Gilgandra Solar Farm

Traffic Impact Assessment Report

F8712

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PROJECT MANAGEMENT

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Project Details

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1 Introduction

This report entails a Traffic Impact Assessment Report (TIAR) for the development of the 5MW Solar Farm at 361 Oxley Highway, Gilgandra NSW. The TIAR will review, traffic volumes, traffic growth and accident statistics to evaluate the adequacy of the proposed works for safe operation of the intersection into the future.

The solar development is considered relatively small scale and will have a footprint of less than 13.3 Ha.

Site access has been proposed at the northern end of the site on Aralee Road Gilgandra which is approximately 1km west of the township and 290m south of Oxley Highway.

2 Existing Conditions

2.1 Location

The subject site is within the 'Primary Production' land zone.

The site is located on:

- Lot 1 & 2 DP1070081

Site is listed on planning maps as 361 Oxley Highway, Gilgandra NSW 2827. The development falls within the Gilgandra Shire Council area. (Lat/Long: -31.71175, 148.633168).

Gilgandra is located 60 km north of Dubbo and is situated midway between Dubbo and Coonabarrabran on the Newell Highway (A39), Oxley Highway and Castelreagh Highway.

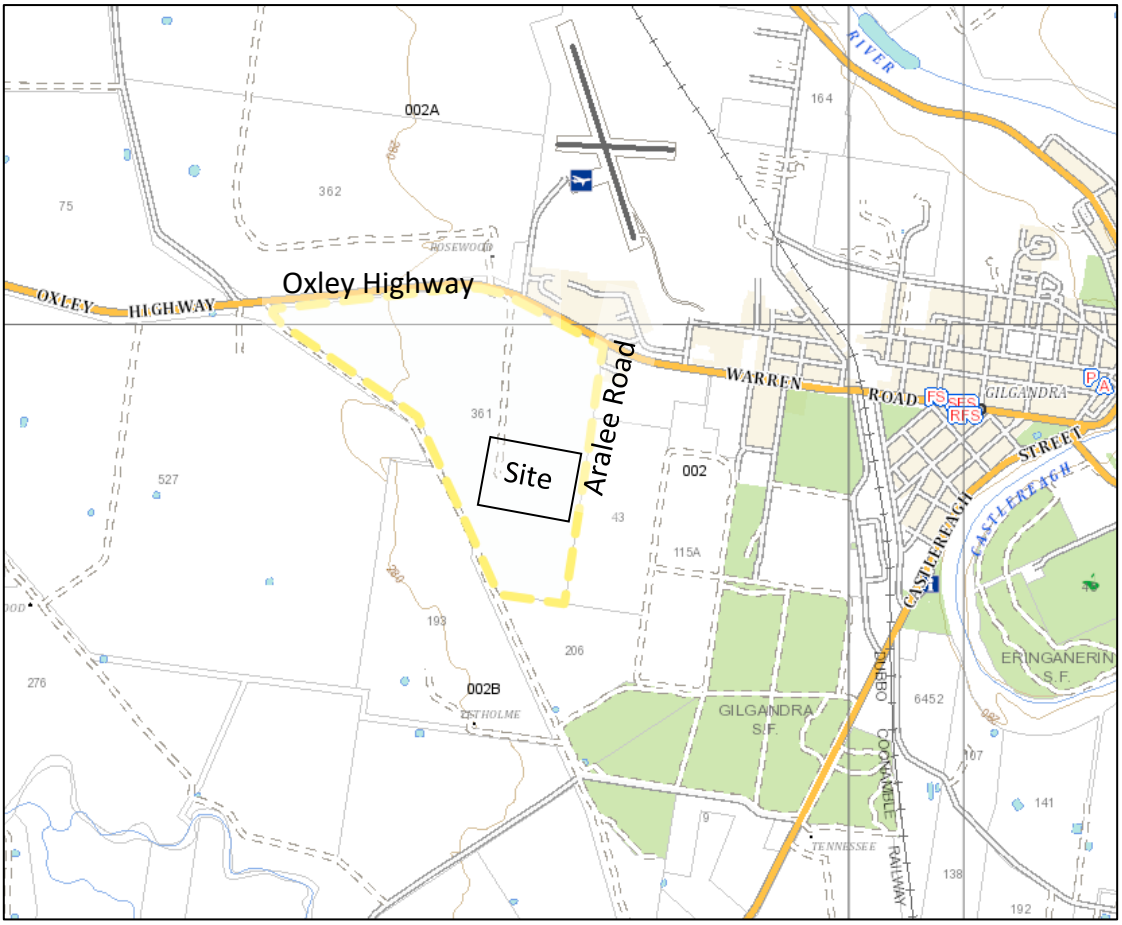
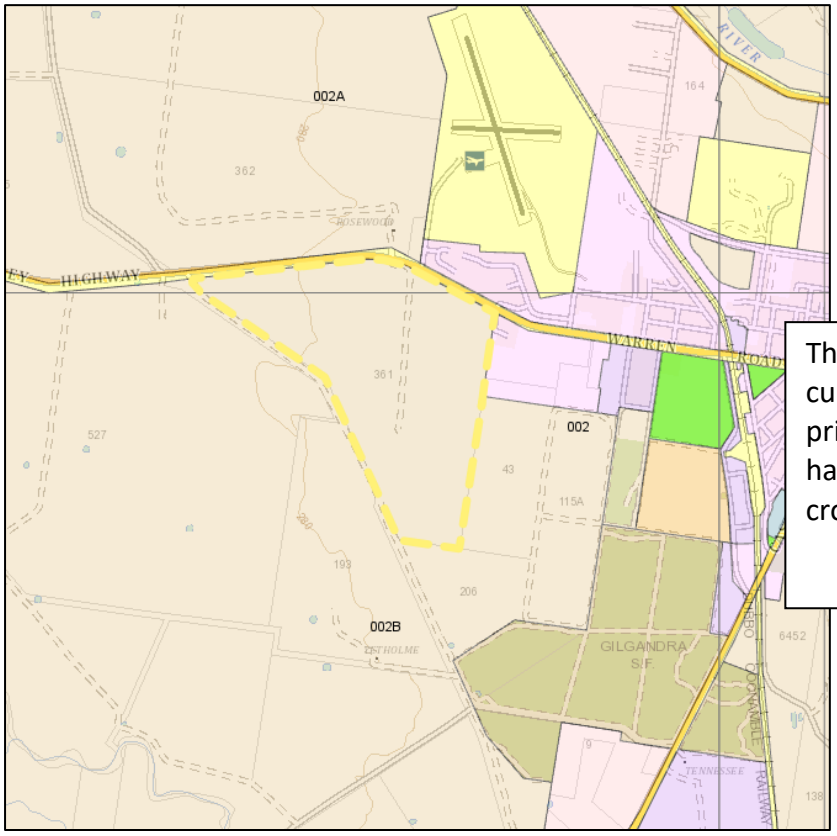


Figure 1: Property Location

The property on which the solar farm will be located is approximately 133.2 Ha and currently used for primary production. The solar development will have a footprint of approximately 11.3 Ha.

Figure 2: Development footprint



The proposed solar site is currently used for primary production and has been a grazing and cropping paddock

Figure 3: Land Use and Zoning

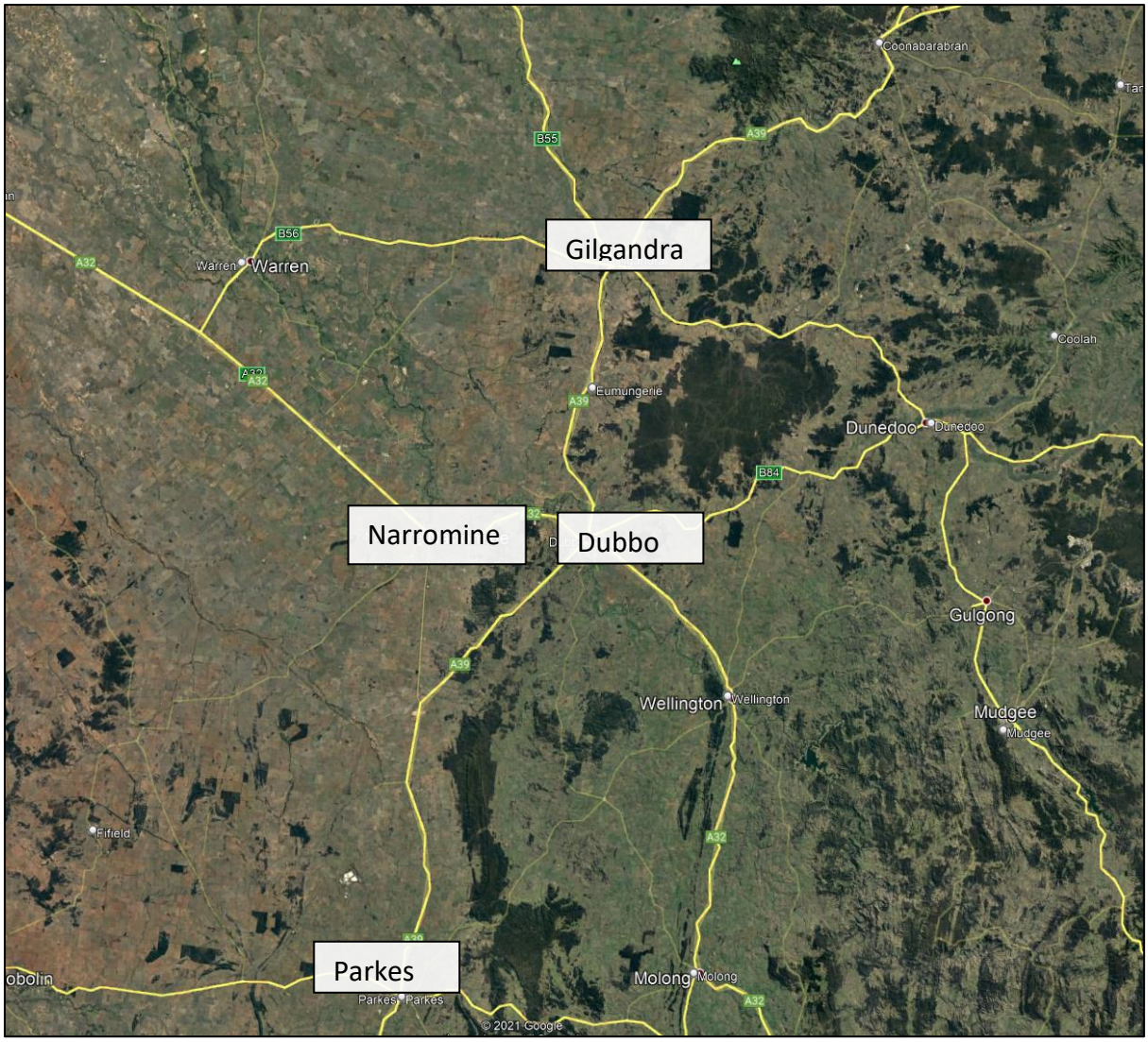


Figure 4: Locality Map

2.2 Oxley Highway (B56) to Aralee Road

Oxley Highway is a declared Regional Road and connects Gilgandra to the Mitchell Highway.

The Newell Highway and Oxley Highway are B-Double approved arterial roads.

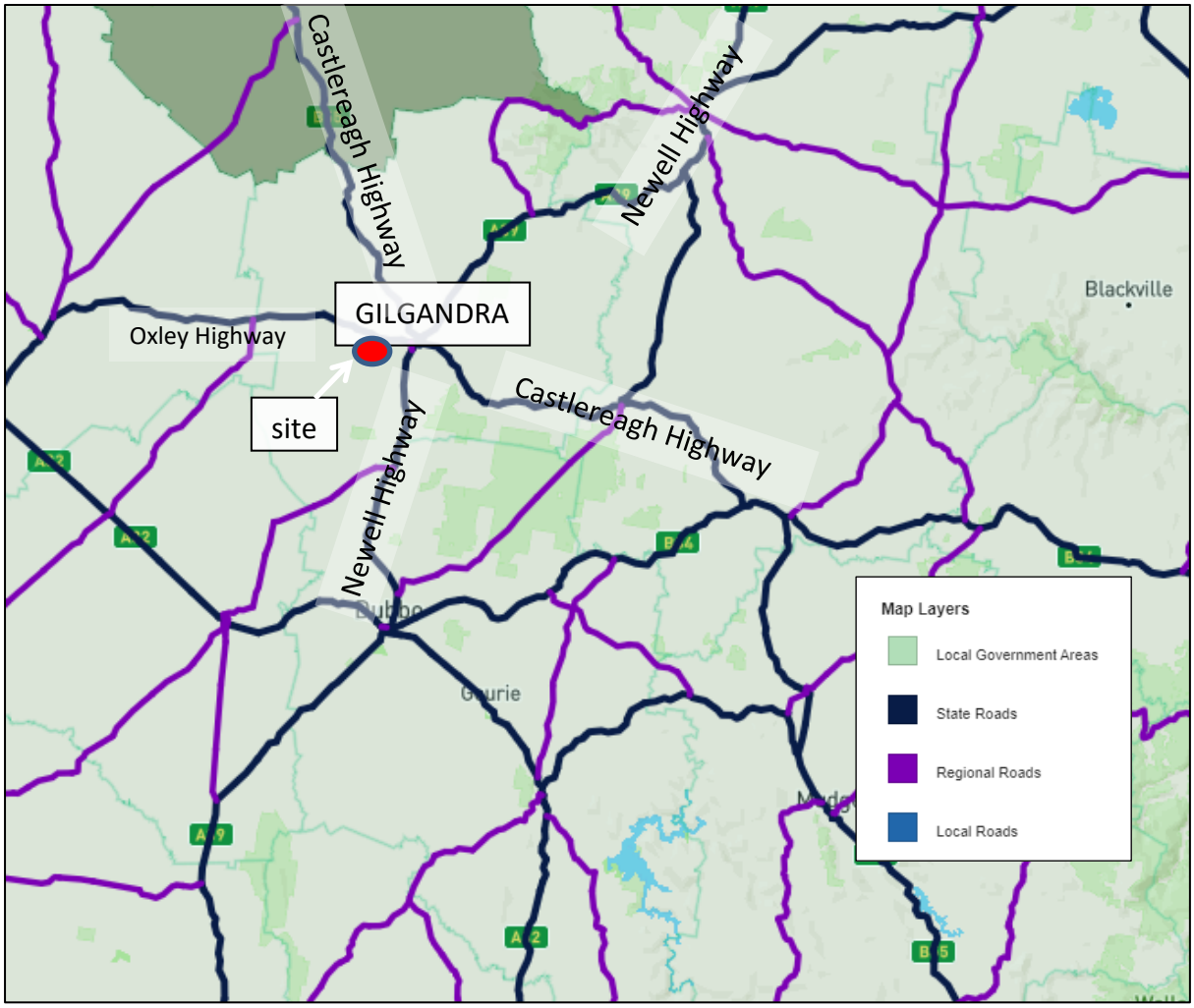


Figure 5: Road Classification

Traffic count data from 2009 4km north of Nevertire, indicates two way ADT on Oxley Road as 554 with 19% heavy vehicles.

2.3 Aralee Road

Aralee Road is a local gravel road approximately 8m wide with table drains. A permit would be required from NHVR for B Double access.

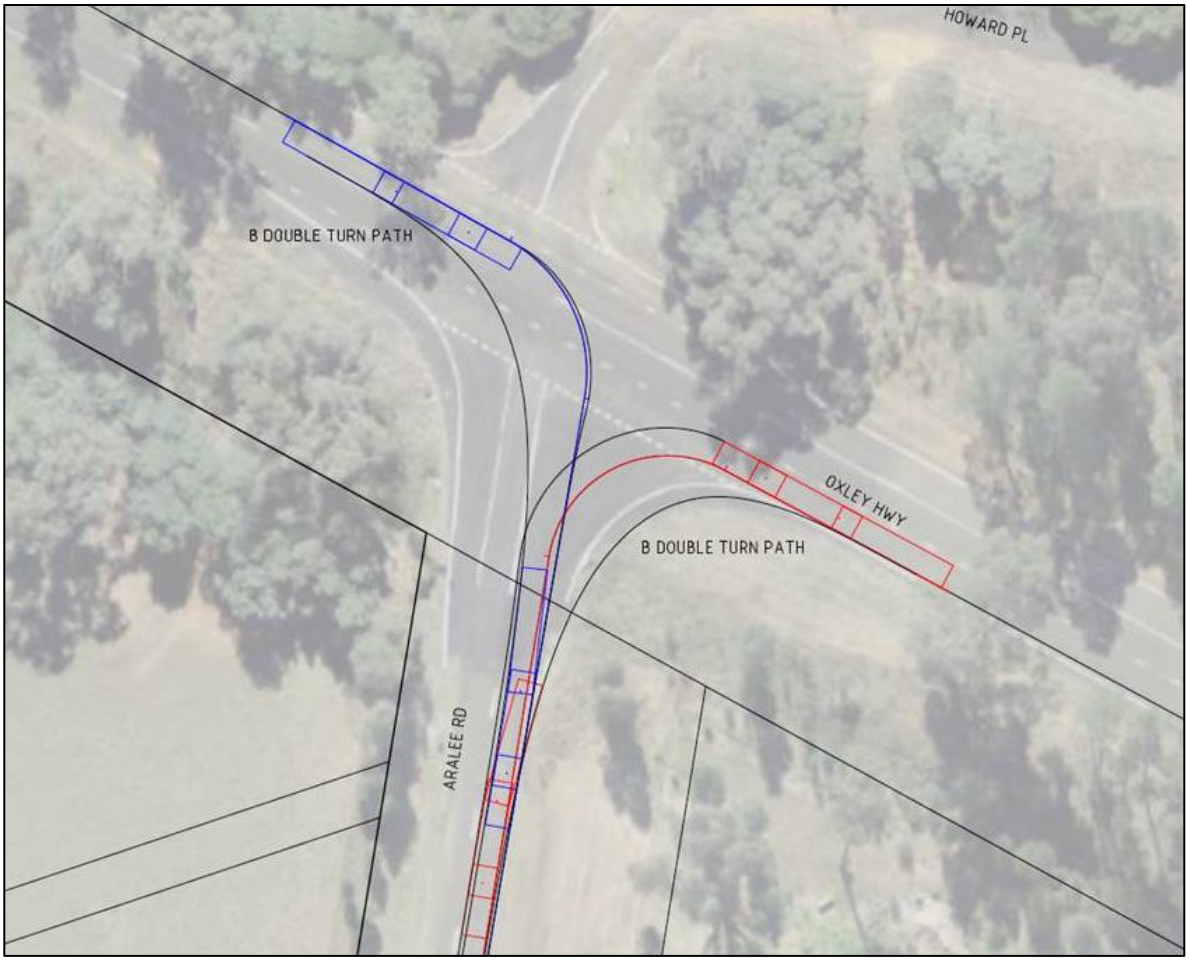


Figure 6: Turning path from Oxley Highway

Figure 7: Proposed access point

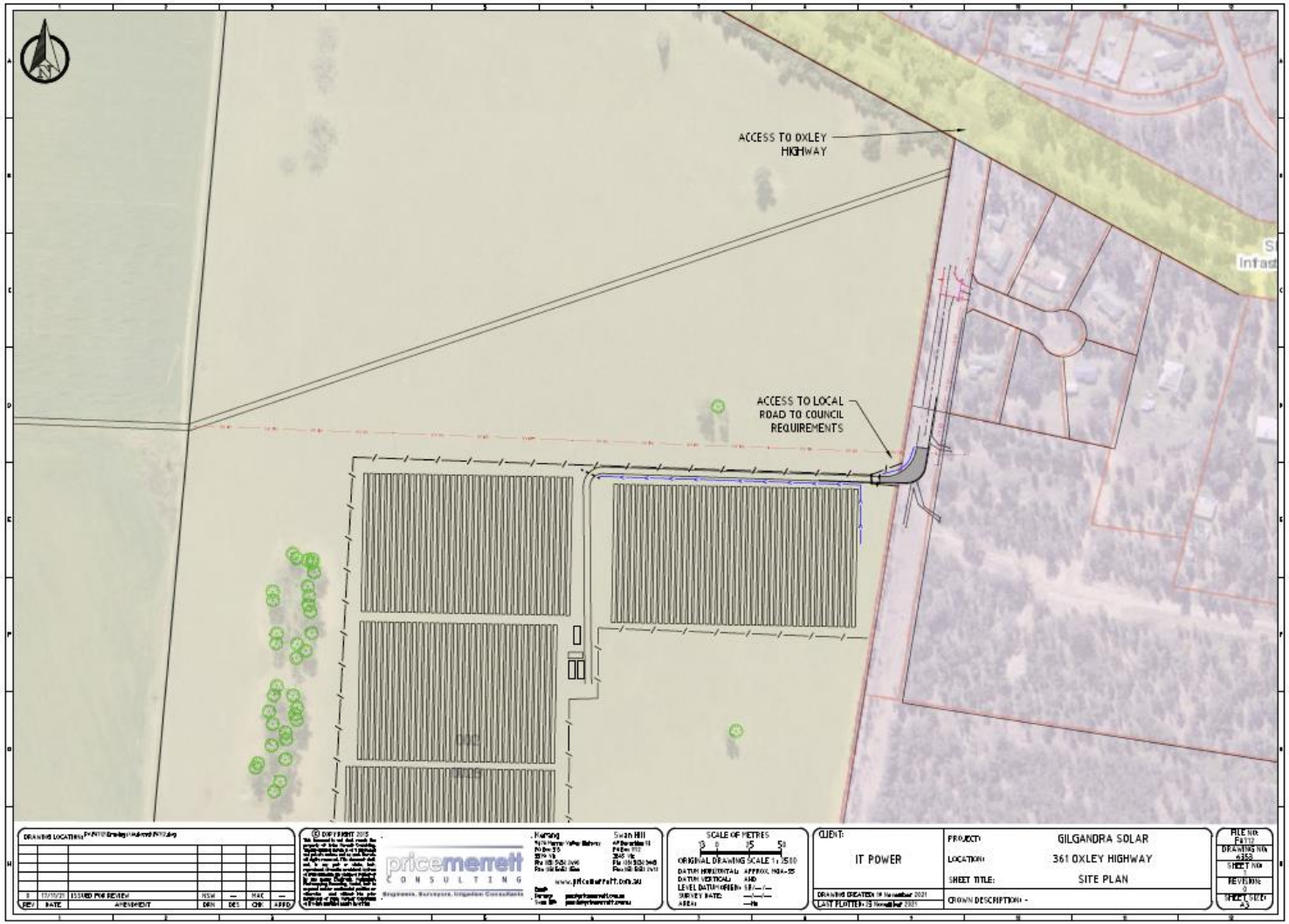


Figure 8: Site access

2.4 Access Arrangement

Access will be created from Aralee Road via a gravel driveway located at the north eastern corner of the site.

The section of Aralee Road which the site access point would only have infrequent use by local traffic. It would appear only one property uses the road where the proposed access point would join.

The topography around the access point is relatively flat with road batters and slopes manageable grades. The site itself slopes towards the south west.

2.5 Transport Route

Equipment for the solar development is likely to be transported on trucks from Port Botany in Sydney. Figure 8 shows the likely transport route. B-double access should not be a problem as road trains currently traverse these routes frequently.

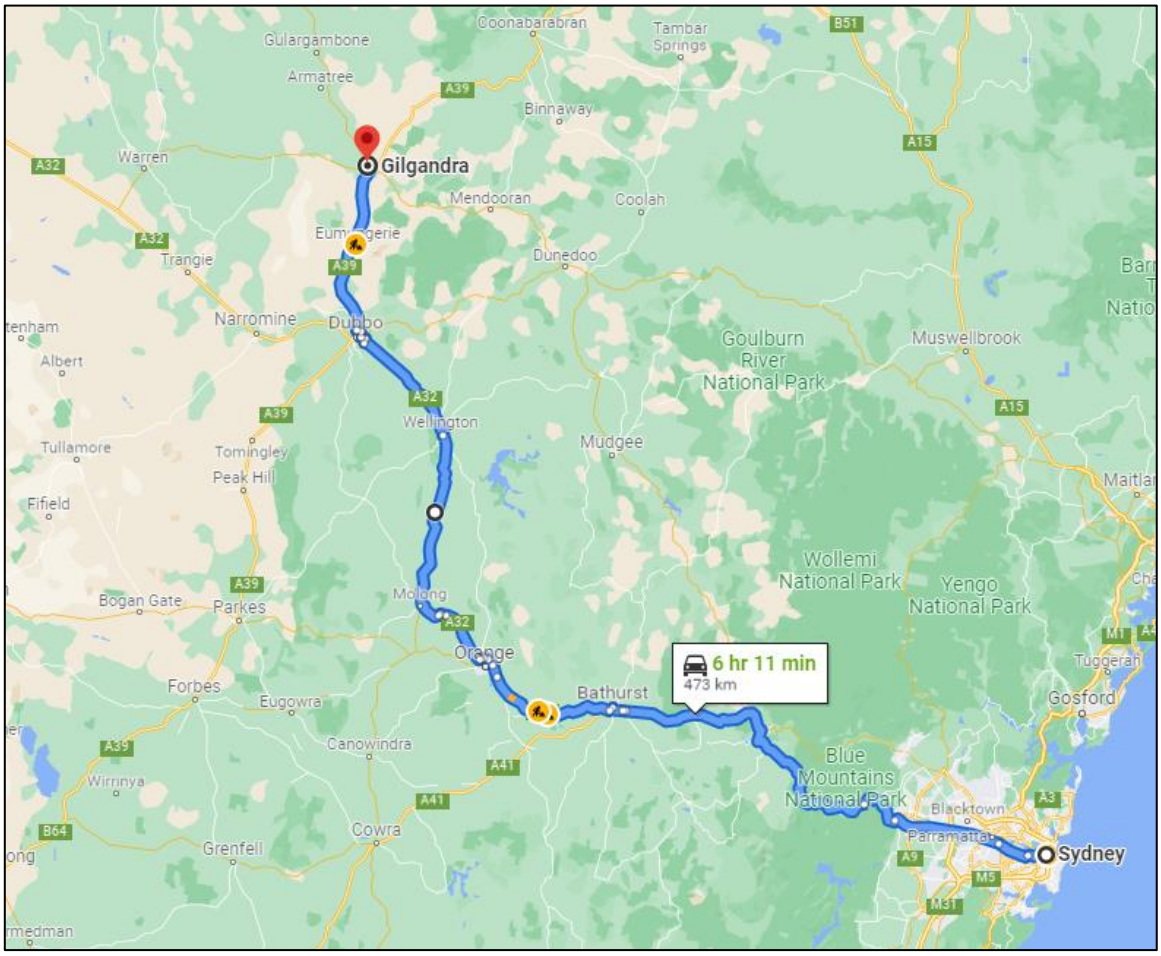


Figure 9: Potential Route

In order to determine the surrounding road network's ability to cater for loading vehicle access to the subject site, Roads and Maritime Higher Mass Limits Network has been reviewed shown in Figure 9 below. It is likely that heavy vehicles will come from the south direction along Newell Highway then turn onto Hargreaves Lane and onto Aralee Road as these are listed as approved roads. Hargreaves Lane is a Regional Road with B-Double approved access.

Figure 10: B-Double approved routes near Gilgandra

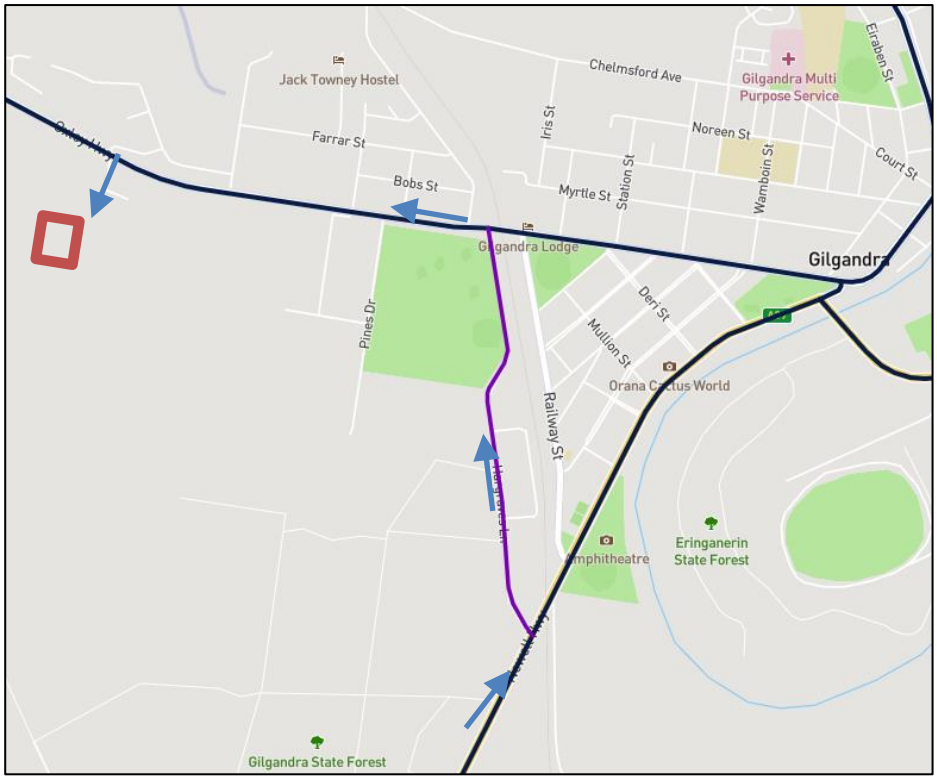


Figure 11: Proposed route to site through Gilgandra

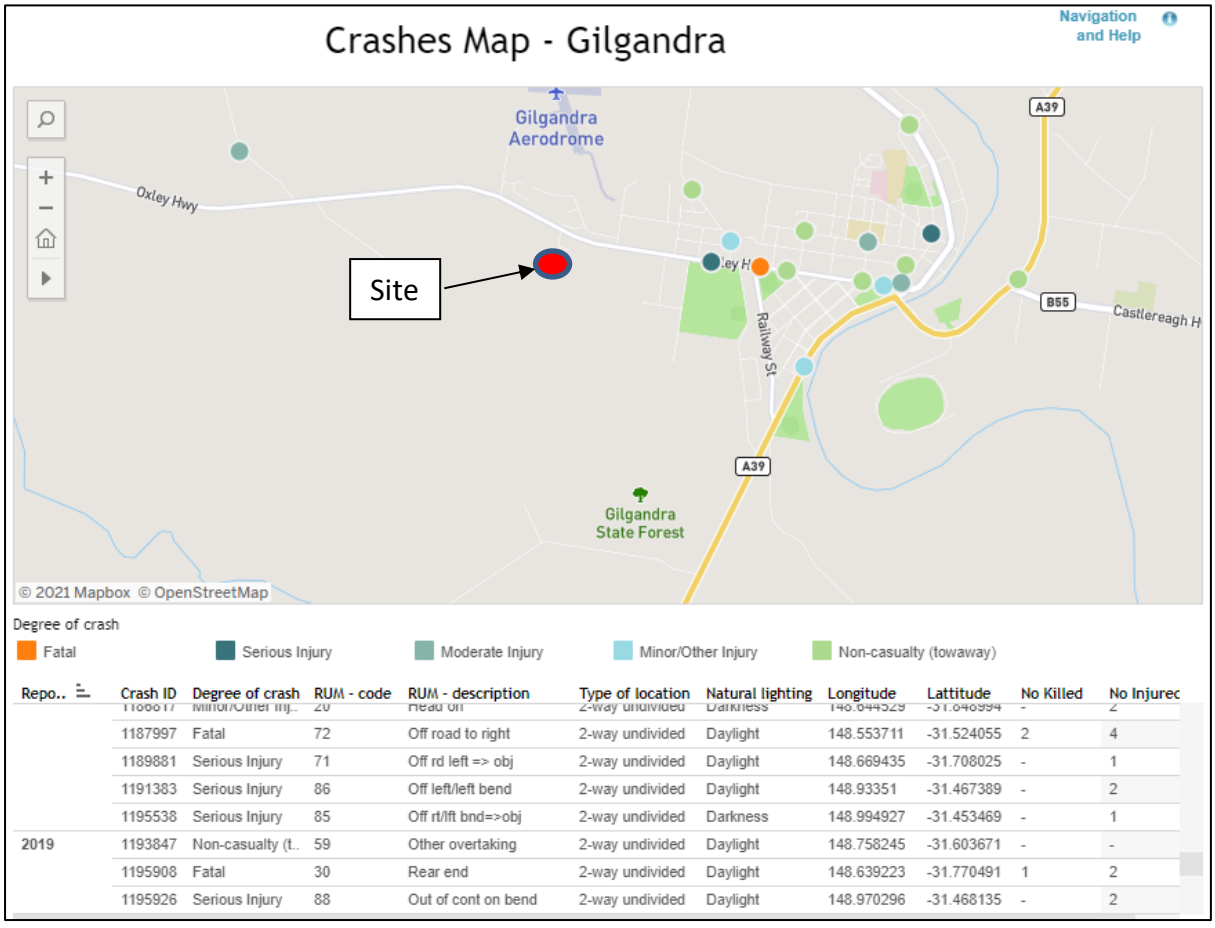
2.6 Crash History

The following crash history data is from the NSW Centre for Road Safety interactive map between the period of 2015 to 2019.

A fatal accident in occurred in 2015 on potential route to site. This vehicle performed a manoeuvre on the road at dusk.

In 2019 a serious vehicle accident occurred when it ran off the road in the dark.

There are no crash statistics at the intersection of Aralee Road and Oxley Highway.



Repo..	Crash ID	Degree of crash	RUM - code	RUM - description	Type of location	Natural lighting	Longitude	Lattitude	No Killed	No Injurec
	1187997	Fatal	72	Off road to right	2-way undivided	Daylight	148.553711	-31.524055	2	4
	1189881	Serious Injury	71	Off rd left => obj	2-way undivided	Daylight	148.669435	-31.708025	-	1
	1191383	Serious Injury	86	Off left/left bend	2-way undivided	Daylight	148.93351	-31.467389	-	2
	1195538	Serious Injury	85	Off rt/lft bnd=>obj	2-way undivided	Darkness	148.994927	-31.453469	-	1
2019	1193847	Non-casualty (t..	59	Other overtaking	2-way undivided	Daylight	148.758245	-31.603671	-	-
	1195908	Fatal	30	Rear end	2-way undivided	Daylight	148.639223	-31.770491	1	2
	1195926	Serious Injury	88	Out of cont on bend	2-way undivided	Daylight	148.970296	-31.468135	-	2

Figure 12: Crash History

3 Development Proposal

The application seeks to utilise the site for the purposes of Gilgandra Solar Farm Development, which will include 12,000 solar PV modules, mounted on a tracking system, and the associated infrastructure to support the use.

Other infrastructure across the site will include electrical invertors, battery energy storage facilities (BESS), underground and/or above electrical cabling, telecommunications equipment, a substation, amenities and storage facilities, vehicle access and parking areas, along with security fencing and gates.

To facilitate the construction of the facility, a temporary construction compound is required for construction and decommissioning phases of the proposed Solar Farm. The construction compound would include:

- Temporary construction offices;
- Car and bus parking areas;
- A staff amenity block (including portable toilets, showers and a kitchen) designed to cater for peak staff numbers during the construction period; and
- Laydown areas.

All land required for the temporary construction compound, if not used as part of the array area, would be restored to its current condition.

The solar farm is to have an AC capacity of 5.0 MW and will cover an area of approximately 13.3 ha which will take up approximately 10% of the overall property of 133.2 ha.

During construction phase there will be a large number of heavy vehicles (approx. 45 of 26m B-doubles) accessing the site delivering panel components.

It is likely to take up to 12 weeks to complete delivery of equipment. Installation of the components will be occurring during delivery therefore completion of the site should occur within approximately 14 weeks. Upon completion of construction, the traffic generation at the site will be very low and only comprise the infrequent service vehicles.

During the construction phase the work site will involve the following:

Week 1 – 2

Establishment phase

Earthworks and general site establishment and fencing to construct new access and site compound development. This will comprise graders, rollers and water carts.

The existing access would be used during the initial works until the new western access point is accessible.

Likely traffic generation during this period is:

- 6 to 8 light vehicle trips per day
- 10-15 Truck and trailer loads of gravel over approximately 2-3 days

Week 3-10

Construction Phase

Main construction of piers, installation of panels and underground infrastructure.

Site operation includes:

- 50 construction workers
- Operating hours 7am to 4pm Monday to Friday
- Potential shuttle bus service to and from the site.

Expected traffic generation during the construction phase will be:

- 12 x B Double (26m articulated) and 33 Semi articulated (19m) for PV Module delivery
    - 6 for site establishment (buildings etc)
    - 2 for delivery of inverters
    - 24 for delivery of mounting systems
    - 7 for delivery of balance of system
    - 5 for demobilisation

Week 10-12

Commissioning

Specialist electrical contractors will commission the site through light or heavy rigid vehicles 12m.

- 10 construction workers
- Operating hours 7am to 4pm Monday to Friday

4 Traffic Engineering Assessment

4.1 Traffic Impacts

During the 12-week construction period an estimated 12 B-Doubles and 33 Semi trailers will access the site with an expected daily maximum likelihood of 3 trucks. The trucks will access the site throughout the day generally between 10am and 2 pm and would therefore not contribute to morning or afternoon peak hour.

A maximum of 50 construction workers are likely to generate movements in the order of 40 vehicles entering the site in the morning between 6:30 to 8:00am and leaving at the afternoon peak around 4:00 to 5:00pm. This is based on the number of vehicles being 80% of the workforce. There is going to be a shuttle bus service to minimise the number of vehicles as well as car-pooling. These movements are expected to be evenly distributed between other nearby towns such as Dubbo, therefore predominately left turn in to the site during the morning peak and right turn out of the site in the afternoon.

Traffic including truck movements generated at the site are highly unlikely to impact the local traffic conditions due to the low number of vehicles. Further analysis is therefore not deemed necessary.

4.1 Proposed Site Access

The proposed access will be constructed to an all-weather standard and accommodate a B-Double turn movement. The specific access should be located to minimise vegetation removal.

The intersection of Oxley Highway and Aralee Road provides a chanalised left turn into Aralee Road which would not require any further improvements with the low number of proposed traffic.

5 Conclusion

The relevant documents, plans and traffic counts have been perused for access requirements to the proposed solar farm development off Aralee Road.

The main findings and proposed upgrades are outlined below:

Recommendations

a) The access point should be constructed to accommodate B-Double turning movements.

b) Dust suppression (water cart) may be required depending on the construction time.

c) Prior to the commencement of construction, a consultation plan is recommended to be implemented with a focus on notifying local community of the programed works. Primarily this is to give information on site contact details if there are any concerns.

d) Dilapidation survey to be undertaken along Aralee Road and the site returned to previous or better state following the construction period.

Proposed Works

e) New access to be designed and constructed to a Council standards. This may require drainage works depending on levels.

6 References

- Austroads Guide to Road Design Part4A: Unsignalised and Signalised Intersections (2017)
- Austroads Guide to Road Design: Part 3 (2016)
- Austroads Guide to Traffic Management Part 3: Traffic Studies and Analysis (2017)
- RTA traffic NSW Guide to Traffic Generating Developments (2002)