

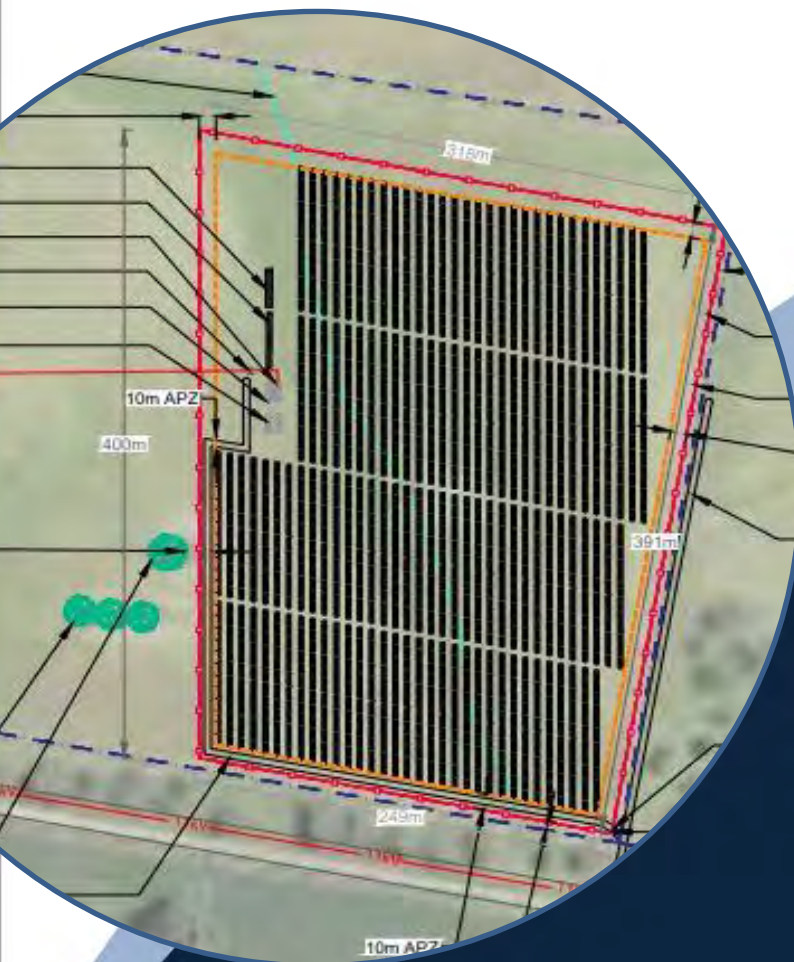


pricemerrett
C O N S U L T I N G

Traffic Impact Assessment Report

Quirindi Solar Farm

K1058



9478 Murray Valley Hwy
PO Box 313
KERANG VICTORIA 3579
Ph: (03) 5452 2490
Fax: 03) 5452 2566
E-mail: pmc@pricemerrett.com.au
www.pricemerrett.com.au

ABN: 62 903 527 353
ACN: 139 256 938

SURVEYING
ENGINEERING
IRRIGATION
PROJECT
MANAGEMENT

| Version | Description | Written by | Approved by | Date issued |
|---------|------------------|------------|-------------|-------------|
| 1 | Issued to client | SG | MC | 7/10/2023 |
| 2 | Issued to client | SG | MC | 22/02/2024 |
| | | | | |
| | | | | |
| | | | | |

Project Details

| | |
|-----------------------|---------------------|
| Project Name | Quirindi Solar Farm |
| Client | ITP Renewables P/L |
| PMC Project Reference | K1058 |

Author: Price Merrett Consulting Pty. Ltd.

©The design is copyright and owned by Price Merrett Consulting Pty. Ltd. (the designer).

Any change to the design without the permission of the designer contributes a breach of copyright.

©Price Merrett Consulting Pty. Ltd. No portion of this report may be reproduced in any form without written permission from the authors.

Disclaimer: This publication has been produced as part of a process for a specific purpose and in response to specific instructions. It should not be used for any other purposes unless agreed in writing by Price Merrett Consulting P/L. No liability is accepted by Price Merrett Consulting P/L or co-authors to any party other than our client. This document remains the property of Price Merrett Consulting P/L.

The author disclaims all liability for any error, loss or other consequence which may arise from the use of any information in this publication.

Table of Contents

| | | |
|-----|---|----|
| 1 | Introduction | 4 |
| 2 | Existing Conditions..... | 4 |
| 2.1 | Site Description..... | 4 |
| 2.2 | Site Access | 5 |
| 2.3 | Transport Route..... | 6 |
| 2.4 | Borah Creek Road & Porters Lane | 9 |
| 2.5 | Crash History | 11 |
| 2.6 | Traffic Volume Analysis – existing network..... | 11 |
| 3 | Development Proposal | 12 |
| 3.1 | Traffic Generation | 13 |
| 4 | Traffic Engineering Assessment | 15 |
| 4.1 | Traffic Impacts of proposed access | 15 |
| 4.2 | Site Distance | 15 |
| 4.3 | Access Type..... | 16 |
| 5 | Conclusion..... | 17 |

Table of Figures

| | | |
|------------|--|----|
| Figure 1: | Property Location..... | 4 |
| Figure 2: | Land Use and Zoning..... | 5 |
| Figure 3: | Site Access off Porters Lane – Looking north | 6 |
| Figure 4: | Potential transport route..... | 7 |
| Figure 5: | B-Double Route through Quirindi..... | 8 |
| Figure 6: | Porters Lane Access | 9 |
| Figure 7: | Borah Creek Road at intersection of Porters Lane - Looking North | 9 |
| Figure 8: | Borah Creek Rd at intersection of Porters Lane - Looking South | 10 |
| Figure 9: | Crash History – general area..... | 11 |
| Figure 10: | Borah Creek Road into Porters Lane..... | 16 |
| Figure 11: | Porters Lane into Private Access..... | 16 |

1 INTRODUCTION

This report entails a Traffic Impact Assessment Report (TIAR) for the development of the 5MW Solar Farm on Borah Creek Road, Quirindi 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.

2 EXISTING CONDITIONS

2.1 Site Description

The solar site is located approximately 5 km north east of Quirindi town centre on Lot 130 & 134 of DP751009, and listed on planning maps as Borah Creek Road, Quirindi. Access to the site will be from Porters Lane which comes off Borah Creek Road.

The development falls within the Liverpool Plains Shire Council area. (Lat/Long: --31.463812, 150.713286).

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

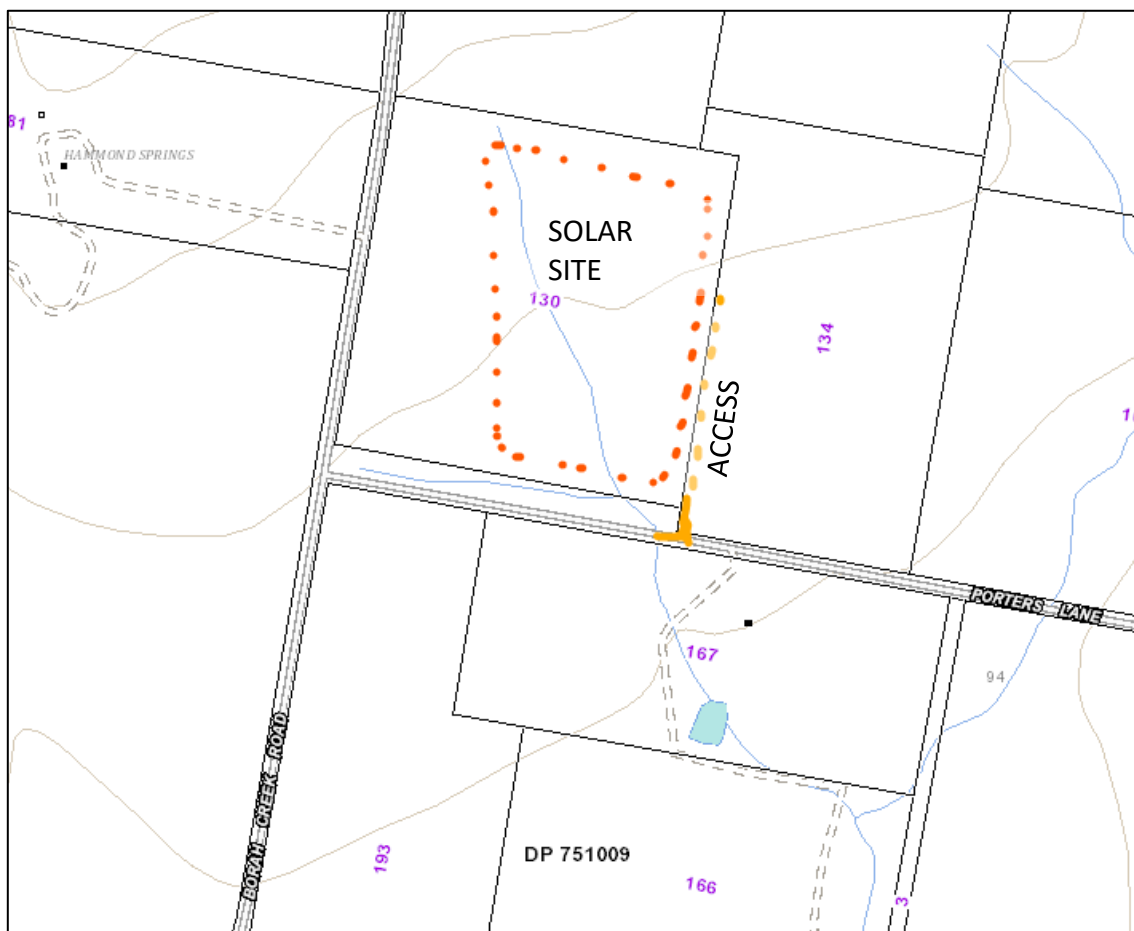
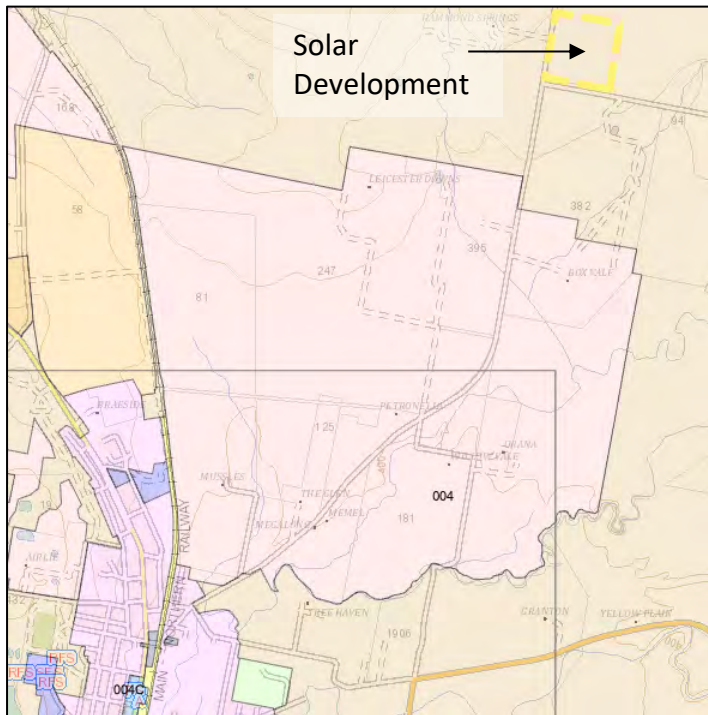


Figure 1: Property Location

The property is currently used for cropping and grazing. The solar development is considered relatively small scale and will have a footprint of approximately 11.09 Ha.



The proposed solar site is currently used for primary production RU1 and has been a cereal cropping paddock

Figure 2: Land Use and Zoning

2.2 Site Access

The site will be accessed from Porters Lane via a shared driveway within Lot 134 DP751009. The access is to remain in place during construction and will be used only periodically during ongoing operation for maintenance.

Porters Lane is a gravel roadway approximately 5.5m wide with table drains either side. Porters Lane has a constant grade up to Borah Creek Road and there are no site impediments along the Lane.



Figure 3: Site Access off Porters Lane – Looking north

2.3 Transport Route

It is expected that trucks would travel from either Sydney or Newcastle, through Muswellbrook and Scone from the Kamilaroi Highway B51 and into Quirindi, then onto Borah Creek Road on the northern side of town. This route is shown in Figure 4 below.

Trucks would travel on State Declared Roads to Loader Street in Quirindi, then Liverpool Plains Shire Council roads to the site. This route is an approved 25/26m B-Double route as shown in Figure 5. The conditional travel restriction along Station Street relates to one heavy vehicle on Donaldsons Bridge over Currabubula Creek at Currabubula at any one time. This will not impact transport to Porter Lane.

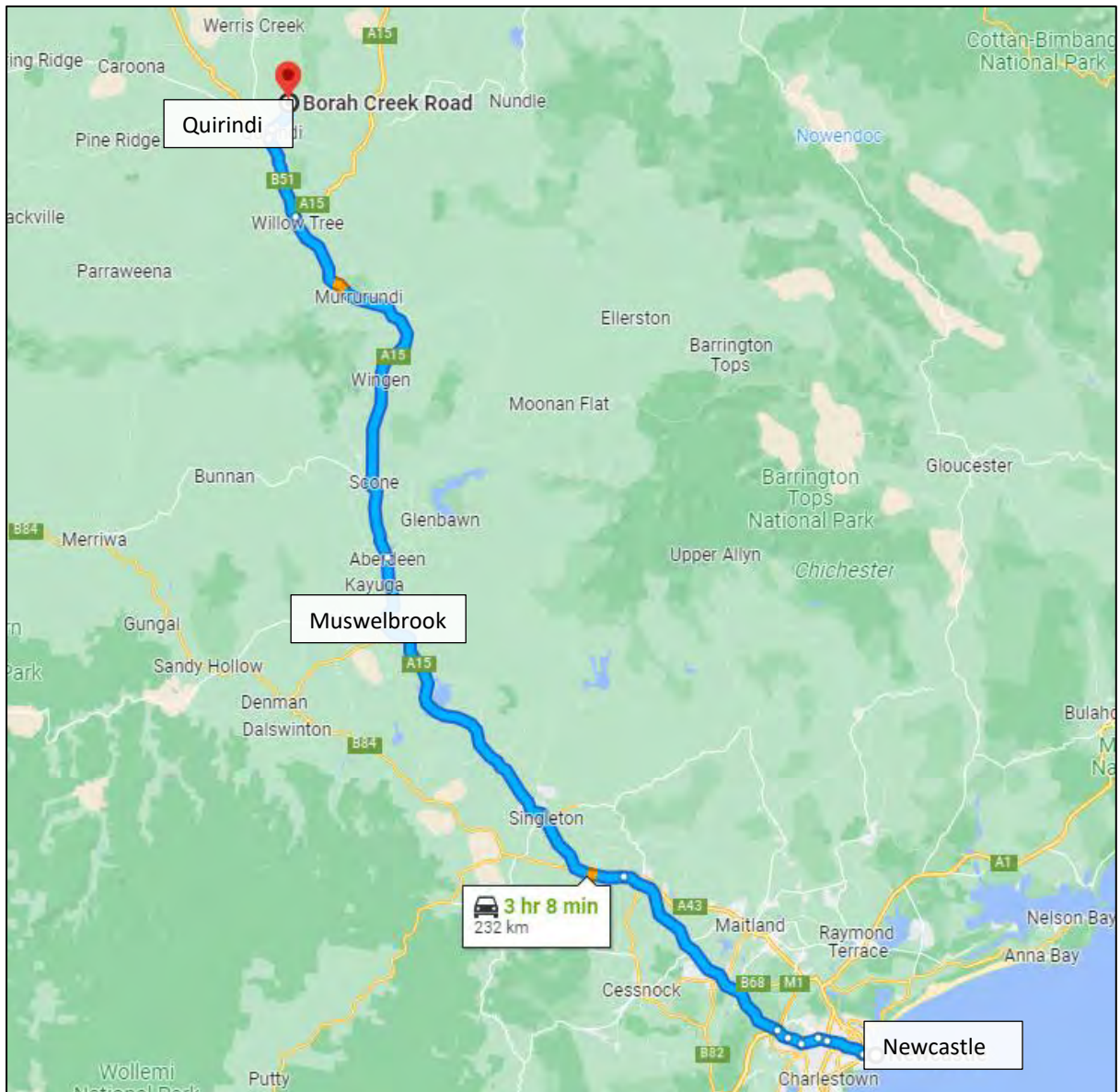


Figure 4: Potential transport route

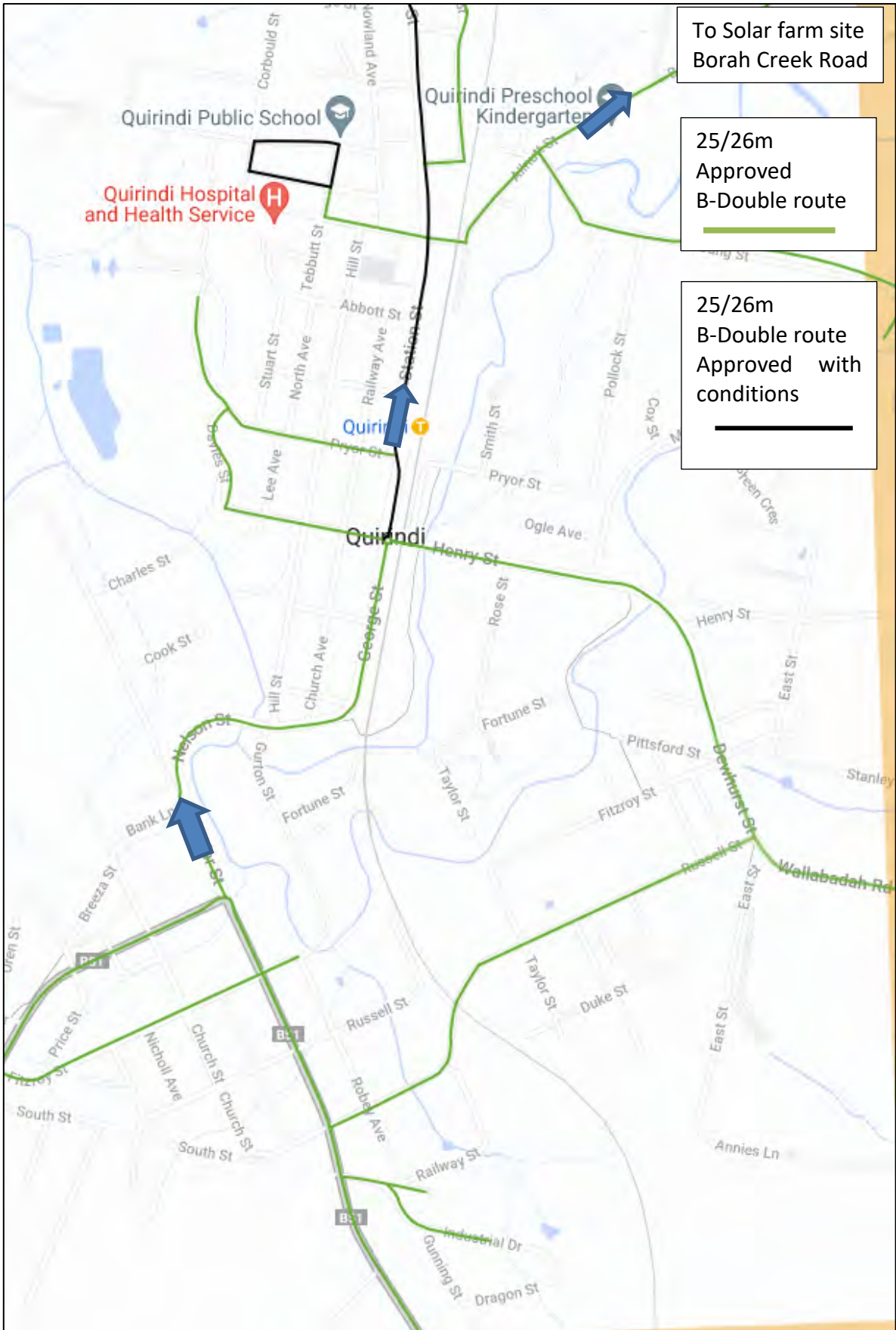


Figure 5: B-Double Route through Quirindi

2.4 Borah Creek Road & Porters Lane

Borah Creek Road will be the main transport route to the solar farm site until Porters Lane. Both roads are managed by Liverpool Plains Shire Council.

Borah Creek Road is a 5 to 5.5m wide two lane sealed road with 1.5m shoulders for the extent of the route. Speed limits along Borah Creek Road is 100km/hr in the vicinity of Porters Lane.



Figure 6: Porters Lane Access



Figure 7: Borah Creek Road at intersection of Porters Lane - Looking North



Figure 8: Borah Creek Rd at intersection of Porters Lane - Looking South

2.5 Crash History

The following crash history data is from the NSW Centre for Road Safety interactive map between the period of 2018 to 2022.

No casualty or towaway accidents have occurred in the available data period near Porters Lane and no accidents have occurred on Porters Lane near the access point. There was a single vehicle minor incident at dusk in 2022 on Borah Creek Road south of the site, resulting in an injury.

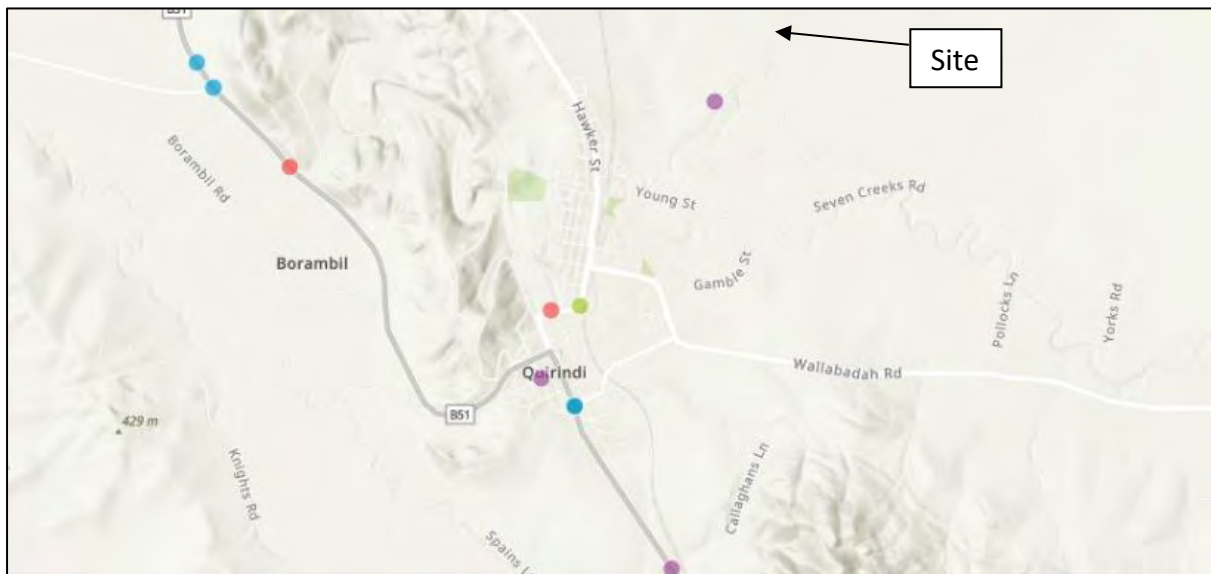


Figure 9: Crash History – general area

2.6 Traffic Volume Analysis – existing network

There is no available traffic count data on TfNSW website for Borah Creek Road however it would be expected to be under 500 Vehicles Per Day (VPD) as it is a relatively minor road that services a small number of properties and alternative routes are available.

Porters Lane is expected to be under 50 VPD as it only services 3-4 rural properties.

3 DEVELOPMENT PROPOSAL

The application seeks to utilise the site for the purposes of a Solar Farm Development, which will include approximately 10,750 solar PV modules, mounted on a tracking system, and the associated infrastructure to support the use.

Details of the proposed entry and access track to the development site and layout and placement of the array is shown on General Arrangement Plan (Drawing No Q1B-G-300) accompanying the development application.

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

The Battery Energy Storage System (BESS) of the development is comprised of several 40-foot-high cube shipping containers that are delivered to site on standard semi-trailer skeletons or flat beds and craned onto foundations. These BESS containers are internally fitted out with battery racks and air conditioning/fire protection systems that have a mass of approximately 12 tonnes. They are designed to be transported as whole, one-piece units and are no different in size compared to standard shipping containers that are commonly in transit on Australian roads.

To avoid OSOM requirements, the battery packs for the BESS system are delivered separately on loose pallets via tautliners/rigid vehicles and these are manually inserted into the container's internal racks during on site assembly of the system. The solar farm's development does not require the use of OSOM vehicles, neither during the construction or operation phases.

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;
- 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 11.09 ha.

3.1 Traffic Generation

During construction phase, approximately 45 heavy vehicles including and up to B-doubles will be accessing the site delivering panel components. There is expected to be up to approximately 50 personnel from various specialised trades working on site during the construction stage, typically dispersed at varying times and not necessarily all at once.

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.

Likely traffic generation during this period is:

- 6 to 8 light vehicle trips per day (earthworks contractor's staff 4-5. Two-way trips).
- 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:

- There is expected to be up to approximately 50 personnel from various specialised trades working on site during the construction stage, typically dispersed at varying times and not necessarily all at once.
- A maximum of approximately 50 construction workers on site; however, typically, only up to 20-30 workers per day would be on site at the same time.
- 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:

- 24 light vehicles per day based on 80% of max workers.
- 45 x heavy vehicles (including semi's to B-Doubles) 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
 - 6 for demobilisation

To minimise light vehicles on site, car pooling and other measures including shuttle bus systems will be encouraged. This can be through incentives for additional payments to workers who carry additional workers to site.

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 of proposed access

During the 12-week construction period an estimated 45 trucks (including up to B-Doubles) will access the site with an expected daily average of 4 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 30 construction workers on site at any one day are likely to generate movements in the order of 24 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. This figure is very conservative and more likely to be 50% with an average of 2 people per car as well as a shuttle bus or other ride share system that would be provided. The main Contractor building the solar farm will be responsible for organising the services of light vehicles and/or shuttle bus arrangements and until the works have been awarded and staff locations determined the exact details on ride share system is unknown.

The provision of a shuttle bus system and or car pooling has added site benefits in the reduction in site car spaces required. This can also reduce potential for site accidents through limiting driver fatigue and reducing vehicle movements within the carpark. Prior to construction, a traffic management plan produced for the development construction phase will focus in more detail on the implementation of a shared commuting system for workers.

Traffic including truck movements generated at the site are likely to impact the local traffic conditions along Borah Creek Road for the short duration construction period. However, impacts can be mitigated through early consultation with local users of the road and continual updates on any changes to traffic movements during construction.

4.2 Site Distance

The intersection of Borah Creek Road and Porters Lane has good sight lines in both directions, well over 800m which is more than sufficient for the existing 100km/hr speed zone. In accordance with AGRD4A clause 3.4.2, the minimum site distance required is 285m based on 110km/hr (100+10) with 2.0sec reaction time. Figure 7 and 8 above demonstrates the flat and extended sight lines available.

Porters Lane access also has good site distances in both directions.

4.3 Access Type

The type of rural access arrangement off Porters Lane should accommodate the turning movement of a 26m B-Double vehicle and any specific requirements of the Liverpool Plains Shire Council. The access would be upgraded in the initial stage of the development and be utilised during the construction phase and operation phase of the development.

The access road into the site laydown area should be all weather construction.

The below images provide outline of B-double turn movements from Borah Creek Road in to Porters Lane and then from Porters Lane into Lot 134. These are conceptual sketches based on rectified imagery and digitised data. Detailed survey and design drawings would need to be provided to understand the scope of works at the intersection and Porters Lane.



Figure 10: Borah Creek Road into Porters Lane

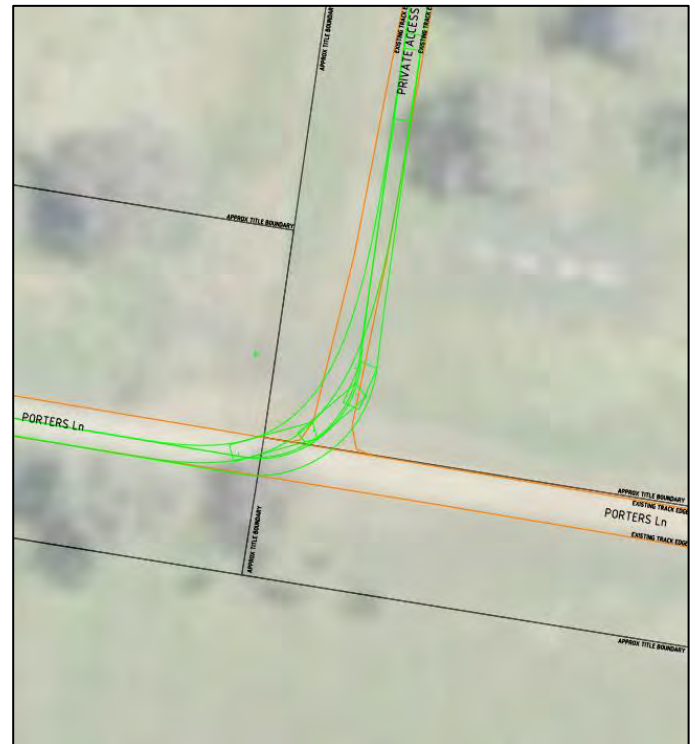


Figure 11: Porters Lane into Private Access

5 CONCLUSION

The relevant documents, have been perused for access requirements to the proposed solar farm development off Borah Creek Road, Quirindi.

The main findings and proposed upgrades are outlined below:

Recommendations

- a) Prior to commencing works, it is recommended that an easement or similar agreement for the duration of the solar project be provided through Lot 134 to secure access into the future for Lot 130.
- b) Prior to commencing works a traffic management plan be developed that incorporates notification of local residents of the works and informs them of the construction period and operating hours.
- c) Shared transport for workers should be incorporated into the site management during construction period.
- d) Access improvements required off Porters Lane to accommodate the largest vehicle that would access site (B-Double).
- e) Driveway improvements for wet weather operation be considered including surfacing with additional gravel.
- f) Dilapidation survey to be undertaken along Borah Creek Road and Porters Lane prior to construction works to assess any impacts on the road during construction period.

Findings

- a) Sight lines for the proposed access are adequate.