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Traffic Impact Assessment

Proposed Solar Farm **Finley NSW**

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1. INTRODUCTION

1.1 Overview

ESCO Pacific Pty Ltd (the Applicant) is proposing to undertake the development and operation of up to 170-megawatt (MW) utility-scale renewable energy facility (the Proposal) Finley, NSW (the site) (refer Figure 1).

The project site covers an area up to 385 hectares (ha) and is located approximately 6 km west of Finley, 45 km east of Deniliquin, 105 km north of Shepparton (Victoria) and 150 km south-west of Narrandera. The site is located within a rural setting across 3 separate landowners properties and on lands described as Lot 133, 134 & 136 DP752299, 198 Canalla Road, Finley, NSW. The site falls wholly within the Berrigan LGA.

The project area is bounded to the north and south by Brookmann Road and Broughans Road, respectively. The nearest major roads are the Riverina Highway located approximately 1.5 km to the north and Newell Highway which passes through Finley approximately 6 km to the east (refer Figure 2).

The site is connected to the Riverina Highway via Canalla Road.

The land comprises flat-lying open paddocks crossed by a network of irrigation and drainage channels, and a waterway crossing the western most paddock that supplies water to a farm dam.

1.2 Assessment Guidelines and Requirements

This Traffic Impact Assessment (TIA) has been prepared in accordance with the relevant governmental assessment requirements, guidelines and policies, and in consultation with the relevant Government Agencies.

The TIA has been developed in accordance with:

- Austroads Guide to Traffic Management Part 3 Traffic Studies and Analysis;
- Austroads Guide to Traffic Management Part 12 Traffic Impacts of Developments; and
- NSW Roads and Maritime Services (RMS) Guide to Traffic Generating Developments (2002).

The assessment is based on the following general scope for matters to consider in a TIA which is defined by the NSW Roads and Maritime Services (RMS) Guide to Traffic Generating Developments (RTA 2002):

- The existing locality and surrounding land uses;
- The existing road network;
- Traffic and carparking generation characteristics;
- Traffic and parking impacts; and
- A summary of assessed traffic impacts and any traffic mitigation measures proposed.

A request for Secretary's Environmental Assessment Requirements (SEARs) for the Finley Solar Farm Facility was submitted to the NSW DP&E on 6 June 2017. The SEARs were subsequently issued by the DP&E on 5 July 2017.

Table 1 presents the general traffic requirements and key transport issues to be addressed in the TIA in accordance with the SEARs.

Secretary's Environmental Assessment Requirements
Specific Issues
The EIS must address the following specific issues:
■ Transport – including an assessment of the site access route, site access point and likely transport impacts of the development on the capacity and condition of roads (including on any Crown Land), a description of the measures that would be implemented to mitigate any impacts during construction, and a description of any proposed road upgrades developed in consultation with the relevant road and rail authorities.

Table 1 Summary of Secretary's Environmental Assessment Requirements Relevant to Traffic Impact Assessment (SSD 8540)

To inform preparation of the SEARs, DP&E invited other Government Agencies to recommend matters to be addressed in the EIS. These matters were taken into account by the Secretary for DP&E when preparing the SEARs.

Table 2 presents the general traffic requirements and key transport issues to be addressed in the TIA in accordance with the RMS Requirements.

RMS Environmental Assessment Requirements	
Specific Issues	Section Addressed
■ Address the impacts of traffic generated by the proposal upon the surrounding road network under the following conditions: • Construction and Decommissioning Phase focussing on transport of materials, traffic movements and parking • Operational Phase focussing on ongoing traffic generation and parking	Section 1.3.3 Section 3
■ The Assessment needs consider both the transportation of the components required for construction of the development and the work force required	Section 1.3.3 Section 3
■ Traffic should be considered and addressed during the operation of the facility	Section 1.3.3 Section 3
■ The Traffic Assessment shall detail the potential impacts associated with the phases of development, the measures to be implemented to maintain the standard and safety of the road network and procedures to monitor and ensure compliance	Section 1.3.3 Section 3

Table 2 Summary of RMS Requirements

1.3 Proposed Development

1.3.1 Introduction

The Finley Solar Farm would be built as a utility scale solar PV plant, with the solar panels mounted in rows on horizontal tracking or fixed tilt systems.

The rows of solar panels are connected into arrays before being inverted from DC to AC electricity, which is the standard form of electricity used throughout Australia. Electricity is then fed, via an

underground on-site high voltage power reticulation system, into the local electricity network through the Finley 132 substation. Infrastructure design and site layout aspects are discussed further below.

Key infrastructure items include:

- installation of approximately 508,000 solar panels in regular arrays;
- each solar panel would be fixed to a metal mounting structure;
- above ground DC cabling;
- underground DC cabling;
- central inverters, step up transformers, and switchgear (known as PCUs);
- underground AC cabling would run from the PCUs to the solar substation;
- a main step up transformer and associated equipment;
- internal vehicle access tracks;
- perimeter safety fencing and closed-circuit television (CCTV) system;
- supervisory control and data acquisition (SCADA) control systems;
- site office and staff amenities, and maintenance shed; and
- a permanent staff and contractor car parking area.

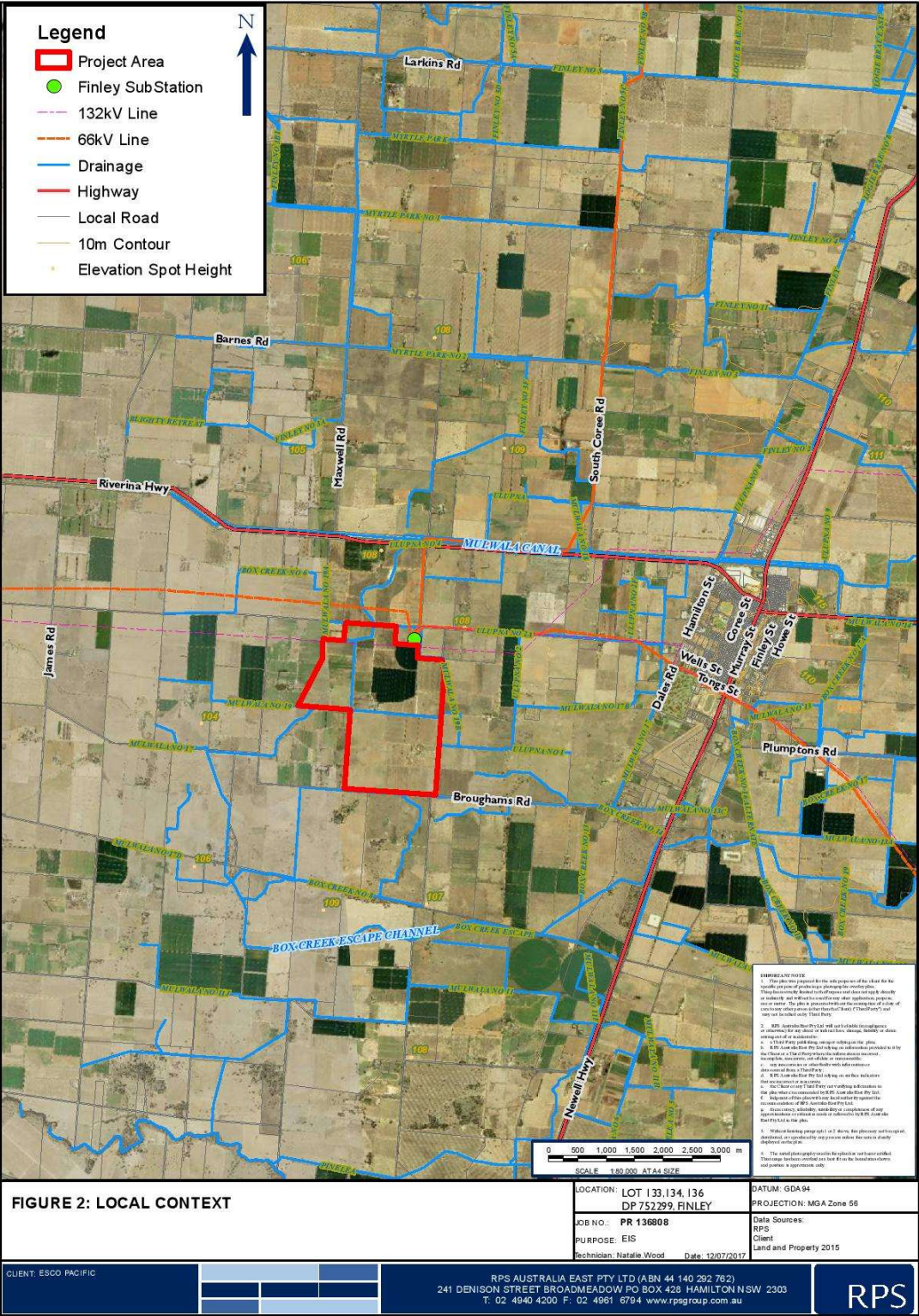


Figure 1 Project Location¹

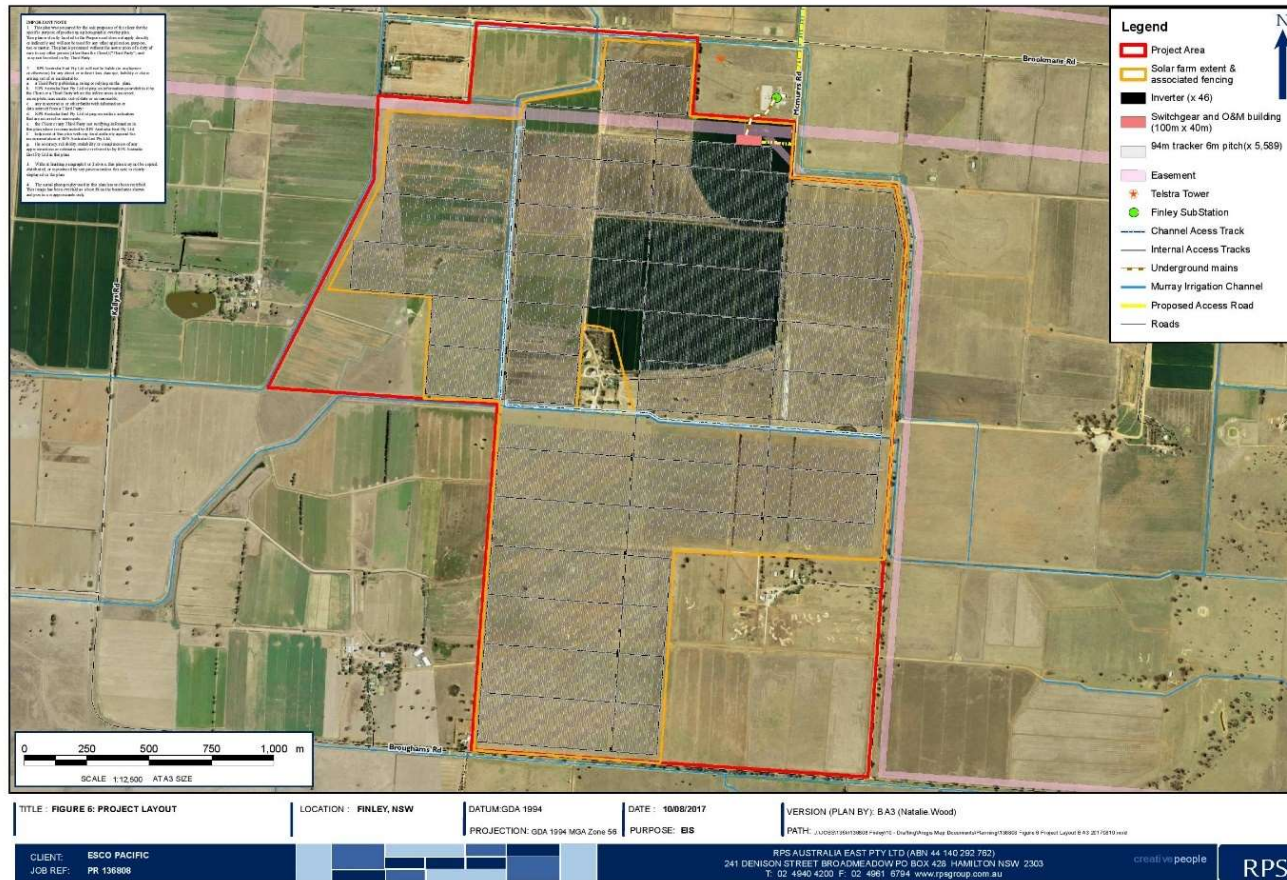
¹ Source RPS

1.3.2 Site Access and Parking

An all-weather access road into the project area currently exists from the entrance to the 'Happy Valley' property off Canalla Road. Canalla Road feeds directly off the Riverina Highway approximately 6 km west of the Finley Township. This access will facilitate all solar farm traffic during construction and operations. In addition, there will be a separate entrance off Canalla Road for access to the solar farms permanent site office, operation and maintenance building, and switch yard. Infrastructure and road access are shown on **Figure 2**.

A vehicle parking area will be located at the north-eastern corner of the development site adjacent to the site office, with 10 parking spaces provided for operational and maintenance staff. Parking for construction vehicles will be either at designated laydown areas, storage locations, or where construction activities are concentrated at any given time.

Figure 2 Site Layout²



² Source RPS

1.3.3 Traffic Generation

1.3.3.1 Construction

As there is no rail facility in close proximity to the site all movements of people and materials will be via the road network, consequently no consultation has occurred with Rail Authorities.

It is anticipated that the average traffic generation during the construction phase will peak at 82³ per day (i.e. 41 movements into and out of the site each day). Construction is programmed to cover a 9-month period during which traffic will be generated from the following sources:

- Light vehicle movements for construction workers 44⁴ (i.e. 22 movements into and out of the site each day) movements generally in the morning and afternoon as construction workers arrive and leave the site;
- Delivery of high voltage equipment, PV components, and related construction materials;
- Delivery of construction materials for the permanent site office, switch yard, and maintenance buildings;
- Delivery of temporary construction worker toilets, lunchrooms, and site office;
- Mobilisation and de-mobilisation of heavy plant and equipment;
- Delivery of aggregates and concrete for civil works; and
- It is anticipated that heavy vehicles peak at 38⁵ (i.e. 19 movements into and out of the site each day) vehicles arriving at the site to unload components).

1.3.3.2 Operations

It is anticipated that the average traffic generation during operations will peak at 28⁶ (i.e. 14 movements into and out of the site each day), or 2 movements per day into and out of the site. Operational traffic will be generated from the following sources:

- Electricians and operators;
- Water trucks;
- General delivery of replacement equipment and parts;
- Labour for PV module cleaning; and
- Labour for general maintenance.

1.3.3.3 Decommissioning

At the end of Finley solar farm's operational life of 40 years the development area would be decommissioned. During decommissioning, all above ground infrastructure would be removed. Key elements of project decommissioning would include:

- Disconnection of the solar farm from the TransGrid connection point at the Finley substation;
- PV modules would be disconnected and removed, including the mounting posts, mounting frames, and trackers. Materials would be sorted and packaged for removal from the site for recycling or reuse. Much of the solar array panels would be recyclable; and
- All buildings and equipment would be removed.

It is anticipated that traffic generation for the decommissioning will be no greater than traffic generation for construction movements are expected to be as follows::

- Light vehicle movements for construction workers 44⁷ (i.e. 22 movements into and out of the site each day) movements generally in the morning and afternoon as construction workers arrive and leave the site; and

³ Source ESCO Pacific July 2017

⁴ Source ESCO Pacific July 2017

⁵ Source ESCO Pacific July 2017

⁶ Source ESCO Pacific July 2017

⁷ Source ESCO Pacific July 2017

- It is anticipated that this will peak at 38⁸ (i.e. 19 movements into and out of the site each day) vehicles arriving at the site to unload components).

2 Existing Traffic Conditions

2.1 Network and Transport Routes

The site location has been selected to benefit from proximity to the existing electricity grid and the major road network in the locality. The major road network is suitable for the transport of project infrastructure and equipment to the site during construction, operations and decommissioning stages, and for the workforce to easily travel from the site during each stage of the project.

The two roads that would primarily be used by the project to transport components are:

- Riverina Highway (MR 694), which connects (in part) Finley to Deniliquin to the west and Finley to Albury to the east; and
- Newell Highway, a major NSW state highway, which connects Finley to the south (Victoria) and the North (NSW and Queensland).

Canalla Road, a local road, which connects the site to Riverina Highway. This route would be used by project traffic which is travelling to and from Finley.

The speed limits on the relevant State Highways roads are generally 100 km/hr near the site.

2.2 Site Access

As detailed above the principal access to the site is via Canalla Road.

Canalla Road (where it connects to the Riverina Highway) is an all-weather gravel road with a formation width of 8 meters.

Canalla Road intersects the Riverina Highway as an unimproved staggered T-intersection (with Marantellis Road) with left deceleration lanes but no right turning lanes. Both side rides are sealed for a distance of approximately 5m from the intersection.

The Riverina Highway and the Canalla Road approach to the intersection are shown in **Figure 3** below and in **Photographs 1,2,3, and 4**.

The sight distances for traffic approaching this intersection along all roads are very good, as the road is straight and level in both directions and drivers can clearly see for at least 500 m both north and south of the intersection.

⁸ Source ESCO Pacific July 2017



FIGURE 3 Intersection Canalla Road / Marantellis Road and Riverina Highway⁹



Photograph 1 Canalla Road Approach to Riverina Highway

⁹ NSW Globe NSW LPI



Photograph 2 Canalla Road / Riverina Highway Intersection looking East



Photograph 3 Canalla Road / Riverina Highway Intersection looking West



Photograph 4 Marantellis Road / Riverina Highway Intersection looking West

2.3 Existing Traffic Volumes

Baseline daily traffic volumes for the affected roads (project access routes) have primarily been determined from published RMS daily traffic surveys, for the years between 2006 and 2011. NSW RMS have not carried out counts at this location since 2011. To establish a baseline for year 2017, daily traffic volume was increased by +3% annual (linear) traffic growth factor has been added to the latest RMS count (i.e. 2011) has been added.

The 3% growth factor was determined by assessing the actual growth between RMS classified counts between 2006 and 2011.

Road	Year	AADT	% heavy vehicles
Riverina Highway (east of Deniliquin)	2006	1065	14
Riverina Highway (east of Deniliquin)	2010	796	14
Riverina Highway (west of Finley)	2006	1307	14
Riverina Highway west of Finley	2010	1232	15
Riverina Highway west of Finley	2011	1509	19
Riverina Highway west of Finley	2017 (assumed)	1780	19

Table 3 RMS Traffic Volumes Riverina Highway¹⁰

A further (hourly) count was carried out to verify the above assumption for 2017 and to determine existing turning movements at key intersections on 20 July 17.

These counts were carried out in the morning between 8:15 and 9:15 and afternoon between 2:30 and 3:30pm and indicated that the 3% growth rate assumed between 2011 and 2017 is an upper limit and considered a worst case based on the information currently available. It is prudent that the TIA utilises the worst-case scenario in its assessment.

Road	Volumes East Bound	% Heavy Vehicles	Volumes West Bound	% Heavy Vehicles
	East Bound/ North	East Bound/ North	West Bound/ South	West Bound/ South
Riverina Highway at Intersection with Canalla Road	46	8%	32	30%
Canalla Road	0	0%	0	0%
Marantelis Road	2		2	

Table 4 Hourly Volumes Count 21 July 17 AM

Note: school bus (heading east towards Finley) stop to pick up school children

¹⁰ RMS Traffic Volume Viewer

Road	Volumes East Bound	% Heavy Vehicles	Volumes West Bound	% Heavy Vehicles
	East Bound/ North	East Bound/ North	West Bound/ South	West Bound/ South
Riverina Highway at Intersection with Canalla Road	32	25%	42	33%
Canalla Road	2	0%	2	0%
Marantelis Road	0	0%	0	0%

Table 5 Hourly Volumes Count 20 July 17 PM

Road	Hourly Turning Movements
Riverina Highway turning into Canalla Road from East	0
Riverina Highway turning into Canalla Road from West	0
Riverina Highway turning into Marantelis Road from East	2
Riverina Highway turning into Marantelis Road from West	0
Canalla Road into Riverina Highway East Bound	0
Canalla Road into Riverina Highway West Bound	0
Marantelis Road into Riverina Highway East Bound	2
Marantelis a Road into Riverina Highway Westbound	0

Table 6 Hourly Turning Movements Riverina Highway/ Canalla Road 21 July 17 AM

Road	Hourly Turning Movements
Riverina Highway turning into Canalla Road from East	2
Riverina Highway turning into Canalla Road from West	0
Riverina Highway turning into Marantelis Road from East	2
Riverina Highway turning into Marantelis Road from West	0
Canalla Road into Riverina Highway East Bound	2
Canalla Road into Riverina Highway West Bound	0
Marantelis Road into Riverina Highway East Bound	0
Marantelis Road into Riverina Highway West Bound	0

Table 7 Hourly Turning Movements Riverina Highway/ Canalla Road 20 July 17 PM

2.4 Capacity Standards

2.4.1 Lane Capacity

Road width design standards for low volume (generally rural) roads are defined by the Austroads Guide to Road Design (Austroads 2010) and are based on daily traffic volumes. The current design standards applicable to the major roads are presented in Table 8.

Daily traffic	Austroads (2010) design standard	Applicable roads	Meets design volume standard?
0–150	Single lane sealed, however unsealed dual lane is also generally acceptable,	Canalla Road	yes
1,000–3,000	Austroads requires a 9-m wide seal	Riverina Highway	yes

Table 8 Daily traffic volumes and corresponding design standards

The roads surrounding the site each have acceptable road cross sections which meet the Austroads (2010) road design standard for the daily traffic volumes using each route. In most cases there is also a large margin of spare traffic capacity to accommodate significant daily traffic increases, without requiring any increase to the design standard of the route.

2.4.2 Warrants for Intersection Improvements

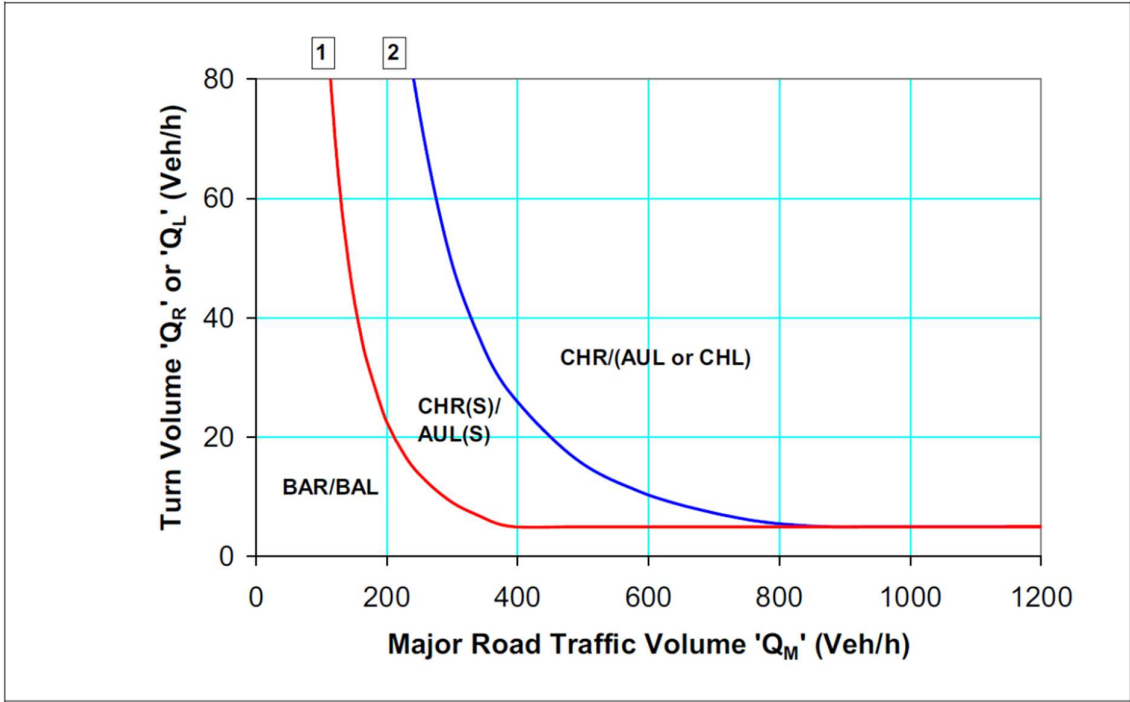
Rural intersection operations are assessed from the combination of the peak hourly through and turning traffic volumes, which are occurring at each intersection. This determines the need for additional intersection turning lanes for which the current Austroads design standards are shown in Appendix A.

The intersection peak hourly traffic volumes will comply with the relevant Austroads Warrant Charts for rural intersection design which are shown in **Figure 4**. There are separate design charts for roads with either 100 km/hr or higher design speeds or design speeds lower than 100 km/hr.

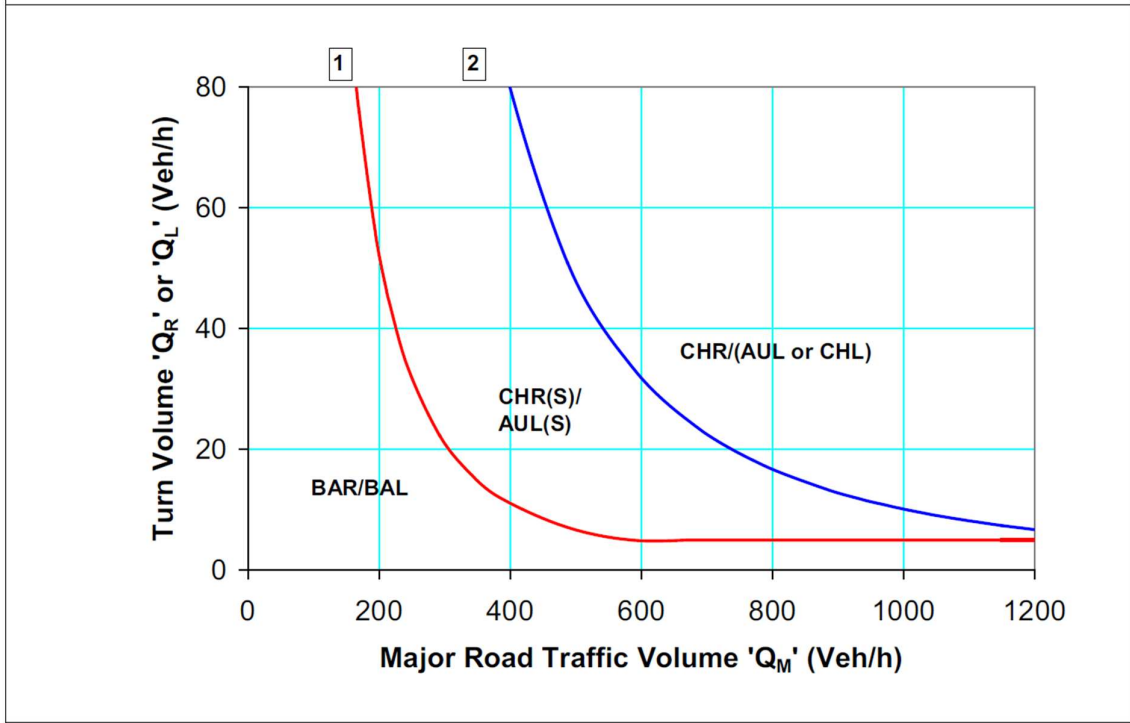
The design speed for intersection Riverina Highway and Canalla Road in the locality of the proposed site access is 100 km/hr. For this design speed, additional left or right turn traffic lanes are not generally required, as long as the peak hourly traffic volume remains below approximately 120 vehicles per hour on the major road.

The current year 2017 baseline Riverina Highway daily traffic volume (see Section 2.3) has been calculated to be approximately vehicles 100 per hour. The subject intersection therefore acceptable without additional left or right turn traffic lanes, as the peak hourly traffic volume is below 120 vehicles per hour and is not projected to exceed this during either the construction or operational phases of the project

A detailed assessment of the future effects of project-generated traffic at the site access and other relevant intersections, during the project construction and operations periods, is provided in Section 3.



Warrant Chart for additional turn lanes for traffic volumes for design speeds 100 km/hr or greater.



Warrant Chart for additional turn lanes for traffic volumes for design speeds less than 100 km/hr.

Figure 4 Austroads warrants design charts for rural intersection turn lanes¹¹

¹¹ Austroads Guide to Road Design – Part 4A

3 Traffic and Parking Demands

3.1 Construction and other Traffic Generating Activities

Construction of the project will take approximately 9 months from the commencement of site establishment works. Construction activities will be undertaken during the standard daytime construction hours of:

- 7 am to 6 pm Monday to Friday; and
- 8 am to 1 pm Saturday.

In general, no construction activities will occur on Sundays or public holidays. Exceptions to these hours may be required on limited occasions for the delivery of equipment, Council and community would be notified if this is required.

When operational, the project will produce electricity for contribution to the grid network. The PV solar panels will operate during daylight hours, seven days per week, 365 days per year. The operational lifespan of the project may be in the order of 40 years.

The future decommissioning of the site will require the removal of all above ground infrastructure from the site. This would see an increase in workforce requirements and daily traffic movements by both car and truck traffic similar to those experienced during the project construction stage.

3.2 Site Access and Circulation

An all-weather access road into the project area currently exists from the entrance to the 'Happy Valley' property off Canalla Road. Canalla Road feeds directly off the Riverina Highway approximately 6 km west of the Finley Township. This access will facilitate all solar farm traffic during construction and operations. In addition, there will be a separate entrance off Canalla Road for access to the solar farms construction office and compound, permanent site office, maintenance building and switch yard.

A vehicle parking area will be located at the north-eastern corner of the development site adjacent to the site office, with 10¹² parking spaces provided for operational and maintenance staff. Parking for construction vehicles will be either at designated laydown areas, storage locations, or where construction activities are concentrated at any given time.

All weather gravel surfaces will be provided for the internal site access roads which will have a minimum width of 5 metres. The indicative locations of the internal access roads are illustrated on **Figure 2**.

During construction, a suitable number of parking spaces will be available within the temporary construction compound.

Access will also be provided during construction for emergency vehicles and numerous access off the surrounding public road network will be provided for RFS personnel in case of fire.

3.3 Traffic Generation

As outlined in Section 1.3.3 the following generated daily traffic movements and corresponding vehicle types have been determined based on the applicants' construction time frame. Truck traffic movements will typically be semi-trailer type truckloads for all deliveries of plant and equipment to the site.

Traffic Generation to and from the site are as follows: -

Construction

It is anticipated that the average traffic generation during the construction phase will peak at 82¹³ per day (i.e. 41 movements into and out of the site each day). Construction is programmed to cover a 9-month period during which traffic will be generated from the following sources:

¹² Source ESCO Pacific July 2017

¹³ Source ESCO Pacific July 2017

- Light vehicle movements for construction workers 44¹⁴ (i.e. 22 movements into and out of the site each day) movements generally in the morning and afternoon as construction workers arrive and leave the site; and
- It is anticipated that heavy vehicles peak at 38¹⁵ (i.e. 19 movements into and out of the site each day) vehicles arriving at the site to unload components. During the non-peak construction periods (months 1-4 and 7-9) it is expected that heavy vehicle movements will be 24 per day (or 12 into and out of the site each day).

Based on advice received from the client and its draft construction timeline, the above traffic movements are the maximum anticipated on any day during the construction period. It is anticipated that on most days the actual number of heavy vehicles will be less than the 38 movements indicate above. However, it is prudent that the TIA is based on maximum or peak movements rather than an average to ensure the worst-case scenario is assessed.

The largest vehicles anticipated to visit the site for most construction deliveries will be 19 m semi-trailer. However, on occasions oversize vehicles may be required to deliver some components and if this occurs than liaison with the necessary road authorities to develop an appropriate Traffic Management Plan will be carried out.

Operational

It is anticipated that the average traffic generation during operations will peak at 14 movements per week, or 2 movements per day.

Decommissioning

It is anticipated that traffic generation for the decommissioning will be no greater than traffic generation for construction. This is expected to be:

- Light vehicle movements for construction workers 44¹⁶ (i.e. 22 movements into and out of the site each day) movements generally in the morning and afternoon as construction workers arrive and leave the site; and
- It is anticipated that this will peak at 38¹⁷ (i.e. 19 movements into and out of the site each day) vehicles arriving at the site to unload components).

3.4 Traffic Distribution

To determine the effect of increase traffic on the capacity of the road networks and associated intersections traffic distribution has been assumed as follows:

- The anticipated number of construction workers on site will be in the order of 200 staff. Of these workers, it is expected that the majority of the workforce will be sourced from the local area. Any non-local specialised contractors are likely to come from across other areas of NSW and would utilise accommodation in either Finley, Berrigan, or Tocumwal;
- The majority of the construction staff movements will be made to/from site using mini buses from Finley; and
- The majority of the construction materials and components are likely to be sourced from overseas due to the specialised nature of the equipment. Materials will be transported by road from port facilities in either Sydney or Melbourne in 12-meter shipping containers. Civil materials such as aggregates and concrete will be sourced from local suppliers.

Consequently, the distribution of traffic used in this TIA is as follows:

For light traffic

- 100% (22) of the workforce will be based locally travelling to and from the site form the Finley along the Riverina Highway.

¹⁴ Source ESCO Pacific July 2017

¹⁵ Source ESCO Pacific

¹⁶ Source ESCO Pacific

¹⁷ Source ESCO Pacific

For heavy traffic

- 80% (15) of truck deliveries will be travelling to and from the site from the Finley along the Riverina Highway; and
- 20% (4) of truck deliveries will be travelling to and from the site from the Deniliquin along the Riverina Highway.

3.5 Traffic Volumes on the Road Network

The existing daily traffic volumes (estimated baseline daily traffic volumes for the year 2017) for Riverina Highway and Canalla Road and the existing adequacy of the road design standards for these routes is discussed in Section 2.3.

The effective current daily traffic capacities for the various roads considered, according to the current Austroads (2010) Guide to Road Design standards are:

- State Highway rural sections (Riverina Highway) 1,000–3,000 daily vehicles; and
- Local Roads (Canalla Road), 0–150 daily vehicles.

The additional daily traffic volumes generated during the construction and operations stages are summarised for the affected travel routes are summarised in the following sections.

3.5.1 Construction Traffic

The project baseline traffic conditions within the local road network and the predicted future daily traffic during the average construction phase of the project are provided in Sections 2 and 3 above

On the assessment of traffic, the increased movements along Riverina highway would be an increase of up to:

- 0.5 % Eastbound; and
- 4.0 % West bound.

Such an increase is well within the capacity of Riverina Highway and will have very little effect on the operation and safety of this section of Highway.

Whilst a significant increase in traffic is anticipated along Canalla Road, the overall future daily traffic volume for the route would remain below the road design standards value of 150 daily vehicles (Austroads 2010). It is recommended that the all-weather gravel road be regularly maintained as part of a Construction Management Plan to ensure it remains serviceable for the life of the construction period.

The project generated daily traffic increases will have only minimal effects on the future traffic operations, level of service, or traffic safety.

3.5.2 Operational Traffic

The daily traffic increases along either the Riverina Highway and Canalla Road will not be noticeable and will have no effects on the future traffic operations, level of service, or traffic safety for the future traffic using these routes.

3.5.3 Decommissioning Traffic

The project generated daily traffic increases will have only minimal effects on the future traffic operations, level of service, or traffic safety.

3.6 Traffic Impact at Intersections

The future volumes of through traffic using the intersection on Riverina Highway and Canalla Road are not anticipated to increase significantly as a result of the project and will remain at approximately 100 hourly vehicle movements (two-way traffic) for the duration of the project construction work, which is a 9-month period approximately.

The potential need for additional turning lanes at the proposed site access intersection has been assessed by reference to the upper the road design standards intersection design warrant chart in **Figure 4**.

From the forecast project peak hourly traffic volumes in Table 9, the corresponding maximum peak hourly turning traffic volumes which will be using the intersection during each stage of the project construction and operations activity are summarised for typical future morning and afternoon peak hour traffic periods in Table 9.

Stage	Peak hour	Hourly traffic entering the Canalla Road (Left in)	Hourly traffic entering the Canalla Road (Right in)
Construction	Morning peak hour	24	2
Operations	Morning peak hour	2	0

Table 9 Future turning traffic volumes at Riverina Highway / Canalla Road Intersection

From the summary of the future site access turning traffic volumes, the combination of the future maximum site entry turning traffic volume from either the east or the west (26 hourly vehicles) when combined with the major road traffic flow using Riverina Highway (80 hourly vehicles) the intersection would not require any only require the minimum (Type BAR/BAL) intersection left or right turn safety treatments according Austroads Guide to Road Design Part 4A. (**Figure 4** in this report)

Such facilities are already in place at the intersection of Riverina Highway and Canalla Road and hence no further work is considered required

3.7 Potential Impacts on Traffic Safety

In light of the low volume and turning movements of estimated traffic generated by the development, it is considered that the project will have a neglectable impact on the operation of the surrounding road network and hence will not adversely affect road safety.

In addition, a Construction Management Plan will be established (in accordance with RMS guidelines) and will provide appropriate warning signs highlighting to road users the presence of construction traffic and increased turning movements.

Temporary traffic control arrangements may be required at the site access intersection during the peak stages of construction traffic activity and on days when deliveries by oversize vehicles may be required. However, the largest vehicles anticipated to visit the site for construction deliveries will be 19 m semi-trailers.

It should be noted that the assessment of the potential distraction from the impacts of glare on passing motorists are assessed in a separate Visual Impact and Glare Assessment prepared for this project.

3.8 Traffic Management

A Construction Traffic Management Plan, which will utilise Austroads and RMS guidelines will be developed for all roads adjacent to the site including the intersection of Riverina Highway and Canalla Road.

The Construction Traffic Management Plan shall be produced in accordance with RMS Traffic Control at Worksites 2010 after an appropriate risk assessment has been carried out.

In addition to compliance with RMS standards, the Construction Traffic Management Plan should address periodic grading and dust control along Canalla Road.

Temporary traffic control arrangements may be required at the site access intersection during the peak stages of construction traffic activity and on days when deliveries by oversize vehicles may be required.

4 Summary, Proposed Measures Implementation and Monitoring Procedures

The traffic impacts from the proposed Solar Farm have been assessed and the key findings are as follows:

- Access will be from Canalla Road. There is an existing unsealed access road which provides access to the site currently;
- The existing daily traffic volumes using Canalla Road satisfy the relevant Austroads (2010) design standards. The predicted increase in traffic along Canalla Road will exceed the design guidelines and hence no additional works are required;
- The available intersection sight distances of the proposed site access intersection with Canalla Road provide for very good traffic safety. The intersection has straight and level approaches and more than adequate for the road speed limit which is 60 km/hr;
- The requirements of the Austroads Warrant Design Charts for Additional Turning Lanes at Rural Intersections indicate that additional intersection turning traffic lanes are not required at the intersection with Canalla Road;
- The existing daily traffic volumes using Riverina Highway satisfy the relevant Austroads (2010) design standards. The predicted increase in traffic along Riverina Highway will not exceed the design guidelines and hence no additional works are required;
- The available intersection sight distances (approx. 500m) at the intersection of Riverina Highway with Canalla Road provide for very good traffic safety. The intersection has straight and level approaches and more than adequate for the road speed limit which is 100 km/hr;
- The assessment of Austroads Warrant Design Charts for Additional Turning Lanes at Rural Intersections indicates the current intersection meets the requirements set out in this standard and as such that additional intersection turning traffic lanes are not required at the intersection of Riverina Highway with Canalla Road;
- The predicted additional daily traffic usage for the assessed roads at the peak stage of project construction will be approximately 82 daily vehicle trips (i.e. 41 movements into and out of the site each day) and reducing to a maximum of 4 daily vehicle (i.e. 2 movements into and out of the site each day) trips during operation;
- Additional traffic generated by the project will not cause the future daily traffic volumes on either the Riverina Highway or Canalla Road to increase above the relevant design levels that would trigger road widening improvements;
- The internal site roads and car parking will be constructed to serve the project's construction access and car parking needs. Internal roads will generally be all weather gravel surfaced roads. 10 car parking spaces will be provided for the project construction and operations workforces. Carparking spaces will all-weather gravel areas with appropriate dimensions in accordance with the requirements of the Development Consents;
- A Construction Traffic Management Plan will be prepared in consultation with the RMS and in accordance with RMS's, Traffic Control at Worksites Manual (RTA 2010); and
- The Construction Traffic Management Plan shall also address the periodic grading and dust control on unsealed roads surrounding the project area.