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TRAFFIC ENGINEERING

Frasers Solar Farm

Transport Impact Assessment

190271TIA001E-F

18 October 2019

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1 INTRODUCTION

onemile**grid** has been engaged by Frasers Lane Development Pty Ltd, trading as South Energy, to undertake a Transport Impact Assessment of the proposed Frasers Solar Farm development at Frasers Lane in Glengarry.

As part of this assessment the subject site has been inspected with due consideration of the development proposal, traffic and parking data has been sourced and relevant background reports have been reviewed.

2 EXISTING CONDITIONS

2.1 Site Location

The subject site is located at the south-west corner of the intersection between Traralgon-Maffra Road and Frasers Lane, as shown in Figure 1. The site is approximately midway between the towns of Glengarry and Toongabbie.

Figure 1 Site Location

Copyright NearMap

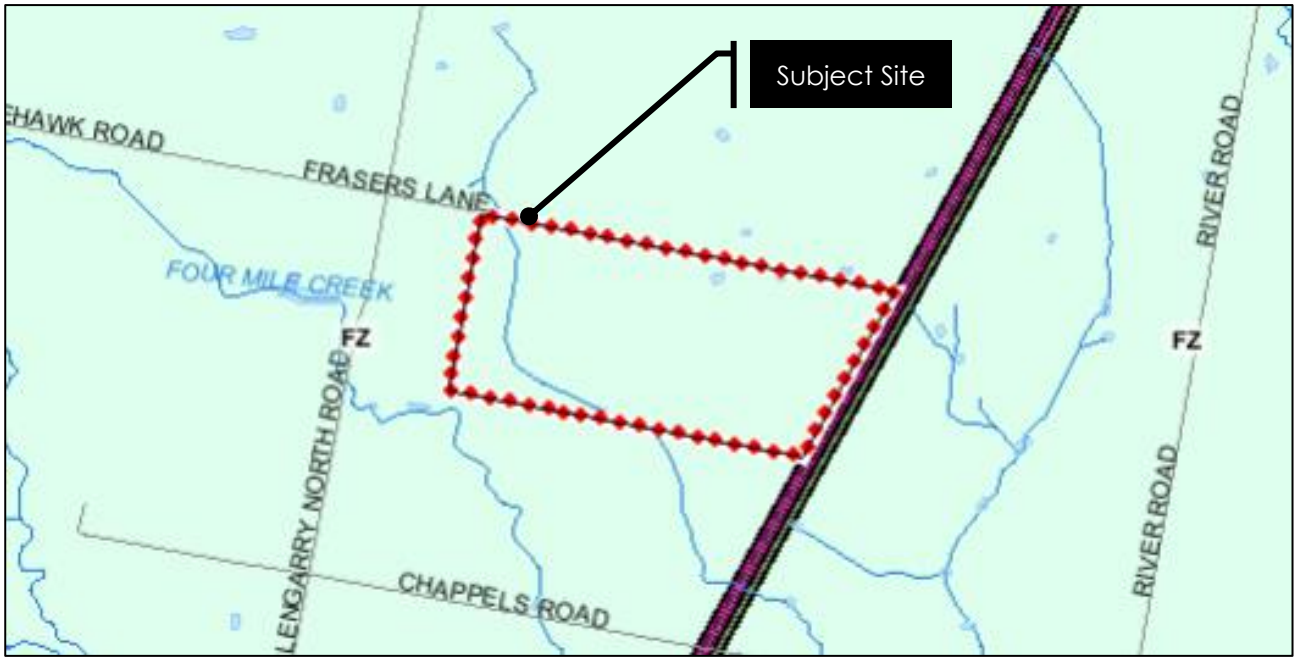
The site is currently occupied by farmland and has an approximate area of 105 hectares. The existing farmland currently has vehicle access via Frasers Lane on the northern side of the site.

Other land use surrounding the site is used for farming.

2.2 Planning Zones and Overlays

It is shown in Figure 2 that the site is located within a Farming Zone (FZ), for which the permitted uses are listed in Clause 35.07 of the Latrobe Shire Council Planning Scheme.

Figure 2 Planning Scheme Zones



2.3 Road Network

2.3.1 Traralgon-Maffra Road

Traralgon-Maffra Road is an arterial road extending generally north-east to south-west from Toongabbie to Glengarry.

In the vicinity of the site, Traralgon-Maffra Road comprises a single traffic lane in each direction. The road has a signed speed limit of 100 km/h.

The cross section of Maffra-Traralgon Road is shown in Figure 3.

Figure 3 Traralgon-Maffra Road looking south-west from Frasers Lane

2.3.2 Frasers Lane

Frasers Lane is a local road extending east-west between Traralgon-Maffra Road and Eaglehawk Road in the west.

In the vicinity of the site, Frasers Lane is set within a wide reservation with a gravel surface. It is noted that there is a culvert under the road at the intersection with Traralgon-Maffra Road.

The cross-section of Frasers Lane is shown in Figure 4.

Figure 4 Frasers Lane looking west beyond Traralgon-Maffra Road

2.4 Traffic Volumes

Traffic volume information for Traralgon-Maffra Road has been sourced from VicRoads Traffic Profile Viewer (for the section between Toongabbie and Glengarry). The data indicates that Traralgon-Maffra Road carries the approximate traffic volumes which are summarised in Table 1. It is noted that the traffic volumes are provided for 2015.

Table 1 Existing Traffic Volumes - Traralgon-Maffra Road

Direction	Daily	AM Peak	PM Peak
North-East Bound		170	220
South-West Bound		194	188
Combined	1700	281	347

3 DEVELOPMENT PROPOSAL

3.1 General

The application seeks to utilise the site for the purposes of Frasers Solar Farm Development, which will include 230,000 solar PV modules, mounted on a single-axis tracking system, and the associated infrastructure to support the use.

Other infrastructure across the site will include electrical invertors, 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 Frasers 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.

3.2 Access

Based on the concept plans prepared by Entura, the site includes two access gates from Frasers Lane on the northern side of the site. It is expected that the main access to the site, and particularly to the substation, will be the eastern access to Frasers Lane. Based on the development plans it is expected that the other access point will be secondary only.

The proposed access locations will be utilised for both construction/installation of the facility, with the first Frasers Lane access catering for the larger loading vehicles, and once the site is operating.

Based on the site's connections to the surrounding road network, particularly Princes Highway to the south, it is expected that the majority of traffic movements to and from the site will be made on Traralgon-Maffra Road to the south-west.

The approximate locations for the proposed access points and the traffic routes are shown in Figure 5.

Figure 5 Site Access

Copyright NearMap

3.3 Construction / Installation

The construction stage is expected to take place over a 12-month period and will require up to 50 staff. Construction will take place over typical hours and will not include Sundays or public holidays.

Across the construction period, it is expected that deliveries will be required from a combination of vehicles, comprising vans through to semi-trailers, as well as a small number of larger sized vehicles. In total across a typical day during peak construction it is projected that 10 trucks will travel to the site.

The impact of construction traffic to the road network and nearby intersections will also be detailed within a Construction Traffic Management Plan.

3.4 Operation

During operation, the site has minimal requirements for staff due to the largely automated operation of the site.

The approximate number of staff number during the operational life of the solar farm is five full time staff in a single day shift.

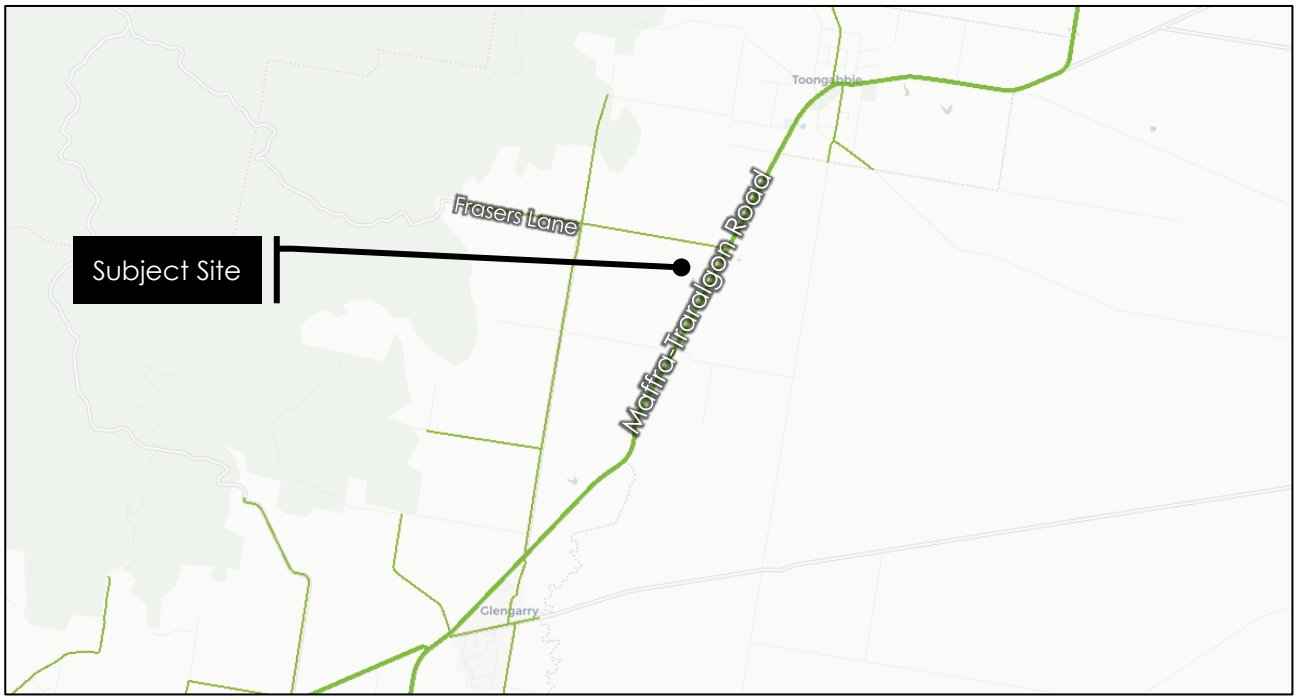
4 INTERSECTION REVIEW

4.1 Overview

As identified above, it is projected that the majority of the vehicle movements, particularly the larger loading vehicles during construction, will be made to and from the south-west on Traralgon-Maffra Road via Princes Highway in Traralgon.

In order to determine the surrounding road networks ability to cater for loading vehicle access to the subject site, VicRoads Higher Mass Limits (HML) Network has been reviewed. Both Traralgon-Maffra Road and Frasers Lane are listed as approved roads as demonstrated in Figure 6.

Figure 6 VicRoads Higher Mass Limits Network



4.2 Traralgon-Maffra Road and Frasers Lane Intersection

Noting that the main access to the site is proposed from Frasers Lane it is anticipated that the larger loading vehicles will need to utilise the intersection between Traralgon-Maffra Road and Frasers Lane. The existing intersection is arranged as a standard T-intersection, with Traralgon-Maffra Road provided with priority. Photos of the intersection are provided in Figure 7.

Figure 7 Traralgon-Maffra Road and Frasers Lane Intersection

5 TRAFFIC CONSIDERATIONS

5.1 Traffic Generation

The majority of traffic generated by the proposed solar farm will be generated during the construction / installation phase associated with trade persons, facility staff and deliveries. During the future operational phase, the level of traffic generated will be significantly reduced due to the low employee intensity requirements of the facility.

It has been advised by the operator that the construction phase will occur over a 12 month period and the operational phase is set for 30 years.

During each of the abovementioned phases, it is projected that the traffic movements detailed in Table 2 will be generated. To determine the traffic volumes, **one**mile**grid** has relied on information from the operator regarding the operation of the facility which is understood to be based upon experience with other solar farm projects. The assessment includes an allowance for visitors / deliveries during the operational phase of the project however it is noted that these are highly variable and are unlikely to occur every day.

Table 2 Anticipated Traffic Movements

Phase	*Component*	*Anticipated Vehicle Movements*	*Resultant Movements*
Construction Phase	Deliveries	Average of 10 daily truck vehicle movements (includes all sizes)	20 truck movements (1 in and 1 out)
	Staff	Based on maximum 50 staff with 50% driver ratio*	50 passenger vehicle movements (1 in and 1 out)
	Total		70 movements
Operational Phase	Staff	Up to 5 staff arriving in the morning and departing in the evening	10 standard vehicle movements (1 in and 1 out)
	Visitors	3 visitors / deliveries across the day	6 standard vehicle movements (1 in and 1 out)
	Total		16 vehicle movements

** Due to the location of the site, carpooling will be necessary and can be managed by the operator and individual trades. This assumption is considered representative of the likely travel patterns to and from the site.*

The loading and delivery movements to the site will be made via multiple vehicles ranging in size between 19m semi-trailers and cars. It is noted that there will be up to five deliveries by Over Dimensional (OD) sized vehicles, as part of transporting the transformer.

General vehicle traffic will likely be concentrated during staff arrivals and departures during the AM and PM peaks, respectively. Construction traffic, deliveries and equipment, will be largely distributed across the day.

5.2 Traffic Distribution

All traffic movements to and from the site will use Frasers Lane via Traralgon-Maffra Road. It is expected that the majority of these movements to Traralgon-Maffra Road will be to the south-west, as detailed in Figure 5.

5.3 Construction Phase Traffic Impact

5.3.1 Roadway Review

Traralgon-Maffra Road

Traralgon-Maffra Road is an arterial road and gazetted as an approved Higher Mass Limit (HML). This road, which operates with a single traffic lane in each direction, has significant capacity reserves based on existing volumes to accommodate the project volumes during construction and naturally also during operation.

Frasers Lane

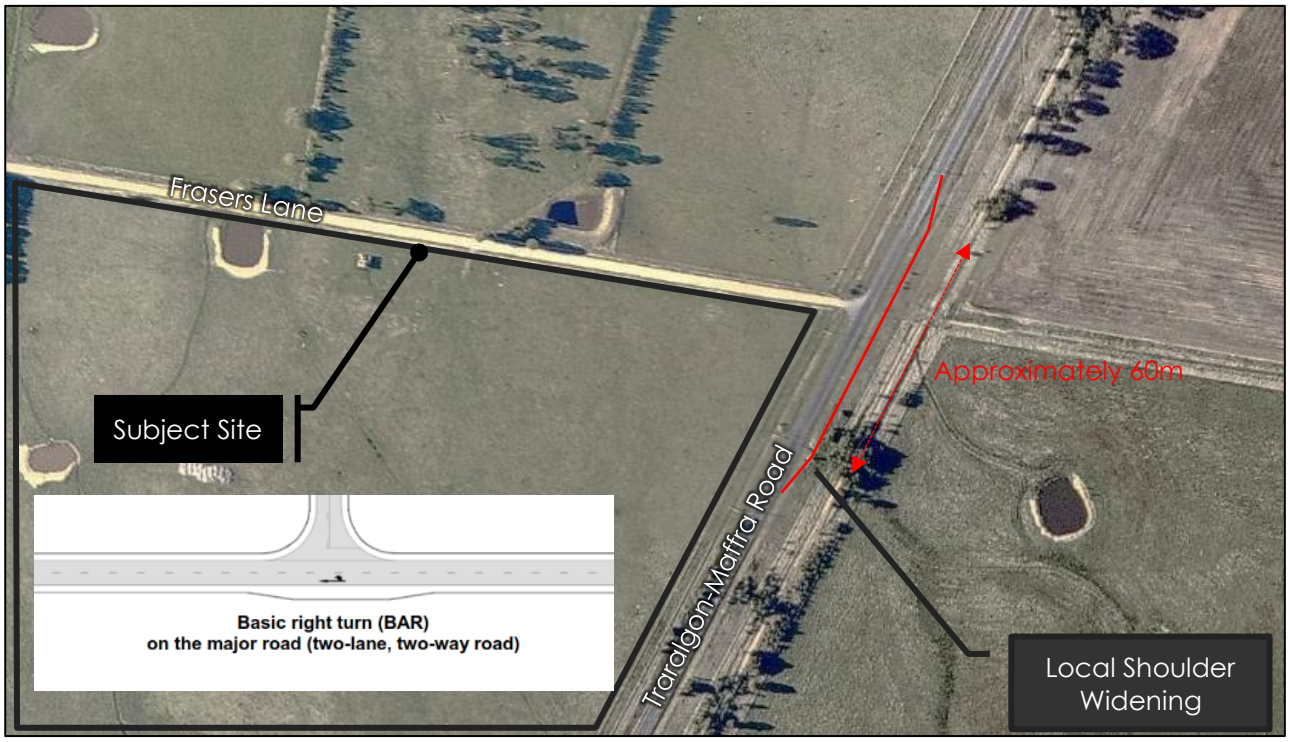
Frasers Lane is a local gravel road and is also gazetted as an approved Higher Mass Limit (HML). The gravel road is set within a wide reservation. Upon investigation of the site, it is expected that two vehicles can comfortably pass each other within the existing cross section without any change to the roadway. It is also expected that this road will have capacity to accommodate the project volumes during construction and naturally also during operation.

5.3.2 Intersection Impact

The existing traffic volumes sourced from VicRoads identified that Traralgon-Maffra Road currently caters for in the order of 1,700 daily vehicle movements.

To assist with the operation of the intersection between Traralgon-Maffra Road and Frasers Lane, it is recommended that local gravel shoulders be constructed on Traralgon-Maffra Road to provide for a potential passing area of turning vehicles. The gravel shoulders are to be designed in accordance with a basic right turn (BAR) treatment for a rural road, as per Austroads Guide to Road Design: Part 4 – Intersections and Crossings General. A concept layout for the proposed intersection treatment is shown in Figure 8 below.

Figure 8 Proposed Intersection Treatment



5.3.3 Transformer, Substation and Battery Delivery

It is assumed that the construction of the facility will require the delivery of a transformer using an Over Dimensional (OD) vehicle.

The OD vehicles required to transport these facilities will exceed VicRoads maximum Gross Combination Mass Limits for heavy vehicles and will require specific permit approval and the preparation of a specific detailed traffic management plan. These requirements are typical for large projects and can be managed and planned by the operator along with the logistics company.

5.4 Operational Phase Traffic Impact

During the operational phase of the solar farm, the development is projected to generate traffic movements associated with 5 staff vehicles arriving and departing the site. This level of traffic generation is considered to have a negligible impact on the surrounding road network.

5.5 Access Alternatives

The proposed primary access to the site is from Frasers Lane. It is noted that the intersection to Traralgon – Maffra Road is arranged as a standard T-intersection with gravel shoulders. As this intersection is existing and has already been constructed to accommodate turning movements, it is considered the preferred access point to the site rather than creating new primary intersection points to Traralgon – Maffra Road. Of note, Frasers Lane is of sufficient width to accommodate the traffic generated.

6 CONCLUSIONS

It is proposed to develop the subject site for the purposes of a solar farm.

Based on the preceding assessment, the following is concluded:

- It is anticipated that during the construction phase the site will generate up to 70 vehicle movements per day;
- Based on the level of traffic generated, a minor upgrade of the intersection between Traralgon-Maffra Road and Frasers Lane is recommended;
- The management of access for over-dimensional vehicles will included within a specific detailed traffic management plan, and managed by the operator along with the logistics company;
- Traffic management plans can be developed and prepared post permit when required;
- During operation it is anticipated that the site will generate up to 16 vehicle movements; and
- This level of traffic is expected to have a negligible impact on the operation of the surrounding road network.