CONSULTINC

# PROVISION OF CONSULTING ENGINEERING SERVICES 

BURRUNDULLA MINI SUSTAINABLE ENERGY PARK 3B CASTLEREAGH HIGHWAY, BURRUNDULLA<br>LOT 6, DP1069441

## TRAFFIC ASSESSMENT REPORT

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## 1 INTRODUCTION

Triaxial have been engaged ITP Renewables to prepare a traffic assessment report. The purpose of this report is to assess the traffic implications of the development proposal. This report is to be included in the development application lodged with Mid Western Regional Council.

The site is currently utilised as grazing land and is shown in the photo below:


Figure 1: Existing Site

## 2 PROPOSAL

### 2.1 DEVELOPMENT SITE

The site is proposed to be utilised by ITP Renewables for the construction of a solar farm on an area of approximately 67Ha size located at Lot 6 DP1069441.

The proposed development site is located near Mudgee, approximately 2.4 km from the intersection of Lions Drive with the Castlereagh Highway. The site is currently zoned as RU1
primary production. The proposed site has not been identified as a possible future residential release area in the Mudgee Urban Release Strategy (2014). The closest proposed residential development is located over 700 metres away at Spring Flat Road, with a proposed subdivision of $25 \times 5$ acre blocks in the planning stage, noted as area 23 on the Mudgee Urban Release Strategy (2014). The site is surrounded by existing farming land.

The Castlereagh Highway along the frontage of the site is constructed with dual carriageway 3.5 m wide lanes and sealed shoulders of minimum 1 m width and table drains either side.

The Western end of the site is located approximately 1 kilometre from the intersection of Queens Pinch Road and the Castlereagh Highway.

## 3 DESIGN SERVICE VEHICLES

### 3.1 CONSTRUCTION PHASE 0-3 MONTHS

It is proposed that the following vehicles will access the site during the following stages of the project:

Vehicles accessing the site during construction will consist of:

- 90 B-Double trucks (total number of B-Doubles over the construction phase).
- Light vehicles suitable for transporting up to 50 workers for an anticipated construction period of 24 weeks.
- Bus service for workers if required.


### 3.2 TYPICAL USE DURING OPERATIONAL PHASE

The following list depicts the weekly schedule of vehicles required for the facility to operate.

- Maintenance access vehicles (2 light vehicles) access to the site in 3 monthly intervals.


## 4 EXISTING TRAFFIC CONDITIONS

### 4.1 ROAD HIERARCHY - SURROUNDING ROAD NETWORK

The NSW administrative road hierarchy comprises the following road classifications, which align with generic road hierarchy as follows:

- Castlereagh Highway (B55) is a state highway, managed by Roads and Maritime Services, with primary function of providing vehicular access between Mudgee and llford.
The B55 Castlereagh Highway is listed as an approved B-Double Route by RMS as shown in Figure 2 and is classified as an Arterial road in the Mudgee Township Traffic Management Plan (2014).


## Mudgee



Figure 2: Existing travel conditions. Source: RMS website: http://www.rms.nsw.gov.au/business-industry/heavy-vehicles/maps/restricted-access-vehicles-map/map/

### 4.2 EXISTING TRAFFIC DATA

Traffic data was sourced from the Mudgee Township Traffic Management Study (2014) produced by Gennaoui Consulting.

Traffic counts for the nearest traffic count station to the site, being Sydney Road near the Burrundulla Road intersection and the corresponding level of service is detailed in table 3.7 of the report as shown below:

| Street | Location |  |  | Lanes | N/E | S/W | Total | LoS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Church Street | Mortimer |  | Market | 4UP | 437 | 435 | 872 | A |
| Church Street | Gladstone | \& | Mortimer | 4UP | 515 | 525 | 1040 | A |
| Church Street | Mealy St |  | Denison St | 4UP | 486 | 542 | 1028 | B |
| Church Street | Denison |  | Gladstone | 4UP | 495 | 525 | 1020 | A |
| Church Street | Horatio St |  | Inglis St | 4UP | 411 | 518 | 929 | A |
| Church Street | Meares St |  | Railway X | $2 \mathrm{U}^{*}$ | 340 | 462 | 802 | A |
| Douro Street | Gladstone |  | Mortimer | 4UP | 329 | 439 | 768 | A |
| Douro Street | Denison | \& | Gladstone | 4UP | 354 | 443 | 797 | A |
| Douro Street | at Railway X |  |  | $2 \mathrm{U}^{*}$ | 282 | 415 | 697 | A |
| Horatio Street | Church St |  | Perry | 4UP | 335 | 332 | 667 | A |
| Market Street | Douro St | \& | Perry | 4UP | 307 | 336 | 643 | A |
| Market St | Douro St | \& | Court | 4UP | 312 | 368 | 680 | A |
| Mortimer Street | Church |  | Perry | 4UP | 308 | 326 | 634 | A |
| Sydney Road | at Railnay $C$ | cossin |  | 2U* | 572 | 517 | 1089 | A |
| Sydney Road | Burrundulla | \& | Industrial | 4UP* | 329 | 402 | 731 | A |
| Ulan | Short | 8 | Pitt / Lue | $2 \mathrm{U}^{*}$ | 423 | 410 | 833 | A |
| Ulan | Pitt/ Lue | \& | Henry Lawson | 2U* | 330 | 366 | 696 | A |

Figure 3: Existing traffic count and corresponding level of service
As can be seen from the above table, the existing condition along Sydney Road at Burrundulla is operating with a carriageway level of service $A$, the highest available.

The existing operation of the closest major intersection, being the intersection of Lions Drive with the Castlereagh Highway has been listed as a level of service B. This is shown in the figure below:

Table 3.8: Existing Operation of Intersection in Mudgee

| Intersections | Afternoon Peak |  | School Period |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Ave Delay | LoS | Ave Delay | LoS |
| Roundabout Controlled |  |  |  |  |
| Castlereagh Rd with Bell \& Putta Bucca Rd * | 12.0 | A |  |  |
| Church St with Short St * | 12.1 | A |  |  |
| Church St with Market St * | 13.0 | A |  |  |
| Church St with Mortimer St * | 13.7 | A |  |  |
| Church St with Gladstone St * | 11.8 | A |  |  |
| Church St with Horatio St * | 13.7 | A |  |  |
| Church Street with Madeira Rd | 8.7 | A | 8.7 | A |
| Douro St with Market St * | 12.4 | A |  |  |
| Perry St with Market St * | 12.2 | A |  |  |
| Perry St with Lovejoy St * | 11.0 | A |  |  |
| Ulan Rd with Pitt Ln and Lue Rd @ | 10.8 | A |  |  |
| Sign Controlled Intersections |  |  |  |  |
| Bellevue Rd with Henry Bayly Dr @ | 7.0 | A |  |  |
| Castlereagh Rd with Bell Street @ | 8.2 | A |  |  |
| Castlereagh Rd with Putta Bucca Rd @ | 7.9 | A |  |  |
| Castlereagh Rd with Bell \& Putta Bucca Rd * | 10.5 | A |  |  |
| Castlereagh Road with Hill End Road \# | 16.4 | B |  |  |
| Church St with Denison St @ | 29.1 | C |  |  |
| Church St with Meares St @ | 19.6 | B |  |  |
| Douro St with Denison St @ | 20.3 | B | 21.6 | B |
| Douro St with Gladstone St @ | 19.7 | B |  |  |
| Douro St with Horatio Street * | 10.3 | A | 10.6 | A |
| Douro St with Inglis St @ | 8.0 | A |  |  |
| Fairydale Ln with Gladstone St @ | 6.0 | A |  |  |
| Lewis St with Gladstone St @ | 12.1 | A | 13.5 | A |
| Lewis St with Mortimer St @ | 10.4 | A | 11.6 | A |
| Perry St with Gladstone St @ | 9.0 | A | 10.1 | A |
| Sydney Rd with Industrial Rd@ | 11.0 | A |  |  |
| Sydney Rd with Lion St and Burrudulla Rd * | 18.5 | B |  |  |
| Ulan Rd with Henry Lawson Dr @ | 8.2 | A |  |  |
| * Analysed with SIDRA Software @ Analyse <br> \# Source: Traffix (2012) | with INTANAL | ftware |  |  |

Figure 4: Existing intersection level of service
As the construction phase of the project will be the main traffic generator and the operational phase will not introduce any traffic onto the road network, the existing conditions for the carriageway and intersection level of service have been adopted for this report.

### 5.1 PROJECTED TRAFFIC GENERATION POTENTIAL - TOTAL DEVELOPMENT

Based on advice from the client and a review of previous Solar Farm installations the proposed traffic generation for the development is separated into the construction and operational phases of the project as shown below. It is proposed to have up to 50 workers accessing the site during the construction phase, with work carried out between $7 \mathrm{am}-4 \mathrm{pm}$ Monday to Friday.

Construction equipment is to be delivered to site via heavy vehicles (nominated as 25 m long B-Doubles at this stage) between 10am - 2pm daily, hence not contributing to the AM or PM peak times.

Construction vehicle average trips per hour:
B-Double $\quad 2 \mathrm{vtph}$ (out of peak times)
Light vehicle access (workers - worst case) 50vtph
Light vehicle acces (workers with bus service) 20vtph
Total Development 50vtph max.

Vehicle average trips per day (vtpd) during construction are listed below:

| B-Double | 8 vtpd |
| :--- | :---: |
| Light vehicle access (workers - worst case) | 80 vtpd |
| Light vehicle acces (workers with bus service) | 20vpd |
| Total Development $\quad$ 100vtd max. |  |

No reduction in these rates has been allowed for with pedestrian and cycle access to the facility. It is assumed that if all workers are accessing the site using light vehicles, there will be at least 2 workers per vehicle. Extra daily trips have been allowed for to access Mudgee township during the day if required. No weekend trips are expected.

As previously described the site will be unmanned during the operational phase and is expected to generate only up to two light vehicle trips in every 3 month period.

It is important to note that the greatest interaction with traffic external to the site will be during the peak PM period, estimated to be between $4 \mathrm{pm}-5 \mathrm{pm}$. The AM peak period with traffic heading to the site will not generate as many interactions due to the expected peak arrival time of 6 am -7 am by the workers. During both peak AM and PM times it is important to note that the majority of the traffic will be moving against the primary direction of the peak flow, with the current peak vehicle movements heading out of Mudgee to the North to access the 3 coal mines.

The peak vehicle trips as listed in this report will have only a very minor impact on the surrounding road network. It is not envisaged that the development will cause a decrease in the level of service to either the road carriageway along the Castlereagh Highway.
The Mudgee Traffic Study nominates a 5-10 year timeframe for a major upgrade to the Sydney Road / Lions Drive intersection, the construction phase of this project is planned to be completed well before these upgrades are required, with no ongoing traffic generated by the development.

### 5.2 PROPOSED SITE ENTRY

We recommend that the site entry location be constructed in accordance with Triaxial plan MX10595.00-CM1.0, with a sealed access point from the Castlereagh Highway. The proposed site entrance has been designed to accommodate the turning path of a B-Double truck, with a sealed entrance a minimum of 26 metres into the site to minimise disruption to the Highway and ensure that a B-Double is able to que off the road if required to when accessing the site before entering the site access gate.

Refer Appendix B - Triaxial Plan MX10595.00-CM1.0

The proposed site entry location is located on a straight section of the Castlereagh highway and will have in excess of 300 m of sight distance in either direction in accordance with the requirements of Austroads Guide to Road Design and Mid Western Regional Council DCP requirements.

Refer Appendix A - Photos 1 and 2

### 5.3 CONSTRUCTION WORKER SITE ACCESS

As the site is located on the Southern side of Mudgee and easily accessible via the Castlereagh Highway through the Mudgee township, the construction worker site access and parking areas should be constructed in accordance with appropriate safe construction site management principles.

Depending on the accommodation arrangements made by the successful building contractor in the construction phase of the project, action should be taken to minimise any impacts on the Mudgee town area by the provision of a bus service to convey workers to site.
It is recommended that a bus service be utilised for workers to access the site during the construction phase.

## 6 SUMMARY

In summary, the proposed solar farm will cause no discernible long-term effects to the surrounding road network once constructed due to the unmanned operation of the site requiring only minimal regular maintenance on a three-monthly basis by minimal staff.
Construction traffic appropriately managed with a bus service for workers and out of peak hour deliveries to the site, combined with the construction of a new appropriate site entry catering for B-Double access will ensure traffic impacts are minimised during the short term construction phase of the project.

## APPENDIX A - SITE PHOTOS



## Photo 1

Proposed site entry location at Castlereagh Highway looking North (towards Mudgee)

Photo 2
Proposed site entry location from
Castlereagh Highway looking South




# PROVISION OFCONSULTING ENGINEERING SERVICES 

BURRUNDUШA MINI SUSTAINABLE ENERGY PARK 3B CASTLEREAGH HIGHWAY, BURRUNDUШA<br>LOT6, DP1069441

## TRA円TC MANAGEMENTREPORT SUPPLEMENTARY INFORMATION

## Doc ument Control:

| Client | ITP Development |  |  |
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ITP Development


## Dear Sir,

## Re: Proposed Solar Fam <br> 3B Sydney Road <br> Bumundulla, NSW, 2850

Traffic Management Plan
Triaxial Reference: MX10595.01-01.pt.jk_Rev C.docx
Triaxial Consulting have been engaged to respond to Traffic for NSW (IfNSW) comments provided in comespondence provided by TFNSW reference: SF2019/129237; WST19/00146/02 dated 21 J uly 2020.

This report is provided as supplementary information to be read in conjunction with Triaxial report, MX10595.00-01.rpt.jd-Rev1 provided on the 24.05.19 and revision B dated 26.06.20.

The purpose of this revised report is to assess the proposed new site entrance location to the Solar Farm development. Concems were raised by TFNSW as to the proximity of existing property access points. The site access location has now been proposed to be moved further South away from existing property access locations to increase the safety of the new access point.

Triaxial plan MX10595.00-MC 1.0 issue C is provided along with this report and includes updated information on the site entrance location.

## Refer Appendix B - Triaxial Plan MX10595.01-MC1.0 (C)

## (A) SAFE INIERSECTION SIGHTDISTANCE

A further review of the safe intersection site distance was undertaken.
The review consisted of a visual inspection at the proposed entrance location and a measurement of the sight distance. The measurement wasconducted as a recording of time taken from first sight of oncoming cars in either direction.

A sample size of more than 15 timed approaches were recorded, with an average time of 12 seconds in either direction. Using a conservative estimate of vehicle speed at $30 \mathrm{~m} / \mathrm{s}$ this equates to a site distance of 360 m , which is well in excess of the minimum 250 m required.

## (B) PROXIMITY TO EXISTING ACCESSESS

As previously mentioned the proposed site access location has been refined to distance the access point from existing property access loc ations a long the Highway.

Nearby accesses at the proposed site entrance location include the entrance to a private residence on the opposite side of the Highway 310m to the North (formerly entrance to nursery that has since ceased operation) and another private residence entrance point located on the opposite side of the road approximately 145 m to the South.

The peak hour and expected travel times are outside of nomal construction workers entry and exit times and the proposed development is not expected to impact upon either of these existing access points.

Entry points for each of the above neighbouring businesses are shown on Triaxial plan MX10595.00-MC1.0 issue C.

Refer Appendix B - Tinaxial Plan MX10595.01-MC 1.0 (C)

## (C) BUS TRAVEL OPION

Localbussenvice providerOgdensCoacheswasconsulted in relation to the possibility of a bus run forworkers during the construction stage of the project as outlined in revision B of this report dated 26 J uly 2020.

We considerthat the requirement to supply bustransport for at least half of the workforce could be conditioned in the approval from Mid Westem Regional Council.

## (D) SIIE ACCESS TREATMENT

Based on the limited number of construction vehicles tuming into the site during the construction phase of the project that will be outside of peak hour vehicle trips along Castlereagh Highway we consider that the property entrance upgraded to a full BAL/BAR intersection will provide an adequately safe entrance for the expected volume of traffic to use the facility.

Entry points for each of the above neighbouring businesses are shown on Triaxial plan MX10595.00-MC1.0 issue C.

Refer Appendix B - Triaxial Plan MX10595.01-MC 1.0 (C)

Yours fa ithfully,


Director

## APPENDIX B

## Tiaxial Plan MX10595.01-MC1.0 (C)



