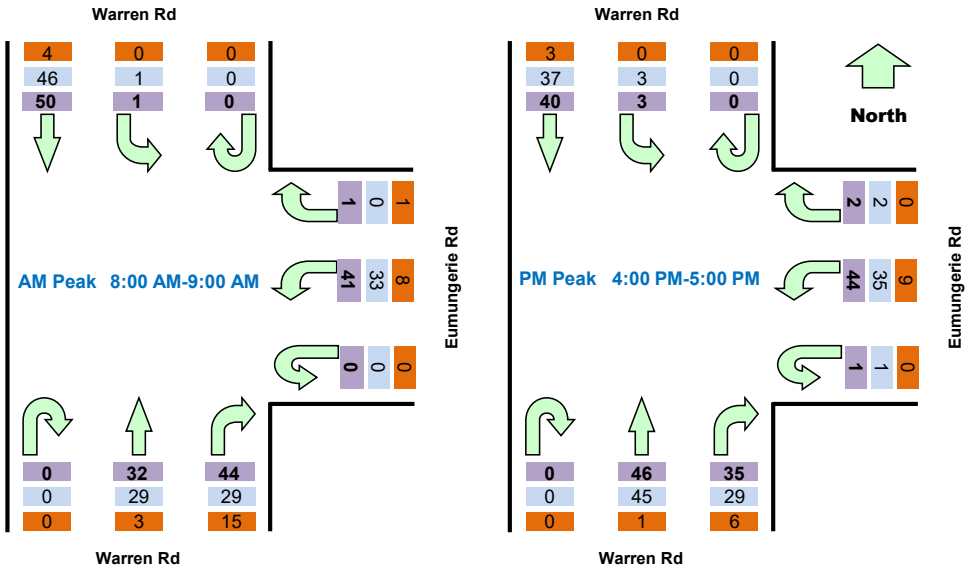
All Vehicles

Time		North Approach Warren R			st Approach Eumungerie			outh Approach Warren R			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
6:00	6:15	0	2	0	0	0	2	0	3	2	56	
6:15	6:30	0	2	0	0	0	1	0	5	2	62	
6:30	6:45	0	0	1	0	0	3	0	3	5	74	
6:45	7:00	0	8	0	0	0	2	0	15	0	98	
7:00	7:15	0	4	0	0	1	2	0	3	5	110	
7:15	7:30	0	12	0	0	0	2	0	3	5	131	
7:30	7:45	0	12	0	0	0	8	0	7	9	157	
7:45	8:00	0	13	0	0	1	6	0	12	5	162	
8:00	8:15	0	15	0	0	0	12	0	5	4	169	Peak
8:15	8:30	0	18	0	0	1	8	0	11	10	153	
8:30	8:45	0	11	0	0	0	8	0	15	7	142	
8:45	9:00	0	6	1	0	0	13	0	13	11	130	
9:00	9:15	0	5	1	0	0	2	0	8	4	116	
9:15	9:30	0	9	1	0	2	11	0	8	6		
9:30	9:45	0	6	0	0	0	11	0	5	7		
9:45	10:00	0	6	1	0	0	9	0	6	8		
15:00	15:15	0	9	0	0	0	10	0	6	22	148	
15:15	15:30	0	5	0	0	0	8	0	14	7	146	
15:30	15:45	0	8	0	0	0	9	0	5	12	156	
15:45	16:00	0	9	0	0	0	11	0	6	7	164	
16:00	16:15	0	13	1	0	0	7	0	9	15	171	Peak
16:15	16:30	0	13	1	0	1	11	0	9	9	151	
16:30	16:45	0	4	0	0	0	18	0	7	13	139	
16:45	17:00	0	10	1	1	1	8	0	10	9	137	
17:00	17:15	0	2	0	0	1	4	0	5	13	128	
17:15	17:30	0	5	1	0	0	7	0	8	11	136	
17:30	17:45	0	6	0	0	0	9	0	10	15	131	
17:45	18:00	0	6	0	0	0	10	0	8	7	112	
18:00	18:15	0	5	0	0	0	10	0	6	12	87	
18:15	18:30	0	6	0	0	0	7	1	7	6		
18:30	18:45	0	7	1	0	0	6	0	5	2		
18:45	19:00	0	1	0	0	0	0	0	2	3		

Peak Time		North Approach Warren R			West Approach Eumungerie			South Approach Warren R			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
8:00	9:00	0	50	1	0	1	41	0	44	32	169
16:00	17:00	0	40	3	1	2	44	0	35	46	171

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

Total
Light
Heavy



Light Vehicles

Time		North Approach Warren R			West Approach Eumungerie			South Approach Warren R		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
6:00	6:15	0	2	0	0	0	2	0	3	2
6:15	6:30	0	2	0	0	0	1	0	0	2
6:30	6:45	0	0	1	0	0	3	0	2	5
6:45	7:00	0	7	0	0	0	2	0	11	0
7:00	7:15	0	4	0	0	1	2	0	2	4
7:15	7:30	0	10	0	0	0	1	0	2	3
7:30	7:45	0	12	0	0	0	7	0	6	7
7:45	8:00	0	13	0	0	1	5	0	10	5
8:00	8:15	0	14	0	0	0	12	0	4	4
8:15	8:30	0	16	0	0	0	6	0	9	9
8:30	8:45	0	11	0	0	0	7	0	9	7
8:45	9:00	0	5	1	0	0	8	0	7	9
9:00	9:15	0	5	1	0	0	2	0	8	4
9:15	9:30	0	8	1	0	1	9	0	6	5
9:30	9:45	0	6	0	0	0	8	0	5	6
9:45	10:00	0	6	0	0	0	8	0	3	7
15:00	15:15	0	6	0	0	0	10	0	5	21
15:15	15:30	0	5	0	0	0	6	0	11	7
15:30	15:45	0	8	0	0	0	8	0	5	10
15:45	16:00	0	8	0	0	0	8	0	4	7
16:00	16:15	0	10	1	0	0	4	0	8	14

16:15	16:30	0	13	1	0	1	8	0	8	9
16:30	16:45	0	4	0	0	0	18	0	6	13
16:45	17:00	0	10	1	1	1	5	0	7	9
17:00	17:15	0	2	0	0	1	3	0	5	12
17:15	17:30	0	5	1	0	0	6	0	7	10
17:30	17:45	0	6	0	0	0	9	0	9	15
17:45	18:00	0	5	0	0	0	9	0	8	6
18:00	18:15	0	5	0	0	0	8	0	5	12
18:15	18:30	0	6	0	0	0	7	1	7	6
18:30	18:45	0	7	1	0	0	6	0	4	2
18:45	19:00	0	1	0	0	0	0	0	2	3

Peak Time		North Approach Warren R			st Approach Eumungerie			South Approach Warren R			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
8:00	9:00	0	46	1	0	0	33	0	29	29	138
16:00	17:00	0	37	3	1	2	35	0	29	45	152

Heavy Vehicles

Time		North Approach Warren R			st Approach Eumungerie			South Approach Warren R		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
6:00	6:15	0	0	0	0	0	0	0	0	0
6:15	6:30	0	0	0	0	0	0	0	5	0
6:30	6:45	0	0	0	0	0	0	0	1	0
6:45	7:00	0	1	0	0	0	0	0	4	0
7:00	7:15	0	0	0	0	0	0	0	1	1
7:15	7:30	0	2	0	0	0	1	0	1	2
7:30	7:45	0	0	0	0	0	1	0	1	2
7:45	8:00	0	0	0	0	0	1	0	2	0
8:00	8:15	0	1	0	0	0	0	0	1	0
8:15	8:30	0	2	0	0	1	2	0	2	1
8:30	8:45	0	0	0	0	0	1	0	6	0
8:45	9:00	0	1	0	0	0	5	0	6	2
9:00	9:15	0	0	0	0	0	0	0	0	0
9:15	9:30	0	1	0	0	1	2	0	2	1
9:30	9:45	0	0	0	0	0	3	0	0	1
9:45	10:00	0	0	1	0	0	1	0	3	1
15:00	15:15	0	3	0	0	0	0	0	1	1
15:15	15:30	0	0	0	0	0	2	0	3	0
15:30	15:45	0	0	0	0	0	1	0	0	2
15:45	16:00	0	1	0	0	0	3	0	2	0
16:00	16:15	0	3	0	0	0	3	0	1	1
16:15	16:30	0	0	0	0	0	3	0	1	0
16:30	16:45	0	0	0	0	0	0	0	1	0
16:45	17:00	0	0	0	0	0	3	0	3	0
17:00	17:15	0	0	0	0	0	1	0	0	1

17:15	17:30	0	0	0	0	0	1	0	1	1
17:30	17:45	0	0	0	0	0	0	0	1	0
17:45	18:00	0	1	0	0	0	1	0	0	1
18:00	18:15	0	0	0	0	0	2	0	1	0
18:15	18:30	0	0	0	0	0	0	0	0	0
18:30	18:45	0	0	0	0	0	0	0	1	0
18:45	19:00	0	0	0	0	0	0	0	0	0

Peak Time		**North Approach Warren R**			**st Approach Eumungerie**			**South Approach Warren R**			**Peak**
Period Start	**Period End**	U	SB	L	U	R	L	U	R	NB	**total**
8:00	9:00	0	4	0	0	1	8	0	15	3	31
16:00	17:00	0	3	0	0	0	9	0	6	1	19

TRANS TRAFFIC SURVEY

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TURNING MOVEMENT SURVEY

Intersection of Mitchell Hwy and Warren Rd, Narromine

GPS *-32.225757, 148.238668*

Date:	Tue 09/05/23
Weather:	Fine
Suburban:	Narromine
Customer:	Amber

North:	Warren Rd
East:	Mitchell Hwy
South:	N/A
West:	Mitchell Hwy

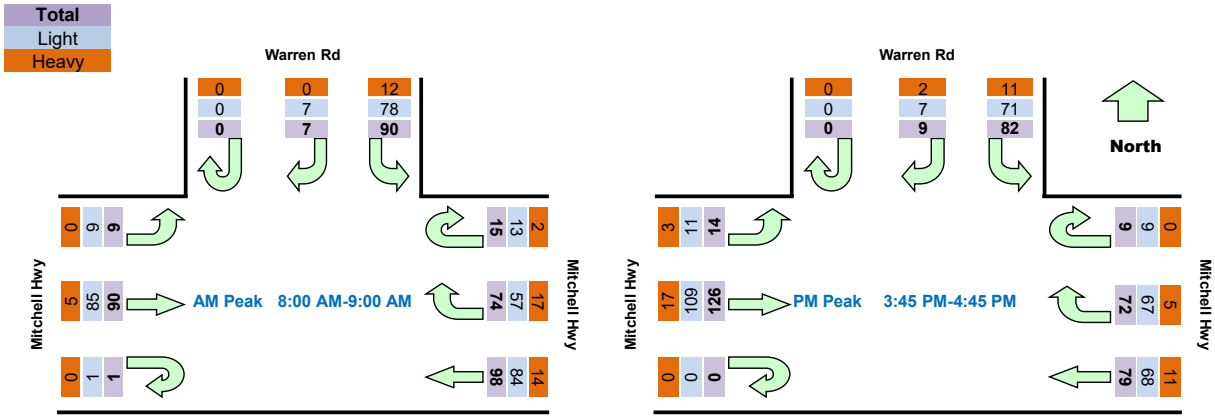
Survey Period	AM:	6:00 AM-10:00 AM
	PM:	3:00 PM-7:00 PM
Traffic Peak	AM:	8:00 AM-9:00 AM
	PM:	3:45 PM-4:45 PM

All Vehicles

Time		North Approach Warren Rd			East Approach Mitchell Hwy			West Approach Mitchell Hwy			Hourly Total	
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	Hour	Peak
6:00	6:15	0	0	4	1	6	9	0	6	0	168	
6:15	6:30	0	0	2	0	7	13	0	11	0	196	
6:30	6:45	0	0	5	4	8	32	0	9	0	232	
6:45	7:00	0	0	10	5	16	13	0	7	0	255	
7:00	7:15	0	1	5	3	7	16	0	21	1	275	
7:15	7:30	0	2	13	1	11	23	0	19	0	324	
7:30	7:45	0	5	16	2	14	15	0	28	1	358	
7:45	8:00	0	1	15	0	15	22	0	16	2	370	
8:00	8:15	0	1	29	3	10	33	0	25	2	384	Peak
8:15	8:30	0	1	27	6	21	21	0	26	1	354	
8:30	8:45	0	3	15	2	23	26	0	22	2	331	
8:45	9:00	0	2	19	4	20	18	1	17	4	327	
9:00	9:15	0	1	7	3	14	20	0	27	1	341	
9:15	9:30	0	2	19	2	14	24	0	18	1		
9:30	9:45	0	3	14	4	15	22	0	30	1		
9:45	10:00	0	1	17	1	13	28	0	38	1		
15:00	15:15	0	1	20	2	30	26	0	18	1	356	
15:15	15:30	0	1	14	3	20	24	0	22	1	366	
15:30	15:45	0	3	13	2	13	15	0	33	2	379	
15:45	16:00	0	4	16	4	12	19	0	33	4	391	Peak
16:00	16:15	0	0	21	2	22	21	0	38	4	378	
16:15	16:30	0	2	23	1	19	18	0	32	3	360	
16:30	16:45	0	3	22	2	19	21	0	23	3	350	
16:45	17:00	0	2	17	2	15	20	0	21	2	348	
17:00	17:15	0	0	7	1	19	29	0	34	0	331	
17:15	17:30	0	3	11	0	20	27	0	26	1	313	
17:30	17:45	0	4	18	1	27	19	0	22	0	286	
17:45	18:00	0	1	14	0	13	17	0	15	2	250	
18:00	18:15	0	2	14	0	19	11	0	26	0	225	
18:15	18:30	0	0	14	1	14	12	0	19	1		
18:30	18:45	0	6	10	0	5	20	0	12	2		
18:45	19:00	0	0	2	2	6	11	0	16	0		

Peak Time		North Approach Warren Rd			East Approach Mitchell Hwy			West Approach Mitchell Hwy			Peak
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	total
8:00	9:00	0	7	90	15	74	98	1	90	9	384
15:45	16:45	0	9	82	9	72	79	0	126	14	391

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



Light Vehicles

Time		North Approach Warren Rd			East Approach Mitchell Hwy			West Approach Mitchell Hwy		
Period Start	Period End	U	R	L	U	R	WB	U	EB	L
6:00	6:15	0	0	4	1	6	6	0	5	0
6:15	6:30	0	0	2	0	2	9	0	8	0
6:30	6:45	0	0	5	4	7	30	0	9	0
6:45	7:00	0	0	9	4	12	8	0	5	0
7:00	7:15	0	1	5	3	6	13	0	21	0
7:15	7:30	0	2	10	1	8	21	0	18	0
7:30	7:45	0	5	15	1	11	11	0	26	1
7:45	8:00	0	1	14	0	13	20	0	15	2
8:00	8:15	0	1	27	3	9	27	0	24	2
8:15	8:30	0	1	24	4	18	19	0	23	1
8:30	8:45	0	3	14	2	17	24	0	21	2
8:45	9:00	0	2	13	4	13	14	1	17	4
9:00	9:15	0	1	7	3	13	17	0	24	1
9:15	9:30	0	2	16	2	11	19	0	18	1
9:30	9:45	0	3	13	3	12	21	0	25	1
9:45	10:00	0	1	14	1	11	27	0	36	1
15:00	15:15	0	1	17	2	28	24	0	17	1
15:15	15:30	0	1	12	3	17	20	0	21	1
15:30	15:45	0	2	13	2	11	14	0	31	2
15:45	16:00	0	3	13	4	11	14	0	27	3
16:00	16:15	0	0	17	2	20	18	0	31	4
16:15	16:30	0	1	20	1	18	15	0	30	2
16:30	16:45	0	3	21	2	18	21	0	21	2
16:45	17:00	0	2	14	2	12	20	0	18	2
17:00	17:15	0	0	7	1	18	28	0	29	0
17:15	17:30	0	3	9	0	18	26	0	21	0
17:30	17:45	0	4	18	1	27	18	0	18	0
17:45	18:00	0	1	13	0	12	16	0	13	2
18:00	18:15	0	2	11	0	18	11	0	24	0
18:15	18:30	0	0	14	1	14	10	0	15	1

18:30	18:45	0	6	10	0	5	19	0	12	1
18:45	19:00	0	0	2	2	6	11	0	16	0

Peak Time		North Approach Warren Rd			East Approach Mitchell Hwy			West Approach Mitchell Hwy			Peak
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	total
8:00	9:00	0	7	78	13	57	84	1	85	9	334
15:45	16:45	0	7	71	9	67	68	0	109	11	342

Heavy Vehicles

Time		North Approach Warren Rd			East Approach Mitchell Hwy			West Approach Mitchell Hwy		
Period Start	Period End	U	R	L	U	R	WB	U	EB	L
6:00	6:15	0	0	0	0	0	3	0	1	0
6:15	6:30	0	0	0	0	5	4	0	3	0
6:30	6:45	0	0	0	0	1	2	0	0	0
6:45	7:00	0	0	1	1	4	5	0	2	0
7:00	7:15	0	0	0	0	1	3	0	0	1
7:15	7:30	0	0	3	0	3	2	0	1	0
7:30	7:45	0	0	1	1	3	4	0	2	0
7:45	8:00	0	0	1	0	2	2	0	1	0
8:00	8:15	0	0	2	0	1	6	0	1	0
8:15	8:30	0	0	3	2	3	2	0	3	0
8:30	8:45	0	0	1	0	6	2	0	1	0
8:45	9:00	0	0	6	0	7	4	0	0	0
9:00	9:15	0	0	0	0	1	3	0	3	0
9:15	9:30	0	0	3	0	3	5	0	0	0
9:30	9:45	0	0	1	1	3	1	0	5	0
9:45	10:00	0	0	3	0	2	1	0	2	0
15:00	15:15	0	0	3	0	2	2	0	1	0
15:15	15:30	0	0	2	0	3	4	0	1	0
15:30	15:45	0	1	0	0	2	1	0	2	0
15:45	16:00	0	1	3	0	1	5	0	6	1
16:00	16:15	0	0	4	0	2	3	0	7	0
16:15	16:30	0	1	3	0	1	3	0	2	1
16:30	16:45	0	0	1	0	1	0	0	2	1
16:45	17:00	0	0	3	0	3	0	0	3	0
17:00	17:15	0	0	0	0	1	1	0	5	0
17:15	17:30	0	0	2	0	2	1	0	5	1
17:30	17:45	0	0	0	0	0	1	0	4	0
17:45	18:00	0	0	1	0	1	1	0	2	0
18:00	18:15	0	0	3	0	1	0	0	2	0
18:15	18:30	0	0	0	0	0	2	0	4	0
18:30	18:45	0	0	0	0	0	1	0	0	1
18:45	19:00	0	0	0	0	0	0	0	0	0

Peak Time		North Approach Warren Rd			East Approach Mitchell Hwy			West Approach Mitchell Hwy			Peak
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	total
8:00	9:00	0	0	12	2	17	14	0	5	0	50
15:45	16:45	0	2	11	0	5	11	0	17	3	49

Appendix B

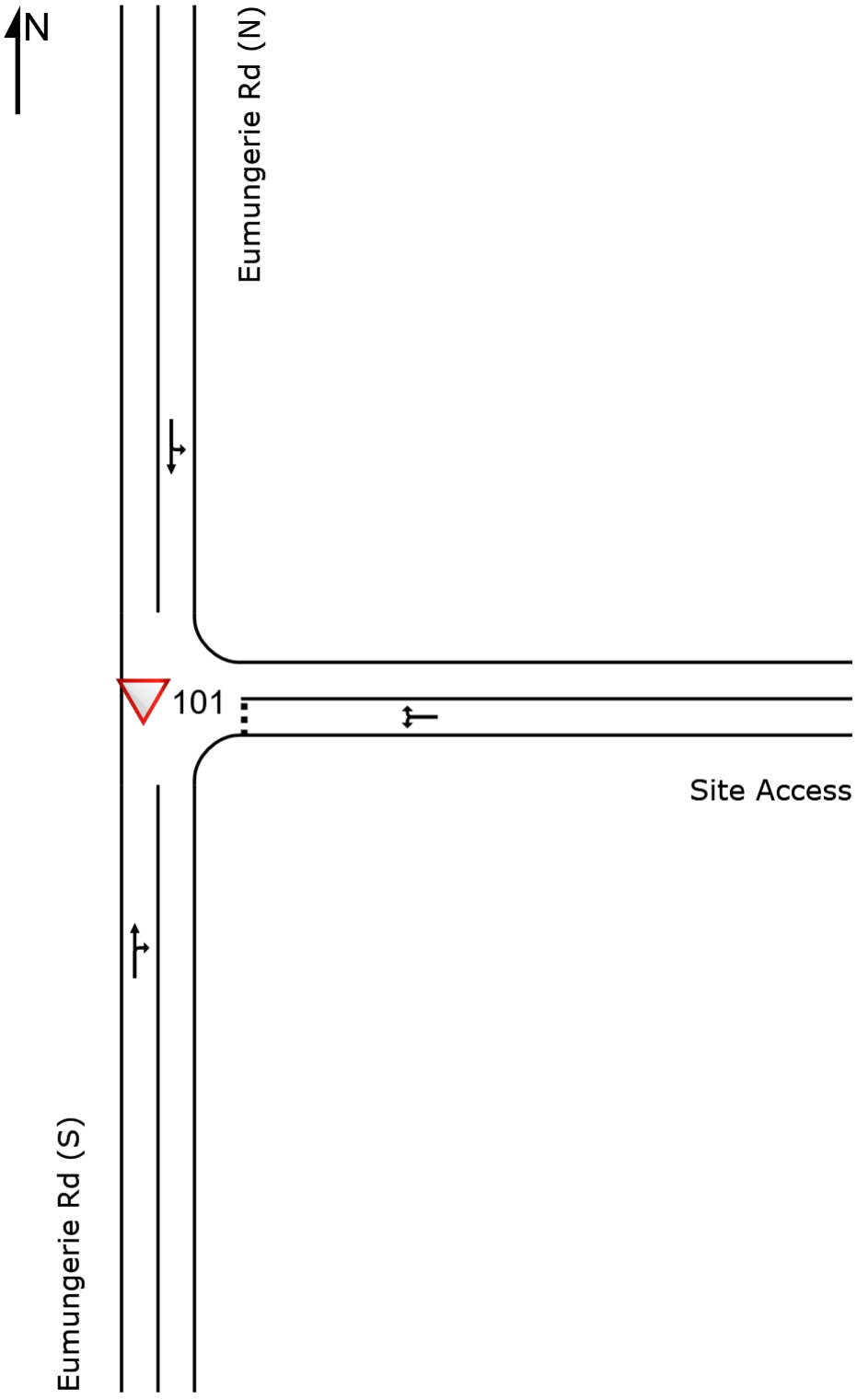
SIDRA Results

SITE LAYOUT

Site: 101 [Site Access AM (Site Folder: General)]

New Site
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 [Site Access AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	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: Eumungerie Rd (S)															
2	T1	All MCs	26	16.0	26	16.0	0.054	0.0	LOS A	0.2	2.4	0.07	0.44	0.07	89.9
3	R2	All MCs	51	54.2	51	54.2	0.054	9.0	LOS A	0.2	2.4	0.07	0.44	0.07	32.3
Approach			77	41.1	77	41.1	0.054	5.9	NA	0.2	2.4	0.07	0.44	0.07	41.4
East: Site Access															
4	L2	All MCs	1	0.0	1	0.0	0.002	0.0	LOS A	0.0	0.0	0.07	0.08	0.07	31.5
6	R2	All MCs	1	0.0	1	0.0	0.002	0.9	LOS A	0.0	0.0	0.07	0.08	0.07	31.5
Approach			2	0.0	2	0.0	0.002	0.5	LOS A	0.0	0.0	0.07	0.08	0.07	31.5
North: Eumungerie Rd (N)															
7	L2	All MCs	1	0.0	1	0.0	0.007	7.9	LOS A	0.0	0.0	0.00	0.07	0.00	84.2
8	T1	All MCs	9	55.6	9	55.6	0.007	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	95.9
Approach			11	50.0	11	50.0	0.007	0.8	NA	0.0	0.0	0.00	0.07	0.00	94.6
All Vehicles			89	41.2	89	41.2	0.054	5.2	NA	0.2	2.4	0.06	0.38	0.06	44.0

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

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

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

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

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

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

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

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

MOVEMENT SUMMARY

Site: 101 [Site Access PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	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: Eumungerie Rd (S)															
2	T1	All MCs	11	20.0	11	20.0	0.007	0.0	LOS A	0.0	0.0	0.02	0.06	0.02	97.5
3	R2	All MCs	1	0.0	1	0.0	0.007	7.5	LOS A	0.0	0.0	0.02	0.06	0.02	33.3
Approach			12	18.2	12	18.2	0.007	0.7	NA	0.0	0.0	0.02	0.06	0.02	82.9
East: Site Access															
4	L2	All MCs	51	54.2	51	54.2	0.042	0.2	LOS A	0.2	1.7	0.12	0.04	0.12	28.1
6	R2	All MCs	1	0.0	1	0.0	0.042	0.8	LOS A	0.2	1.7	0.12	0.04	0.12	31.4
Approach			52	53.1	52	53.1	0.042	0.2	LOS A	0.2	1.7	0.12	0.04	0.12	28.1
North: Eumungerie Rd (N)															
7	L2	All MCs	1	0.0	1	0.0	0.020	7.9	LOS A	0.0	0.0	0.00	0.02	0.00	86.7
8	T1	All MCs	32	26.7	32	26.7	0.020	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	99.1
Approach			33	25.8	33	25.8	0.020	0.3	NA	0.0	0.0	0.00	0.02	0.00	98.6
All Vehicles			96	39.6	96	39.6	0.042	0.3	NA	0.2	1.7	0.07	0.03	0.07	41.5

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

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

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

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

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

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

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

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

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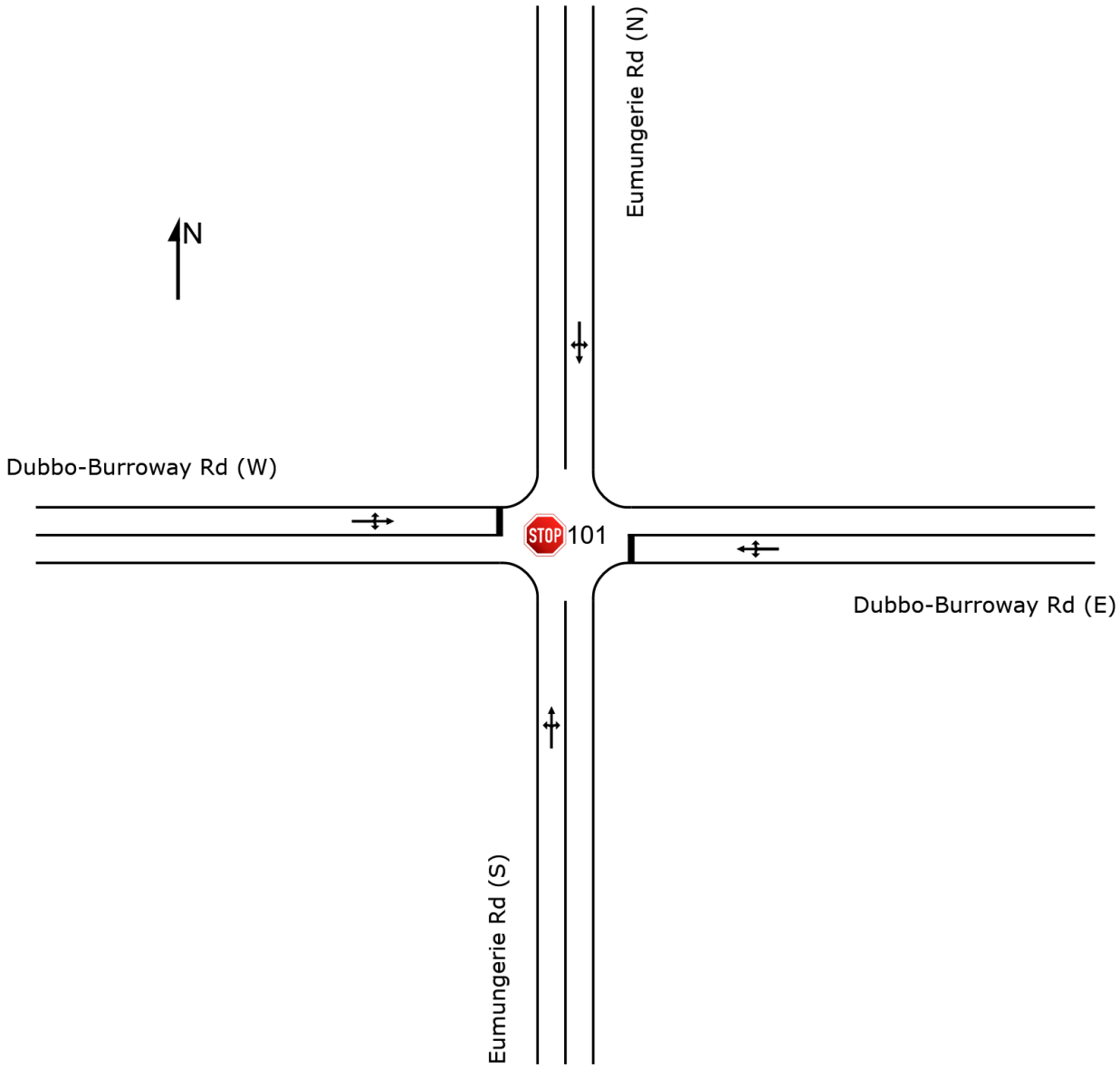
SITE LAYOUT

Site: 101 [Eumungerie Rd / Dubbo-Burroway Rd AM (Site Folder: General)]

New Site
Site Category: (None)
Stop (Two-Way)

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



MOVEMENT SUMMARY

Site: 101 [Eumungerie Rd / Dubbo-Burroway Rd AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	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: Eumungerie Rd (S)															
1	L2	All MCs	2	50.0	2	50.0	0.018	9.1	LOS A	0.0	0.2	0.01	0.12	0.01	65.4
2	T1	All MCs	25	29.2	25	29.2	0.018	0.0	LOS A	0.0	0.2	0.01	0.12	0.01	96.0
3	R2	All MCs	3	0.0	3	0.0	0.018	7.4	LOS A	0.0	0.2	0.01	0.12	0.01	84.3
Approach			31	27.6	31	27.6	0.018	1.4	NA	0.0	0.2	0.01	0.12	0.01	91.8
East: Dubbo-Burroway Rd (E)															
4	L2	All MCs	5	0.0	5	0.0	0.083	9.6	LOS A	0.3	2.7	0.15	0.97	0.15	71.7
5	T1	All MCs	11	10.0	11	10.0	0.083	9.9	LOS A	0.3	2.7	0.15	0.97	0.15	68.3
6	R2	All MCs	54	45.1	54	45.1	0.083	11.9	LOS A	0.3	2.7	0.15	0.97	0.15	57.9
Approach			69	36.4	69	36.4	0.083	11.4	LOS A	0.3	2.7	0.15	0.97	0.15	60.2
North: Eumungerie Rd (N)															
7	L2	All MCs	1	0.0	1	0.0	0.007	7.8	LOS A	0.0	0.1	0.02	0.14	0.02	81.3
8	T1	All MCs	8	62.5	8	62.5	0.007	0.0	LOS A	0.0	0.1	0.02	0.14	0.02	92.0
9	R2	All MCs	1	0.0	1	0.0	0.007	7.5	LOS A	0.0	0.1	0.02	0.14	0.02	81.2
Approach			11	50.0	11	50.0	0.007	1.5	NA	0.0	0.1	0.02	0.14	0.02	89.6
West: Dubbo-Burroway Rd (W)															
10	L2	All MCs	1	0.0	1	0.0	0.019	9.6	LOS A	0.1	0.5	0.13	0.99	0.13	71.9
11	T1	All MCs	19	11.1	19	11.1	0.019	10.0	LOS A	0.1	0.5	0.13	0.99	0.13	68.1
12	R2	All MCs	1	0.0	1	0.0	0.019	9.1	LOS A	0.1	0.5	0.13	0.99	0.13	71.9
Approach			21	10.0	21	10.0	0.019	9.9	LOS A	0.1	0.5	0.13	0.99	0.13	68.5
All Vehicles			132	31.2	132	31.2	0.083	8.1	NA	0.3	2.7	0.10	0.71	0.10	68.8

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

MOVEMENT SUMMARY

Site: 101 [Eumungerie Rd / Dubbo-Burroway Rd PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	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: Eumungerie Rd (S)															
1	L2	All MCs	2	50.0	2	50.0	0.012	9.1	LOS A	0.0	0.4	0.17	0.33	0.17	62.7
2	T1	All MCs	9	22.2	9	22.2	0.012	0.0	LOS A	0.0	0.4	0.17	0.33	0.17	90.4
3	R2	All MCs	6	33.3	6	33.3	0.012	9.2	LOS A	0.0	0.4	0.17	0.33	0.17	66.9
Approach			18	29.4	18	29.4	0.012	4.3	NA	0.0	0.4	0.17	0.33	0.17	76.8
East: Dubbo-Burroway Rd (E)															
4	L2	All MCs	1	0.0	1	0.0	0.018	9.6	LOS A	0.1	0.5	0.18	0.95	0.18	71.8
5	T1	All MCs	16	6.7	16	6.7	0.018	9.9	LOS A	0.1	0.5	0.18	0.95	0.18	69.5
6	R2	All MCs	2	0.0	2	0.0	0.018	9.3	LOS A	0.1	0.5	0.18	0.95	0.18	71.8
Approach			19	5.6	19	5.6	0.018	9.8	LOS A	0.1	0.5	0.18	0.95	0.18	69.9
North: Eumungerie Rd (N)															
7	L2	All MCs	52	46.9	52	46.9	0.057	9.1	LOS A	0.0	0.1	0.00	0.42	0.00	62.7
8	T1	All MCs	31	37.9	31	37.9	0.057	0.0	LOS A	0.0	0.1	0.00	0.42	0.00	88.6
9	R2	All MCs	1	0.0	1	0.0	0.057	7.4	LOS A	0.0	0.1	0.00	0.42	0.00	78.6
Approach			83	43.0	83	43.0	0.057	5.7	NA	0.0	0.1	0.00	0.42	0.00	70.4
West: Dubbo-Burroway Rd (W)															
10	L2	All MCs	1	0.0	1	0.0	0.007	9.6	LOS A	0.0	0.2	0.14	0.98	0.14	71.5
11	T1	All MCs	5	20.0	5	20.0	0.007	10.9	LOS A	0.0	0.2	0.14	0.98	0.14	65.0
12	R2	All MCs	1	0.0	1	0.0	0.007	9.2	LOS A	0.0	0.2	0.14	0.98	0.14	71.4
Approach			7	14.3	7	14.3	0.007	10.5	LOS A	0.0	0.2	0.14	0.98	0.14	66.8
All Vehicles			127	33.9	127	33.9	0.057	6.4	NA	0.1	0.5	0.06	0.52	0.06	71.0

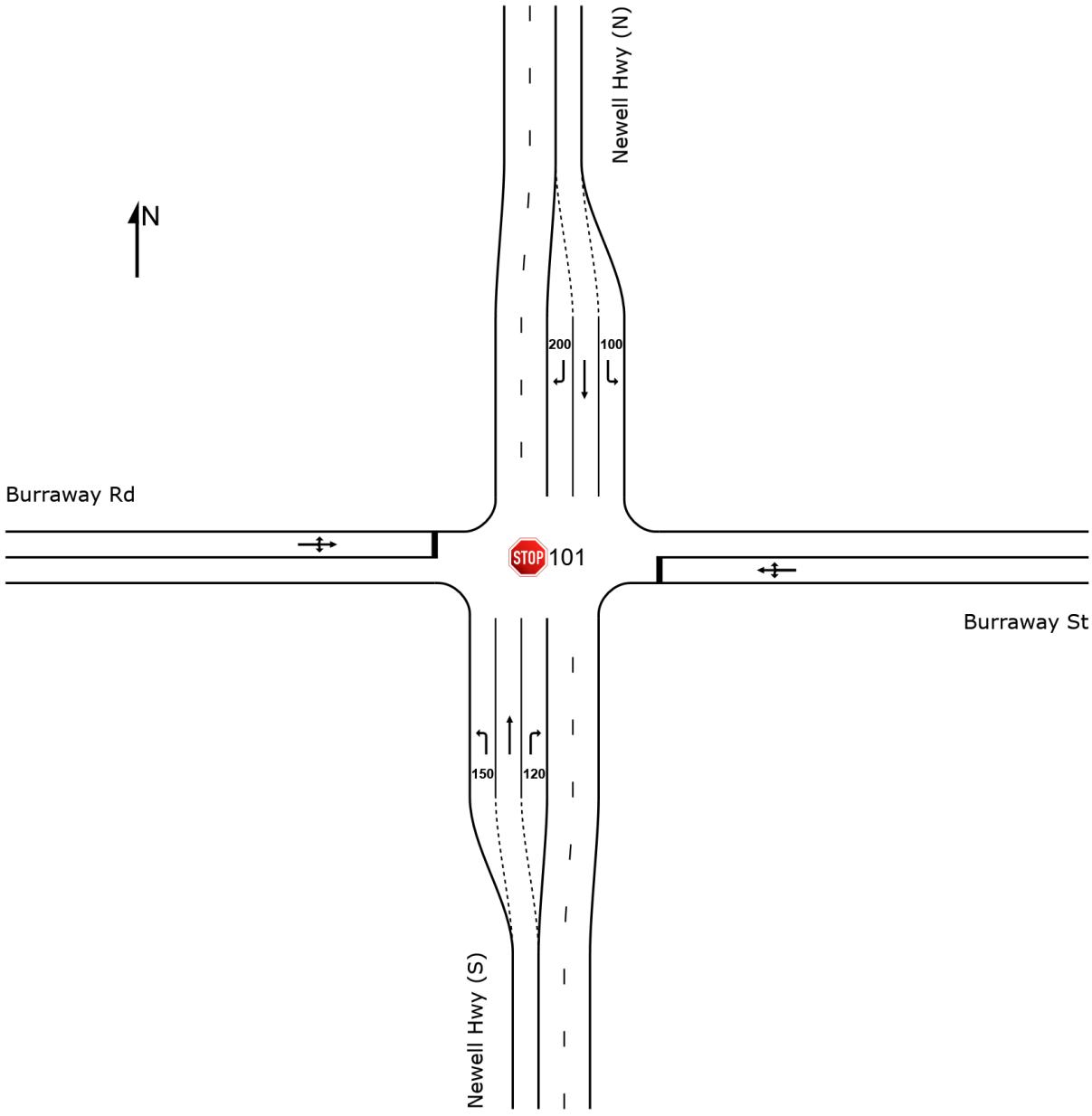
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level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

SITE LAYOUT

Site: 101 [Newell Hwy / Burraway Rd / Burraway St AM (Site Folder: General)]

New Site
Site Category: (None)
Stop (Two-Way)

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



MOVEMENT SUMMARY

Site: 101 [Newell Hwy / Burraway Rd / Burraway St AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	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: Newell Hwy (S)															
1	L2	All MCs	109	31.7	109	31.7	0.072	7.5	LOS A	0.0	0.0	0.00	0.63	0.00	55.4
2	T1	All MCs	193	17.5	193	17.5	0.110	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
3	R2	All MCs	25	4.2	25	4.2	0.021	7.6	LOS A	0.1	0.6	0.28	0.60	0.28	52.8
Approach			327	21.2	327	21.2	0.110	3.1	NA	0.1	0.6	0.02	0.26	0.02	67.3
East: Burraway St															
4	L2	All MCs	136	5.4	136	5.4	0.183	8.7	LOS A	0.7	5.3	0.36	0.88	0.36	49.5
5	T1	All MCs	4	0.0	4	0.0	0.183	17.9	LOS B	0.7	5.3	0.36	0.88	0.36	43.7
6	R2	All MCs	5	80.0	5	80.0	0.183	30.6	LOS C	0.7	5.3	0.36	0.88	0.36	38.2
Approach			145	8.0	145	8.0	0.183	9.7	LOS A	0.7	5.3	0.36	0.88	0.36	48.8
North: Newell Hwy (N)															
7	L2	All MCs	7	85.7	7	85.7	0.006	8.5	LOS A	0.0	0.0	0.00	0.63	0.00	44.6
8	T1	All MCs	161	9.8	161	9.8	0.088	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	80.0
9	R2	All MCs	5	0.0	5	0.0	0.005	8.1	LOS A	0.0	0.1	0.39	0.60	0.39	52.6
Approach			174	12.7	174	12.7	0.088	0.6	NA	0.0	0.1	0.01	0.04	0.01	76.2
West: Burraway Rd															
10	L2	All MCs	5	20.0	5	20.0	0.482	14.1	LOS A	2.1	16.3	0.79	1.13	1.18	37.7
11	T1	All MCs	5	0.0	5	0.0	0.482	20.9	LOS B	2.1	16.3	0.79	1.13	1.18	35.7
12	R2	All MCs	92	11.5	92	11.5	0.482	30.9	LOS C	2.1	16.3	0.79	1.13	1.18	38.8
Approach			102	11.3	102	11.3	0.482	29.5	LOS C	2.1	16.3	0.79	1.13	1.18	38.5
All Vehicles			748	15.3	748	15.3	0.482	7.4	NA	2.1	16.3	0.19	0.45	0.24	58.6

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

MOVEMENT SUMMARY

Site: 101 [Newell Hwy / Burraway Rd / Burraway St PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	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: Newell Hwy (S)															
1	L2	All MCs	61	10.3	61	10.3	0.035	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	61.3
2	T1	All MCs	171	11.1	171	11.1	0.094	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
3	R2	All MCs	92	10.3	92	10.3	0.082	7.9	LOS A	0.3	2.5	0.31	0.62	0.31	52.6
Approach			323	10.7	323	10.7	0.094	3.6	NA	0.3	2.5	0.09	0.30	0.09	66.3
East: Burraway St															
4	L2	All MCs	67	14.1	67	14.1	0.103	9.1	LOS A	0.4	2.9	0.37	0.89	0.37	47.6
5	T1	All MCs	5	40.0	5	40.0	0.103	24.7	LOS B	0.4	2.9	0.37	0.89	0.37	43.0
6	R2	All MCs	1	0.0	1	0.0	0.103	16.4	LOS B	0.4	2.9	0.37	0.89	0.37	50.4
Approach			74	15.7	74	15.7	0.103	10.4	LOS A	0.4	2.9	0.37	0.89	0.37	47.3
North: Newell Hwy (N)															
7	L2	All MCs	2	50.0	2	50.0	0.002	7.9	LOS A	0.0	0.0	0.00	0.63	0.00	51.2
8	T1	All MCs	176	15.6	176	15.6	0.099	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	All MCs	1	0.0	1	0.0	0.001	7.7	LOS A	0.0	0.0	0.33	0.56	0.33	52.7
Approach			179	15.9	179	15.9	0.099	0.2	NA	0.0	0.0	0.00	0.01	0.00	79.2
West: Burraway Rd															
10	L2	All MCs	1	0.0	1	0.0	0.606	16.7	LOS B	2.9	25.5	0.85	1.22	1.46	36.8
11	T1	All MCs	12	9.1	12	9.1	0.606	27.4	LOS B	2.9	25.5	0.85	1.22	1.46	32.9
12	R2	All MCs	95	33.3	95	33.3	0.606	40.5	LOS C	2.9	25.5	0.85	1.22	1.46	33.5
Approach			107	30.4	107	30.4	0.606	38.8	LOS C	2.9	25.5	0.85	1.22	1.46	33.4
All Vehicles			683	15.7	683	15.7	0.606	9.0	NA	2.9	25.5	0.22	0.43	0.31	57.4

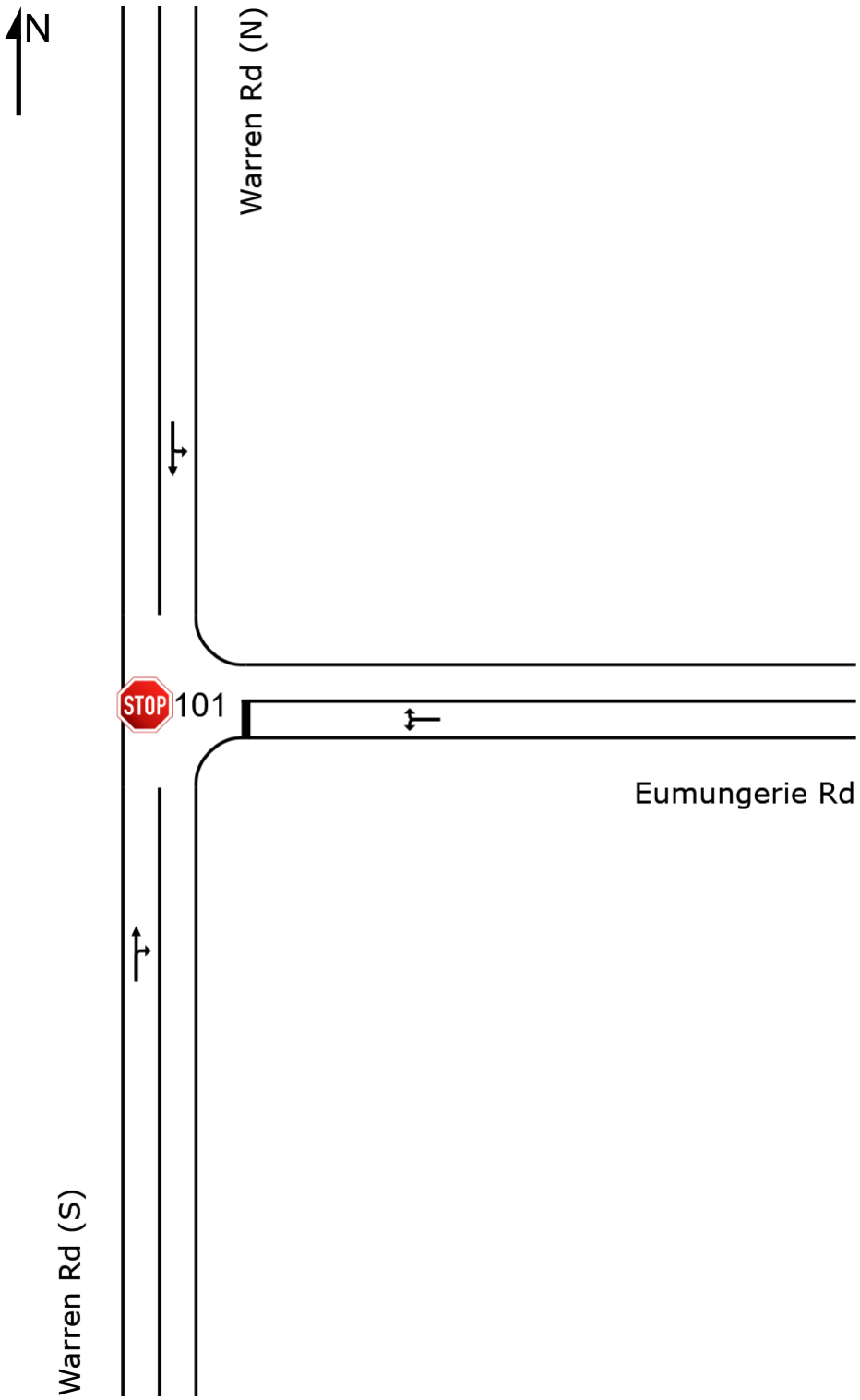
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level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

SITE LAYOUT

Site: 101 [Eumungerie Rd / Warren Rd AM (Site Folder: General)]

New Site
Site Category: (None)
Stop (Two-Way)

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



MOVEMENT SUMMARY

Site: 101 [Eumungerie Rd / Warren Rd AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	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: Warren Rd (S)															
2	T1	All MCs	34	9.4	34	9.4	0.063	0.0	LOS A	0.3	2.5	0.15	0.36	0.15	47.9
3	R2	All MCs	62	32.2	62	32.2	0.063	5.2	LOS A	0.3	2.5	0.15	0.36	0.15	50.6
Approach			96	24.2	96	24.2	0.063	3.4	NA	0.3	2.5	0.15	0.36	0.15	49.6
East: Eumungerie Rd															
4	L2	All MCs	43	19.5	43	19.5	0.038	10.9	LOS A	0.1	1.2	0.15	0.92	0.15	55.1
6	R2	All MCs	2	50.0	2	50.0	0.038	12.7	LOS A	0.1	1.2	0.15	0.92	0.15	54.0
Approach			45	20.9	45	20.9	0.038	10.9	LOS A	0.1	1.2	0.15	0.92	0.15	55.0
North: Warren Rd (N)															
7	L2	All MCs	1	0.0	1	0.0	0.029	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	48.7
8	T1	All MCs	53	8.0	53	8.0	0.029	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach			54	7.8	54	7.8	0.029	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles			195	18.9	195	18.9	0.063	4.2	NA	0.3	2.5	0.11	0.39	0.11	50.9

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

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

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

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

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

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

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

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

MOVEMENT SUMMARY

Site: 101 [Eumungerie Rd / Warren Rd PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	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: Warren Rd (S)															
2	T1	All MCs	48	2.2	48	2.2	0.050	0.0	LOS A	0.2	1.5	0.11	0.25	0.11	48.5
3	R2	All MCs	37	17.1	37	17.1	0.050	5.0	LOS A	0.2	1.5	0.11	0.25	0.11	54.4
Approach			85	8.6	85	8.6	0.050	2.2	NA	0.2	1.5	0.11	0.25	0.11	50.9
East: Eumungerie Rd															
4	L2	All MCs	62	22.0	62	22.0	0.053	11.0	LOS A	0.2	1.8	0.13	0.93	0.13	55.0
6	R2	All MCs	3	0.0	3	0.0	0.053	9.4	LOS A	0.2	1.8	0.13	0.93	0.13	55.2
Approach			65	21.0	65	21.0	0.053	10.9	LOS A	0.2	1.8	0.13	0.93	0.13	55.0
North: Warren Rd (N)															
7	L2	All MCs	3	0.0	3	0.0	0.024	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	48.5
8	T1	All MCs	42	7.5	42	7.5	0.024	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.8
Approach			45	7.0	45	7.0	0.024	0.3	NA	0.0	0.0	0.00	0.04	0.00	49.7
All Vehicles			196	12.4	196	12.4	0.053	4.6	NA	0.2	1.8	0.09	0.43	0.09	51.9

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

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

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

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

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

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

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

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

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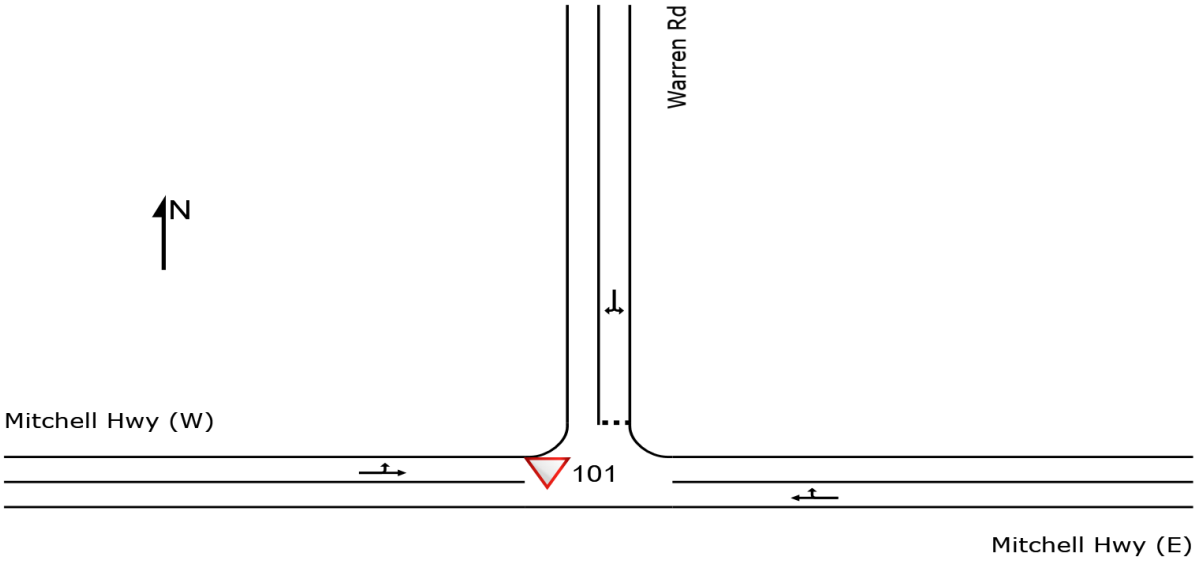
SITE LAYOUT

Site: 101 [Mitchell Hwy / Warren Rd AM (Site Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

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



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MOVEMENT SUMMARY

Site: 101 [Mitchell Hwy / Warren Rd AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	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
East: Mitchell Hwy (E)															
5	T1	All MCs	103	14.3	103	14.3	0.136	0.0	LOS A	0.6	5.1	0.22	0.33	0.22	48.0
6	R2	All MCs	109	22.1	109	22.1	0.136	5.6	LOS A	0.6	5.1	0.22	0.33	0.22	46.3
Approach			213	18.3	213	18.3	0.136	2.9	NA	0.6	5.1	0.22	0.33	0.22	47.1
North: Warren Rd															
7	L2	All MCs	95	13.3	95	13.3	0.075	5.0	LOS A	0.3	2.4	0.21	0.51	0.21	45.3
9	R2	All MCs	7	0.0	7	0.0	0.075	5.9	LOS A	0.3	2.4	0.21	0.51	0.21	45.3
Approach			102	12.4	102	12.4	0.075	5.1	LOS A	0.3	2.4	0.21	0.51	0.21	45.3
West: Mitchell Hwy (W)															
10	L2	All MCs	9	0.0	9	0.0	0.056	4.6	LOS A	0.0	0.0	0.00	0.05	0.00	48.5
11	T1	All MCs	96	5.5	96	5.5	0.056	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	49.7
Approach			105	5.0	105	5.0	0.056	0.4	NA	0.0	0.0	0.00	0.05	0.00	49.6
All Vehicles			420	13.5	420	13.5	0.136	2.8	NA	0.6	5.1	0.16	0.30	0.16	47.2

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

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

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

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

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

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

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

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

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MOVEMENT SUMMARY

Site: 101 [Mitchell Hwy / Warren Rd PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	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
East: Mitchell Hwy (E)															
5	T1	All MCs	83	13.9	83	13.9	0.103	0.0	LOS A	0.5	3.5	0.25	0.34	0.25	47.8
6	R2	All MCs	85	6.2	85	6.2	0.103	5.6	LOS A	0.5	3.5	0.25	0.34	0.25	46.4
Approach			168	10.0	168	10.0	0.103	2.8	NA	0.5	3.5	0.25	0.34	0.25	47.1
North: Warren Rd															
7	L2	All MCs	102	15.5	102	15.5	0.088	5.2	LOS A	0.4	2.8	0.26	0.53	0.26	45.2
9	R2	All MCs	9	22.2	9	22.2	0.088	6.5	LOS A	0.4	2.8	0.26	0.53	0.26	44.8
Approach			112	16.0	112	16.0	0.088	5.3	LOS A	0.4	2.8	0.26	0.53	0.26	45.1
West: Mitchell Hwy (W)															
10	L2	All MCs	15	21.4	15	21.4	0.083	4.8	LOS A	0.0	0.0	0.00	0.05	0.00	48.1
11	T1	All MCs	133	13.5	133	13.5	0.083	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	49.7
Approach			147	14.3	147	14.3	0.083	0.5	NA	0.0	0.0	0.00	0.05	0.00	49.5
All Vehicles			427	13.1	427	13.1	0.103	2.7	NA	0.5	3.5	0.17	0.29	0.17	47.3

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

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

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

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

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

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

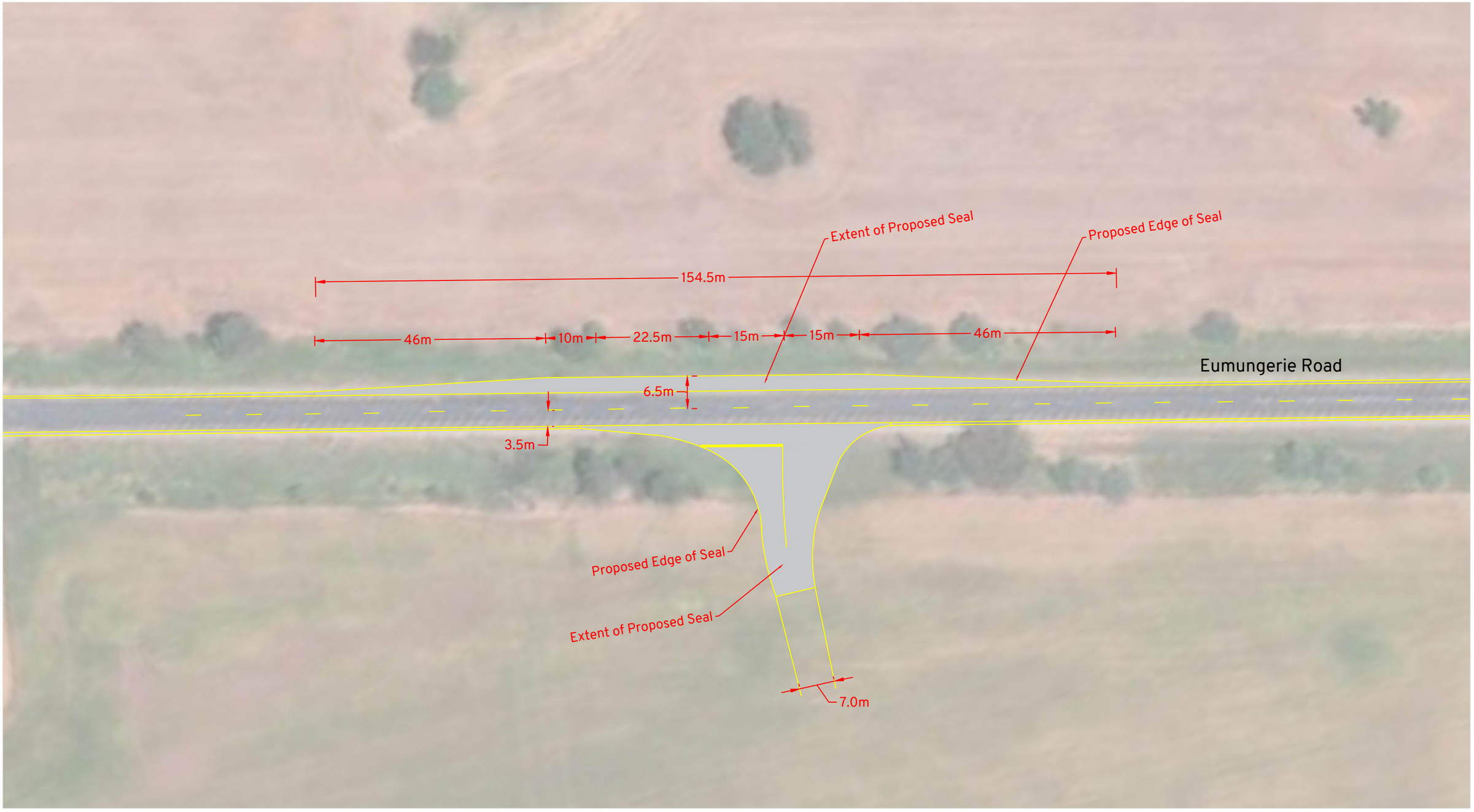
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

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

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

Appendix C

Site Access Design



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

Rural Basic Right-turn Treatment (BAR) Section 7.5.1.
1: Design speed of 110km/h.
2: Lane widths of 3.5m have been used.
3: Formation/carriageway widening is 3.0m.
4: Taper lengths calculate to 46m.
5: Storage length is 22.5m for one 19m design vehicle.

Burroway Solar Farm
Eumungerie Road, Burroway
Access Design - BAR

DRAWN: OM
DATE: 20/07/2023
DWG NO: 662 S01B
SCALE at A3: 1:750

Amber 01

Appendix D

Site Access Swept Path Assessment

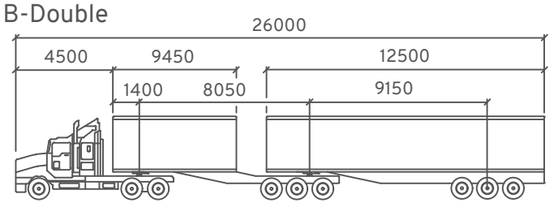
Vehicle Envelope

300mm Clearance

Reverse Manoevure

Min. Design Speed 5km/h

26.0m B-Double



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

Burroway Solar Farm

Eumungerie Road, Burroway

Swept Path Assessment - Site Access

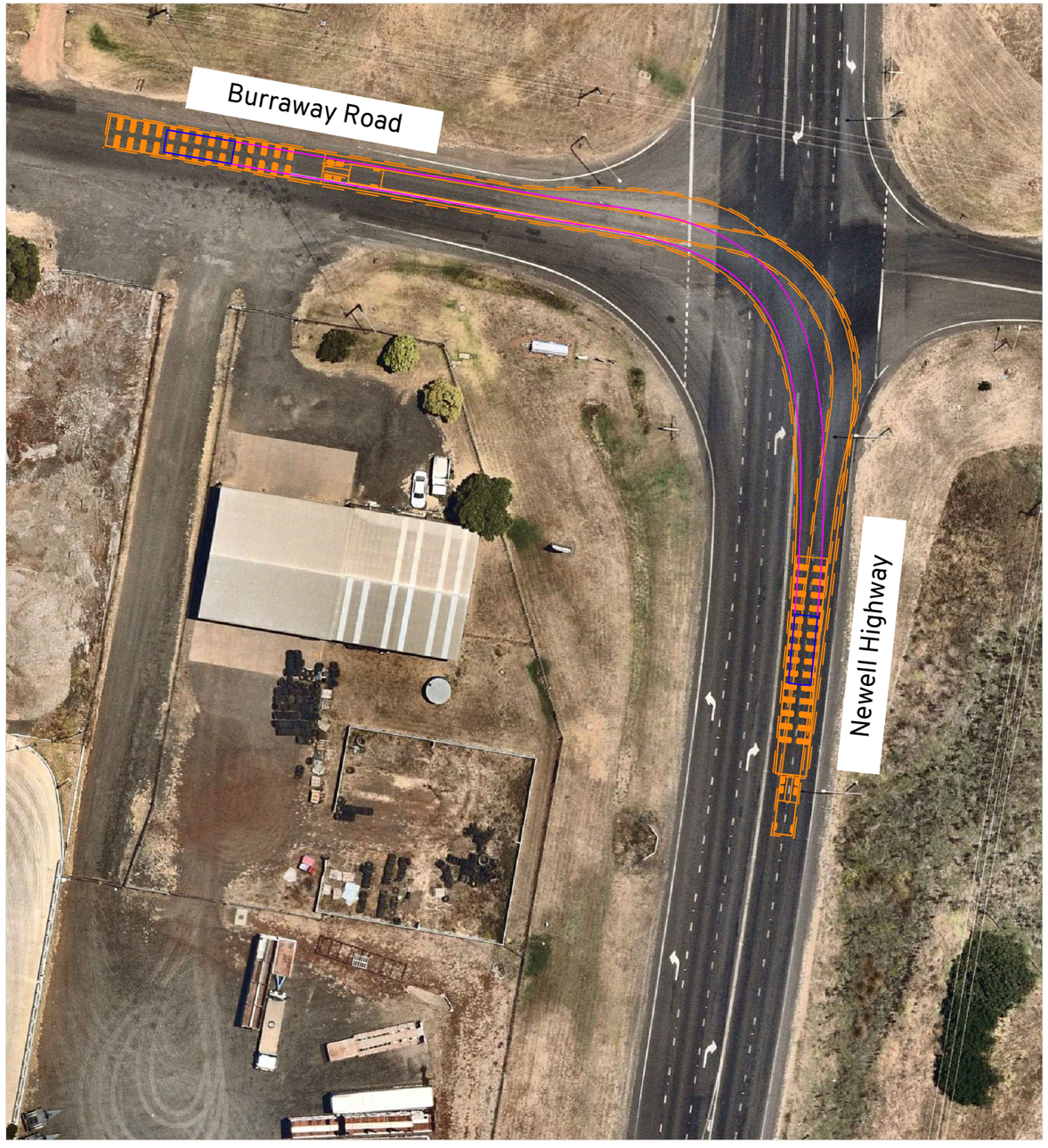
DRAWN: OM
DATE: 20/07/2023
DWG NO: 662 S01B
SCALE at A3: 1:750

Amber 02

Appendix E

OSOM Swept Path Assessment

Toward Site



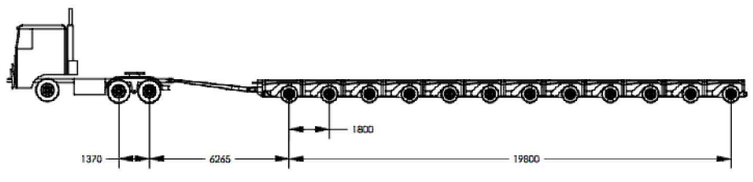
Away From Site

Vehicle Envelope

300mm Clearance

Reverse Manoevure

Min. Design Speed 5km/h



Volvo FH16 8x4 + Nooteboom Tower Trailer

Trailer Length	*21.600m*
Overall Width	*4.200m*
Lock-to-lock time	*6.00s*
Wall to Wall Turning Radius	*17.349m*
Inner Turning Radius	*9.225m*
Payload	*195MVA*

Burroway Solar Farm

Eumungerie Road, Burroway

OSOM Swept Path Assessment

DRAWN: OM
DATE: 20/07/2023
DWG NO: 662 S01B
SCALE at A3: 1:750

Amber 03

Toward Site

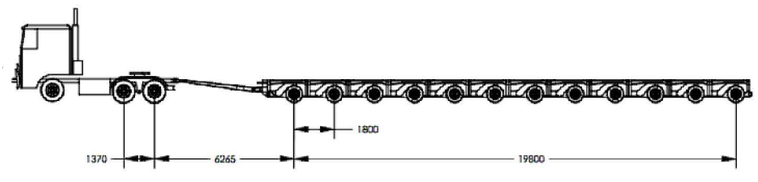
Away From Site

Vehicle Envelope

300mm Clearance

Reverse Manoevure

Min. Design Speed 5km/h



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Burroway Solar Farm

Eumungerie Road, Burroway

OSOM Swept Path Assessment

DRAWN: OM
DATE: 20/07/2023
DWG NO: 662 S01B
SCALE at A3: 1:750

Amber 04

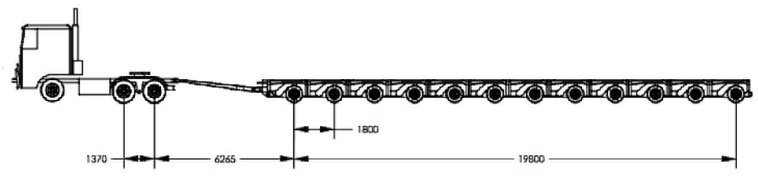
Eumungerie Road

Vehicle Envelope

300mm Clearance

Reverse Manoevure

Min. Design Speed 5km/h



Volvo FH16 8x4 + Nooteboom Tower Trailer

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Payload	*195MVA*

Burroway Solar Farm

Eumungerie Road, Burroway

OSOM Swept Path Assessment - Site Access

DRAWN: OM
DATE: 20/07/2023
DWG NO: 662 S01B
SCALE at A3: 1:750

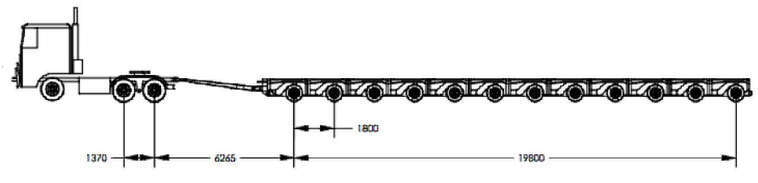
Amber 05

Vehicle Envelope

300mm Clearance

Reverse Manoevure

Min. Design Speed 5km/h



Volvo FH16 8x4 + Nooteboom Tower Trailer

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Lock-to-lock time	*6.00s*
Wall to Wall Turning Radius	*17.349m*
Inner Turning Radius	*9.225m*
Payload	*195MVA*

Burroway Solar Farm

Eumungerie Road, Burroway

OSOM Swept Path Assessment - Site Access

DRAWN: OM
DATE: 20/07/2023
DWG NO: 662 S01B
SCALE at A3: 1:750

Amber 06

Appendix F

Response to Agency Advice – TFNSW

The Traffic Impact Assessment has also been prepared in response to the Agency Advice provided by TfNSW. A response to each of the comments provided within the Agency Advice is outlined in Table 12.

Table 12: Response to TfNSW Agency Advice

TfNSW Comment	Response
The purpose of the TIA is to address the impact of traffic generation on the public road network and measures employed to ensure traffic efficiency and road safety during construction, operation and decommissioning of the project. The requested TIA needs to be tailored to the scope of the proposed development and include, but not be limited to, the following:	This Traffic Impact Assessment has been prepared to assess the construction, operational and decommissioning traffic impacts, and the access arrangements of the solar farm. It is based on surveys and observations at the site and our experience of similar developments elsewhere. The assessment responds to the SEARs and details how road impacts of the project traffic, particularly from heavy vehicle use and oversize and overmass vehicles, would be avoided or managed using road-use management strategies.
Detailed plans identifying the proposed location of any: ▪ Project-related infrastructure within and outside of the project boundary. ▪ Transmission line infrastructure, or any other project-related structures, within a road reserve. Include demarcation of local and classified road reserves. ▪ Permanent or temporary connection/access to classified roads. ▪ The Scoping Report does not identify specific details of the development's ancillary infrastructure and whether any temporary facilities are to be provided on-site including (but not limited to) concrete batching facilities. The EIS and TIA must identify the source for input materials and quantify the traffic generation associated with the haulage of the source materials. Where the location of source materials is not yet known, worst case scenarios for traffic distribution of those materials to and from the development site are to be addressed.	▪ Figure 1 shows the proposed layout of the site in relation to the road network, access locations and existing infrastructure. ▪ All vehicles would access the site via Eumungerie Road. It is proposed to provide a BAR turn treatment to allow suitable vehicle access. ▪ An overview of the proposed vehicles and travel routes are provided within Sections 3 and 4, respectively. Materials are proposed to be sourced from nearby towns including Dubbo and Narromine and the transport of these materials has been considered in the assessment.
Identify and assess the implications of any road and rail projects that will potentially be occurring simultaneously with the scheduling of the OSOM movements along the proposed OSOM routes.	▪ At the time of preparing the report no rail or road projects relevant to the OSOM route have been suggested by TfNSW or the rail authorities. It is recommended that further consultation be undertaken prior to construction by the appointed contractor as part of the preparation of the CTMP.

TfNSW Comment	Response
An assessment should be undertaken as a part of the EIS and TIA to identify the projects that will have overlapping construction periods and assess the cumulative traffic impacts with emphasis on the following: ▪ The cumulative impacts from traffic generated from the construction workforces in terms of the origin-destination routes, access, AM/PM peaks where there is overlap with other projects. ▪ The cumulative impacts of heavy vehicle movements in terms of AM/PM peaks and routes where there is an overlap with other projects. ▪ Cumulative impacts and consideration in relation to the timing of movements of OSOMs where other projects will be utilising the same routes as proposed for this development.	An assessment of the cumulative impacts of the project and other projects in the area is provided within Section 3.3. The assessment identifies projects which are expected to generate additional vehicle movements within Dubbo and Narromine. 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 Inland Rail (Narromine to Narrabri) project has the potential to generate additional vehicle movements along Eumungerie Road, Dubbo-Burroway Road, Warren Road, Mitchell Highway and Newell Highway, however the cumulative traffic impacts generated by the proposal and nearby developments are expected to be minimal. 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 for the OSOM vehicles.
A further assessment should be undertaken to address the cumulative impacts of the project's workforce accommodation (and transport) requirements, concurrent to other project's workforce requirements or proposals, within the local and sub-regional context and must consider the following: ▪ The accommodation requirements of the project. ▪ The local accommodation capacity, including types, and applying context including proximity to relevant town centres and other services which may be utilised by the workforce. ▪ Origin and destination of the workforce. ▪ The transport options available (Light Vehicles, Shuttle Buses, carpooling etc), any associated incentives or requirements to encourage the workforce to take up those options, and any staff pick up locations external to the project site. ▪ The above matters rely on enforcement and therefore the worst-case scenario for peak of construction without the above enforcement measures must be the base case for the TIA assessment.	A report is understood to be prepared by other consultants which addresses this matter.
Identify the return routes for Heavy Vehicles and OSOM vehicles.	The OSOM route is provided within Figure 17.
National Heavy Vehicle Regulator (NHVR) approved routes identified on the Restricted Access Maps (RAV MAP) are to be utilised for the heavy vehicle routes for the proposed development.	The proposed access route utilises B-Double approved routes as outlined within Section 5.

TfNSW Comment	Response
Identify and provide the following measurements parameters of the OSOM components / materials to be moved: ▪ Identify all the types of OSOM vehicles proposed to be used for the project. ▪ Overall combination load length, width, height and mass ▪ Maximum component length, widths and heights ▪ Wheelbase dimensions, ▪ Maximum trailer articulation angle(s), ▪ Minimum overhang heights above the road surface, Axle loads and axle group loads in terms of both tonnes and Equivalent Standard Axles (refer to Austroads Guide to Pavement Technology).	The Applicant has advised that the exact transformer model has yet to be determined and as such a transport company is unable to be approached to confirm the configuration of the delivery vehicle. The transformer model would be confirmed following development consent approval. Notwithstanding this, in order to assess the ability for larger OSOM vehicles to access the site a swept path assessment has been prepared from Newell Highway to the site via via Burraway Road, Dubbo-Burroway Road and Eumungerie Road.
Further include details on the number of OSOM movements, the intended time for OSOM movements to occur and identify the location of pull-over bays / rest areas along the OSOM routes.	Details of the OSOM vehicle movements are provided in Section 5.5. 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.
Project schedule: ▪ Hours and days of work, number of shifts and start and end times, ▪ Identify the approximate project's targeted construction commencement date/s. Identify the phases and stages of the project, including construction, operation and decommissioning.	The proposed hours of operation and staging is provided within Section 3.1.1.
Traffic volumes including: ▪ Existing background traffic, ▪ Project-related traffic for each phase or stage of the project, ▪ Projected cumulative traffic at commencement of operation, and a 10-year horizon post-commencement.	Turning movement count surveys were undertaken at four intersections in the area: ▪ Eumungerie Road / Dubbo-Burroway Road ▪ Newell Highway / Burraway Road ▪ Eumungerie Road / Warren Road ▪ Mitchell Highway / Warren Road In addition, midblock count data was collected from the TfNSW database for Newell Highway. The traffic data is presented within Section 2.3 of this report. The project related traffic data is presented within Section 3.1 of this report. The solar farm is expected to generate the maximum number of vehicle movements during construction, with a minimal level of traffic expected during operation. At the future 10-year scenario the site is expected to generate up to 6 vehicle movements per day associated with operation which is expected to have a minimal impact on the road network. The traffic assessment within this report has subsequently focused on the traffic impacts during construction when the majority of vehicle movements are generated.

TfNSW Comment	Response
Traffic characteristics including: ▪ Number and ratio of heavy vehicles to light vehicles, ▪ Peak times for existing traffic, ▪ Peak times for project-related traffic including commuter periods, ▪ Proposed hours for transportation and haulage, ▪ Specify the design vehicles for the project (in particular identifying all the relevant types of heavy / OSOM / specialist vehicles and shuttle buses) ▪ Interactions between existing and project-related traffic.	The traffic volumes expected to be generated during construction are presented within Figure 13 which identifies the various light and heavy vehicle movements. Section 3.2 of the report identifies the distribution of the construction traffic and Section 3.3 and 3.4 identify the potential traffic impacts of the project.
The origins, destinations and routes for: ▪ Commuter (employee and contractor) light vehicles and pool vehicles (including shuttle buses), ▪ Heavy (haulage) vehicles, ▪ OSOM vehicles.	The distribution for light and heavy vehicles is provided within Section 3.2. The access routes to the site for heavy vehicles and OSOM vehicles are discussed in Section 5.
Route analysis for all vehicle types accessing the site, which includes: ▪ Identifying potential constraints and / or pinch points along the route/s.	An assessment of the proposed access routes is provided within Section 5.
▪ Identify the necessary road network infrastructure and access upgrades required to cater for and mitigate the impact of project related traffic on both the local and classified road network for the development (for instance, road widening, hardstand areas, pullover bays, site access upgrades, intersection treatments etc).	It is proposed to provide the following road upgrades: ▪ Provide a Basic Right Turn treatment at the site access on Eumungerie Road; and ▪ In order to mitigate the impacts of the Project during construction, a CTMP is to be prepared which should include the recommendations provided within this document. The turn treatments and available sight distance at the site access and Eumungerie Road all comply with the requirements of the Austroads Guide. The proposed road upgrades are shown with Appendix C.
▪ 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:	See comments below:
- Available sight distances at the site access and nearby intersections and any constraint to achieving the required sight distance for the posted speed limit.	An assessment of the available sight distance at the site access on Eumungerie Road is provided within Section 4.2.
- 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, identifying the existence of the minimum basic turn treatments and addressing the need for any warranted higher order treatments.	An assessment of the required turn treatments at the site access on Eumungerie Road is provided within Section 4.1. The assessment indicates that a BAR turn treatment is required to comply with the Guideline. It is proposed to provide a BAR treatment as shown within Appendix C. The design complies with the requirements of the Austroads Guide.

TfNSW Comment	Response
- 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. The design vehicle templates used with the swept path analysis software are also requested in order for TfNSW to review the performance within the software (e.g. Autodesk Vehicle Tracking or Transoft AutoTURN).	A swept path assessment has been prepared based on a B-Double vehicle to demonstrate that vehicles are able to enter the site from Eumungerie Road which is an approved B-Double route. The swept path assessment is provided within Appendix D and demonstrates that the vehicle is able to suitably access the site. In order to assess the ability for larger OSOM vehicles to access the site a swept path assessment has been prepared from Newell Highway to the site via Burraway Road, Dubbo-Burroway Road and Eumungerie Road. The OSOM vehicle has been based on the expected design vehicle at this time, but it is noted that the ultimate vehicle used for the transportation of the transformer may change prior to construction. The OSOM swept path assessment is provided in Appendix E.
Provide strategic design drawing/s for any identified road infrastructure and access upgrades. It should be noted that any identified road infrastructure upgrades will need to be to the satisfaction of TfNSW and Council. Works must be appropriately designed in accordance with Austroads Guide to Road Design for the existing posted speed limit, including provision of Safe Intersection Sight Distance (SISD). Note: The design needs to comply with TfNSW Strategic design requirements for DAs.	It is proposed to provide the following road upgrades: ▪ Provide a Basic Right Turn treatment at the site access on Eumungerie Road; and ▪ In order to mitigate the impacts of the Project during construction, a Traffic Management Plan is to be prepared which should include the recommendations provided within this document. The turn treatments and available sight distance at the site access on Eumungerie Road are proposed to comply with the requirements of the Austroads Guide. The proposed road upgrades are shown with Appendix C.
Where road safety concerns are identified at a specific location along the proposed haulage routes, TfNSW suggests that the TIA be supported by a targeted Road Safety Audit undertaken by suitably qualified persons in accordance with the Austroads Guidelines.	The crash history search identified one crash along Eumungerie Road within 2 kilometres of the site. Further, the road network is proposed to be upgraded to comply with the Austroads Guide. As such, the vehicle movements generated by the site are expected to be accommodated on the road network in a safe manner.
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.	Refer above comment.
Consideration of the local climate conditions that may affect road safety during the life of the project (e.g. fog, wet and dry weather, icy road conditions).	The access route utilises roads that are designated for B-Double vehicles as outlined within the TfNSW Restricted Access Vehicle Map. Other recommendations have also been provided for inclusion within the CTMP which address the proposed operation measures during local climate events.
The layout of the internal road network, parking facilities and infrastructure.	The site layout is shown within Figure 1.

TfNSW Comment	Response
Impact on rail corridors and level crossings along the transport route/s detailing any proposed interface treatments, where applicable.	The preferred transport route crosses the Dubbo – Coonamble rail line at a level crossing on Boothenba Road. Consultation with the rail authority ARTC has been carried out with a summary provided in Section 7.
Impact on public transport (public and school bus routes) and consideration for alternative transport modes such as carpooling and shuttle buses during construction.	Heavy vehicle movements should avoid peak school bus times to limit the interaction of larger vehicles and vulnerable road users. Several school bus services operate along Newell Highway, Burraway Road and Warren Road. The CTMP is recommended to include measures to promote the use of carpooling shuttle buses.
Identification and assessment of potential environmental impacts of the project, such as blasting, lighting, visual, noise, dust and drainage on the function and integrity of all affected public roads.	Environmental impacts have been assessed by others as part of the Environmental Impact Statement.
Controls for transport and use of any dangerous goods in accordance with State Environmental Planning Policy No. 33 – Hazardous and Offensive Development, the Australian Dangerous Goods Code and AS4452 Storage and Handling of Toxic Substances.	Any controls for transport of dangerous goods are to be provided prior to construction as part of the CTMP in the event they are identified by the appointed contractor. At the time of preparing this report no dangerous goods have been identified.
A draft Traffic Management Plan (TMP) to be provided with the EIS, that could be developed further in consultation with relevant Councils and TfNSW and implemented following approval of the EIS.	A Traffic Management Plan (i.e. the CTMP) is to be developed in consultation with relevant Councils and TfNSW prior to construction of the project, and should include the recommendations provided within this document. The adoption of the mitigation measures outlined within the CTMP would ensure construction traffic has a minimal impact to the capacity and safety of the surrounding road network.

Appendix G

Response to Agency Advice – Narromine Shire Council

The Traffic Impact Assessment has also been prepared in response to the Agency Advice provided by Narromine Shire Council. A response to each of the comments provided within the Agency Advice is outlined in Table 13.

Table 13: Response to Council Advice

Council Comment	Response
Council seeks a traffic and access impact assessment that takes into consideration the following: a. The impact of increased traffic movements, type, and number of vehicle movements on Council's road network;	The traffic volumes expected to be generated during construction are presented within Figure 13 which identifies the various light and heavy vehicle movements. Section 3.2 of the report identifies the distribution of the construction traffic and Section 3.3 and 3.4 identify the potential traffic impacts of the project.
The level of service required to facilitate an increased traffic volume as the result of the proposal and if any Council roads will require an update to support the increase in traffic and heavy haulage. This should specifically address some matters specifically referred to in the Scoping Report.	The SIDRA analysis provided in Section 3.4 indicates the following: ▪ All intersections in the surrounding area are expected to continue to operate with minimal queue lengths; ▪ The average delay at intersections in the network is below 10 seconds; and ▪ All intersections are expected to operate with a good or satisfactory level of service. Accordingly, the road network is expected to be able to readily accommodate the traffic movements generated during peak construction. An assessment of the required turn treatments at the site access on Eumungerie Road is provided within Section 4.1. The assessment indicates that a BAR turn treatment is required to comply with the Guideline. It is proposed to provide a BAR treatment as shown within Appendix C. The design complies with the requirements of the Austroads Guide.
Road safety audit is sought to be provided as part of the EIS and design phase.	The crash history search identified one crash along Eumungerie Road within 2 kilometres of the site. Further, the road network is proposed to be upgraded to comply with the Austroads Guide. As such, the vehicle movements generated by the site are expected to be accommodated on the road network in a safe manner.
Site control measures should also be implemented so that there is no distraction nor interfere with a road user/ driver.	The recommendations provided within Section 6, which should be included in the future CTMP, would ensure the construction traffic would have a minimal impact to the capacity and safety of the surrounding road network.