

APPENDIX F TRAFFIC IMPACT ASSESSMENT

2/10/2019 / **Walla Walla Solar Farm Project**

Traffic Impact Assessment

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Table of Contents

1. Introduction	1
1.1 Background	1
1.2 Site Context	2
1.3 Report Structure	4
2. Existing Conditions	5
2.1 Road Network	5
2.1.1 Schneiders Road	6
2.1.2 Benambra Road	7
2.1.3 Olympic Highway	8
2.1.4 Existing Vehicle Volumes	9
2.1.5 Summary	10
2.2 Technical Assessment	11
2.2.1 Road Condition	11
2.2.2 Swept Path Analysis	11
2.3 Intersections / Access points	12
2.4 Passing Bays for Trucks	13
2.5 Parking	13
2.6 Active Travel	13
2.7 Public Transport	14
2.8 Crash Data	15
3. Proposed Development	16
3.1 Solar Farm Infrastructure	16
3.2 Indicative Site Layout	16
3.3 Proposed Access Arrangements	16
3.4 Employees and Workforce	18
3.4.1 Construction Phase	18
3.4.2 Operational Phase	19

4. Traffic and Parking Generation	20
4.1 Traffic Generation	20
4.1.1 Construction Phase	20
4.1.2 Operation Phase	21
4.2 Parking Generation	21
5. Transport and Traffic Impact Assessment	22
5.1 Development Related Traffic Network Distribution	22
5.2 Future Road Capacity	22
5.3 Intersection Capacity / Operation	23
5.4 Access Arrangements	24
5.5 Parking Impacts	24
5.5.1 Construction Phase	24
5.5.2 Operation Phase	24
5.6 Public Transport Impacts	24
5.7 Pedestrian and Cycle Impacts	24
6. Summary and Recommendations	25
6.1 Summary	25
6.2 Recommendations	25

1. Introduction

1.1 Background

Ontoit was engaged by NGH Pty Ltd (NGH) to undertake a Traffic and Transport Impact Assessment (TIA) to assist with the Environmental Impact Assessment (EIA) for the proposed Walla Walla solar farm. Ontoit has been advised that the proposal is to construct and operate a solar farm with a capacity of 300 MWAC¹ (the Project) using photovoltaic technology at a site near Walla Walla, NSW (see **Figure 1**).

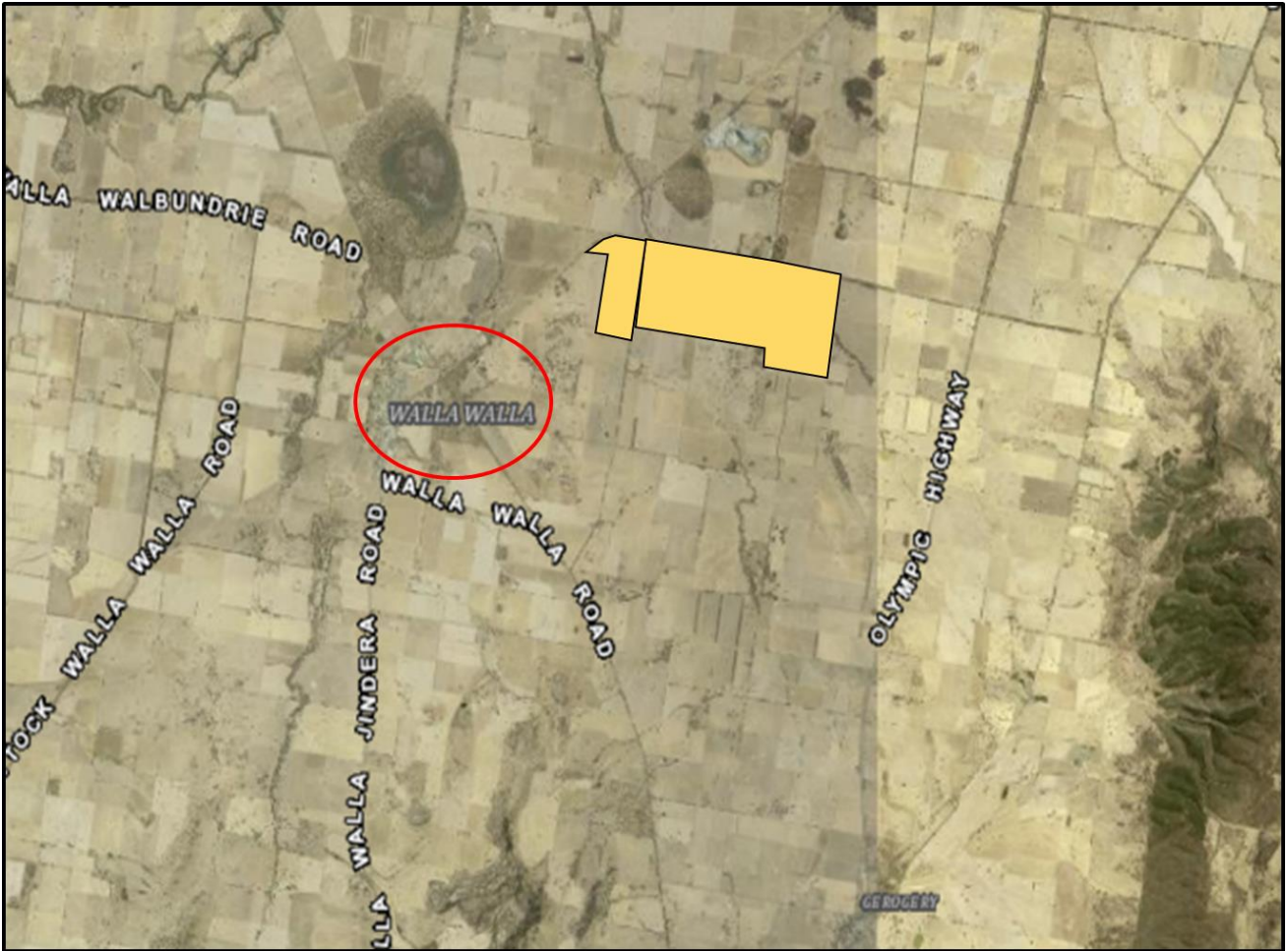


Figure 1 Proposed location for the Walla Walla solar farm Development (credit: SIX Maps, NSW)

This TIA informs and supports the planning exercise for the completion of an EIA for the construction of the proposed solar farm at Walla Walla, NSW. The purpose of the study is to examine existing traffic and transport network conditions and to assess the future traffic and parking impacts arising from the proposed development scenario. The study has assessed existing and future traffic conditions to ensure the transport infrastructure has sufficient capacity to support future development.

¹ MWAC – Mega Watt Alternating Current (i.e. Mega Watts of AC power)

This report presents a summary of the analysis and results that have been conducted as part of the TIA. The assessment of traffic and parking impacts generated by the proposed development has been based on the following information and guidelines:

1. The NSW Roads and Maritime (RMS) *Guide to Traffic Generating Developments* (Version 2.2, October 2002);
2. Proposed development plans and designs provided by NGH;
3. Greater Hume LEP; and
4. Review of existing traffic and parking conditions on the surrounding road network.

1.2 Site Context

The Project site is located within the Greater Hume Shire Council (Greater Hume/Council) Local Government Area (LGA) in NSW approximately four kilometres north east of Walla Walla. The town of Walla Walla is located approximately 40 kilometres north of Albury and 100 kilometres south west of Wagga Wagga in NSW (see **Figure 2**). Currently home to approximately 840 residents, the Walla Walla area offers residents a country lifestyle in close proximity to the major regional centre of Albury Wodonga. Direct access to Albury is via the Olympic Highway located approximately 14 kilometres south east of Walla Walla.



Figure 2 Proposed site for development in Walla Walla (credit: google maps, 2019)

Figure 3 illustrates the existing sites which are approximately 605 hectares collectively and are zoned RU1 Primary Production under the Greater Hume LEP 2012. The current site is located to the north east of Walla Walla and is bounded by Schneiders Road to the west and Benambra Road to the north. The site also has several important environmental features including Back Creek running through the middle of the site, several dams and a number of existing trees scattered across the whole site. The subject land covers a number of lots including:

- Lots 16, 17, 20, 21, 87, 88, 89, 108, 109 118 of DP 753735;
- Lot 3 DP 253113;
- Lot 1 DP 1069452;
- Lot A DP 376389; and
- Lot 1 DP 933189.

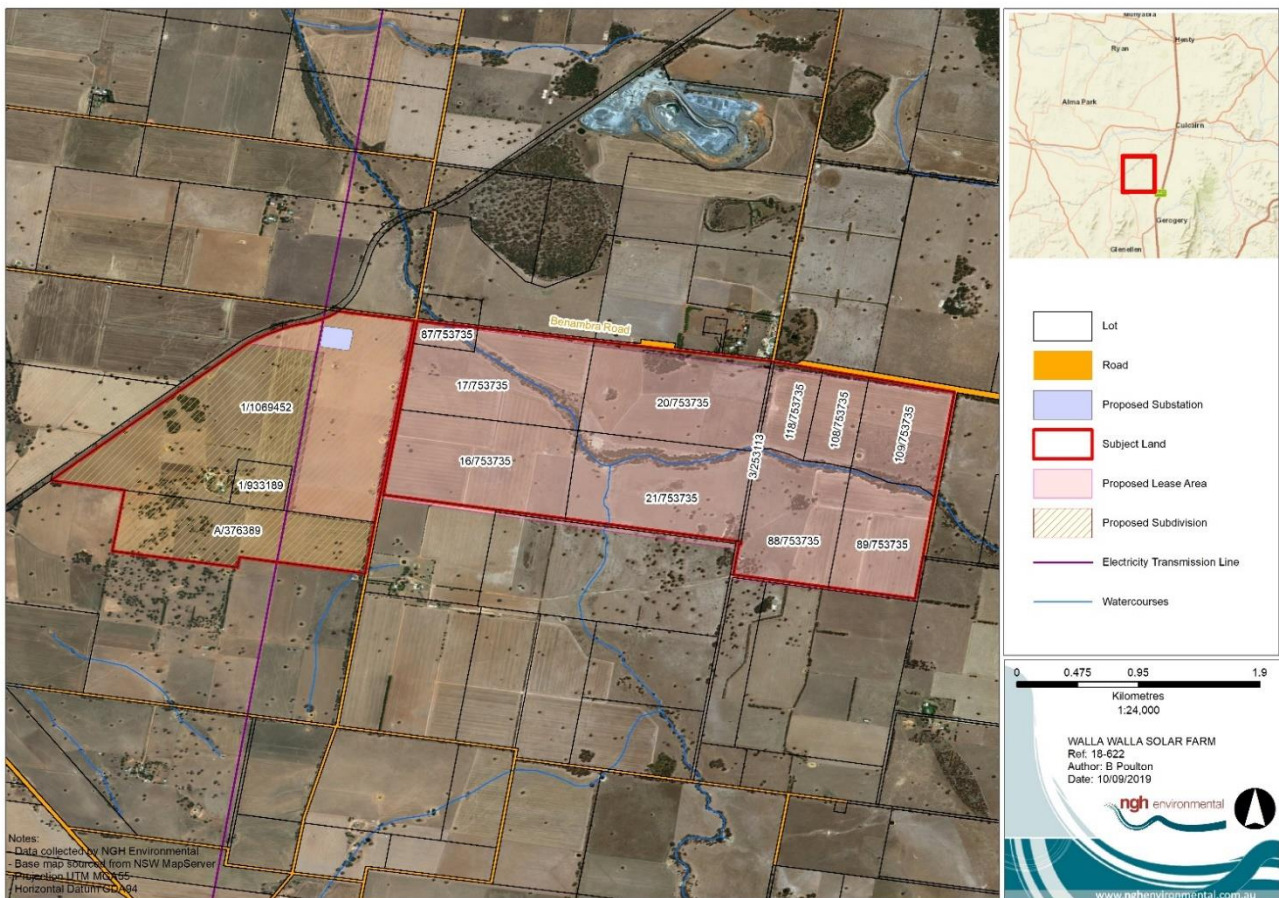


Figure 3 Zoomed-in image of proposed site for development featuring lot labels and boundaries (source: NGH)

1.3 Report Structure

This report provides advice and analysis on the potential future traffic and transport conditions that would potentially result from the proposed development options. The report has been structured as follows:

- Chapter 2 – Existing Conditions – this section provides an overview of the current traffic and transport conditions in the vicinity of the site;
- Chapter 3 – Proposed Development – this section provides an overview of the development master planning options for the proposed site;
- Chapter 4 – Traffic and Parking Generation – this section provides an overview of the likely traffic and parking generation as a result of proposed development;
- Chapter 5 – Transport and Traffic Impact Assessment – this section provides an overview of the potential impacts to traffic and road network as a result of the proposed development; and
- Chapter 6 – Summary and Recommendations – this section summarises the analysis and key conclusions / recommendations of the study.

2. Existing Conditions

A comprehensive review of the transport and traffic network in the vicinity of the proposed development site has been undertaken to establish a baseline of conditions. This section outlines and summarises the findings from this review.

2.1 Road Network

The site under investigation is located to the north-east of the town of Walla Walla, NSW (as illustrated in **Figure 1**). The road network that bounds the site includes (see **Figure 4**):

- Schneiders Road to the west;
- Benambra Road to the north; and
- Olympic Highway to the east.

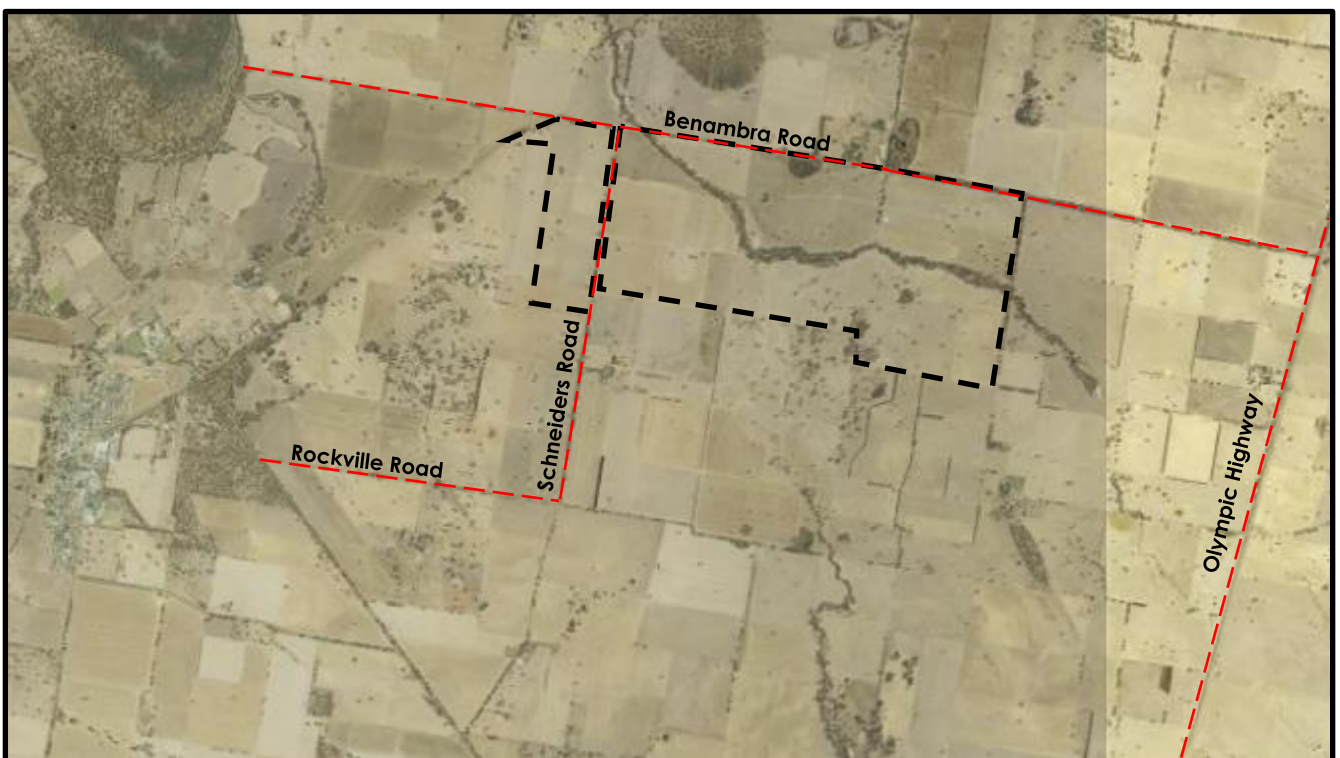


Figure 3 Road network surrounding proposed site for construction (credit: SIX Maps, NSW)

All three roads surrounding the site have different road hierarchy classifications and as such have different road characteristics. An overview of these is provided in the following sections.

2.1.1 Schneiders Road

Schneiders Road is a minor part of the road network surrounding the proposed site and is classified as a local road which is managed by Council (see **Figure 4**). Schneiders Road would not be utilised by construction traffic but crossed at two location points to access from the east to the west of the development and vice versa. Schneiders Road would also provide emergency access during operations (see **Figure 8**). Being a minor local road in the area of Walla Walla, it reflects the following characteristics:

- Unsealed single carriageway approximately 7.0 metres in width with one-lane in each direction (i.e. 2 x 3.5m traffic lanes) and no posted speed limits



Figure 5 Schneiders Road facing south



Figure 5 Schneiders Road facing south on Benambra Road



Figure 7 Benambra Road facing east – right turn onto Schneiders Road



Figure 4 Schneiders Road facing east – proposed crossing point

Figure 8 shows an existing access point which could be used to access the site and potentially cross from one side of the site to the other. Improvement to the gate and entry road would be required if this location is to be used for site access.

2.1.2 Benambra Road

Benambra Road is classified as a local road and will act as a key part of the road network surrounding the site and is managed by Council. An existing quarry is located north of Benambra Road and the intersections from the Olympic Highway to Benambra Road have been upgraded to accommodate the quarry generated traffic. Being a local road in the area, it has the following characteristics:

- The majority of Benambra Road is a sealed carriageway around 7.0 metres in width with one-lane in each direction (i.e. 2 x 3.5 metre wide traffic lanes)
- Approximately 3.3 kilometres of the road is an unsealed gravel road with a width of around 7.0 metres (i.e. 2 x 3.5 metre wide traffic lanes);
- Road is slippery when wet due to a thin layer of quarried material;
- Poor drainage along the road;
- No central median; and
- No posted speed limits.



Figure 6 Benambra Road facing west approx. 3.7km from Olympic Highway



Figure 7 Benambra Road at Schneiders Road Intersection



Figure 8 Benambra Road facing south farm access will not be used for construction



Figure 9 Benambra Road facing east toward Olympic Highway

2.1.3 Olympic Highway

Olympic Highway is classified as a main road under the *Roads Act 1993*. Despite it being called a Highway, it does not consist of a high enough quality to be deemed a highway, so therefore it is identified as a main road (see **Figure 15**). The Olympic Highway acts as a key route through south-western NSW, acting as an alternate to Albury and Wagga Wagga. It would provide a key access to the site by allowing traffic to access Benambra Road (see **Figure 13** and **Figure 16**). Being a main road, it has the following characteristics:

- Sealed carriageway approximately 7.0 metres wide with one-lane in each direction (i.e. 2 x 3.5 metre wide traffic lanes);
- Several Turning and overtaking lanes;
- Posted speed limit of 100 km/h;
- No central median; and
- Priority controlled intersection throughout.



Figure 10 Olympic Highway facing north – left turn onto Benambra Road



Figure 11 Olympic Highway facing north toward Benambra Road intersection



Figure 12 Olympic Highway facing north – other side of Benambra Road



Figure 13 Benambra Road facing east toward Olympic Highway intersection

2.1.4 Existing Vehicle Volumes

To assist with the existing conditions and future utilisation assessments, traffic data was collected from Council for Schneiders Road and Benambra Road. Traffic counters were located along road corridors in close proximity to the site as illustrated by red lines in **Figure 17**. The key corridors included:

- Schneiders Road between Benambra Road and Rockville Road;
- Benambra Road 100 metres east of Schneiders Road; and
- Benambra Road 100 metres west of Schneiders Road.

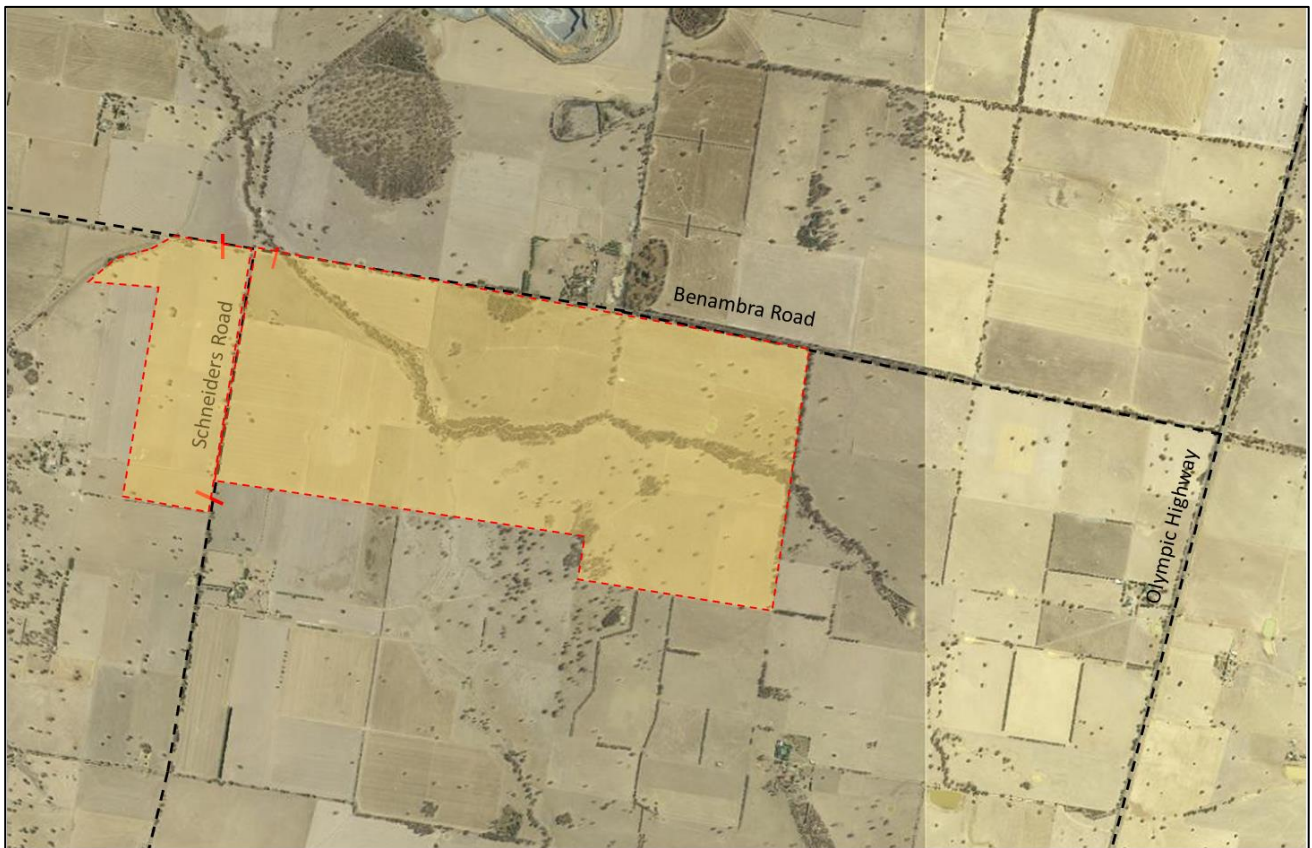


Figure 14 Traffic counter locations

The data collected during the traffic surveys is summarised in **Table 1**.

Table 1 Summary of traffic volumes by location

Location	Average Total Weekly Volume	Average Daily Traffic Volume	Average Weekly Volume of Freight Vehicles
Schneiders Road between Benambra Road and Rockville Road	453	65	14
Benambra Road 100m east of Schneiders Road	941	134	232
Benambra Road 100m west of Schneiders Road	848	121	248

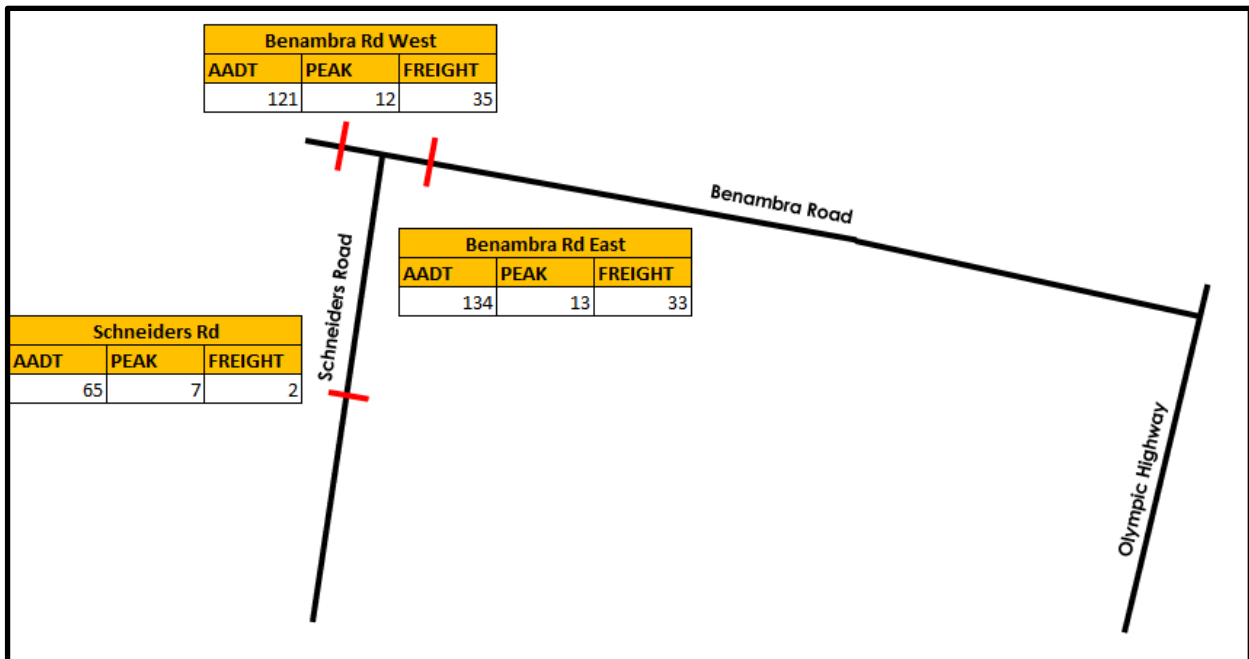


Figure 18 AM and PM peak traffic volumes at survey locations

Figure 18 illustrates the estimated average daily traffic (i.e. estimated AADT) volume, peak hour volume and daily freight volume based on the supplied traffic counts. The data suggests that the road network is operating well within its available capacity. However, more data will need to be gathered for all three roads to formulate a more accurate understanding of existing traffic conditions, specifically for the Olympic Highway.

2.1.5 Summary

An assessment of the existing road conditions in the vicinity of the proposed development site suggests the following key considerations:

- The traffic volume data collected has identified no existing issues along key access corridors;
- All road corridors are operating well within their available capacity; and
- Posted speed signs may need to be installed.

2.2 Technical Assessment

2.2.1 Road Condition

The unsealed section of Benambra Road would not be utilised by heavy vehicles during the construction period and therefore would not require any upgrade works prior to construction.

2.2.2 Swept Path Analysis

To assess the capability of the Olympic Highway/Benambra Road intersection to provide for large vehicles accessing the site, a swept path analysis was undertaken using Spiire's AUTOTURN programme. The swept path analysis assessed the ability for a 36 metre A-Double to negotiate the left and right turn into Benambra Road (see **Figure 18** and **Figure 19**).



Figure 18 Swept path analysis turning right into Benambra Road



Figure 19 Swept path analysis turning left into Benambra Road

The analysis suggests that the Benambra Road/Olympic Highway intersection has the capability to allow 36 metre A-Double trucks to negotiate the turn. Considering the trucks identified to be entering the site to be approximately 19 metre, this intersection presents no issues regarding its ability to accommodate for large trucks wanting to access the site.

2.3 Intersections / Access points

Due to the rural nature and existing land use of the subject site, there is no formal access point (i.e. no sealed or gravel access roads). The main access point would need to be constructed to provide for 36 metre long A-double vehicles and be sealed or at a minimum should be spread with crushed blue metal or gravel to reduce dust. Planned access points are illustrated in **Figure 20** and include:

- Main construction and operation access located at the north eastern corner of the development site;
- Access to the TransGrid substation; and
- Two crossing points along Schneiders Road.

The traffic volume data collected and site observations confirmed:

- There appears to be no operational issues with any of the existing intersections and all are operating within capacity during peak periods;
- No localised queuing on any approaches to any of the intersections; and
- No delays were observed at any of the intersections.

Due to the generally flat nature of the site, there appears to be no issues that would affect the provision of access points anywhere along the surrounding road network. However, there are several existing access points that could be used as possible entry points to the site as shown below.

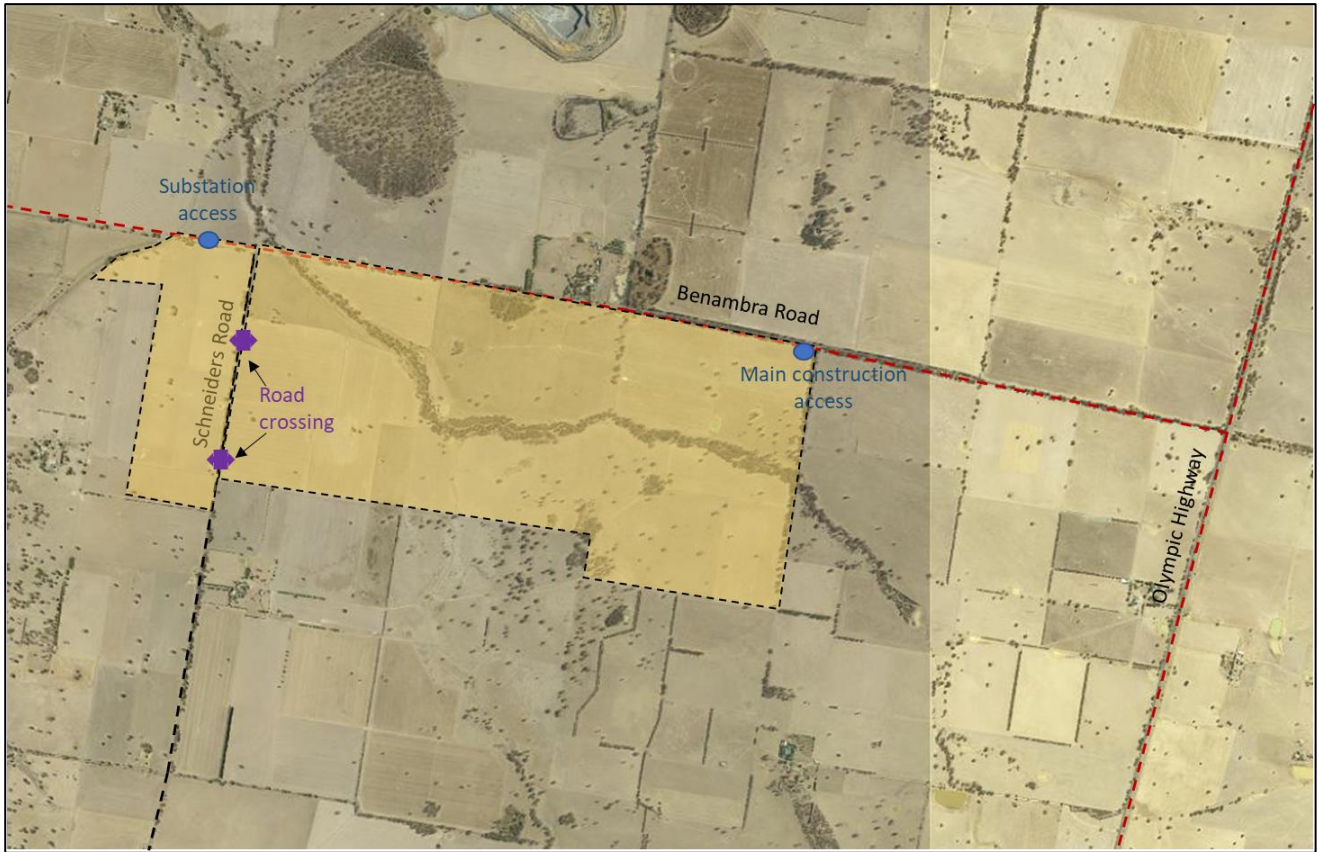


Figure 20 Planned site access

2.4 Passing Bays for Trucks

The majority of trucks accessing the quarry to the north of the subject site use a local access road, Weeamera Road to access Benambra Road and then to Olympic Highway, with truck numbers low enough to have minimal impact on traffic operations in the area.

2.5 Parking

There are no existing parking facilities on or in the vicinity of the subject site. There is no formal parking along any of the access roads or adjacent road corridors.

The nature of the site is such that temporary parking facilities will be able to be constructed as required to support both the construction phase and operational phase parking requirements. Provision of parking areas at the north-east corner of the development would enable ready access to Benambra Road and Olympic Highway. Parking requirements will need to be incorporated into the final site design details.

2.6 Active Travel

There are no existing bicycle parking facilities in the vicinity of the proposed development site. Olympic Highway has line markings to indicate the edge of the traffic lanes and the sealed road shoulders. These sealed road shoulders are used by cyclists as required.

There are indications of some local horse-riding into Walla Walla, however the limited numbers of equestrian travel do not require further consideration.

There are no footpaths in the vicinity of the subject site and with limited pedestrian numbers in the area none will be required.

2.7 Public Transport

There are currently no regular public transport routes that service the proposed development site. Recently a new school bus service has been introduced to the area along the route shown in **Figure 22**. It is understood that two bus services use the route; one operates in the morning (at around 7:00-7:45am) and one operates in the afternoon (at around 3:30-4:00pm). There is a bus stop currently located at the end of Benambra Road.

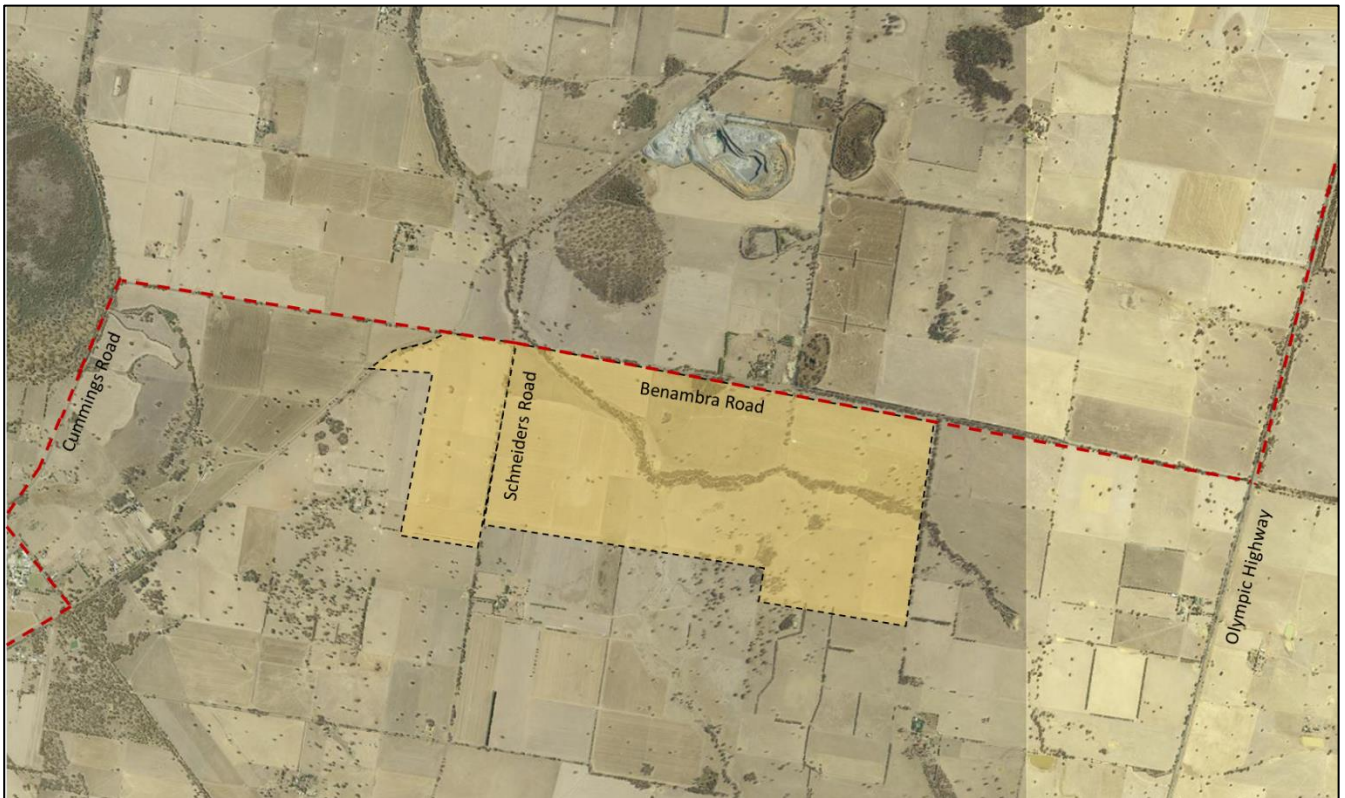


Figure 22 Future bus route

The operation of the new bus route will have minimal impact upon the traffic assessment of the subject site. It is recommended that the future site traffic management plan note the operation of the bus route on Benambra Road and incorporate this into movement planning for construction phase activities and operational phase activities.

2.8 Crash Data

Existing road crash data was sourced from the Transport for NSW road safety website, available from: http://roadsafety.transport.nsw.gov.au/statistics/interactivecrashstats/lga_stats.html?tblga=4 (Figure 23). A review of historic crash data (between 2012 and 2017) was undertaken focussing on the primary corridors to and from the proposed solar farm site at Walla Walla.



Figure 23 Map illustrating crash data (credit: NSW Government, 2016)

Figure 23 shows the location and severity of accidents on all roads in the vicinity of the subject site. It is evident that there has been a limited number of crashes.

Analysis of the crash data identified:

- No fatal incidents surrounding the area of the site;
- Four serious injuries on roads surrounding the area of the site;
- Four moderate injuries on roads surrounding the area of the site;
- One minor injury in a road surrounding the site; and
- Eight non-casualty (towaway) incidents in the area surrounding the site.

The analysis suggests that there are a limited number of severe incidents on roads in the vicinity of the site and none on Benambra Road, or Schneiders Road or at the intersection of Olympic Highway and Benambra Rod.

3. Proposed Development

3.1 Solar Farm Infrastructure

The proposal involves the construction and operation of a solar farm at a site near Walla Walla, NSW. Ontoit understands that the project would generate approximately 300 MW of alternating current (AC) of renewable energy using photovoltaic technology. The project comprises the following key infrastructure:

- Approximately 900,000 photovoltaic (PV) solar panels mounted on single axis tracker steel frames;
- Power conversion units, a transformer and electrical conduits;
- Connection to the existing 330 kV transmission line on the western side of the site, this being the Jindera to Wagga Wagga transmission line; and
- Onsite substation.

During the construction phase, temporary ancillary facilities would be established on the site and may include:

- Laydown areas;
- Construction site offices and amenities; and
- Car and bus parking areas for construction staff.

3.2 Indicative Site Layout

The indicative site layout for the Project is shown in **Figure 24**. This illustrates the proposed layout of the solar farm which includes the following elements:

- Solar PV Panels;
- Transmission lines and easements;
- Operation and maintenance building (also construction compound);
- Substation area; and
- Key environmental constraints across the site.

3.3 Proposed Access Arrangements

The proposed access points to the site are illustrated in **Figure 21**. These proposed access points for the site are located away from residential dwellings and to minimise the potential impact on local road operations. The main site access point for construction traffic would be from the sealed section of Benambra Road, around 2.6 kilometres west of Olympic Highway in the north eastern corner of the subject site. Existing site access (see **Figure 11**) would not be used for construction as it is considered too close to existing residential dwellings.

A secondary access to the western portion of the site, referred to as the sub-station access, is expected to be provided from Benambra Road to the west of Schneiders Road. This access will have less activity and be mainly for access to the sub-station both during construction phase and the operational phase.

Schneiders Road will not be used for site access but given that the site straddles Schneider Road, it is proposed to provide access crossing points from one side of the subject site to the other.

There is no requirement for passing bays for trucks on Benambra Road, given that the main site access for construction traffic would be located at the north eastern corner of the development site only 2.6 kilometres from Olympic Highway.

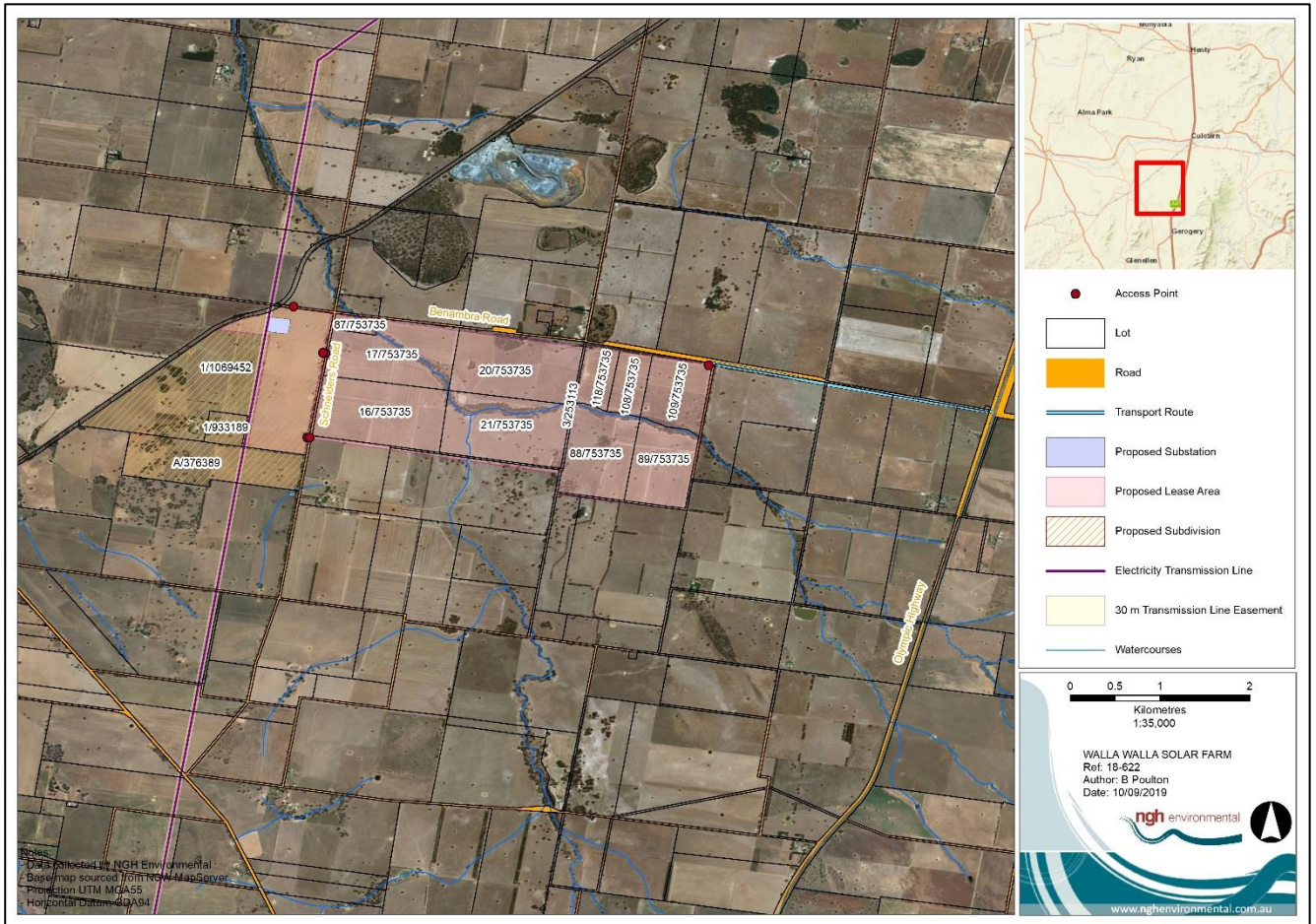


Figure 21 Proposed access points to the site (source: NGH)

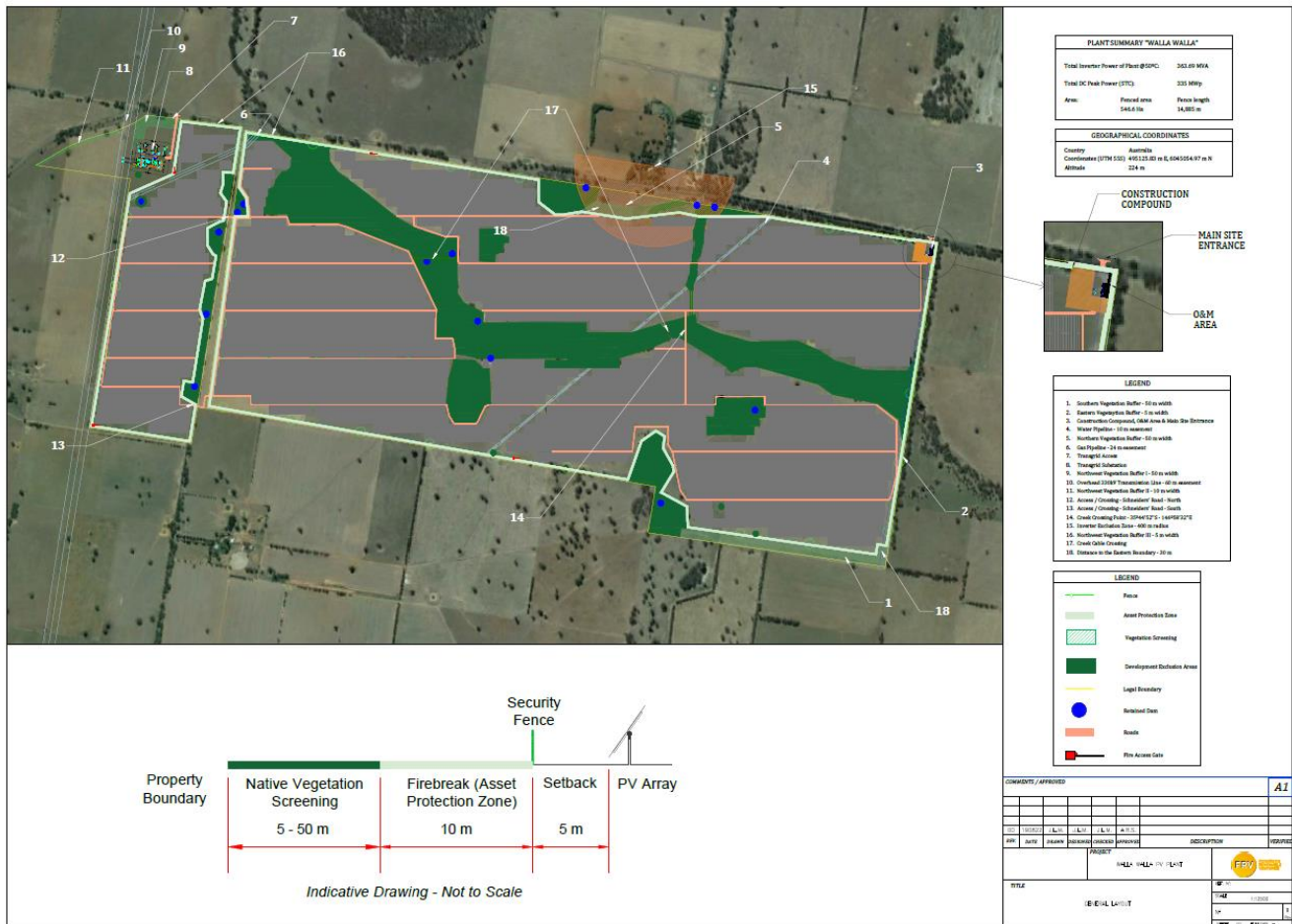


Figure 24 Indicative solar farm layout (source: NGH)

3.4 Employees and Workforce

3.4.1 Construction Phase

Based on information provided by the proponent it is understood that the construction phase for the project will take approximately 16-20 months. It is anticipated that the greatest travel demand will be during the construction phase due to:

- Approximately 40-60 employees would be required during the first three months of construction
- Approximately 250 workers during the peak construction period (8-12 months).
- During the peak period, approximately 400 light vehicle movements (200 vehicles) per day could be expected to travel to / from the site.
- To reduce total vehicle movements, it is proposed to limit light vehicle activity by provision of a bus service between the site and the Walla Walla township:
 - > This will reduce traffic activity and improve safety, and
 - > Reduces traffic operational impacts on the local road network.
- Based on the provision of bus services, it is appropriate to reduce the light vehicle traffic generation from the subject site to approximately 120 movements (60 trips each way) during the peak construction phase (considering movements to be a one-directional trip).
- During the three-month initiation stage it is estimated that approximately 24 heavy vehicles would access the site each day for materials and equipment delivery (i.e. 48 movements per day).

- This would increase to an estimated peak of 45 heavy vehicles per day during the peak activity period coinciding with the first four to six months of the peak construction period equating to 90 heavy vehicle movements during this time (i.e. 45 inbound and 45 outbound).
- These heavy vehicle movements will be mainly truck and dog configuration with several mixer trucks and articulated loads.

The proposed provision of a bus service to transport workers and reduce vehicle movements is supported. It is noted that the proponent could consider contracting a local based bus company to provide the bus service. This would provide the added benefit of enabling bus movements to be coordinated with school bus movements.

3.4.2 Operational Phase

It is understood that once construction is complete the solar farm trip demand would significantly decrease during the operational phase of the site. It is anticipated that once established the solar farm will:

- Have approximately 21 full time equivalent employees, of which 16 could be based locally (for the expected 30 year operational period); and
- Several operational and maintenance light vehicles accessing each day.

4. Traffic and Parking Generation

4.1 Traffic Generation

The RMS 'Guide to Traffic Generating Development' does not outline specific trip generation rates for the construction and operation of a solar farm. As such, traffic generation demand has been determined through the analysis of the forecasted employee, workforce and goods and service vehicle deliveries (as provided by the proponent). This section of the report summarises the analysis undertaken to determine the traffic generation rates during both the construction and operational phases for the proposal.

4.1.1 Construction Phase

The construction phase of the Project is expected to generate the peak travel demand for the site which will result from the:

- Construction trade workforce;
- Large equipment deliveries; and
- Goods and Service vehicle deliveries and visitors.

As detailed in section 3.3.1, it is understood that during the peak of the construction phase:

- The peak workforce requirement would be approximately 250 personnel;
- There would be approximately 45 heavy vehicles accessing the site (i.e. 90 movements) per day;
- There would potentially be approximately 200 light vehicle (i.e. 400 movements) per day transporting workforce and services to and from the site. A bus service is proposed to reduce the number of light vehicles.

Considering the information provided above, it is anticipated that the AM period will have the largest single hour demand. **Table 2** outlines the estimated peak period vehicle demand for the construction phase.

Peak period activity is expected to occur between 7:30am to 9:00am and 3:00pm to 5:00pm Monday to Friday.

Table 2 Estimate 'worst case' peak hour vehicle demand for the construction phase

Type of Vehicle	Movement = Single Trip
Full time workers	Up to 250 construction personnel
Heavy	Daily: Up to 90 movements per day (45 deliveries)
Light	Daily: Up to 400 movements per day (reduced to 120 movements per day by provision of a bus service)
Total	Up to 490 vehicle movements per day (reduced to 210 movements per day by provision of a bus service)

Based on the above analysis, it is anticipated that the peak travel demand, or the 'worst case' during the construction phase, is estimated to be 245 vehicles (490 movements). It is not anticipated that these peak figures would be a consistent daily demand throughout the 16-20 month construction phase. The peak vehicle demand needs to be determined to ensure that there is sufficient capacity in the surrounding transport network to provide for the construction phase activity. While the availability of traffic data used in this TIA is limited, it is considered sufficient for the purposes of this assessment.

4.1.2 Operation Phase

The travel demand during the operational phase of the project is anticipated to be significantly less than the construction phase. In estimating the operational phase vehicle demands for the solar farm, OntoIt has considered the estimated total workforce on site day-to-day as indicated in **Table 3**. The data suggests that traffic activity will be low and there will be no significant traffic impacts.

Table 3 Estimated peak hour vehicle demands for the operational phase

Mode	Total Workforce / Deliveries	Percentage of Peak Hour Trips	Estimated Peak Hour Trips
Private Vehicles	11 (22 movements)	100%	11 (22 movements)

Based on the above analysis it is anticipated that the daily peak travel demand for the operational phase of the solar farm will be 11 vehicles per day, not including the occasional light goods and service vehicles. As operation phase activity is low the transport network capacity analysis presented in **Section 5** focusses on the construction phase.

4.2 Parking Generation

The Greater Hume LEP does not specify parking rates for solar farm developments. However the proposed solar farm will need to provide enough capacity for a temporary parking facility during the construction phase and a permanent facility for operational phase, including employee parking and maintenance vehicle parking. Parking generation rates have been derived from the peak vehicular demand during the construction and operational phases. Subsequently the anticipated parking demands are as flows:

- Construction phase:
 - > Temporary parking facility to provide for up to 250 vehicles;
 - > A designated bus pick-up and drop-off location and storage / waiting facility; and
 - > Loading and unloading spaces for light goods and service deliveries.
- Operational Phase:
 - > Eleven permanent employee parking spaces;
 - > Five permanent visitor parking spaces; and
 - > Two loading and unloading spaces.

All parking, during both construction and operational phases, should be contained on the site and no off-site vehicle parking should be permitted. Parking should be located within the proposed construction compound area on a gravel surface.

5. Transport and Traffic Impact Assessment

5.1 Development Related Traffic Network Distribution

Analysis of the expected traffic related impacts of the proposed development has focussed on the traffic generated during the construction phase of the project as that is expected to generate much more traffic than the operational phase.

OntoIt has considered the potential travel patterns for traffic access to the site and expects that the majority of the traffic will be from either the Olympic Highway or the town of Walla Walla. Traffic will comprise a mixture of heavy and light goods vehicles (i.e. large and small trucks), light vehicles (i.e. cars) and the proposed shuttle buses for the workforce. The analysis suggests that there will be a minor increase in traffic activity in the area. However, the small increase in traffic is expected to have minimal impact on the overall level of traffic and have little or no impact on traffic operations at key intersections.

5.2 Future Road Capacity

The primary access corridor for vehicular traffic to the project is expected to be Benambra Road via Olympic Highway. As noted in section 2.1, given the rural nature of Benambra Road, its existing estimated capacity would be approximately 600 vehicles per hour (300 vehicles per lane). Schneiders Road would be lower (approximately 450-500 vehicles) as it is unsealed and in poorer condition, however, it is still capable of carrying the required number of vehicles per hour. Schneiders Road would not be utilised as part of any construction route, except for construction traffic crossing the road at two points to travel between the sites either side of the road.

Table 4 compares the existing capacity versus existing and future estimated traffic volumes.

Table 4 Existing capacity vs Existing AM Peak Hour Traffic Volume vs Estimated AM Peak Hour Traffic Volume

Road	Capacity	Existing AM Peak Volume	Estimated Future AM Peak Volume (during construction of solar farm)
Benambra Road east of Schneiders Road	600	5	100
Benambra Road west of Schneiders Road	600	4	10
Schneiders Road between Rockville Road and Benambra Road	450-600	4	10
Olympic Highway east of Benambra Road	1000-1500	unknown	unknown

The RMS 'Guide to Traffic Generating Developments' and Austroads 'Guide to Traffic Management Part 3: Traffic Studies and Analysis' provide guidance on the acceptable Level of Service (LoS) for road corridors and major intersections. The Highway Capacity Manual (HCM) defines LoS as "the quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to manoeuvre, traffic interruptions, and comfort and convenience".

As defined within the Austroads Guide, single lane traffic capacities are dependent on a number of factors and characteristics. However a lane capacity is generally accepted as approximately 1,800 passenger car units per hour. The capacities defined in **Table 4** have taken the rural road conditions/characteristics into consideration which aligns with the capacities displayed in Table 4.5 of the RMS 'Guide to Traffic Management Part 3: Traffic Studies and Analysis'.

Based on the information presented in **Table 4** and comparison to Table 4.5 in the RMS guide, the future traffic conditions along the primary corridors, during and after the construction phase (estimated 16-20-months) can be summarised as follows:

- **Benambra Road eastbound (west of Olympic Highway)** – will operate above a satisfactory level;
- **Benambra Road westbound (east of Cummings Road)** – will continue to operate above a satisfactory level;
- **Schneiders Road northbound (south of Benambra Road)** – will operate above satisfactory level; and
- **Olympic Highway (east of Benambra Road)** – while limited current traffic data is available the additional traffic generated by the project is expected to have minimal impact on traffic flows along Olympic Highway and so it is expected that it will continue to operate above satisfactory level.

Summary: Considering the current low traffic volumes on the existing roads in the vicinity of the site there is more than adequate capacity to accommodate the projected traffic demands from the project. It is expected that the road network will experience a small increase in traffic as a result of the site development, mainly during peak periods, which is expected to pose no significant issues to traffic flow.

5.3 Intersection Capacity / Operation

There are three intersections along the primary access route to the subject site that will experience a growth in traffic use during the 16-20 month construction period:

- Benambra Road and the Olympic Highway (see **Figure 25**)- a priority-controlled intersection which has a left turn storage lane for vehicles travelling northbound on the Olympic Highway turning into Benambra Road (see **section 2.1.3**);
- Benambra Road and Schneiders Road (see **Figure 26**) – a non-priority controlled intersection which provides other options for access into the site (see **section 2.1.1**); and
- Benambra Road and Cummings Road (see **Figure 27**) – a priority-controlled intersection which provides access to and from the town of Walla Walla.

The recent site visit observed minimal traffic travelling through the Benambra Road / Schneiders Road intersection with most of that being travel between the east side of Benambra Road and the Olympic Highway. It is anticipated that the projected increase in traffic on the road network surrounding the site will have minimal impact on the intersection operations at any of these locations. Any possible delays that may occur would likely be limited to the movements turning onto the Olympic Highway and would only occur during the 16-20 month construction period. However, queues and delays are expected to be minor and only occur for short durations during the peak periods.



Figure 25 Benambra Road / Olympic Highway intersection



Figure 26 Benambra Road / Schneiders Road intersection



Figure 27 Benambra Road / Cummings Road intersection

As traffic data was available this TIA has not undertaken any intersection operational analysis. However, based on the projected traffic demands generated by the subject site it is reasonable to expect that the intersections listed above will continue to operate within their available capacity. The only other traffic generating development in the area is the quarry to the north of the site. The combination of traffic generated by the quarry and the construction site may result in short periods where the intersections will incur queues and delays but these are likely to be minor. Further data would be required (such as turning movement counts) to more accurately assess the extent of the impact on intersection operations.

5.4 Access Arrangements

It is understood that access to the proposed solar farm will be as follows:

- The main access route to the site is expected to be via the Olympic Highway and Benambra Road to a main access point from Benambra Road in the north eastern corner of the subject site around 2.6 kilometres from Olympic Highway;
- A secondary access to the western portion of the site, referred to as the sub-station access, is expected to be provided from Benambra Road to the west of Schneiders Road; and
- Schneiders Road will not be used for site access but given that the site straddles Schneider Road, it is proposed to provide access crossing points from one side of the subject site to the other.

These access arrangements are considered to provide the optimal arrangements for site access. With the primary access route to the site expected to be via Olympic Highway, it is appropriate that the main access be from Benambra Road as close as possible to Olympic Highway. The provision of crossing points on Schneiders Road is appropriate to provide for access between the two separable portions of the site and will have minimal impact on other road users.

5.5 Parking Impacts

5.5.1 Construction Phase

Parking facilities will be required during the construction phase of the project. The parking areas will need to accommodate up to 250 vehicles and provide designated pick-up / drop-off and loading / unloading areas. Provision should be made within the site for the turning of large trucks. Ideally this would be located near the loading and unloading areas. The provision of on-site parking

5.5.2 Operation Phase

It is understood that there will be approximately 21 full time equivalent employees post construction, with 16 of those likely to be based locally. Sufficient parking spaces to accommodate this employee demand should be provided next to the proposed site office. In addition, a further two spaces are recommended to allow for parking of maintenance and delivery vehicles.

5.6 Public Transport Impacts

There are no existing public transport routes currently passing the proposed solar farm site, so there will be no impact on public transport routes. However, it is understood that a new school bus route passes the site twice per day so construction traffic should be made aware of the school bus as part of the site Traffic Management Plan.

5.7 Pedestrian and Cycle Impacts

No impacts are anticipated on pedestrian and cycle access to the proposed solar farm.

6. Summary and Recommendations

6.1 Summary

The primary impacts of the project will be the related to activity during the 16-20 month construction period. It is possible that the additional construction traffic will result in some additional delays and queues particularly for traffic travelling along Benambra Road and at the intersection with Olympic Highway. Once fully operational, the subject site will generate minimal traffic due to the small number of full-time employees with negligible impact on the traffic operating conditions.

Several temporary measures could be considered to assist in minimising the temporary impact brought about by the construction activities and these are included below.

6.2 Recommendations

To minimise localised congestion and traffic impact on the local road network, several measures could be considered.

It is recommended that the following engineering solutions be considered:

- Undertake a road dilapidation survey and report prior to and post construction activity. Any identified deterioration to the existing road network in the vicinity of the proposed solar farm will need to be returned to the same standard as pre-construction;
- Construct the main access point at the north eastern corner of the development site on Benambra Road. This option would enable free flowing traffic during the construction period, minimising delays, while improving safety and visibility;
- Construct the sub-station access point for the TransGrid substation on Benambra Road, to the west of Schneiders Road, to be used for transformer delivery and operations;
- Maintain access points on Schneiders Road and provide signage warning local traffic of construction vehicles crossing the road;
- Traffic data be collected at the Olympic Highway and Benambra Road intersection to more accurately assess impacts of the construction activity on existing traffic operations;
- Further information regarding the level of activity of light goods and service vehicles during both the construction phase and operational phase would assist in understanding site requirements when preparing the Traffic Management Plan prior to construction; and
- Traffic travel pattern data relating to both the quarry and the proposed solar farm would assist in understanding the impact on intersections surrounding the site prior to construction.

It is recommended that the following management activities be considered:

- A Traffic Management Plan should be produced and approved prior to the commencement of any activity at the site;
- The Traffic Management Plan should note the operating hours of the school bus route on Benambra Road and incorporate this into construction phase operational planning;
- A temporary car park facility should be constructed on the subject site to provide for the anticipated construction staff vehicles; and
- The proponent could consider contracting a local based bus company to provide a shuttle bus service for transporting construction staff movement to and from site.

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