# Traffic Management Plan

## Avonlie Solar Farm

April 2022

**Project Number: 21-848**

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# Document verification

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# Acronyms and abbreviations

| | |
|---|---|
| AADT | Average Annual Daily Traffic |
| AC | Alternating Current |
| AES | Accommodation and Employment Strategy |
| AS | Australian Standard |
| AUL | auxiliary left-turn treatment |
| BAR | basic right-turn lane |
| CEMP | Construction environmental management plan |
| CoC | Conditions of Consent |
| DPIE | Department of Planning, Industry and Environment (NSW) |
| EIS | Environmental impact statement |
| EMS | Environmental Management System |
| EP&A Act | *Environmental Planning and Assessment Act 1979* (NSW) |
| EPC | Engineering, Procurement and Construction |
| ERP | Emergency Response Plan |
| FIFO | Fly In Fly Out |
| ha | hectares |
| ISEPP | State Environmental Planning Policy (Infrastructure) 2007 (NSW) |
| km | kilometres |
| kv | Kilovolts |
| m | metres |
| MW | Mega Watts |
| NSW | New South Wales |
| RAV | Restricted Access Vehicle |
| RNP | NSW Road Noise Policy |
| RTS | Response to Submissions |
| TCP | Traffic Control Plan |
| TMP | Traffic Management Plan |
| vpd | Vehicles per day |

# 1. Introduction

## 1.1 Background

Iberdrola Australia Limited is the Project Owner of the Avonlie Solar Farm ('the project'). The project is to construct, operate and potentially decommission an approximately 245.47 Megawatt (MW DC) solar farm located approximately 20 kilometres (km) south of Narrandera, New South Wales (NSW). The Project Owner has appointed an Engineering, Procurement and Construction (EPC) contractor, Beon Energy Solutions (Beon), to manage the project. The solar farm was approved by the NSW Government in August 2019 and will consist of approximately455,000 solar panels on approximately 581 hectares (ha) of land.

Construction of the project would take approximately 15 months to complete. The project is expected to operate for about 30 years, after which the project would be reconditioned or decommissioned.

Since the project approval, two modifications have also been determined for the project to address changes to the disturbance footprint, road/ access intersection and battery storage system.

## 1.2 Location of the Project Site

The project site is located in the Narrandera Local Government Area (LGA) approximately 20 km south-east of Narrandera (Figure 1-1). The subject land would occupy approximately 802 ha and includes Lots 1 and 2 DP606800, Lot 1 DP386927, Lot 13 DP795880, Lot 7 DP254595 and Lots 13, 22, 26, 28, 30, 43, 53 DP754538.

Of this, approximately 550 ha makes up the development footprint (or area of disturbance).

The project site is bounded by the Sturt Highway to the east and Muntz Road to the south. Access to the site is currently maintained via a single entrance located on south eastern site boundary off Muntz Road, roughly 3.4 km south west of Sturt Highway. This entrance is proposed to provide access to the site during constructionand operation. The location of the site is shown in Figure 1-1 below.

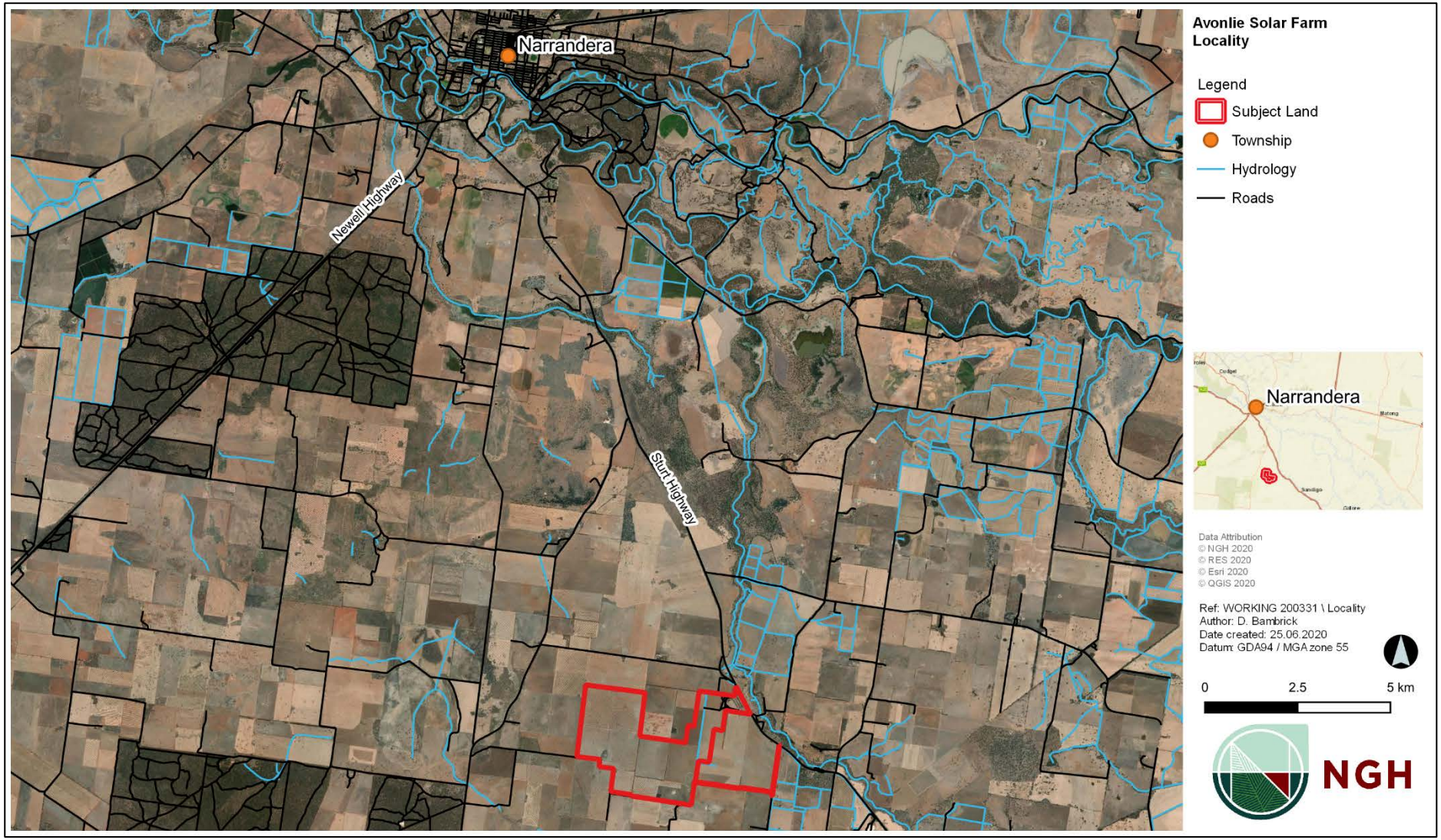



Figure 1-1 Avonlie Solar Farm site location

## 1.3 Strategic framework

This Traffic Management Plan (TMP) sits within a suite of management plans and strategy documents required by the Conditions of Consent (CoC) which detail the environmental performance criteria and site-specific management measures and procedures to be implemented. The overarching document is the Environmental Management Strategy (EMS) required under the CoC. The TMP sits within the management plans required under the CoC and shouldbe read in conjunction with the EMS, Construction Environmental Management Plan (CEMP) and other relevant management plans (refer to Figure 1-2).


Figure 1-2 EMS Framework

## 1.4 Statutory approvals

Legislation, standards, guidelines and other reference documents applicable to this project, and specific to thisTMP, are identified in this section.

## 1.5 Conditions of Consent

Table 1-1 outlines the requirements of the CoC and refers to the relevant section of this TMP where each itemhas been addressed.

Table 1-1 CoC requirements for TMP.

| Requirements | Development phase | TMP Cross reference / How Addressed |
|---|---|---|
| **Schedule 3 Environmental Conditions – General CoC 2** | | |
| **Over-Dimensional and Heavy Vehicle Restrictions**<br>2. The Applicant must ensure that the:<br>(a) Development does not generate more than:<br>• 35 heavy vehicle movements a day during construction, upgrading anddecommissioning;<br>• 3 over-dimensional vehicle movements during construction, upgrading anddecommissioning; and<br>• 2 heavy vehicle movements a day during operations.<br>on the public road network. | All | Section 4 - Potential impacts. |
| (b) Length of any vehicles (excluding over-dimensional vehicles) used for the development does not exceed 19 metres, unless the Secretary agrees otherwise | All | Section 4 - Potential impacts. |
| **Schedule 3 Environmental Conditions – General CoC 3** | | |
| The Applicant must keep accurate records of the number of over-dimensional andheavy vehicles entering or leaving the site each day for the duration of the project. | All | Section 5.1.3 - Logistics of site deliveries. |
| **Schedule 3 Environmental Conditions – General CoC 4** | | |
| **Access Route**<br>All vehicles associated with the development must travel to and from the site via theSturt Highway, Sandigo Road, Muntz Road and the site access point on Muntz Road, as identified in the figure in Appendix 1.<br>*Note: The Applicant is required to obtain relevant permits under the Heavy VehicleNational Law (NSW) for the use of over-* | All | Section 5.2.2 - Access routes and internal routes. |

| Requirements | Development phase | TMP Cross reference / How Addressed |
|---|---|---|
| *dimensional vehicles on the road network* | | |
| **Schedule 3 Environmental Conditions – General CoC 5** | | |
| **Road Upgrades and Site Access**<br>Prior to commencing construction, the Applicant must:<br>(a) Upgrade the intersection of the Sturt Highway and Sandigo Road, including BAR/AUL(s) treatments;<br>(b) Upgrade the intersection of Sandigo Road and Muntz Road, including BAR/BAL treatments with minimum 200 mm compacted gravel (CBR of 30) and 20/14 seal;<br>(c) Upgrade Sandigo Road from the Sturt Highway to 100 m past Muntz Road, including sealing to a width of 7 m with minimum 200 mm compacted gravel (CBR of 30), 20/14 seal and 1 m gravel shoulders<br>(d) Upgrade Muntz Road between Sandigo Road and the site access point, including a gravel surface to a width of 6.2 m with 0.5 m shoulders; and<br>(e) Design the site access point off Muntz Road (shown in Appendix 1) with a Rural Property Access type treatment to cater for the largest vehicle accessing the site<br>These upgrades must comply with the Austroads Guide to Road Design (as amended by RMS supplements) and be carried out to the satisfaction of the relevant roads' authority. | Construction | Section 4.4 – Improvement works. |
| **Schedule 3 Environmental Conditions – General CoC 6** | | |
| **Operating Conditions**<br>6. The Applicant must ensure:<br>(a) The internal roads are constructed as all-weather roads;<br>(b) There is sufficient parking on site for all vehicles, and no parking occurs on the public road network in the vicinity of the site;<br>(c) The capacity of the existing roadside drainage network is not reduced;<br>(d) All vehicles are loaded and unloaded on site, and enter and leave the site in a forward direction; and<br>(e) Development-related vehicles leaving the site are in a clean condition to minimise dirt being tracked onto the sealed public road network. | All | Section 3 - Project overview.<br>Section 5 - Safeguards and mitigation measures. |
| **Schedule 3 Environmental Conditions – General CoC 7** | | |

| Requirements | Development phase | TMP Cross reference / How Addressed |
|---|---|---|
| **Traffic Management Plan**<br>7. Prior to commencing the development, the Applicant must prepare a Traffic Management Plan for the development in consultation with RMS and Council, and tothe satisfaction of the Secretary. This plan must include:<br>(a) Details of the transport route to be used for all development-related traffic;<br>(b) A protocol for undertaking independent dilapidation surveys to assess the:<br>• Existing condition of Sandigo Road and Muntz Road prior to construction, upgrading or decommissioning activities; and<br>• Condition of Sandigo Road and Muntz Road following construction, upgrading or decommissioning activities;<br>(c) A protocol for the repair of Sandigo Road and Muntz Road if dilapidation surveys identify these roads to be damaged during construction, upgrading or decommissioning works;<br>(d) Details of the road upgrade works required by condition 5 of Schedule 3 to this consent;<br>(e) Details of the measures that would be implemented to minimise traffic impacts during construction, upgrading or decommissioning works, including:<br>• Temporary traffic controls, including detours and signage;<br>• Notifying the local community about project-related traffic impacts;<br>• Procedures for receiving and addressing complaints from the community about development-related traffic;<br>• Minimising potential for conflict with school buses and other motorists as far as practicable;<br>• Implement measures to minimise dirt tracked onto the public road network from development related traffic;<br>• Details of the employee shuttle bus service and measures to encourage employee use of this service;<br>• Scheduling of haulage vehicle movements to minimise convoy length or platoons;<br>• Responding to local climate conditions that may affect road safety such as fog, dust and wet weather;<br>• Responding to any emergency repair or maintenance requirements; and | All | Section 5 - Safeguards and Mtigation measures. |

| Requirements | Development phase | TMP Cross reference / How Addressed |
|---|---|---|
| • A traffic management system for managing over-dimensional vehicles;<br>(f) A driver's code of conduct that addresses:<br>• Travelling speeds;<br>• Driver fatigue;<br>• Procedures to ensure that drivers adhere to the designated transport routes; and<br>• Procedures to ensure that drivers implement safe driving practices.<br>(g) A program to ensure drivers working on the development receive suitable training on the code of conduct and any other relevant obligations under the Traffic Management Plan.<br>Following the Secretary's approval, the Applicant must implement the Traffic Management Plan. | | |

### 1.5.1 Legislation

In NSW, the *Road Transport Act 2013* and the *Roads Act 1993* govern the safe management of road transport and will be complied with and referred to during construction and operation of the project.

In addition to the *Road Transport Act 2013*, the following Standards and Guidelines will guide traffic management for the project:

- Austroads *Guide to Road Design.*
- Roads and Maritime Services (Roads and Maritime*) Supplements to Austroads Guide to Road Design.*
- Australian Standard *AS1742- Manual of Uniform Traffic Control Devices.*
- Roads and Maritime's *Guide to Traffic Control at Work Sites.*
- Relevant Council traffic management specifications/guidelines.

## 1.6 Purpose of this report

This updated TMP is seeking approval to:

- Increase the number of heavy vehicles a day during construction, upgrading and decommissioning.
- Increase the number over-dimensional vehicle movements during construction, upgrading and decommissioning.
- Increase the length of vehicles.

These three proposed changes don't meet the Project CoC, specifically:

> Schedule 3 Environmental Conditions – General CoC 2, Over-Dimensional and Heavy Vehicle Restrictions.
>
> 2. The Applicant must ensure that the:
>
> (a) Development does not generate more than:
>
> - 35 heavy vehicle movements a day during construction, upgrading and decommissioning.
> - 3 over-dimensional vehicle movements during construction, upgrading and decommissioning.
>
> (b) Length of any vehicles (excluding over-dimensional vehicles) used for the development does not exceed 19 metres, unless the Secretary agrees otherwise.

The Project Owner and EPC Contractor now propose that there would be:

- 65 heavy vehicle movements per a day (65 inbound and 65 outbound) during construction, upgrading and decommissioning.
- 24 over-dimensional vehicle movements during construction, upgrading and decommissioning.
- Max length of vehicles would be 26 m.

Amber Organisation undertook a revised assessment (Appendix F) of theses proposed changes to the project. The assessment included reviewing the increase in traffic generation on the existing traffic levels, local road assessment and intersection assessment. Based on the revised assessment the existing proposed road improvement works outlined in Section 4.4 are acceptable for the proposed changes in heavy vehicle movements and max length of vehicles. The revised assessment also found the increase in heavy vehicle movements to 65 per day (65 inbound and 65 outbound) and 24 over-dimensional vehicle movements is able to be readily accommodated on the road network given these movements are distributed throughout the day.

## 1.7 Consultation

The CoC (Schedule 3, Condition 7) requires that this TMP be developed in consultation with Transport for NSW (formerly Roads and Maritime Services) and Narrandera Shire Council.

The EPC Contractor and project team (including traffic specialists) met with representatives from the Narrandera Shire Council on 6 August 2019 via teleconference to consult on the draft TMP. Minutes of the meeting are as follows:

- All discussed details of the improvement work proposed as part of the project, including:
  - Upgrade of intersection at Sturt Highway and Sandigo Road.
  - Upgrade Sandigo Road between its intersection with the Sturt Highway and Muntz Road.
  - Upgrade Muntz Road between its intersection with Sandigo Road to the site access point.
- All discussed details of traffic data provided by Council.
- Council requested the TMP include an example Drivers Code of Conduct.
- Council confirmed no additional expectations for TMP beyond legislative requirements as per the Environmental Impact Statement (EIS) and COC.

- Council recommended EPC contractor co-ordinate with RMS in regard to Sturt Highway.
- Council confirmed direct communications between Jacobs Traffic specialists and Council is suitable.

Following consultation with Narrandera Shire Council a revised draft TMP was provided to Narrandera Shire Council and Transport for NSW on 30 August 2019 for comment. The key stakeholders and consultation undertaken to date, as well as the comments received on the draft TMP is summarised in Table 1-2.

Table 1-2 Stakeholder engagement

| Stakeholder | Comments | Where addressed in Traffic Management Plan |
|---|---|---|
| **Narrandera Shire Council** | No further comments on draft TMP submitted on 30 August 2019. | N/A |
| **Transport for NSW (formerly Roads and Maritime Services)** | The Drivers Code of Conduct could consider fatigue issues in more detail for both light and heavy vehicle operators. Drivers should take a break every 2 hours (not every 2 years) and stop immediately and rest if feeling drowsy or fatigued. Drivers should be encouraged to plan their journey with rest breaks, ensure adequate length breaks are taken, avoid lengthy journeys at the end of long shifts, etc. | Section 5.8 Appendix C and D. |
| | Will it be necessary to implement any traffic control plans? If so potential impacts on other road users should be included in the TMP. | Section 5.4.1. |
| | There does not appear to be much information on procedures for receiving and addressing complaints from the community about development related traffic. | Section 5.11. |
| | More discussion is required on minimising potential conflict with school buses and other motorists as far as practicable. | Section 4.1 and 4.1.3. |
| | More discussion is required on responding to local climate conditions that may affect road safety such as fog, dust and wet weather. | Section 5.8. |
| | The original conditions of consent from Roads and Maritime Services include construction of Sandigo Road to provide for 2 travel lanes and be sealed for at least 50 metres from its intersection with the Sturt Highway, this could be included in the sedimentation and dust control measures. It may also be necessary to consider using all-weather surface treatments in other areas as part of the strategy to minimise dirt tracked onto the public road network. | TMP based on updated conditions of consent. |

| Stakeholder | Comments | Where addressed in Traffic Management Plan |
|---|---|---|
| | The site layout has not been included with the report. This should provide the location of the access points, the internal road network, vehicle unloading points, staging areas and parking areas. | Appendix E. |

In February 2022 Beon approached both Narrandera Shire Council and Transport for NSW seeking approval for new conditions for site deliveries as outlined in Section 1.6 of this document. Outcome of the consultation with key stakeholders is provided in Appendix A with records of emailed correspondence available upon request.

## 1.8 Quality assurance and review

The TMP will be a 'living' document that will be progressively revised through the life of the project and will be updated to reflect the various work packages and changing methodologies adopted by the contractor. The TMP will also be updated by the EPC Contractor in response to any incidents or traffic disruptions arising from its work. The EPC contractor will not commence any work until the TMP has been submitted and approved by Transport for NSW.

Construction activities for the Avonlie Solar Farm that require traffic management will be controlled by this TMP. Based on stakeholder consultation, this TMP will be reviewed and updated accordingly. All revisions to this TMP will be coordinated by the Site Manager or nominated delegate and be authorised by the Project Manager and maintained in the web-based Document Management System used for the project.

# 2. Existing environment

## 2.1 Sturt Highway

Sturt Highway is a regional state highway (HW A20), which generally runs on a northwest – southeast alignment in the vicinity of the site. It has one traffic lane, approximately 3.8 m wide, in each direction, and the carriageway has a sealed width of approximately 6 m. The speed limit varies along the route, with a maximum posted speed limit of 80 or 100km/h occurring outside urban areas.

Sturt Highway is of vital importance to communities living in towns within southern NSW. The Sturt Highway would experience traffic from freight and livestock transporters, agricultural machinery, caravaners and holidaymakers, emergency services and local traffic. In 2011 the average daily traffic count for the Sturt Highway was 2,472 vehicles per day (vpd) (RMS, 2018).

Figure 2-1 Intersection at Sturt Highway and Sandigo road looking north

## 2.2 Muntz and Sandigo Road

Sandigo Road is a local road that runs in a north – south alignment, extending from its intersection with the Sturt Highway in the north to where it continues as Orara Street approximately 22 km to the south. It has a sealed road width of approximately five metres in the vicinity of the site, with wide unsealed shoulders on both sides of the road, allowing for simultaneous two-way movement.

Muntz Road is also a local road in an east-west alignment. It extends from its intersection with Sandigo Road to its termination approximately 2.8 km to the west. It is an unsealed road of approximately seven metres wide toward the eastern end, and four to five metres wide further west. Figure 2-2 shows the intersection at Sandigo Road and Muntz Road looking west. This section of the road would be used by vehicles accessing the project site.

Figure 2-2 Intersection at Sandigo road (sealed) and Muntz Road (unsealed) looking west

## 2.3 Site access

The project site is currently accessed from Muntz Road approximately 3.4 km south-west of the Sturt Highway.The proposed access will be designed to accommodate simultaneous entry and exit of the largest vehicles to use the site, a Restricted Access Vehicle (RAV). A single construction and operation access point would be developed off Muntz Road, which runs east to west to the eastern boundary of the site as shown in Figure 2-3.

The internal access roads would involve construction of a network of tracks accessing the solar farm infrastructure for maintenance. The main access and internal tracks would be constructed of engineered fill topped with crushed stone pavement. The crowned driving surface would be nominally 4 m wide, plus shoulders and any required drainage. The site access road and all internal tracks would be maintained throughout the construction and operation of the solar farm.

Figure 2-3 Approximate location of proposed site entrance at Muntz Road looking west

# 3. Project overview

The project involves constructing, operating and eventually decommissioning an approximate 254.1MW (AC) solar farm to the south of Narrandera in Central Southern NSW. The project would consist of the following components:

- Solar arrays consisting of approximately 455,000 solar panels supported by about 20,000 piles, driven or screwed into the ground to support the solar array's mounting system. The panels to be installed would be Photovoltaic solar arrays ground-mounted on a single-axis tracking system.
- Perimeter security fencing.
- Power conversion units.
- A substation including an elevated busbar, switch room, a lightning protection system, current and voltage transformers and a dual connection into two existing TransGrid overhead transmission lines.
- Two additional overhead transmission lines:
    - 132 kV overhead line (around 0.6 km) to connect the substation into an existing TransGrid overhead transmission line to the west of the substation location.
    - 132 kV overhead line (around 1.2 km) to connect the substation into the second existing TransGrid overhead transmission lines to the north of the substation location.
- Operations and maintenance buildings with associated car parking.
- Site entrance via access point at Muntz Road.
- Underground and overhead cabling.
- Internal access tracks.
- Emergency lighting.
- Security fencing and CCTV system including infrared (non-visible) lighting.
- Subdivision of the property for the purpose of the substation and continued agricultural purposes.
- Clearing of vegetation.
- Road upgrades.
- Temporary facilities.

The proposed solar arrays and associated components are expected to operate for about 30 years. At the end of its operational life, the project would be decommissioned. Decommissioning would remove all above ground infrastructure and rehabilitation of the site to allow it to be used for purposes such as agriculture.

## 3.1 Construction overview

Construction of the project is expected to take around 15 months and commenced in December 2021. The following construction stages are envisioned:

- Site establishment and preparation including:
    - Upgrades to the local road network and establishing site access establishment of internal access track network.

  - Establishing compound area and laydown areas.
  - Demarcating an easement for the existing transmission line to make workers aware of the easement.
  - Installing environmental controls.
  - Bulk earthworks.
- Construction of control room, switch room and storage building.
- Construction of the substation and connections.
- Installation of cabling and inverter stations.
- Installation of PV panels, including installing the steel post and framing system.
- Removing temporary construction facilities and rehabilitation of disturbed areas.

# 4. Potential impacts

## 4.1 Construction

Preliminary construction planning has estimated that peak vehicle movements would occur in the first half of 2022. During this period, it is estimated that a total of 55 light vehicles and 65 heavy vehicles would access the site per day. This represents 55 light vehicle movements (55 inbound and 55 outbound) and 65 heavy vehicle movements per day (65 inbound and 65 outbound).

A breakdown of these peak daily vehicle movements is shown in Table 4-1.

Table 4-1 Vehicle movements generated during the peak construction period

| Traffic generation | Peak light vehicle movements per day | Peak heavy vehicle movements per day |
|---|---|---|
| Personnel | 55 | 0 |
| Haulage, plant and equipment | 0 | 65 |
| **Total** | **55** | **65** |

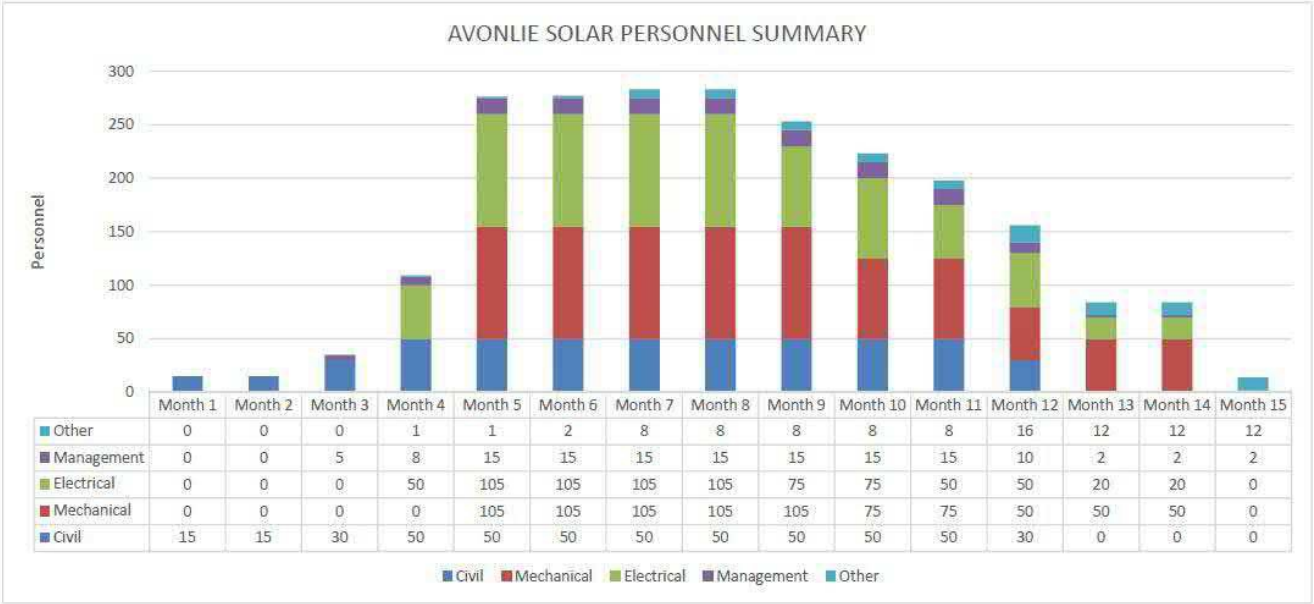
Clause 2(a) of Schedule 3, Environmental Conditions – General of the Project Approval requires that the development will not generate more than 35 heavy vehicle movements (35 heavy vehicles entering and leaving the site) a day during construction, upgrading or decommissioning; 3 over-dimensional vehicle movements during construction, upgrading and decommissioning and 2 heavy vehicle movements (2 heavy vehicles entering and leaving the site) a day during operations. The EPC contractor proposes that the heavy vehicle movements a day during construction will be 65 not 35 and the over-dimensional vehicle movements during construction, upgrading and decommissioning will be 24 not 3. This updated TMP is seeking approval to these changes. The EPC contractor will ensure that heavy vehicle movement numbers will comply with the updated 65 heavy vehicles during construction and Condition 2(a) for operation and decommissioning, as well as the 24 over-dimensional vehicle movements during construction, upgrading and decommissioning.

The vehicle movements generated by the development are unlikely to impact upon the operation of the Sturt Highway, Muntz Road or Sandigo Road. These roads currently experience low traffic volumes and have abundant spare capacity to accommodate the increase in construction traffic.

To minimise potential impacts to other road users, advanced warning signs on approach to the site along Sturt Highway will be used to inform drivers of increased traffic activities during construction.

### 4.1.1 Personnel

Personnel will access the site between 2022 and mid-2023. The number of on-site workers over the construction period is shown below in Figure 4-1.




| | Month 1 | Month 2 | Month 3 | Month 4 | Month 5 | Month 6 | Month 7 | Month 8 | Month 9 | Month 10 | Month 11 | Month 12 | Month 13 | Month 14 | Month 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Other | 0 | 0 | 0 | 1 | 1 | 2 | 8 | 8 | 8 | 8 | 8 | 16 | 12 | 12 | 12 |
| Management | 0 | 0 | 5 | 8 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 10 | 2 | 2 | 2 |
| Electrical | 0 | 0 | 0 | 50 | 105 | 105 | 105 | 105 | 75 | 75 | 50 | 50 | 20 | 20 | 0 |
| Mechanical | 0 | 0 | 0 | 0 | 105 | 105 | 105 | 105 | 105 | 75 | 75 | 50 | 50 | 50 | 0 |
| Civil | 15 | 15 | 30 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 30 | 0 | 0 | 0 |

Figure 4-1 On-site workforce over construction period (Avonlie Vehicle and Personnel Summary Rev C, SGRE)

The peak period for personnel activity is different to the peak period for vehicle movements. Preliminary construction planning has estimated that peak personnel activity would occur in month 7 and month 8. The subcontractor would use a combination of light vehicles and buses to transport personnel to reduce the numberof vehicle movements to and from the site. The breakdown of personnel and associated vehicle movements during the peak personnel activity period is shown below in Table 4-2.

Table 4-2 Maximum daily personnel vehicles movements

| Vehicle type | Expected capacity | No. personnel | No. vehicles | No. vehicle movements |
|---|---|---|---|---|
| Light vehicle (Utility vehicle) | 2 people per vehicle | 163 | 82 | 82 |
| Heavy vehicle (50-person bus) | 40 people per vehicle | 120 | 3 | 3 |

Approximately 45 per cent of the workforce will be local personnel and approximately 55 per cent will be ‘fly-in fly-out’ (FIFO) personnel. The FIFO personnel are expected to be housed in Narrandera, located approximately 20 km north of the site. Other short-term accommodation options within 100 km of the project site include:

- Boree Creek (30 km south).
- Coolamon (83 km north east).
- Ganmain (68 km north east).
- Gogeldire (54 km north west).
- Grong Grong (43 km north east).
- Leeton (50 km north west).

- Lockhart (47 km south).
- Urana (68 km south west).

All workers would transit to the site from accommodation based in Narrandera and the surrounding towns identified above. Hence, personnel vehicle movements are expected to predominantly occur at the beginning and end of standard construction hours to and from the site, respectively. Refer to the Project Accommodation and Employment Strategy (AES) for further details regarding workforce personnel.

### 4.1.2 Haulage, plant and equipment

Haulage deliveries such as gravel, sand, concrete and other materials are forecast to be sourced from the Riverina region. Haulage vehicles will use the Sturt Highway, followed by Sandigo Road and Muntz Road toaccess the site. This route is discussed further in Section 5.2.2.

The approximate total number of vehicles during construction in relation to haulage is shown below in Table 4-3.

Table 4-3 Haulage traffic vehicles

| Item | Total no. of vehicles | Vehicle type |
|---|---|---|
| Construction Plant | 55 | Low Loader |
| Construction Huts and Containers | 42 | Low Loader & Semi Trailer |
| Water | 1,213 | 15KL Rigid Watercraft |
| Quarry Product | 1,200 | Truck & Dog Trailer |
| Concrete | 50 | Concrete Truck |
| Removal of Waste | 1,523 | B-Double |
| Fencing | 151 | Semi-Trailer |

Equipment used during construction would include earth-moving equipment for civil works, diesel generators, trucks and cranes with similar noise outputs to farm machinery such as tractors. These vehicles will use the Sturt Highway, followed by Sandigo Road and Muntz Road to access the site. This route is discussed further in Section 5.2.2.

The approximate total number of traffic vehicles during construction in relation to plant and equipment is shown below in Table 4-4.

Table 4-4 Plant and equipment traffic volumes

| Item | Total number of vehicles | Vehicle Type |
|---|---|---|
| Primary plant delivery | 10 | Single Trailer |

| Item | Total number of vehicles | Vehicle Type |
|---|---|---|
| Operation and Maintenance Building | 10 | Single Trailer |
| Trackers | 700 | B-Double |
| Modules | 1,190 | Truck & Dog Trailer |
| Posts | 206 | B-Double |
| Inverters | 70 | Single Trailer |
| AC cables | 20 | Single Trailer |
| DC cables | 20 | Single Trailer |

The distribution of heavy vehicles delivering materials, plant and equipment over the project is shown below in Figure 4-2.

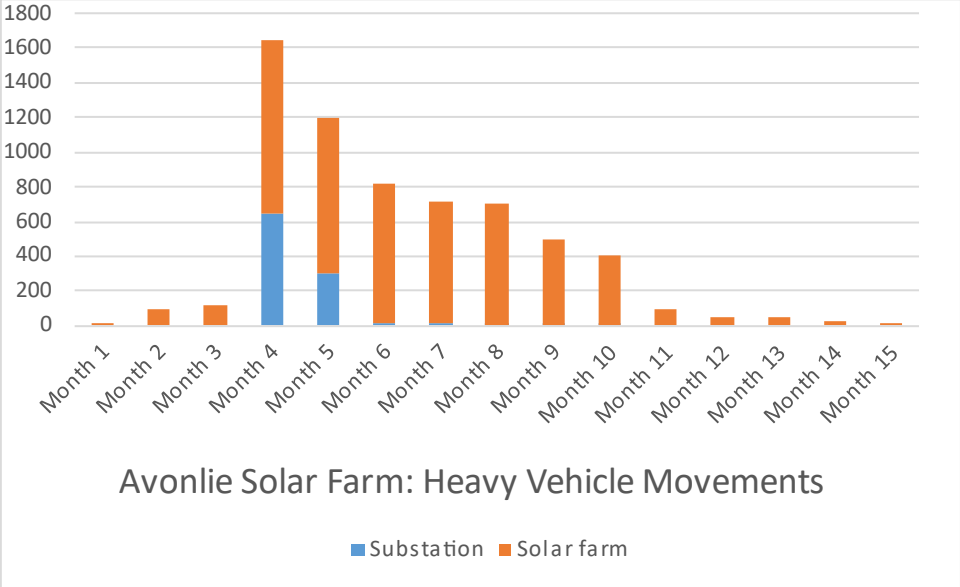



Figure 4-2 Materials, plant, equipment heavy vehicles over construction period.

Based on a peak of 1650 heavy vehicles in month 4, this would equate to an average of 65 heavy vehicle movements per day for materials, plant and equipment.

As per tables 4-3 and 4-4 the total traffic volume is estimated at 6460 heavy vehicle movements for the project duration, of which 2429 will be Restricted Access Vehicles (B-Doubles up to 26m) and 4031 will be General access vehicles (19m or less).

All vehicles arriving at the site will be managed in a staggered arrangement with a gap of at least 5 minutes.

### 4.1.3 Bus Services

Busabout Wagga operates public and school bus services out of Wagga Wagga along part of the road network along the haulage routes discussed in Section 5.2.2. The bus routes, maximum hourly frequency and its interaction with construction vehicles are detailed in Table 4-5.

Table 4-5 Buses

| Bus route | Max frequency per hour | Interacting roads |
|---|---|---|
| 962 Glenfield Park-Wagga Wagga | 1 | Sturt Highway (Wagga Wagga), east of the site |
| 961 Bourkelands-Wagga Wagga | 2 | Sturt Highway (Wagga Wagga), east of the site |
| 963 Glenfield Park-Wagga Wagga | 2 | Sturt Highway (Wagga Wagga), east of the site |
| 960 Lake Albert-Wagga Wagga | 2 | Sturt Highway (Wagga Wagga), east of the site |
| S105 To Ashmont, Glenfield & Lloyd (School Bus) | 1 (PM only) | Olympic Boulevard (Wagga Wagga), east of thesite |
| S109 Ex Cnr Brunskill Ave & Kurrajong Ave (School Bus) | 1 (AM only) | Sturt Highway (Wagga Wagga), east of the site |
| S118 To Alfredtown & Kooringal (SchoolBus) | 1 (PM only) | Sturt Highway (Wagga Wagga), east of the site |
| S124 To The Rock - First Stop Sturt Hwy(School Bus) | 1 (PM only) | Sturt Highway and Olympic Boulevard (Wagga Wagga), east of the site |
| S135 Ex Forest Hill Primary School (School Bus) | 1 (AM only) | Sturt Highway (Wagga Wagga), east of the site |
| S147 Ex – Opposite Wagga Wagga HighSchool (School Bus) | 1 (AM only) | Sturt Highway (Wagga Wagga), east of the site |
| S151 To Kooringal & Forest Hill (School Bus) | 1 (PM only) | Sturt Highway (Wagga Wagga), east of the site |
| S171 Ex Tarcutta Motel (School Bus) | 1 (AM only) | Sturt Highway (Wagga Wagga), east of the site |
| S188 To Mangoplah (School Bus) | 1 (PM only) | Olympic Boulevard (Wagga Wagga), east of |

| Bus route | Max frequency per hour | Interacting roads |
|---|---|---|
| | | thesite |
| S187 To Lake Albert & Gumly (School Bus) | 1 (PM only) | Sturt Highway (Wagga Wagga), east of the site |
| S190 Ex Cnr Pearson St & Uranquinty St(School Bus) | 1 (AM only) | Sturt Highway and Olympic Boulevard (Wagga Wagga), east of the site |
| S191 To Uranquinty (School Bus) | 1 (PM only) | Sturt Highway (Wagga Wagga), east of the site |
| S194 Ex Cnr Urana Rd & Olympic Hwy (School Bus) | 1 (AM only) | Sturt Highway and Olympic Boulevard (Wagga Wagga), east of the site |
| 965 Ex School (School Bus) | 1 (PM only) | Sturt Highway (Wagga Wagga), east of the site |

There are a number of school buses that service Wagga Wagga and the surrounding area. However, the frequency of these buses is low, with one bus per route either in the morning or evening before and after normalschool hours.

Due to the low frequency of buses (both for school and the general public) and the abundant spare capacity along the Sturt Highway and Olympic Boulevard it is unlikely that the additional construction vehicles will significantly affect the operation of local buses.

To minimise potential impacts to buses, heavy vehicle arrival and departure times will be timed to minimise interaction with buses near the site. All heavy vehicle drivers will be made aware of possible bus movementsduring these periods as part of their induction. Advanced warning signs on approach to the site along Sturt Highway will be used to inform bus operators of increased traffic activities during construction.

## 4.2 Operation

During operation, onsite personnel would be limited to a small number for maintenance activities. Typically, four (4) vehicles would access the site at any time during the operation and maintenance period.

Maintenance would be undertaken during the following standard working hours:

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

Emergency works would be potentially required outside of standard hours; however, these would be expected to occur very rarely. During these occurrences, 20 to 30 vehicles may be present at any one time, including heavy vehicles.

## 4.3 Maximum vehicle length

Clause 2(b) of Schedule 3, Environmental Conditions – General of the Project Approval specifies that the length of any vehicles used in the development may not exceed 19 metres unless the Secretary agrees otherwise. The EPC contractor proposes that maximum length for any vehicles will be 26 m not 19 m. This updated TMP is seeking approval to these changes The vast majority of heavy vehicles accessing the site will comply with the now proposed 26 m.

Switch room buildings (approximately 25 metres by 5 metres) will be transported using up to fifteen 35-metre low loaders (Prime Mover Towing 12 Axle Gooseneck Modular Platform). As these vehicles are oversized, an over-dimensional permit will be sought from Roads and Maritime Services. This permit will undergo a separateapproval process and a suitable contractor will be engaged for transportation. As part of the permit, the subcontractor would develop a TMP to manage the oversized and over-dimensional vehicles.

## 4.4 Improvement works

To comply with Clause 5 of Schedule 3, Environmental Conditions – General of the Project Approval, the project would include the following upgrade works. The locations of these works and their proposed upgrades are shown below in Figure 4-3. The design and areas of impact for the road surface including the permitted extent of the road formation are provided in Appendix B. The EPC contractor will ensure that the road upgrades do not extend beyond the proposed road formation area shown in Appendix B.

Amber Organisation undertook a revised assessment (Appendix F) of the proposed changes to the project including maximum number of 65 heavy vehicle movements per a day (65 inbound and 65 outbound), 24 over-dimensional vehicle movements during construction, upgrading and decommissioning and max length of vehicles to 26 m. The assessment included reviewing the increase in traffic generation on the existing traffic levels, local road assessment and intersection assessment. Based on the revised assessment the existing proposed road improvement works outlined below is acceptable for the proposed changes in heavy vehicle and over-dimensional vehicle movements and max length of vehicles.

The conclusions of the revised assessment also included:

- The increase in truck movements from 35 to 65 per day is able to be readily accommodated on the road network given these movements are distributed throughout the day.
- The increase from 3 to 24 OSOM vehicle movements is expected to have a minimal impact on the road network with these movements able to be managed by traffic management measures that will be identified as part of the individual permits for these deliveries.

### 4.4.1 Sturt Highway and Sandigo Road intersection

Upgrade of the Sturt Highway and Sandigo Road intersection to facilitate the increased number of heavy vehicles required to access the site during construction.

A review of the existing intersection indicates that a basic right-turn lane (BAR) and auxiliary left-turn treatment (AUL) will be required. This work will include widening of the existing shoulder to provide additional pavement toensure that traffic is able to pass to the left of a stationary vehicle that is waiting to turn into Muntz Road. The extent of the widening would be confirmed during detailed design to accommodate the largest heavy vehicle accessing the site and would comply

*with Section 7.5 of Guide to Road Design – Part 4A: Unsignalised and signalised intersections.* Necessary warning and regulatory signage would also be confirmed during detailed design.

### 4.4.2 Muntz Road

Upgrade of Muntz Road between Sandigo Road and the site entry to be suitable for two-way (heavy vehicle) construction traffic, including widening of the road to a width of 6.2 m with a gravel seal, with 0.5 m gravel shoulders.

### 4.4.3 Muntz Road and site access point intersection

Construction and design of Muntz Road and the site access point intersection with a Rural Property Access type treatment to cater for the largest vehicle expected to access the site, including BAR/BAL treatments with minimum 200 mm compacted gravel (CBR of 30) and 20/14 seal.

As part of the project, the upgrade of Muntz Road, Sandigo Road and the Sturt Highway/Sandigo Road intersection would provide benefits to the local community by improving conditions and safety on these sectionsof road.

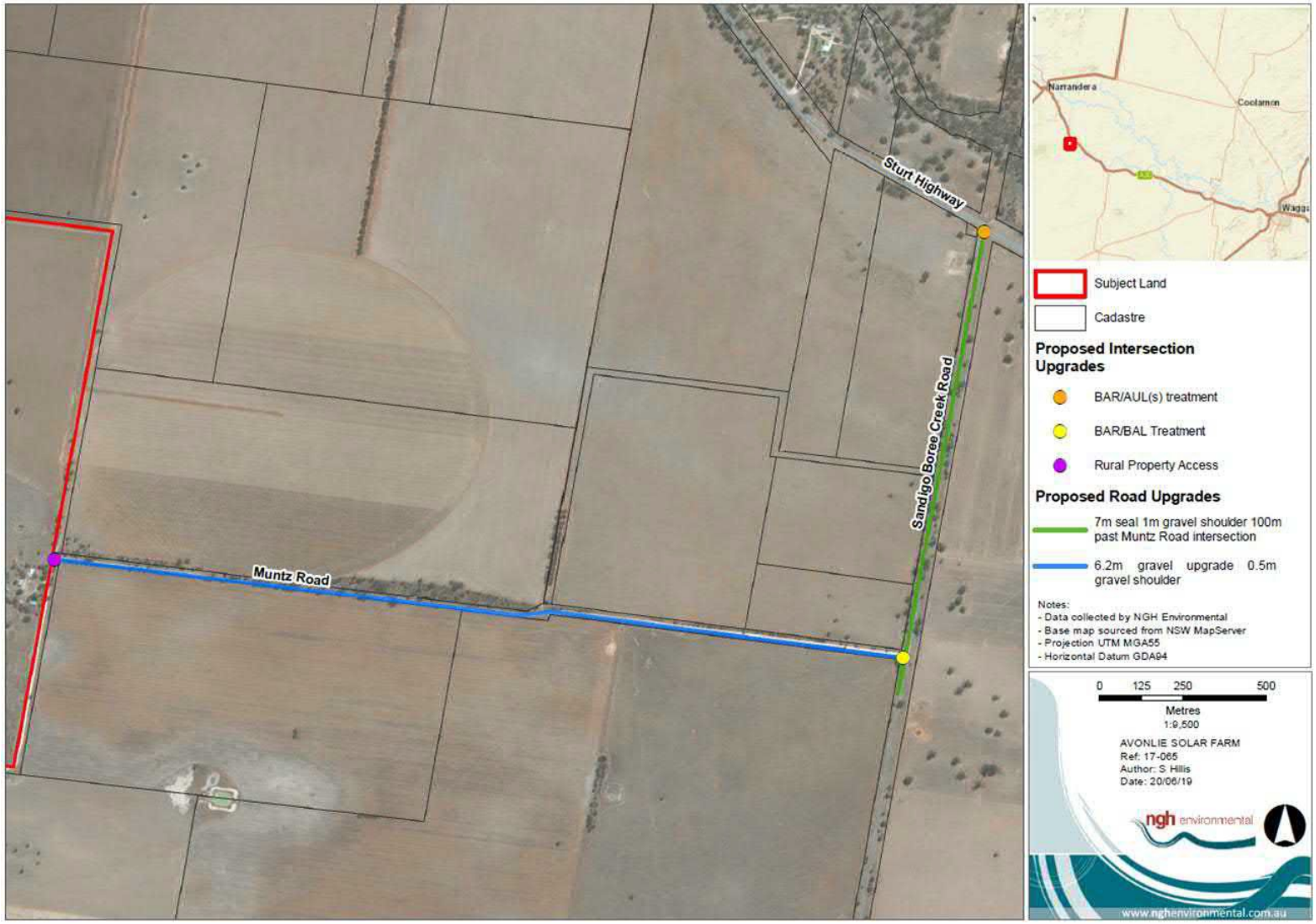



Figure 4-3 Road upgrades and site access.

# 5. Safeguards and Mitigation Measures

Safeguards and mitigation measures from the Environmental Impact Statement (EIS) as amended by the Response to Submissions Report (RTS) are provided in Table 5-1.

These safeguards and mitigation measures would be implemented to minimise potential traffic and access impacts. The EPC contractor will further appoint a 'Freight Forwarder' that will be responsible for the overallexecution and coordination of vehicle movements, noting execution of the TMP requirements during construction will be the responsibility of all on site.

Table 5-1 Revised safeguards and mitigation measures

| Safeguards and mitigation measures | Timing | Section of report were addressed |
|---|---|---|
| A Haulage Plan would be developed in consultation with the relevant road authority (Council and RMS) and implemented during construction and decommissioning, including but not limited to:<br>• Assessment of road routes to minimise impacts on transport infrastructure.<br>• Scheduling of deliveries of major components tominimise safety risks (on other local traffic).<br>• Traffic controls (signage and speed restrictions etc.). | Construction<br>Operation<br>Decommissioning | Section 5.1.2 – Haulage and plant vehicles.<br>Section 5.2.2– Access routes and internal route.<br>Section 5.7 – Road signage |
| A Traffic Management Plan would be developed in consultation with the relevant road authority (Council and RMS) and implemented during construction and decommissioning. The plan would include, but not be limited to:<br>• Prior to construction, a pre-conditioning survey of the relevant sections of the existing road network, to be undertaken by an appropriately qualified person in consultation with Council.<br>• Assessment of road condition prior to construction on all local roads that would be utilised.<br>• A program for monitoring road condition, to repair damage exacerbated by the construction and decommissioning traffic.<br>• Finalised detail of any required road-specific, construction staff access and public safety mitigation measures (including but not limited to project generated traffic, driver fatigue and behaviour, adverse climatic conditions, dust, public traffic including school bus activity, glint and glare etc.).<br>• The designated routes and adherence of construction traffic to the site.<br>• Carpooling/shuttle bus arrangements to minimise vehicle numbers during construction. | Construction<br>Decommissioning | Section 5– Safeguards and mitigation measures<br>Section 5.8 – Driver Code of Conduct and site induction<br>Appendix A – Consultation with Transport for NSW and Council |

| Safeguards and mitigation measures | Timing | Section of report were addressed |
|---|---|---|
| • Scheduling of deliveries and construction activities.<br>• Community consultation regarding traffic impacts for nearby residents.<br>• Consideration of cumulative impacts.<br>• Traffic controls (speed limits, signage, etc.).<br>• Procedure to monitor traffic impacts and adapt controls (where required) to reduce the impacts.<br>• Providing a contact phone number to enable any issues or concerns to be rapidly identified and addressed through appropriate procedures.<br>• Water to be used on unsealed roads to minimise dust generation through increased traffic use.<br>• Following construction, a post condition survey of the relevant sections of the existing road network to be undertaken to ensure it is of similar condition to that prior to construction. Any damage will be repaired at cost to the proponent.<br>• A driver code of conduct to address hazards. | | |
| The proponent would repair any damage resulting from project traffic (except that resulting from normal wear and tear) as required at the proponent's cost. | Construction<br>Decommissioning | Section 5.5 – Road conditions |
| A flood response plan to be prepared and implemented that will include an access contingency plan in times of flooding when the Sturt Highway could be closed. | Construction<br>Operation<br>Decommissioning | Section 5.2.4 – Flood response plan |

## 5.1 Management and coordination of vehicles

Standard construction working hours are expected to be as follows, or otherwise agreed with the necessarydevelopment approvals:

- Monday to Friday: 7am to 6pm.
- Saturday: 8am to 1pm.
- Sundays and NSW public holidays: no work.

Approval for activities outside the above specified hours will be as per CoC.

The remainder of this section outlines the management and coordination of vehicles to minimise vehiclemovements and reduce potential impacts.

### 5.1.1 Personnel vehicles and parking provisions

A temporary construction compound will be established on site that would include a site office, amenities and parking for personnel vehicles.

As discussed in Section 4.1.1, 82 light vehicles are expected to access the site during the peak construction period. The proposed laydown area during construction will have sufficient parking provisions for these light vehicles only and no parking will occur on the public road network surrounding the site during construction.

Buses will be used by the EPC contractor to transport the majority of workers from the local area. To encourage use of these buses, the majority of site personnel will not be supplied with light vehicles to travel to and from thesite. In addition, parking at site will be limited and will only be provided to a small portion of the workforce (as described above).

Pick-up locations and relevant consultation with Narrandera Shire Council will be undertaken when the subcontractors are confirmed.

### 5.1.2 Haulage and plant vehicles

Several designated laydown areas will be developed on site for the delivery and storage of materials. All vehicles will be loaded and unloaded on site and will enter and leave in a forward direction. The location of the laydown areas could potentially change throughout the construction period as installation of the arrays progresses.

Transport for NSW (formerly Roads and Maritime Services) and Narrandera Shire Council would be consulted to determine whether measures such as warning signs on the Sturt Highway should be provided to minimise road safety risks. This is discussed further in Section 5.3.

### 5.1.3 Logistics of site deliveries

The EPC contractor would employ a full-time logistics person who will be responsible for liaising directly with the EPCcontractor's Site Manager (Construction) for expeditors on a daily basis in order to closely monitor the delivery schedules. Examples of the milestones that would be monitored and level of communication include:

- Keeping records of the number of heavy vehicles accessing the site each day (as required in Clause 3 of Schedule 3, Environmental Conditions – General of the Project Approval).
- Ensuring that the maximum number of heavy vehicle movements per day is adhered to.
- Schedule of next day and 2-day forecast of all deliveries, including inventory and timing.
- Expected shipment date.
- Number of containers from each supplier.
- Transit time.
- Estimated time of arrival.
- Online access available for up-to-date reporting of each shipment.
- Daily reports sent to site.
- Minimum daily communication with transport company.

The EPC contractor's logistics manager will coordinate trucks to arrive at the site at a specific time of day in order to satisfy community and safety concerns, including the use of police escorts, when necessary, although unlikely. Haulage of materials and equipment to the site will be scheduled to arrive and depart from the site at different times coinciding with the construction program. Vehicles will be scheduled to avoid conflict with local traffic and rail services. Furthermore, the varying origins of the haulage movements and limited number of deliveries to site each day will limit the potential for haulage vehicles to form convoys or platoons.

## 5.2 Operating conditions

### 5.2.1 Access arrangements

There is currently no formal site access available from Muntz Road. However, the project includes the construction of a new site access point on Muntz Road which would be the only access for vehicles during construction and operation. The location of the access point will be designed to accommodate the swept paths of the largest heavy vehicle anticipated to access the site. Muntz Road would also be allowed for two-way heavy vehicle access.

The project is unlikely to impact access to adjacent properties. During the upgrade of Muntz Road and Sandigo Road, where works are required near property accesses, potentially affected property owners would be consulted to discuss their access requirements and to determine whether additional management measures would be needed to maintain access.

During the upgrade of Sandigo Road and Sturt Highway intersection, temporary partial closures would be required to enable the road to be upgraded. Works would be staged to avoid the need to fully close the road forany extended period of time. If closures are required, consultation would be undertaken with affected landowners to notify them of the proposed closures and to organise any alternate access.

### 5.2.2 Access routes and internal routes

Clause 4 of Schedule 3, Environmental Conditions – General of the Project Approval specifies that all vehicular traffic associated with the development must travel to and from the project site via Sturt Highway, Sandigo Road, Muntz Road and the site access point on Muntz Road.

All heavy vehicles will be required to travel via heavy vehicle-approved roads. To comply with Clause 4, all vehicular traffic will enter and exit the site via Sturt Highway, Sandigo Road, Muntz Road and the site access point on Muntz Road. Trucks will be able to turn left on Sandigo road onto Sturt Highway when they’re departing site

Haulage routes will be finalised when the subcontractors are confirmed. Example routes from Melbourne, Sydney, Newcastle, Wollongong, as well as the proposed quarry routes from the surrounding region are shown below in Figure 5-1 to Figure 5-7.

Internal roads will be constructed as all-weather roads. All vehicles will enter and exit the site in a forward direction.

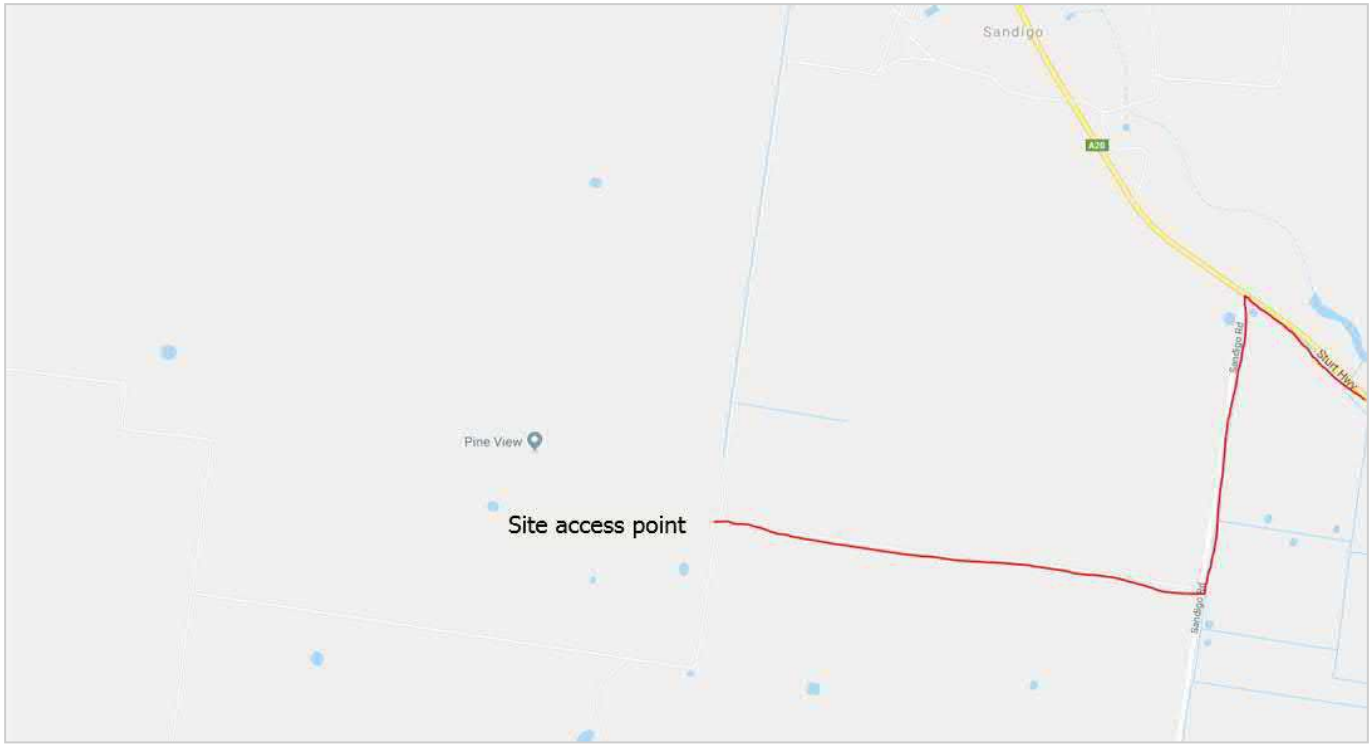



Figure 5-1 Traffic routes for all vehicles to site access point

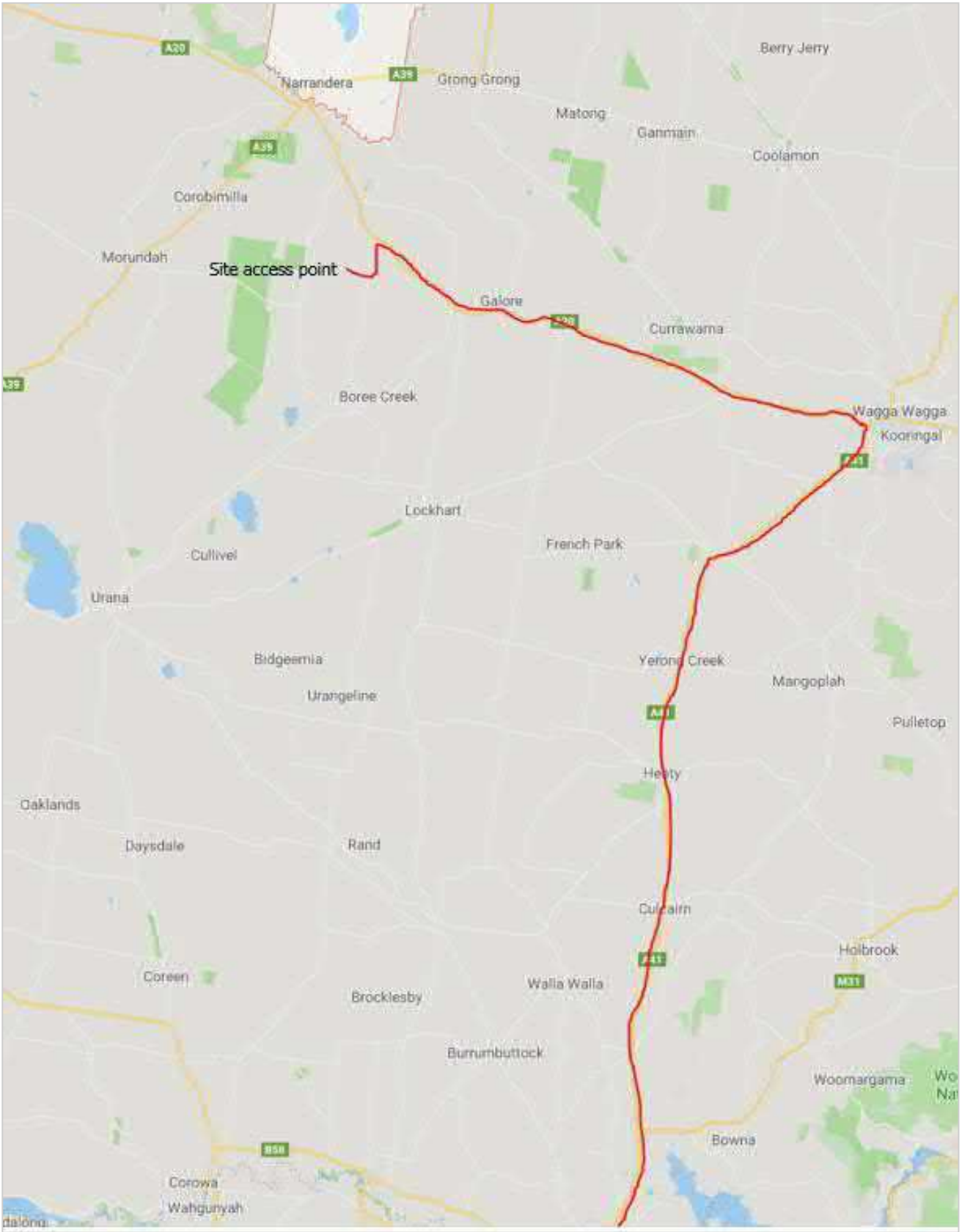



Figure 5-2 Traffic routes for vehicles from Melbourne

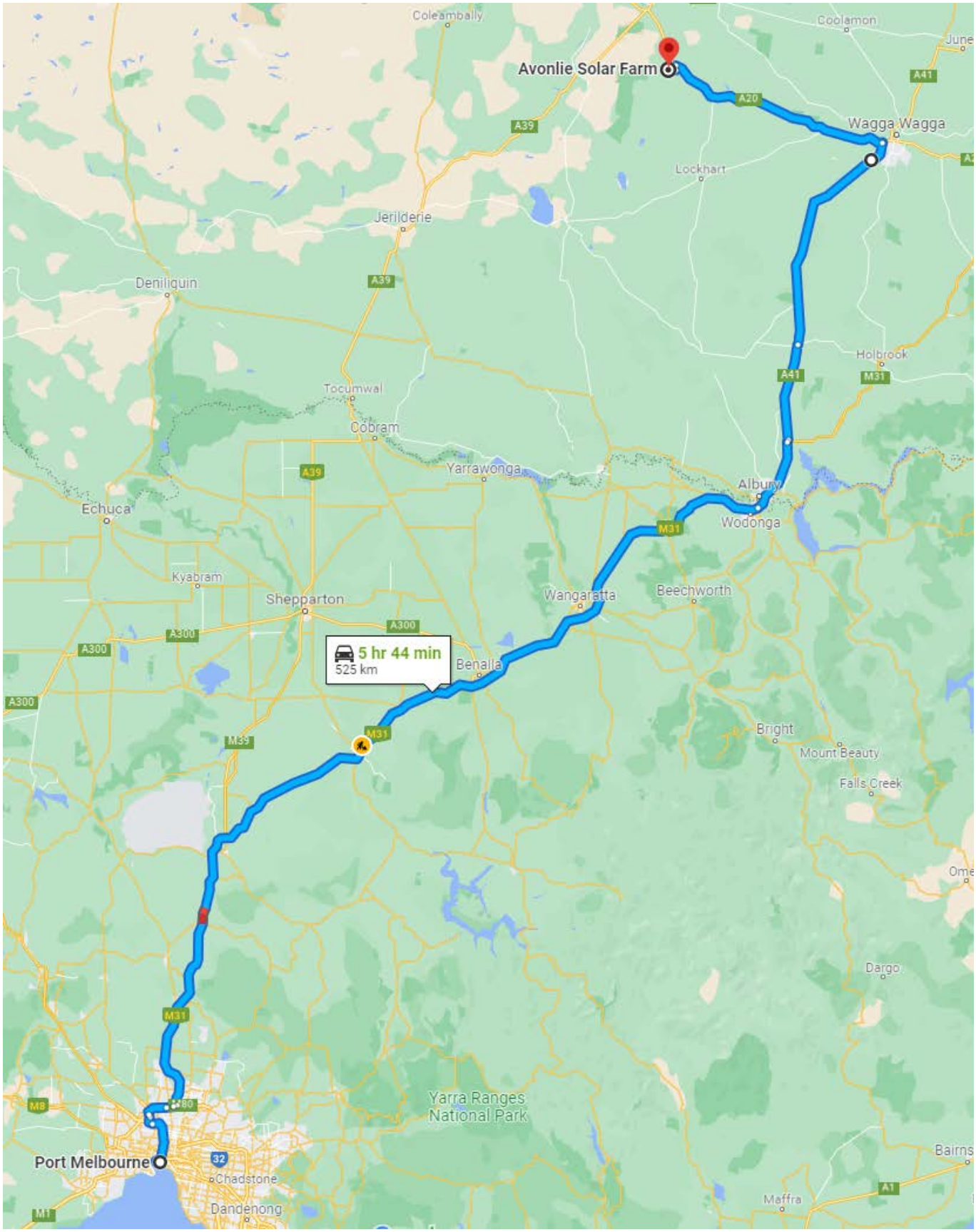



Figure 5-3 Traffic routes for vehicles from Port Melbourne

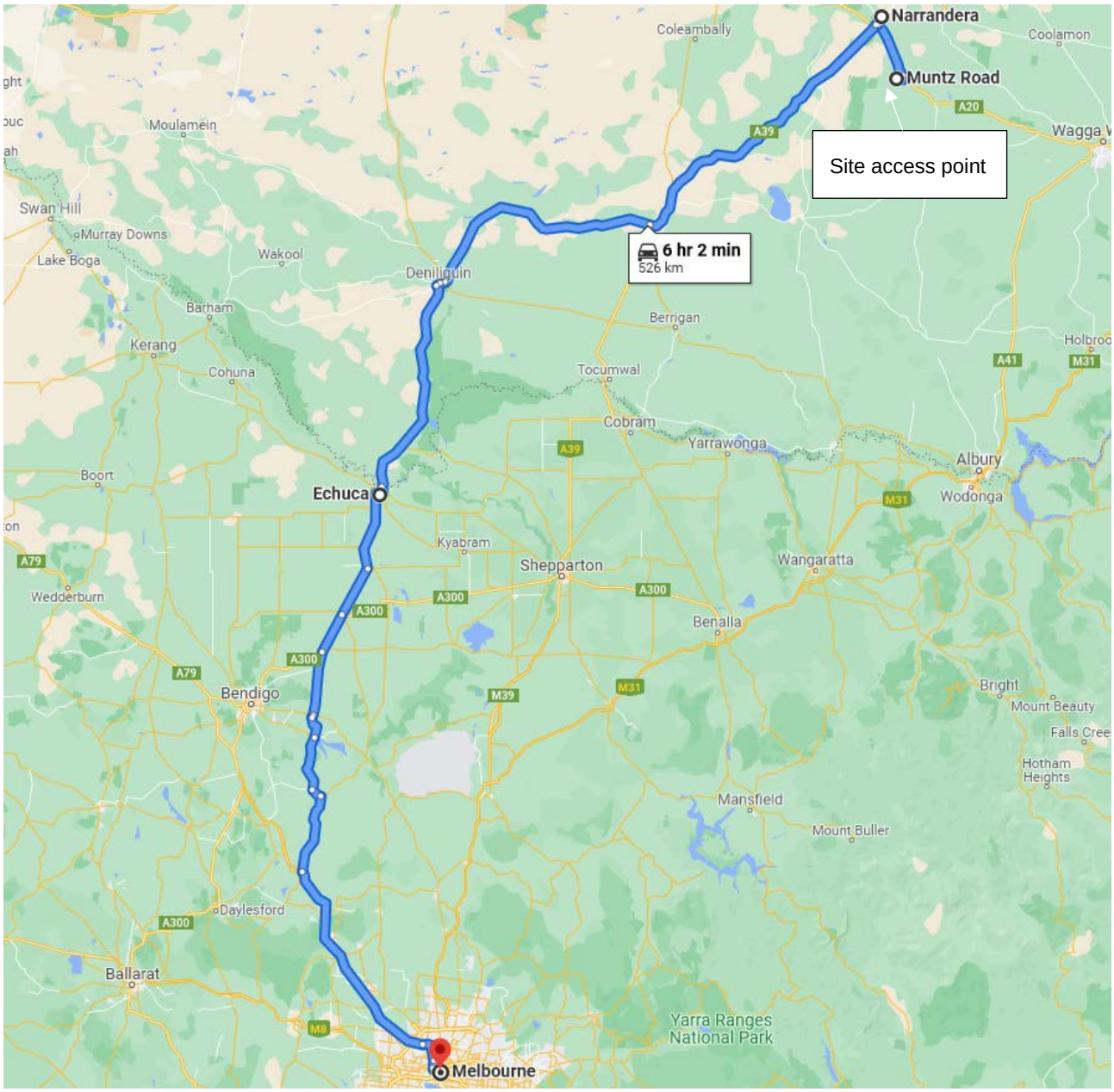



Figure 5-4 Alternative traffic routes for vehicles from Melbourne

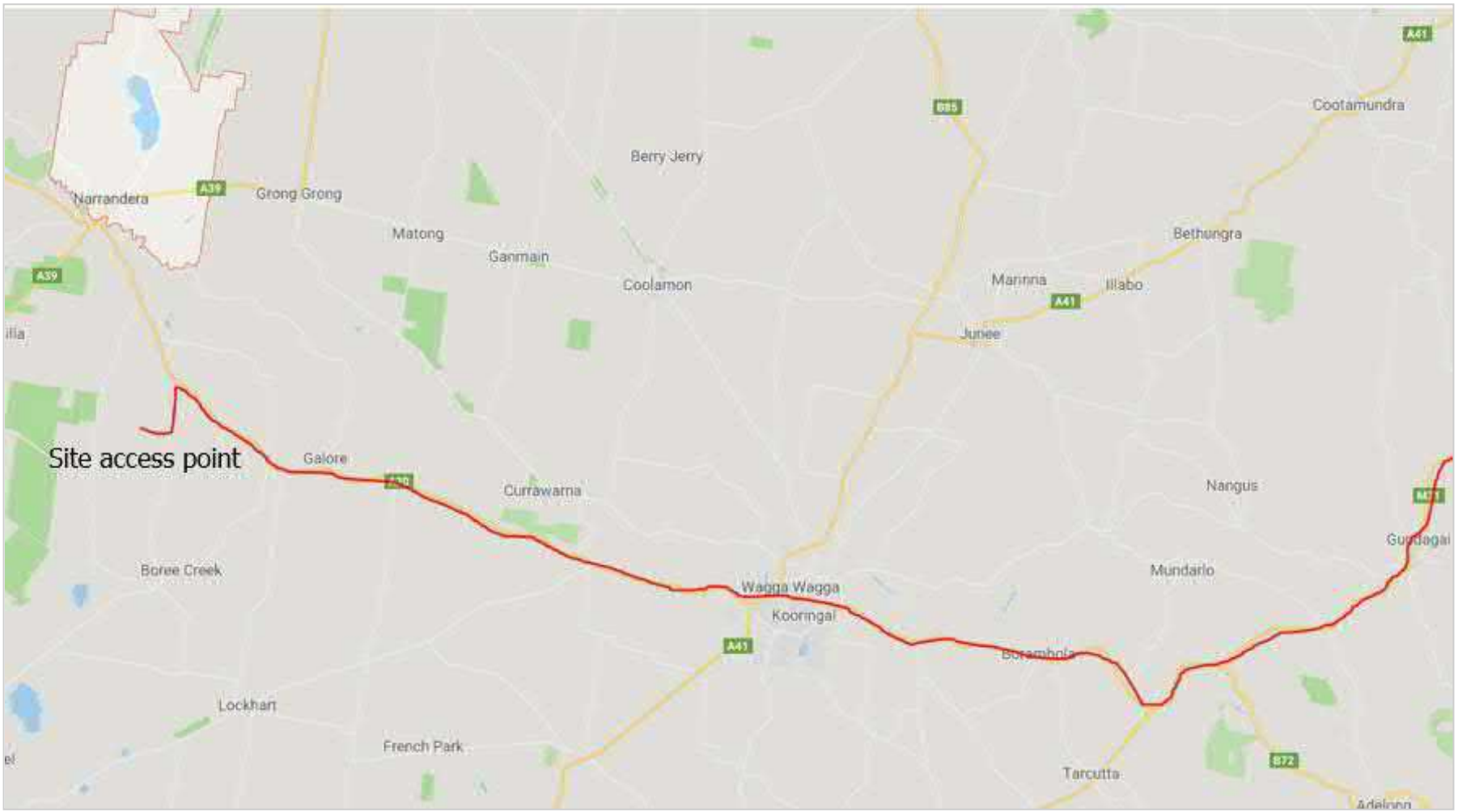



Figure 5-5 Traffic routes for all vehicles from Sydney, Wollongong and Newcastle

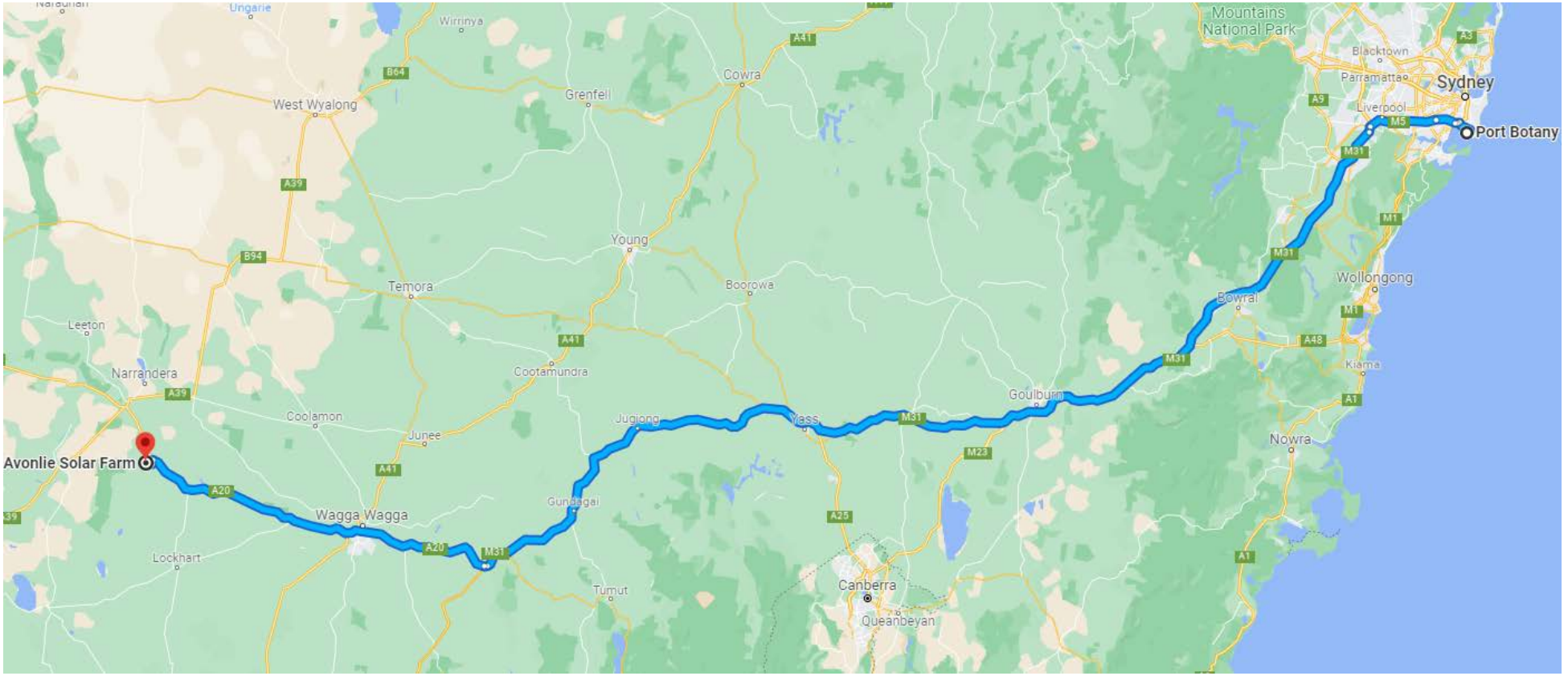



Figure 5-6 Traffic route from Port Botany to site

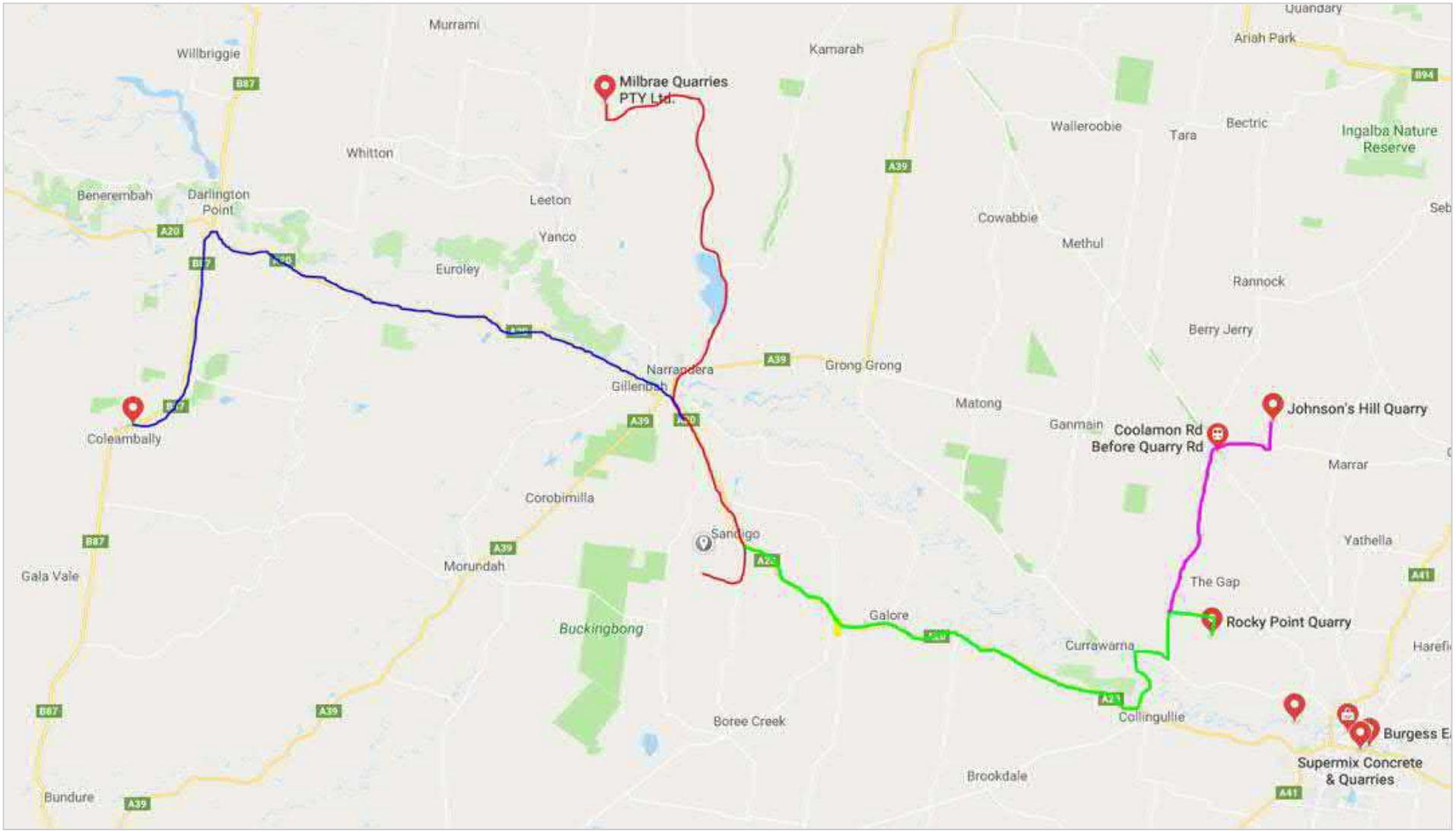



Figure 5-7 Traffic routes for all vehicles for quarry delivery

### 5.2.3 Dirt management

Progressive Erosion and Sediment Controls Plans will be prepared prior to the commencement of constructionand will be regularly reviewed and updated during the period of the works. The EPC contractor will establish a site access that seeks to prevent the tracking of dirt off-site by vehicles, including monitoring of vehicles and using a rumble grid to be installed at the site access point. Access to the site will be via Sandigo Road, which will be sealed as part of the improvement works outlined in Section 4.4. Any residual risk is to be managed through additional removal procedures, with the wheels, wheel arches and underbody of all plant and support vehicles carrying excess dirt and soil to be thoroughly cleaned prior to exiting the site.

### 5.2.4 Flood response plan

In times of flooding when the Sturt Highway could be closed, the alternate route for vehicles exiting the site, which will be documented in the Site Emergency Response Plan (ERP), will be to the east along Muntz Road to Sandigo Road, west along Greenvale Road via Boundary Road and Strontian Road, and Federation Way (as shown in Figure 5-8).

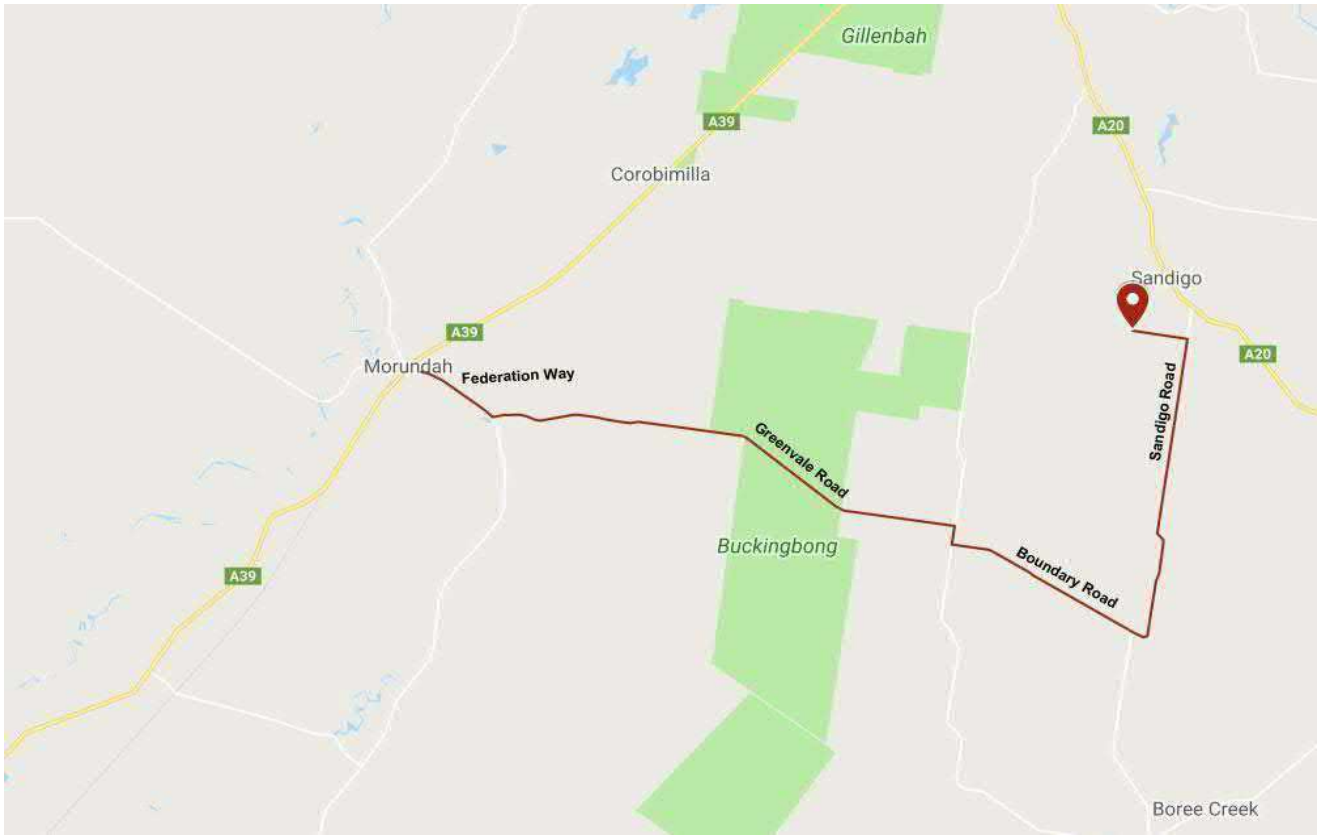



Figure 5-8 Alternative traffic routes for all vehicles during flooding

## 5.3 Road safety

As outlined in Section 4.1, there would be an increase in the number of heavy vehicles on the network duringconstruction of the project. These vehicles would access the site via the Sandigo Road and Sturt Highway intersection, which will be upgraded prior to construction of the project, which will be designed to provide safeaccess.

The increase in heavy vehicles exiting the site via this intersection would potentially pose a risk as there are no acceleration lanes along the highway. However, sight distances at the intersection are in excess of the minimum requirement for approaching vehicles to slow down if a slow-moving truck turned onto the highway. 'TrucksTurning' warning signs will be installed on both approaches to the intersection of Sandigo Road and Sturt Highway to advise road users of the increased activity (refer to Section 5.7 for further details).

## 5.4 Improvement works

The intersection of Sturt Highway and Sandigo Road will undergo improvement works to minimise the impact ofconstruction vehicles entering and exiting the site on other road users via a basic right-turn and auxiliary left- turn treatment. During construction of the intersection upgrade works, traffic control will be in accordance with Council requirements, including a Traffic Control Plan (TCP). The intersection upgrade works would be constructed prior to construction on the site to minimise the interaction between construction related vehicles and other road users.

### 5.4.1 Traffic controls

It is the responsibility of all personnel on site to ensure that roadworks is carried out in a safe and efficient manner. The EPC contractor will ensure that site specific TCPs for all work which involves any disruption whatsoever to the transport network will be developed by suitable qualified and accredited personnel. All TCPs for short term works will be designed in accordance with the requirements stipulated within Australian Standard 1742.3 and the Roads and Maritime's "*Traffic Control at Worksites Manual".*

The TCP will include all signage, barriers, traffic controllers, traffic diversions and lighting required, as well asactions required to mitigate any potential impacts to other road users. Where work requirements necessitate temporary speed limits, the EPC contractor will review and seek approval before the temporary speed limit is intended to be implemented. The EPC contractor will then arrange for the supply and erection of appropriate temporary speed zoning signs. Following erection of the signs, arrangements will be made to cover the signswhen the speed zones are not in use.

The traffic control techniques likely to be employed could include:

- Temporary lane closures or detours.
- Raised pavement markers and clear line marking.
- Channelisation using PSB's or lane delineators.
- Directional, information and regulatory sign posting.

A program for the regular inspection of traffic infrastructure work will be implemented by the Site Manager. This will ensure the controls in place continue to provide safe traffic management for both the travelling public and the EPC contractor's employees or subcontractors. All controls will comply with current Roads and Maritime Guidelines.

## 5.5 Road condition

The increase in vehicle movements on the surrounding road network has the potential to impact the condition of these roads. Sandigo Road and Muntz Road will be upgraded prior to construction to accommodate the relatively minor increase in traffic resulting from the project.

### 5.5.1 Dilapidation surveys

Prior to commencement of construction, upgrading and decommissioning works of the solar farm, an independent pre-construction dilapidation survey would be undertaken by an appropriately qualified person todocument the existing condition of the following roads along the haulage routes:

- Sandigo Road between Sturt Highway and Muntz Road.
- Muntz Road between Sandigo Road and the site access.

The surveys will involve a visual inspection of any existing damage on the above roads. The inspection would focus on structural and drainage aspects, such as potholes, visible rutting at wheel paths, cracking and surface deformation or depression. Recent maintenance activity, photos and location referencing of existing damage willbe converted into a pre-construction dilapidation report.

On completion of the project construction, a post-construction dilapidation survey would be undertaken to determine whetherconstruction of the project has caused sections of these roads to deteriorate. The post-construction dilapidationsurvey will follow a similar process to the pre-construction survey and converted into a post-construction dilapidation report.

### 5.5.2 Repair of roads

Narrandera Shire Council will be consulted with to agree on the damage as a result of construction activity, if any, and what repairs are required to Muntz and Sandigo Roads. Relevant fees will be jointly estimated. Council would then scope and arrange for the required repairs to be paid for by the EPC contractor.

### 5.5.3 Emergency road repair

There will be on-site resources to respond to emergency road repairs during construction and decommissioning. On receipt of notification of road damage, the EPC contractor will dispatch resources to repair the road as required.

## 5.6 Speed limits

All personnel driving construction vehicles to and from the site would undergo a project induction which would include information on the management of traffic related issues while travelling to and from the site. The induction would include the following points:

- Consideration and courtesy when driving on public roads.
- Speed limits must be strictly adhered to.

The internal speed limit within the site during construction will be 40 km/h for all vehicles. Where vehicles arerequired to pass work crews or drive through active work areas, the speed limit will be reduced to 25 km/h.

Signage and other controls would be implemented to ensure that any driver operating a vehicle within the site would do so in a safe manner.

Speed limits on Sturt Highway, Sandigo Road and Muntz Road will be reduced during construction. However, low traffic volumes are currently experienced on these roads, as evident in the 2014 Average Annual Daily Traffic (AADT) data received from Narrandera Shire Council. In addition, adequate sight distances are providedfor inbound and outbound vehicles at the Sturt Highway and Sandigo Road intersection.

## 5.7 Road signage

As outlined in AS1742.3 *Manual of uniform traffic control devices*, appropriate road signage will be used to warn traffic of potential heavy vehicle turning movements into and out of the site at Sandigo Road and Muntz Road. As specified in Table 7.3.3 of the Avonlie Solar Farm – EIS, signage will also be used on Sturt Highway Highway to alert drivers of trucks entering and exiting Sandigo Road.

W5-22, W8-207(L) and W8-207(R) posted signs will be displayed at a distance of 150 to 350 m from the site access point and intersections to provide approaching traffic with sufficient warning. Signs will be removedonce construction works are complete.

Transport for NSW will be consulted, and the necessary approvals sought prior to the inception of road signage. The installation of signs will be conducted in accordance with the relevant Australian standards.

Table 5-2 shows the proposed warning signs to be located on these roads.

Table 5-2 Proposed warning signs

| Sign | Display |
|---|---|
| W5-22 |  |
| W8-207(L) |  |
| W8-207(R) |  |

## 5.8 Driver Code of Conduct and site induction

### 5.8.1 Heavy Vehicle Driver Code of Conduct

The heavy vehicle driver code of conduct is regulated by the NSW Code of Practice for Long Haul Drivers. TheEPC contractor would schedule the acceptance of freight. This may necessitate the reliance on freight companies to manage their drivers within legislative requirements, log book entries, verification of licenses etc.

A Heavy Vehicle Driver Code of Conduct will be in place to address the following:

- Travelling speeds.
- Driver fatigue.
- Adherence to designated transport routes.

- Safe driving practices.
- Driving to conditions during fog, dust and wet weather conditions.
- Other items e.g., mobile phone usage, driving under influence.

All heavy vehicle drivers to the site will be given specific guidance on how to manage fatigue and the need to drive in accordance with the prevailing conditions as part of the site induction process. Other risk factors associated with travelling to and from site which are specific to the local environment will also form part of the induction. Risk factors such as flooding and the alternate routes to be used in the event of flooding will also becovered, as per Section 5.2.4.

Examples of fatigue management schemes recommended for heavy vehicle operators includes:

- Taking a break every two hours and to stopping immediately to rest if feeling drowsy or fatigued.
- Planning their journey with rest breaks to ensure adequate breaks from driving are taken.
- Avoiding lengthy journeys at the end of a long shift.

An example Heavy Vehicle Driver Code of Conduct is attached in Appendix C. Additional driver behavioural expectations and a site delivery process will include:

- Engagement of local drivers to ensure familiarity with the roads.
- Planned layover areas defined in advance by Project Management.
- Directions of approach to site that are documented and specified in advance to the freight companies.
- Arrival at pre-determined and approved time with logistics.
- A driver site induction, including security gate process.
- Logistics to escort all delivery vehicles to laydown areas.
- Consideration and courtesy when driving on public roads.
- Speed limits to be strictly adhered to.
- Drivers to adhere to any directions given by site personnel.
- Drivers to adhere to maximum continuous driving times and rest breaks.

### 5.8.2 Light Vehicle Driver Code of Conduct

As discussed in Section 4.1, light vehicles will access the site during the construction period. A light vehicledriver code of conduct will be in place, outlining arrangements for light vehicles and will include:

- Safe driving practices.
- Fit to drive procedures and driving under the influence.
- Fatigue management.
- Driving to conditions during fog, dust and wet weather conditions.

All workers and delivery drivers to the site will be given specific guidance on how to manage fatigue and the need to drive in accordance with the prevailing conditions as part of the site induction process. Other risk factors associated with travelling to and from site which are specific to the local environment will also form part of the induction. Risk factors such as flooding and the alternate routes to be used in the event of flooding will also be covered, as per Section 5.2.4.

Examples of fatigue management schemes recommended for light vehicle operators includes:

- Taking a break every two hours and to stopping immediately to rest if feeling drowsy or fatigued.
- Planning their journey with rest breaks to ensure adequate breaks from driving are taken.
- Avoiding lengthy journeys at the end of a long shift.

An example Light Vehicle Driver Code of Conduct is attached in Appendix D for usage of vehicles supplied bythe EPC contractor.

### 5.8.3 Site induction

For subcontractors, inductions will take place prior to arrival. For independent operators and one-off personnel, induction will take place on arrival at the site. Alternatively, independent personnel may be escorted by an inducted employee.

An example of a typical site induction for delivery drivers is summarised below.

#### Requirements Prior to Accessing Site

Prior to accessing site, the non-inducted delivery driver's site contact will complete the following with the driver:

- Site Visitor's induction.
- Pre-task hazard assessment (e.g., JHA) and implementation of controls.
- Communication of the intended travel route on site, speed limits and road rules, site contact/escort nameand contact number, and any work area specific hazards.

#### General Requirements

A non-inducted delivery driver will be escorted at all times when travelling to and from the site access point to any pick up or drop off point.

The completed visitor induction and attached pre-task hazard assessment and access/escort details will be recorded and retained on the project site.

A load/unload plan and pre-task hazard assessment (e.g., JHA) will be completed for loading and unloading tasks on site and relevant controls implemented prior to the commencement of these tasks.

All vehicles will enter and leave the site in a forward direction. All vehicles will be loaded and unloaded on site.On arrival at the pick-up/drop off point, non-inducted delivery drivers will exit the vehicle and remain in a pre- defined safe area whilst loading and unloading of freight is occurring, unless they are performing one of the tasks as outlined below.

Non-inducted Transport Drivers will not perform any tasks other than:

- Driving to the designated drop-off or pick-up location.
- Indicating the load distribution to the project personnel.
- Operating vehicle and vehicle mounted loads for which they are competent, including discharge of materialif required.
- Performing release of load restraints on incoming loads.
- Performing restraint of outgoing loads.
- Completing any required paperwork.

*Note: This process does not apply to: Persons delivering or collecting cash, mail or packages and/or conducting similar brief transactions*

## 5.9 Restricted Access Vehicles

Restricted Access Vehicles (RAV) may need to deliver construction equipment to site. Delivery of equipment to site using an RAV would need to consider the following:

- Appropriate permits being issued by Transport for NSW and the NSW Police.
- Use of escort vehicles as required.
- Provision of traffic controllers as required.
- Restriction of RAV deliveries to daylight hours (outside of school bus hours).

The delivery of large equipment would be coordinated with any known vehicular activity on Sturt Highway or in the townships of Wagga Wagga and Narrandera.

## 5.10 Safety of livestock

The site access road and site would be fenced, as necessary, with livestock proof fencing prior to construction commencing. No interaction between construction traffic and livestock is expected.

## 5.11 Communication and stakeholder consultation

Proactive measures to liaise, consult and communicate with the community, Transport for NSW, Narrandera Shire Council and any other relevant stakeholders will be implemented during the construction phase. This is to ensure timely, accurate and comprehensive traffic information to all existing and potential roadsusers is conveyed, and to accommodate any community and key stakeholder feedback regarding road safety and traffic management issues. Community and stakeholders will also be consulted prior to the improvement works along Muntz Road, Sandigo Road and the intersection of Sandigo Road and Sturt Highway.

The strategies for community consultation include:

- Pre-construction: Community engagement day where relevant contact details will be shared, and the community will be informed of impacts of construction activities, including:
    - Planned start and end date of investigation or construction activities.
    - Timing of construction activities.
    - Planned routes for construction vehicles.
    - Planned duration and timing of any road or lane closure, if required.
- During construction: A 24-hour phone number will be displayed on the site entrance sign. The phone number will facilitate a line of communication between the community and any project-related matters.

### 5.11.1 Complaint's response

Complaints relevant to this TMP will be facilitated, managed and responded to by the Project Owner in accordancewith the EMS. A summary of the Project Owner's approach to any complaints is set out below.

The Project Owner is committed to dealing with complaints in a reasonable timeframe and commits to ensuringthat people who make complaints will be:

- Provided with information about the complaint handling process.
- Provided with acceptable ways to make complaints.
- Listened to, treated with respect and actively involved in the complaint process.
- Provided with reasons for and decisions and any options for redress or review.

The Project Owner will take all reasonable steps to ensure people making complaints are not adversely affected because a complaint has been made by them or on their behalf. The Project Owner will ensure that information about how and where complaints may be made is well publicised.

The Project Owner will acknowledge the receipt of any complaint within 3 days from receiving the compliant and will ensure that the person handling the complaint is different from any project person whose conduct or service is being complained about. The Project Owner will resolve complaints promptly and with as little formality as possible. All outcomes will be properly implemented, monitored and reported to the complaint handling managerand/or senior management.

Refer to Section 5.2 of the EMS for further details regarding complaintresponse procedures.

## 5.12 Statutory responsibilities

The EIS prepared in relation to the consent application for the proposed solar facility identified the relevant statutory framework within which the application was considered. Of relevance to the preparation of this TMPare the following statutory documents.

### *5.12.1 Roads Act 1993*

In accordance with *Roads Act 1993* and revised safeguards and mitigation measure TT3, the final detailed design of the upgrade of Muntz Road and Sandigo Road will be developed in consultation with Narrandera Shire Council and Transport for NSW (formerly Roads and Maritime Services) as required.

### *5.12.2 State Environmental Planning Policy (Infrastructure) 2007*

Clause 104 of the *State Environmental Planning Policy (Infrastructure) 2007* (ISEPP) relates to traffic generating developments, which require further referral to Transport for NSW (Roads and Maritime Services). The EIS concludes, on the basis that the development does not result in 200 or more motor vehicles per day, that Clause 104 did not apply.

Section 4 of this TMP provides an updated summary of the predicted traffic volumes relating to the development. As the maximum number of vehicles accessing is site is less than 200 it follows that the triggers identified in Clause 104 and Schedule 3 to the ISEPP for traffic generating developments do not apply to the project.

There is therefore no obligation to refer the matter to Transport for NSW in the context of traffic generating developments.

### 5.12.3 NSW Road Noise Policy

The EIS contains an assessment of the proposed development by reference to the NSW Road Noise Policy (RNP). This assessment concluded that noise impacts during construction, operation and decommissioning would be within the accepted noise criterion. Noise exceedances would not

occur. The preparation of this TMP has not revealed any matters that require the review of this conclusion.

### *5.12.4 Environmental Planning and Assessment Act 1979*

The development has been declared State Significant Development under Part 4 of the *Environmental Planning and Assessment Act 1979*, with development consent approved, subject to the conditions in Schedules 2 to 4 of the CoC. This TMP sits within a suite of management plans and strategy documents required by the CoC which detail the requirements and site-specific management measures to be implementedto ensure compliance with these conditions.

# 6. Plan operation

## 6.1 Roles and responsibilities

The roles and responsibilities for the implementation of this TMP are indicated in Table 6-1.

Table 6-1 TMP implementation

| Entity role | Responsibility |
|---|---|
| EPC contractor | Implementation of the TMP during construction. |
| All personnel | Follow all guidelines and Project Rules with respect to traffic management. |
| Freight forwarder | Implementation of the TMP during construction. |

## 6.2 TMP audit

The TMP will be audited in accordance with the EPC contractor's management systems and the CoC (Schedule 3, Condition 7).

## 6.3 TMP review

The TMP will be reviewed in accordance with the EPC contractor's management systems.

## 6.4 Competence training and awareness

All personnel working on the project would undergo a project induction which would include information on the management of traffic related issues while travelling to and from the site. The induction would include the following points:

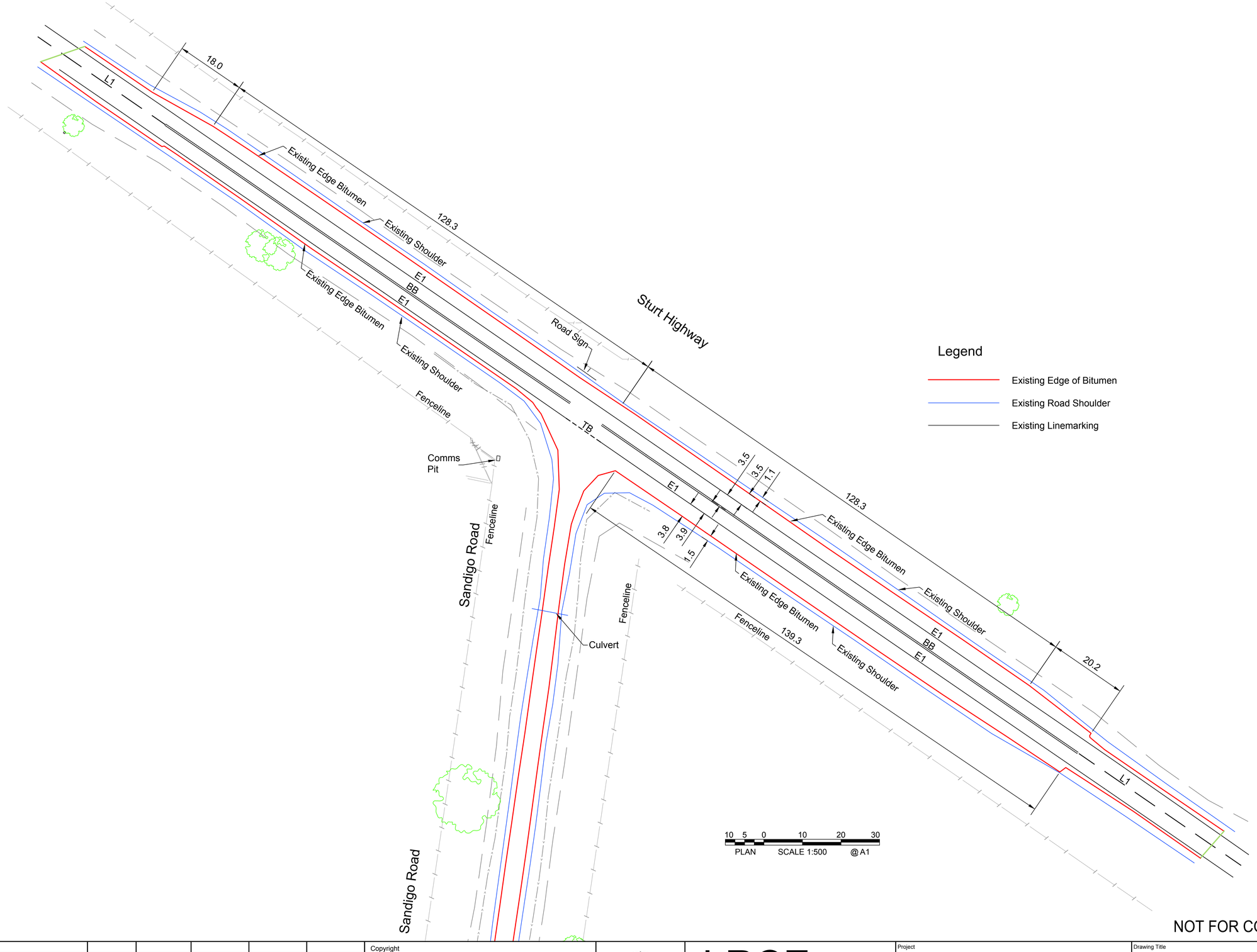
- Consideration and courtesy are essential when driving on public roads and the worksite.
- All employees would be required to comply with the onsite Vehicle Movement Plan being prepared by the EPC contractor.
- Speed limits must be strictly adhered to.

After completing the induction, workers would sign a statement of attendance and records of this would be kept in the site office.

# Appendix A Consultation with Transport for NSW (Roads and Maritime Services) and Council

| Stakeholder | Consultation details |
|---|---|
| Narrandera Shire Council | Feedback received from Narrandera Shire Council via email dated 01/03/2022 was no objection for new conditions sought for site deliveries. |
| Transport for NSW (Roads and Maritime Services) | Feedback received by Narrandera Shire Council via email dated 25/03/2022 was no objection for new conditions sought for site deliveries subject to the discussed changes been included in the document (this version). |

# Appendix B Improvement Works – Road map and areas of impact




Legend

- Existing Edge of Bitumen
- Existing Road Shoulder
- Existing Linemarking

NOT FOR CONSTRUCTION

| Revision | Amendment or reason for issue | Issue date | Drawing completed by | Designed & dwg. checked by | Verified by ✕ = Not verified | Issue authorised (*) |
|---|---|---|---|---|---|---|
| 6 | Issued For Information | 31-08-20 | L.V.R. | L.V.R. | L.V.R. | |
| 5 | Issued For Information | 25-05-20 | L.V.R. | L.V.R. | L.V.R. | |
| 4 | Issued For Information | 17-04-20 | L.V.R. | L.V.R. | L.V.R. | |
| 3 | Issued For Information | 18-02-20 | L.V.R. | L.V.R. | L.V.R. | |
| 2 | Issued For Information | 14-11-19 | L.V.R. | L.V.R. | L.V.R. | |
| 1 | Issued For Information | 30-09-19 | L.V.R. | L.V.R. | L.V.R. | |



* Drawing Status
Warning: Unless there is an authorised Lance Ryan Consulting Engineers Pty. Ltd. signature at * , this drawing is not authorised for issue.

North

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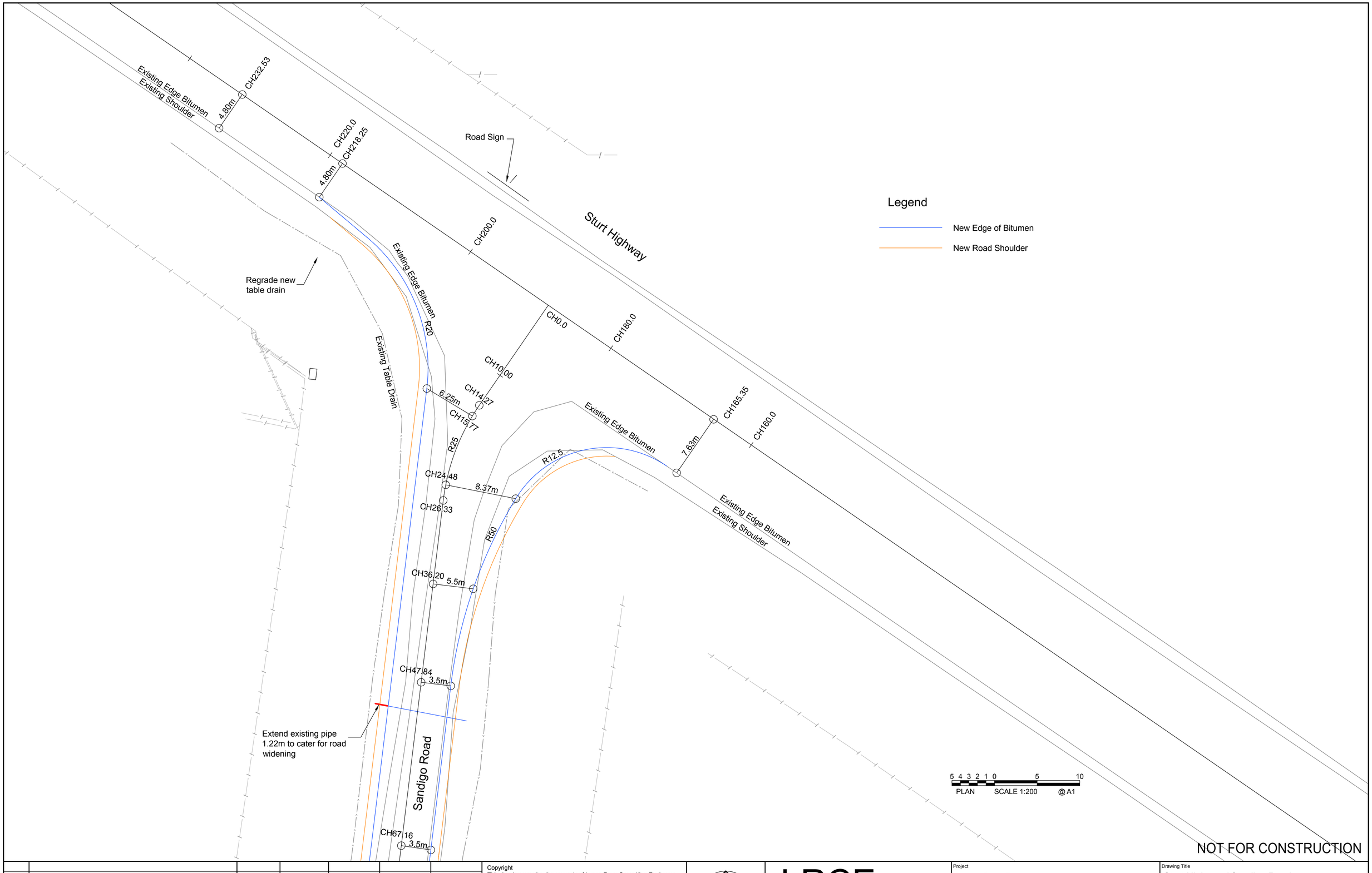
| | |
|---|---|
| Project | Avonlie Solar Farm<br>Sturt Highway / Sandigo Road / Muntz Road<br>Road Reconstruction |
| Drawing Title | Sturt Highway / Sandigo Road<br>Existing Intersection Layout and Linemarking |
| Client | Siemens Gamesa |
| Scales | 1:500 (A1), 1:1000 (A3) |
| Client Project No. | |
| Architect / Project Manager | Siemens Gamesa |
| Drawing No. | 19W020 – C03 |
| Sheet | 03 of 82 |
| Revision | 6 |

0 100mm 200mm 300mm A1 SHEET




| Revision | Amendment or reason for issue | Issue date | Drawing completed by | Designed & dwg. checked by | Verified by X = Not verified | Issue authorised (*) |
|---|---|---|---|---|---|---|
| 6 | Issued For Information | 31-08-20 | L.V.R. | L.V.R. | L.V.R. | |
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| 4 | Issued For Information | 17-04-20 | L.V.R. | L.V.R. | L.V.R. | |
| 3 | Issued For Information | 18-02-20 | L.V.R. | L.V.R. | L.V.R. | |
| 2 | Issued For Information | 14-11-19 | L.V.R. | L.V.R. | L.V.R. | |
| 1 | Issued For Information | 30-09-19 | L.V.R. | L.V.R. | L.V.R. | |



* Drawing Status
Warning: Unless there is an authorised Lance Ryan Consulting Engineers Pty. Ltd. signature at * , this drawing is not authorised for issue.

North

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| | |
|---|---|
| Project | Avonlie Solar Farm<br>Sturt Highway / Sandigo Road / Muntz Road<br>Road Reconstruction |
| Drawing Title | Sturt Highway / Sandigo Road<br>Proposed Intersection Layout<br>Dimensions |
| Client | Siemens Gamesa |
| Scales | 1:200 (A1), 1:400 (A3) |
| Client Project No. | |
| Architect / Project Manager | Siemens Gamesa |
| Drawing No. | 19W020 – C04 |
| Sheet | 04 of 82 |
| Revision | 6 |

0 100mm 200mm 300mm A1 SHEET

# Appendix C Example Heavy Vehicle Driver Code of Conduct

## C.1 Driver Code of Conduct

The Driver's Code of Conduct is to ensure that drivers adhere to safe driving practices, particularly when using local roads through Wagga Wagga and Narrandera. All employees and contractors are to abide by responsibledriving and adhering to the Code of Conduct.

All heavy vehicle drivers to the site will be given specific guidance on how to manage fatigue and the need to drive to prevailing conditions as part of the site induction process. Other risk factors associated with travelling to and from site which are specific to the local environment will also form part of the induction. Risk factors such as flooding and the alternate routes to be used in the event of flooding will also be covered.

### C.1.1 General Requirements

Heavy vehicle drivers hauling to and from Avonlie Solar Farm must:

- Have undertaken a site induction carried out by a suitably qualified employee.
- Hold a valid driver's licence for the class of vehicle that they are operating.
- Operate the vehicle in a safe manner to, from and within the site.
- Comply with the direction of authorised site personnel when within the site.

### C.1.2 Heavy Vehicle Speed

Heavy vehicle drivers are to be made aware of two types of speeding:

- Where a heavy vehicle driver travels faster than the posted speed limit.
- Where a heavy vehicle driver travels within the posted speed limit but at a speed which is inappropriate forroad conditions e.g., rain, fog, unsealed roads.

All heavy vehicle drivers are to observe the posted speed limits to comply with Australian Road Rules. Drivers must adjust speed appropriately to suit the road environment and weather conditions.

The internal speed limit within the site during construction is 40 km/h for all vehicles. Where vehicles arerequired to pass work crews or drive through active work areas, the speed limit is 25 km/h.

### C.1.3 Heavy Vehicle Driver Fatigue

Under the Heavy Vehicle Driver Fatigue Reform (2008), all drivers of trucks and truck combinations over 12 tonne GMV (except for Ministerial Exemption Notices that may apply) are required to operate under one of threefatigue management schemes:

- Standard Hours of Operation.
- Basic Fatigue Management.
- Advanced Fatigue Management.

All heavy vehicle operators are to be aware of their adopted fatigue management scheme and operate within itsrequirements. This includes recommendations for drivers to:

- Take a break every two hours and stop immediately to rest if feeling drowsy or fatigued.
- Plan their journey with rest breaks to ensure adequate length breaks are taken.
- Avoid lengthy journeys at the end of a long shift.

### C.1.4 Adherence to Designated Transport Routes

Heavy vehicle drivers must follow the designated transport routes agreed upon with site personnel at Avonlie Solar Farm. Heavy vehicles must travel only on heavy vehicle-approved roads and must access the site via Sturt Highway, Sandigo Road, Muntz Road and the site access off Muntz Road.

# Appendix D Light Vehicle Driver Code of Conduct

## D.1 Drivers Code of Conduct

### D.1.1 Introduction

All Project personnel must strictly comply with this Driver's Code of Conduct during days of work and also days of departure/return to your place of origin.

This Driver's Code of Conduct addresses:

- Travelling speeds.
- Driver fatigue.
- Procedures to ensure that drivers adhere to the designated transport route/s.
- Procedures to ensure that drivers implement safe driving practices.

### D.1.2 Travelling speeds

Drivers must:

- Be aware of the legal speed limit on public roads and designated speed limits for internal access roads within the site.
- Not exceed the legal speed limit on public roads.
- Not exceed the speed limit designated for internal access roads within the site.

### D.1.3 Safe driving practice

Drivers must:

- Be competent and hold the appropriate licence class for the vehicle used.
- Be aware of and comply with all road laws and regulations.
- Exercise extra care in adverse weather conditions that may affect road safety such as fog, dust, wet weather and flooding.
- Maintain awareness of other drivers and report any observations of driver fatigue or misconduct to the HSE Advisor.
- Respect the rights of all road users to share the road.
- Cover loose materials when transporting materials.
- Report any incidents in accordance with the Incident Management Procedure.

### D.1.4 Fatigue management

Drivers must:

- Rest at least every 2 hours or when required to avoid fatigue.
- Stop immediately and rest if feeling drowsy or fatigued.
- Ensure adequate length breaks are taken during a shift.

Commuting to and from a project site is a potential contributing factor to fatigue. Where possible this shall be managed by:

- Avoiding long journeys at the end of long shifts.
- Incorporating rest breaks into journeys.
- Carpooling and rotation of drivers.
- Use of shuttle buses and rotation of drivers.

To reduce fatigue, workers who are also driving a shuttle bus for more than 30 minutes to or from a site must finish their shift at least 30 minutes before normal finish time and rest in an air-conditioned crib room prior to driving their colleagues back to the nominated drop-off location. In addition, the role of driver shall be rotatedwithin the work group (e.g., one driving leg completed by worker per day).

Driving to and from project sites, ideally driving should be performed as per the following:

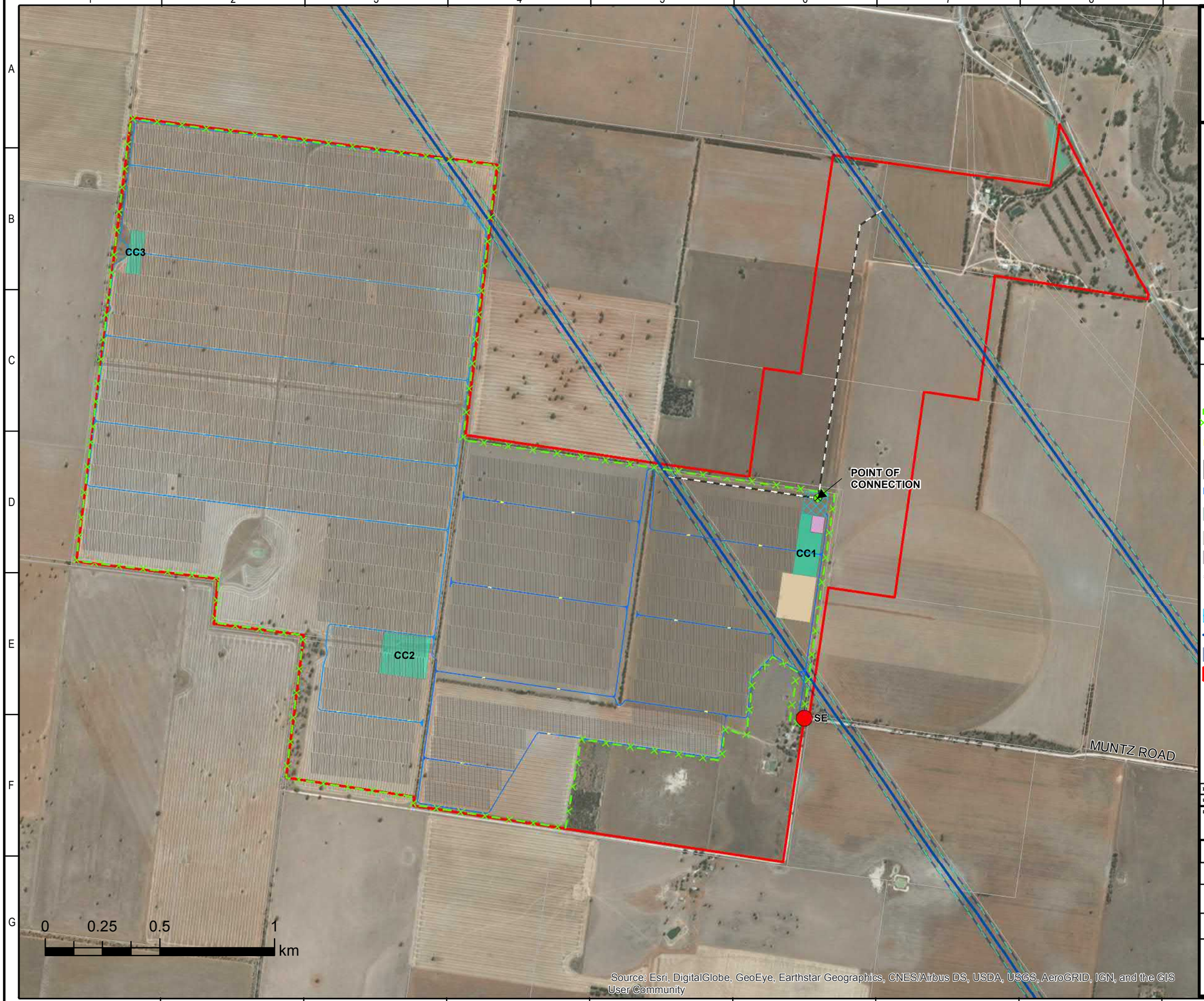
- During daylight hours (not always possible with early starts on project sites or driving to/from an airport to catch a flight).
- Shared with another employee where possible.
- Mandatory rest break (e.g., 10 mins) after 2 hours of driving.
- Mandatory zero alcohol tolerance.
- Mandatory zero illicit drugs tolerance or impairment by prescription medication.
- Maximum of 8 hours of driving per day (cumulative).

### D.1.5 Designated transport routes

Drivers must:

- Adhere to the approved site access route, unless an approved alternative haulage route is in place due to an emergency.
- Use only the approved established site access point/s.
- Enter and exit the site in a forward direction.
- Ensure vehicles leaving the site are in a clean condition.
- Notify the HSE Advisor immediately if there is any damage to the site access route which may present a safety hazard.

# Appendix E Site Layout




# AVONLIE SOLAR FARM

## SITE LAYOUT

CONTAINS INFORMATION FROM STATE OF NEW SOUTH WALES (DEPARTMENT OF NATURAL RESOURCES AND MINES) 2017.

**LEGEND**

- SITE ENTRANCE
- SECURITY FENCE
- POWER CONVERSION UNIT WITH HARDSTANDING
- SOLAR TRACKER
- PROPOSED NEW ACCESS TRACK
- TEMPORARY CONSTRUCTION COMPOUND AND LAYDOWN
- PROPOSED BATTERY STORAGE
- PROPOSED TRANSFORMER AND UTILITY AREA
- PROPOSED 132kV OVERHEAD CONNECTION
- POINT OF CONNECTION
- TRANSGRID SUBSTATION
- 132kV POWERLINE (TRANSGRID)
- TRANSGRID EASEMENT CORRIDOR
- SITE BOUNDARY

NOTES:
1. LAYOUT SHOWN IS INDICATIVE AND SUBJECT TO FINAL DESIGN BUT WILL BE GENERALLY IN ACCORDANCE WITH THIS DRAWING.

| | | | |
|---|---|---|---|
| INFRAS DWG | N/A | APPD DATE | 21-02-2019 |
| LAYOUT DWG | N/A | LAYOUT NO. | INFRASTRUCTURE05_20180830 |

DRAWING NUMBER

**03819D1001-04**

**SCALE - 1:16,000 @ A3**

COORDS

GDA 1994 MGA Zone 55

**PLANNING PERMIT APPLICATION**



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EMAIL: info-australia@res-group.com

# Appendix F Revised Traffic Assessment (Amber Organisation, 2022)

Amber Organisation
www.amberorg.com.au
1800 022 363

Tammy Vesely
Senior Project Manager
NGH Consulting
35 Kincaid Street
**Wagga Wagga NSW 2650**

Ref: 279
23 February 2022

**Issued via email:** tammy.v@nghconsulting.com.au

Dear Tammy

**Avonlie Solar Farm – Modification Assessment**

Amber has been asked to review a proposed modification to the Avonlie Solar Farm. The modification would allow the following changes to the construction activities of the project:

- Increase the size of the largest truck to access the site from a 19 metre Articulated Vehicle to a 26 metre B-Double (excluding oversize and overmass vehicles);
- Increase the maximum number of heavy vehicle movements from 35 to 65 movements per day during construction;
- Increase the number of oversize and overmasss (OSOM) vehicles from 3 to 24; and
- Amend the access route for all panel deliveries to the site.

These modifications represent a change to the construction activities assessed as part of the original Traffic Impact Assessment and as such, a revised assessment is provided to determine whether the proposed changes are acceptable and whether any amendments are required to the road network.

## 1. Traffic Generation

The proposed modification will allow a maximum of 65 heavy vehicle movements per day which represents an increase from the existing maximum of 35 heavy vehicle movements permitted under Condition 2(a) of the existing development consent.

The development consent defines a 'vehicle movement' as *one vehicle entering and leaving the site*. Accordingly, the proposed 65 heavy 'vehicle movements' will generate 65 inbound trips and 65 outbound trips.

The previous Traffic Impact Assessment prepared by TDG, dated 18 May 2018, estimated that the construction activities would generate up to 300 light vehicle trips (150 inbound trips in the morning peak and 150 outbound trips in the evening peak). As such, the site is expected to generate a total of 400 trips per day during peak periods.

## 2. Local Road Assessment

Access to the site from the state road network (Sturt Highway) is proposed via Sandigo Road and Muntz Road. As part of the solar farm construction Sandigo Road has been upgraded to have a sealed carriageway width of 7.0 metres between Sturt Highway and Muntz Road. Muntz Road has been widened to have an unsealed width of 7.2 metres between Sandigo Road and the site access inclusive of 0.5 metre wide shoulders.

The *Australian Road Research Board Best Practice Guide for Unsealed Roads 2* (ARRB Guide), dated October 2020, provides a breakdown of the unsealed road classifications based on a functional classification system which is reflective of the approach taken within the Austroads Guidelines. A summary of the classifications outlined within Table 3.9 of the ARRB Guide is provided below.

***Table 1: Unsealed Roads Classification System (ARRB Guide)***

| Road Class | Class Type | Service Function Description | Road Type Description |
|---|---|---|---|
| 4A | Main Road > 150 vpd | This type of road is used for major movements between population centres and connection to adjacent areas. High traffic volumes occur, and the road can carry large vehicles. | • All weather road, predominantly two-lane and unsealed. Can be sealed if economically justified.<br>• Operating speed standard of 50–80 km/h according to terrain.<br>• Minimum carriageway width is 7m. |
| 4B | Minor Road 50-150 vpd | This type of road is used for connection between local centres of population and links to the primary network. | • All-weather two-lane road formed and gravelled or single-lane sealed road with gravel shoulders.<br>• Operating speed standard of 30–70 km/h according to terrain.<br>• Minimum carriageway width is 5.5m. |
| 4C | Access Road 10-50 vpd | Provides access to low use areas or individual rural property sites and forest areas. Caters for low travel speed and a range of vehicles and may be seasonally closed. | • Substantially a single lane two-way, generally dry weather, formed road.<br>• Operating speeds standard of < 20–40 km/h according to terrain.<br>• Minimum carriageway width is 4m. |
| 4D | Tracks < 10 vpd | Mainly used for fire protection purposes, management access and limited recreational activities. | • Predominantly a single-lane two-way earth track (unformed) at or near the natural surface level.<br>• Predominantly not conforming to any geometric design standards.<br>• Minimum cleared width is 3m. |

The previous Traffic Impact Assessment prepared by TDG indicates Sandigo Road currently carries in the order of 33 vehicle trips per day. Therefore, during construction Sandigo Road and Muntz Road are expected to accommodate up to 433 trips per day during peak construction periods.

Unsealed roads would typically be considered for sealing when they accommodate between 200 and 500 trips per day. The ARRB Guide notes that roads may warrant paving when maintenance costs increase to unacceptable levels, in wet climates, or when economic or social benefits are evident. Given the expected traffic volume on the local roads is less than 500 trips per day and the increase in traffic is only temporary it is considered acceptable for Muntz Road to remain unsealed.

The recent sealing of Sandigo Road to have a carriageway width of 7.0 metres and the widening of the unsealed carriageway of Muntz Road to 7.2 metres complies with the relevant standards and provides sufficient width to allow two trucks to pass, including 26 metre long B-Doubles. Therefore, it is concluded that the surface of the roads are suitable to accommodate the future traffic volumes.

Overall, the 60 vehicle trips associated with the increased number of truck movements per day and the increase in vehicle size will result in a negligible impact to the proposed road surface and design.

# 3. Intersection Assessment

## 3.1 Sturt Highway / Sandigo Road

The intersection of Sturt Highway and Sandigo Road has been upgraded to provide an Auxiliary Left Turn (AUL) and a Basic Right Turn (BAR) turn facilities. The design of the intersection has been prepared by Lance Ryan Consulting Engineers Pty Ltd in accordance with the Austroads Guide for a 26 metre B-Double design vehicle. The swept path assessment prepared by Lance Ryan Consulting Engineers Pty Ltd showing a B-Double vehicle at the intersection is provided within Appendix A. Accordingly, the intersection is able to accommodate the traffic volumes and maximum vehicle size proposed as part of the modification to the solar farm.

The increase in the number of truck movements is expected to occur outside of the peak times. As such, the traffic volumes are expected to be readily accommodated at the intersection of Sturt Highway and Sandigo Drive and the turn facilities are expected to provide safe and efficient vehicle movement from the state road network.

## 3.2 Sandigo Road / Muntz Road Intersection

The upgrade design for the intersection of Sandigo Road and Muntz Road has also been prepared by Lance Ryan Consulting Engineers Pty Ltd. However, the intersection has been designed based on a 19 metre long Articulated Vehicle. A swept path assessment has been prepared for a 26 metre long B-Double and is provided within Appendix A. The swept path assessment shows that the current design for the intersection is able to accommodate the B-Double vehicle and as such, the intersection is suitably designed to accommodate the largest vehicle expected to access the site as part of the modification to the solar farm.

The provision of simultaneous two-way vehicle movements at the intersection for the largest vehicle expected to access the site will allow the increase in truck movements to be readily accommodated at the intersection.

# 4. OSOM Vehicle Movements

At the time of preparing the documentation for the Environmental Impact Statement it was understood that OSOM vehicles related to delivery of specific switch station infrastructure (transformer). However, it is now understood that machinery/amenities required for substation works by TransGrid may be classified as OSOM vehicles when being transported. As such, it is proposed to increase the number of OSOM vehicles permitted as part of the project to allow 24 OSOM vehicles to access the site.

OSOM vehicles are subject to specific road permits that will be applied for by the contractor once the dimensions of the load and the specific delivery vehicle are known. The vehicle movements will be spread across the project construction period and typically occur outside of peak times to minimise disruption to the road network.

The increase in OSOM vehicle movements is expected to have a minimal impact to the operation of the road network with any impacts able to be managed through traffic management measures that will be confirmed at the time of applying for the individual permits.

## 5. Route Assessment

Port Melbourne has been identified as the location where the solar farm plant will be imported. The proposed construction traffic access route from Melbourne to the site is proposed to be via Todd Road and Cook Street to access M2 and subsequently M80. Vehicles will then travel north on Hume Highway and access Olympic Highway to reach Wagga Wagga. Vehicles will then travel west on Sturt Highway to access Sandigo Road, Muntz Road and the site.

The arterial roads are designated for B-Double vehicles as outlined within the VicRoads Gazetted Roads for B-Doubles Map and TfNSW Restricted Access Vehicle Map. Accordingly, the access route is able to accommodate the loads and type of vehicle movement to be generated during construction of the solar farm.

It is noted that a second route is proposed from Port Sydney in the event congestion at Port Melbourne creates time constraints for the project. The route will utilise the M5 to travel west and access M31. The A20 will be used to travel through Wagga Wagga and access the site. As such, the alternative route also proposes to utilise arterial/State roads that are able to accommodate the type of vehicle movement to be generated during construction of the solar farm.

## 6. Conclusions

Based on the above assessment the following conclusions are made:

- The increase in truck size from a 19 metre Articulated Vehicle to a 26 metre B-Double (excluding oversize and overmass vehicles) is acceptable with the existing road upgrades being suitable to accommodate the increase in vehicle size.
- The increase in truck movements from 35 to 65 per day is able to be readily accommodated on the road network given these movements are distributed throughout the day.
- The increase from 3 to 24 OSOM vehicle movements is expected to have a minimal impact on the road network with these movements able to be managed by traffic management measures that will be identified as part of the individual permits for these deliveries.
- The proposed access route from either Port Melbourne or Port Sydney utilises arterial/State roads that are able to accommodate the type of vehicle movement to be generated during construction of the solar farm.

Overall, the proposed amendments to the permit are expected to have a minimal impact to the operation of the surrounding road network.

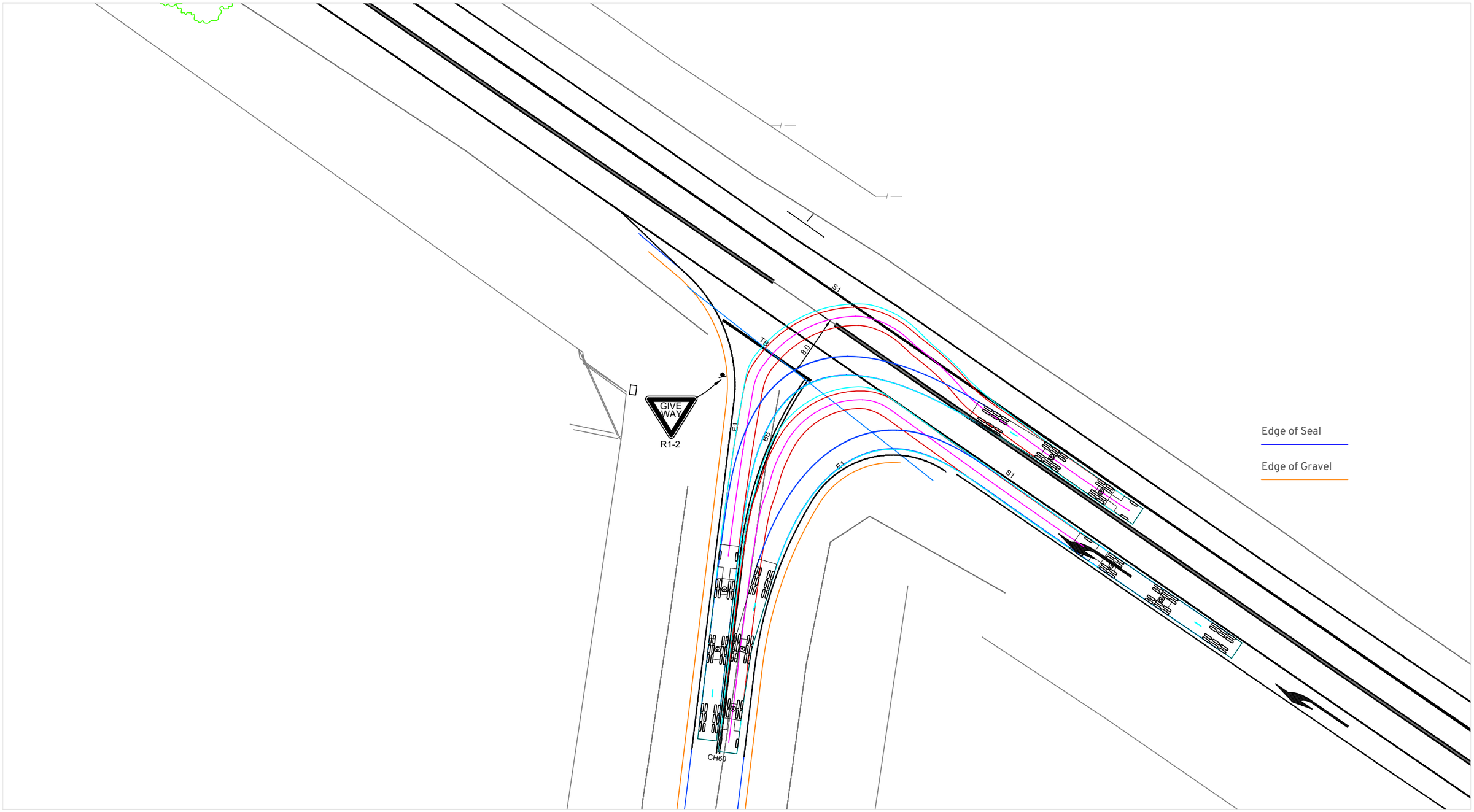
If you have any questions please feel free to contact the undersigned.

Yours sincerely
Amber Organisation

Michael Willson
**Director**

# Appendix A

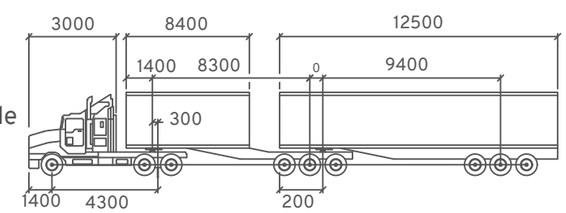
Swept Path Assessment




Vehicle Envelope

300mm Clearance

B-Double




| | mm |
|---|---|
| Tractor Width | : 2500 |
| Trailer Width | : 2500 |
| Tractor Track | : 2500 |
| Trailer Track | : 2500 |
| Lock to Lock | : 6.0s |
| Steering Angle | : 22.2 |
| Articulating Angle | 70.0 |

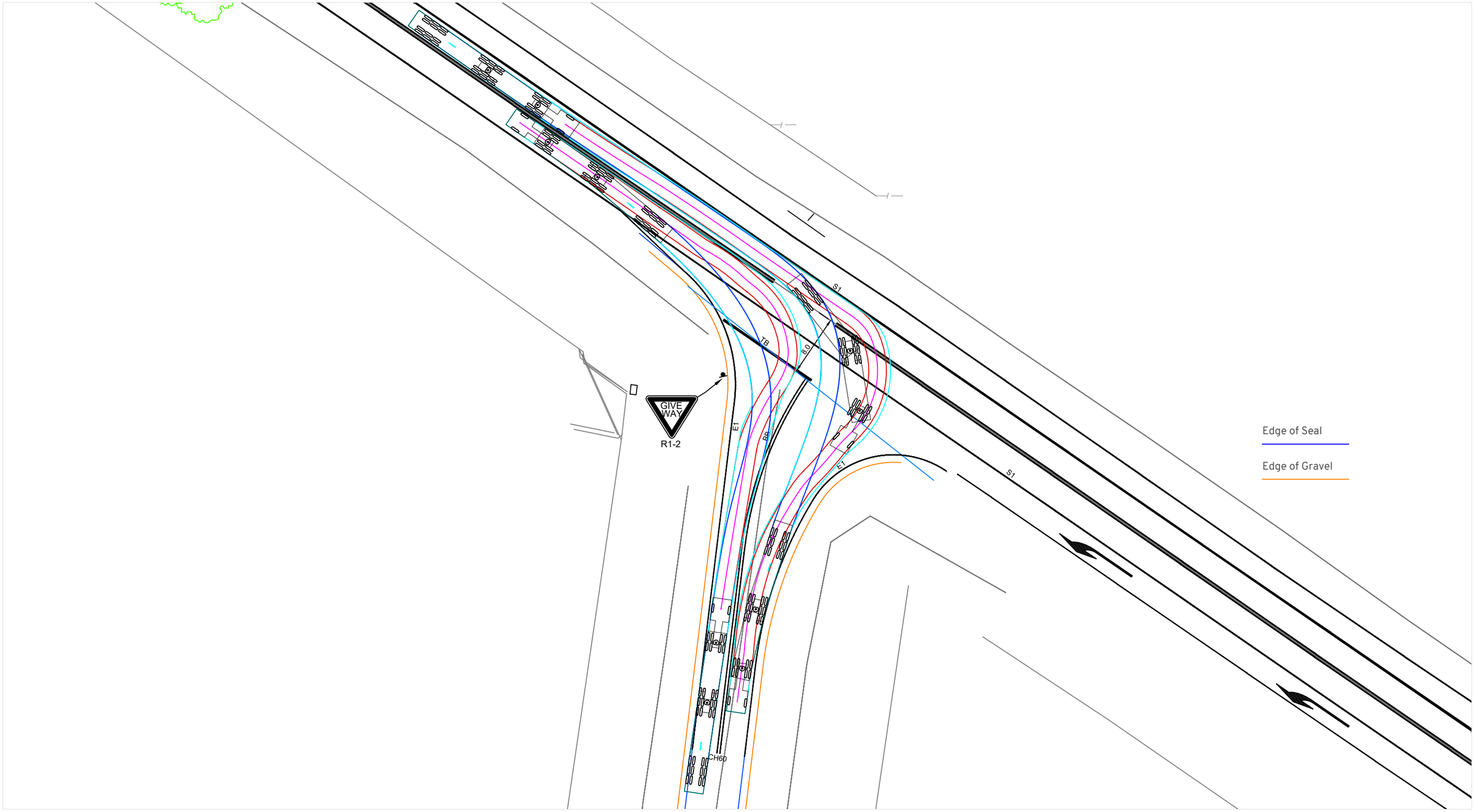
# Avonlie Solar Farm

## Access Design Review

## Swept Path Assessment

DRAWN: MW
DATE: 08/11/2021
SCALE: 1:500 @ A3
DWG NO: 279-S01A

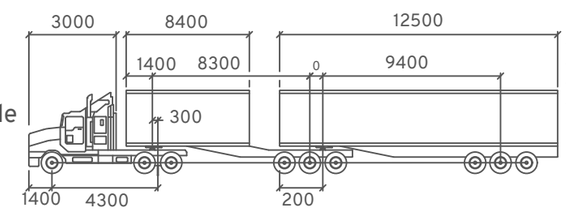
Amber 01




Vehicle Envelope

300mm Clearance

B-Double




| | mm |
|---|---|
| Tractor Width | : 2500 |
| Trailer Width | : 2500 |
| Tractor Track | : 2500 |
| Trailer Track | : 2500 |
| Lock to Lock | : 6.0s |
| Steering Angle | : 22.2 |
| Articulating Angle | 70.0 |

# Avonlie Solar Farm

## Access Design Review

## Swept Path Assessment

DRAWN: MW
DATE: 08/11/2021
SCALE: 1:500 @ A3
DWG NO: 279-S01A

Amber 02

Telstra Marker

R1-2

GIVE WAY

TL

BB

Sandigo Road

Road Sign

Comms Pillar

Comms Pit

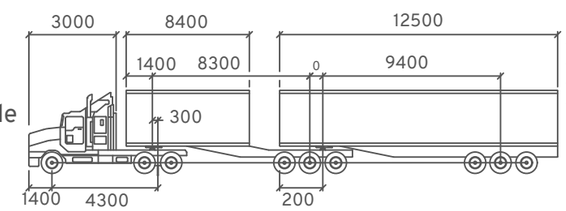
Edge of Seal

Edge of Gravel

Vehicle Envelope

300mm Clearance

B-Double




| | mm |
|---|---|
| Tractor Width | : 2500 |
| Trailer Width | : 2500 |
| Tractor Track | : 2500 |
| Trailer Track | : 2500 |
| Lock to Lock | : 6.0s |
| Steering Angle | : 22.2 |
| Articulating Angle | 70.0 |

# Avonlie Solar Farm

## Access Design Review

## Swept Path Assessment

DRAWN: MW
DATE: 08/11/2021
SCALE: 1:500 @ A3
DWG NO: 279-S01A

Amber 03