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Junction Rivers Wind Farm

EIS Traffic and Transport Assessment

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Executive Summary

Access Traffic Consulting was commissioned by Umwelt Australia Pty Ltd (Umwelt) on behalf of Windlab Developments Pty Ltd (Windlab) to undertake a traffic and transport assessment for the proposed Junction Rivers Wind Project (the Project), which is to be located approximately 140km west of Hay and 15km to the south of the regional township of Balranald, on land within the Murray River Council (MRC) local government area. The Project is located within the South-West Renewable Energy Zone (SW REZ), which the NSW Government has identified as a target area for renewable energy development in its Transmission Infrastructure Strategy and Electricity Infrastructure Roadmap.

The Project would involve the construction, operation and eventual decommissioning of a wind farm with up to 96 Wind Turbine Generators (WTG) and associated ancillary infrastructure, with a generating capacity of up to approximately 750MW. The delivery strategy for the Project is yet to be confirmed, and it may be constructed in either one or two stages. If delivered in two stages the first stage would include the construction of up to 30 wind turbine generators (WTGs) and associated infrastructure, with the second stage delivering the remaining balance of the overall 96 WTGs and additional site infrastructure.

This traffic and transport assessment was carried out to determine the level of potential impacts of the construction, operations and decommissioning phases of each of the identified stages of the Project on the operation of the surrounding state and local government-controlled road networks. The outcomes of this assessment will be used in support of the Environmental Impact Statement (EIS) for the Project, with MRC and Transport for New South Wales (TfNSW) expected to be advice agencies.

Based on the assessment completed, it was identified that the increase in traffic volumes anticipated as a result of the construction, operations and decommissioning phases of both stages of the Project were anticipated to have a minor impact on the traffic operation of the surrounding road networks. Notwithstanding this, the technical assessment identified the requirement for the provision of the following upgrade works and mitigation treatments as part of the Project to maximise the safety and operational performance of the external road network:

Stage 1 (up to 30 WTGs)

- Completion of minor works along the identified transport route to accommodate the swept paths of the OSOM turbine component transport vehicles, including the relocation of signage and road lighting infrastructure and construction of required temporary hardstand pavement areas as identified in the Preliminary Transport Route Assessment for the Project (Rex J Andrews Route Assessment, refer Appendix A). It is noted that the exact extents and scope of these works will be determined in subsequent detailed design phases of the Project once the turbine component and transport vehicle configurations are confirmed.

  In addition, further consultation with the relevant local government road authorities will be required to establish infrastructure or maintenance agreements to cover any required works to offset the potential pavement impacts of the OSOM vehicle movements for the Project on the lower order, local government controlled road links along the identified OSOM transport routes. This would also include pre and post dilapidation inspections to be undertaken on the sections of the local government roads used by Project traffic, with these inspections to be completed by representatives of Windlab and the appropriate Council. These inspections are required to identify and document the current condition of the roads (pre-construction) and establish the required maintenance and/or rehabilitation works deemed necessary to reinstate the roads to their documented condition prior to the introduction of Project traffic at the completion of their use.
- Provision of upgrade works to the Yanga Way / Balranald-Moulamein Road intersection to provide basic right (BAR) and basic left (BAL) turn treatments, generally in accordance with Figure 8.2 of Part

4A (rural BAL) and Figure A6 of Part 4 (rural BAR) of Austroads *Guide to Road Design*, and provision of additional hardstand area required to accommodate OSOM turn movements (as per Rex J Andrews Route Assessment).

- Provision of upgrade works to the section of Balranald-Moulamein Road between Yanga Way and Site Access 5 (SA5– approx. 11.095km). These upgrade works are proposed to include road grading and resheeting works to provide a suitable unsealed (gravel) road surface up to 8m minimum in width. (to match the current minimum road width on this link).

  It is also noted that as part of Stage 1, pre and post construction phase dilapidation surveys will be required to be undertaken on this section of Balranald-Moulamein Road (Yanga Way to SA5). The pre construction inspection is to be undertaken upon the completion of the proposed regrading / resheeting works and is to establish the pre-construction road condition, with the post construction dilapidation survey then used to identify rehabilitation works required to be completed by the Project to bring road conditions / standards on this section of Balranald-Moulamein Road back to the recorded pre construction condition.
- Provision of suitable site access configurations at Site Access 2,3 & 5 on Balranald-Moulamein Road, with provision for additional hardstand areas as required to accommodate OSOM heavy vehicle movements. It is proposed that these site access points are to be provided generally in accordance with the site access arrangement/configuration outlined in Figure 7.4 of Austroads Guide to Road Design Part 4: Intersections and Crossings – General.
- Installation of advisory "truck turning" signage be installed on the approaches to the Yanga Way / Balranald-Moulamein Road intersection, to highlight to motorists the potential for turning heavy vehicles to/from the side road.
- Preparation of traffic management plan for Stage 1 of the Project outlining proposed management measures and processes to minimise the impact of Project traffic (including OSOM turbine component transport vehicles) on the external road network.

<u>Stage 2 (66 or the remaining balance of the 96 WTGs after Stage 1 construction)</u>

- Completion of identified route upgrade works as identified in Rex Andrews route assessment, if previous route works have been remediated upon completion of Stage 1 OSOM haulage operations.
- Provision of upgrade works to the Balranald-Moulamein Road / Arundel Road intersection to provide basic right (BAR) and basic left (BAL) turn treatments, generally in accordance with Figure 8.2 of Part 4A (rural BAL) and Figure A6 of Part 4 (rural BAR) of Austroads *Guide to Road Design*.
- Provision of upgrade works to the section of Balranald-Moulamein Road between Site Access 5 (SA5 – approx. 11.095km) and Site Access 8 (SA8 – approx. 22.140km). These upgrade works are proposed to include road grading and resheeting works to provide a suitable unsealed (gravel) road surface up to 8m minimum in width.
- Provision of upgrade works to the section of Arundel Road between Balranald-Moulamein Road and Site Access 4 (SA8 – approx. 0.710km). These upgrade works are proposed to include road grading and resheeting works to provide a suitable unsealed (gravel) road surface up to minimum 7m width (on 9m formation).
- It is also noted that as part of Stage 2, pre and post construction phase dilapidation surveys will be required to be undertaken on the relevant sections of Balranald-Moulamein Road (Yanga Way to SA8) and Arundel Road (Balranald-Moulamein Road to SA4). The pre construction inspection is to be undertaken upon the completion of the proposed regrading / resheeting works and is to establish the pre-construction road condition, with the post construction dilapidation survey then used to identify

rehabilitation works required to be completed by the Project to bring road conditions / standards on this section of Balranald-Moulamein Road back to the recorded pre construction condition.

- Provision of suitable site access configurations at Site Access 6,7 & 8 on Balranald-Moulamein Road, Site Access 4 on Arundel Road and Site Access 1 (Emergency Only) on Yanga Way, with provision for additional hardstand areas as required (SA4 / SA6 / SA7 & SA8) to accommodate OSOM heavy vehicle movements. It is proposed that these site access points are to be provided generally in accordance with the site access arrangement/configuration outlined in Figure 7.4 of Austroads Guide to Road Design Part 4: Intersections and Crossings – General.
- Installation of advisory "truck turning" signage be installed on the approaches to the Yanga Way / Balranald-Moulamein Road and Balranald-Moulamein Road / Arundel Road intersections, to highlight to motorists the potential for turning heavy vehicles to/from the side roads.
- Preparation of traffic management plan for Stage 2 of the Project outlining proposed management measures and processes to minimise the impact of Project traffic (including OSOM turbine component transport vehicles) on the external road network.

If the mitigation measures and road network upgrade works listed above are carried out, then the Project can be considered to have a minimal impact on the traffic operation of the relevant sections of the local government and state-controlled road networks.

Taking the above into consideration, this report (in combination with the Preliminary Route Assessment) demonstrates the compliance of the Project with Part 8 of the Environmental and Planning Regulation (2021), as outlined in the traffic and transport items of the Secretary's Environmental Assessment Requirements (SEARs) .

Access Traffic Consulting therefore recommends that the Project be approved from a traffic engineering and traffic impact viewpoint.

1.0 Introduction

1.1 Project Background

Windlab Developments Pty Ltd (Windlab) proposes to develop the Junction Rivers Wind Project (the Project) to provide a reliable and affordable source of energy for the people of New South Wales (NSW) and contribute to reducing greenhouse gas (GHG) emissions associated with energy generation.

The Project is located approximately 15 kilometres (km) south of Balranald, 140 km west of Hay and 20 km northeast of the NSW and Victorian border within the southern section of the Murray-Darling Basin. The Project is within the Murray River Council Local Government Area (LGA) and immediately east of Balranald Shire LGA. The Project is located within the South-West Renewable Energy Zone (SW REZ), which the NSW Government has identified as a target area for renewable energy development in its Transmission Infrastructure Strategy and Electricity Infrastructure Roadmap.

The Project is a State Significant Development (SSD) as defined under *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP) and will require development consent under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

The Project will have a generating capacity of approximately 750 megawatts (MW) and would connect to the existing 220 kilovolt transmission line that traverses the Project Area and/or the proposed Project EnergyConnect transmission line. The key components of the Project include:

- Approximately 96 (3 blade) WTGs with a total height (tip height) of approximately 300 metres (m).
- Electrical connections between the proposed WTGs and substations/switching stations consisting of underground or a combination of underground cables and overhead powerlines.
- Substations/switching stations and transmission connections to connect to the existing 220 kV transmission line and/or the approved Project EnergyConnect transmission line.
- Up to four battery energy storage system (BESS) facilities (to a total of 200 megawatts (MW) with a 4-hour delivery capacity), or up to four static synchronous compensator (STATcom) facilities.
- Permanent Power Performance Masts
- Other associated infrastructure including access roads and tracks, operation and maintenance buildings and construction facilities.
- Temporary on-site concrete batching plants, rock crushing facilities, and calibration meteorological masts during the construction phases.
- Targeted road network upgrades to facilitate delivery of WTG components to the Project Area as required.

The Project may be constructed in two stages, with Stage 1 proposing the construction of up to 30 WTGs and required ancillary infrastructure, with Stage 2 proposing the construction of the remaining WTGs (approx. 66 WTGs) and required ancillary infrastructure (refer Section 3.2.1 for further staging details).

If the Project is not staged, then construction would be one continuous process establishing all 96 WTGs and required ancillary infrastructure. Regardless of the staging option, the overall construction period would be approximately four years (Stage 1 approximately 18 months and Stage 2 approximately 30 months).

1.2 Assessment Scope and Methodology

Access Traffic Consulting was commissioned by Umwelt Australia Pty Ltd (Umwelt) on behalf of Windlab to undertake a traffic and transport impact assessment (TTIA) as part of the Environmental Impact Statement (EIS) for the Project.

This TTIA was carried out to determine the level of potential impacts of the construction, operations and decommissioning phases of each identified stage of the Project on the operation of the surrounding road network. The outcomes of this assessment will be used in support of the EIS for the Project, with Murray River Council (MRC) and Transport for New South Wales (TfNSW) expected to be advice agencies.

Further to this, the purpose of this report is also to assess the Project's compliance with the requirements of Part 8 of the Environmental and Planning Regulation (2021), as outlined in the traffic and transport items of the Secretary's Environmental Assessment Requirements (SEARs) provided for the Project.

The following methodology was adopted to undertake the required assessments as part of the TTIA, as summarised in the key tasks listed below.

- Broadly identify the existing transport infrastructure which is of relevance to the Project.
- Estimate traffic generation associated with the construction, operations and decommissioning phases of the Project and the distribution of this Project traffic on the identified road network, including the movement of materials, plant, equipment and turbine components in addition to the construction, operations and decommissioning phase workforces.
- Assess the potential impact of the Project on the surrounding transport infrastructure during the construction, operations and decommissioning phases.
- Identify potential mitigation and management strategies to be implemented during the construction, operations and decommissioning phases to offset the impact of the proposed Project (if required).

The adopted methodology centres on establishing a background, "without Project" traffic scenario for the identified transport routes and comparing this with scenarios incorporating the expected Project-generated traffic (i.e. "with Project"), and an additional scenario considering cumulative traffic volumes from both the Project and relevant State Significant Projects which are expected to concurrently utilise the same sections of the road network.

The process allows for the assessment of the traffic impacts of the Project in terms of road safety, access requirements, intersection operations, road link capacity, road pavements and other transport infrastructure. Following this, if required, potential mitigation and/or management measures would be formulated to address the potential traffic impacts of the Project.

1.3 Study Area

As noted above, the Project Area is located approximately 140km west of Hay and 15km to the south of the regional township of Balranald. This assessment relates to both Stage 1 and Stage 2 of the Junction Rivers Wind Farm, with the relevant Project areas located on both sides of the MRC controlled Balranald-Moulamein Road, south of the Sturt Highway, as shown on **Figure 1** overpage.

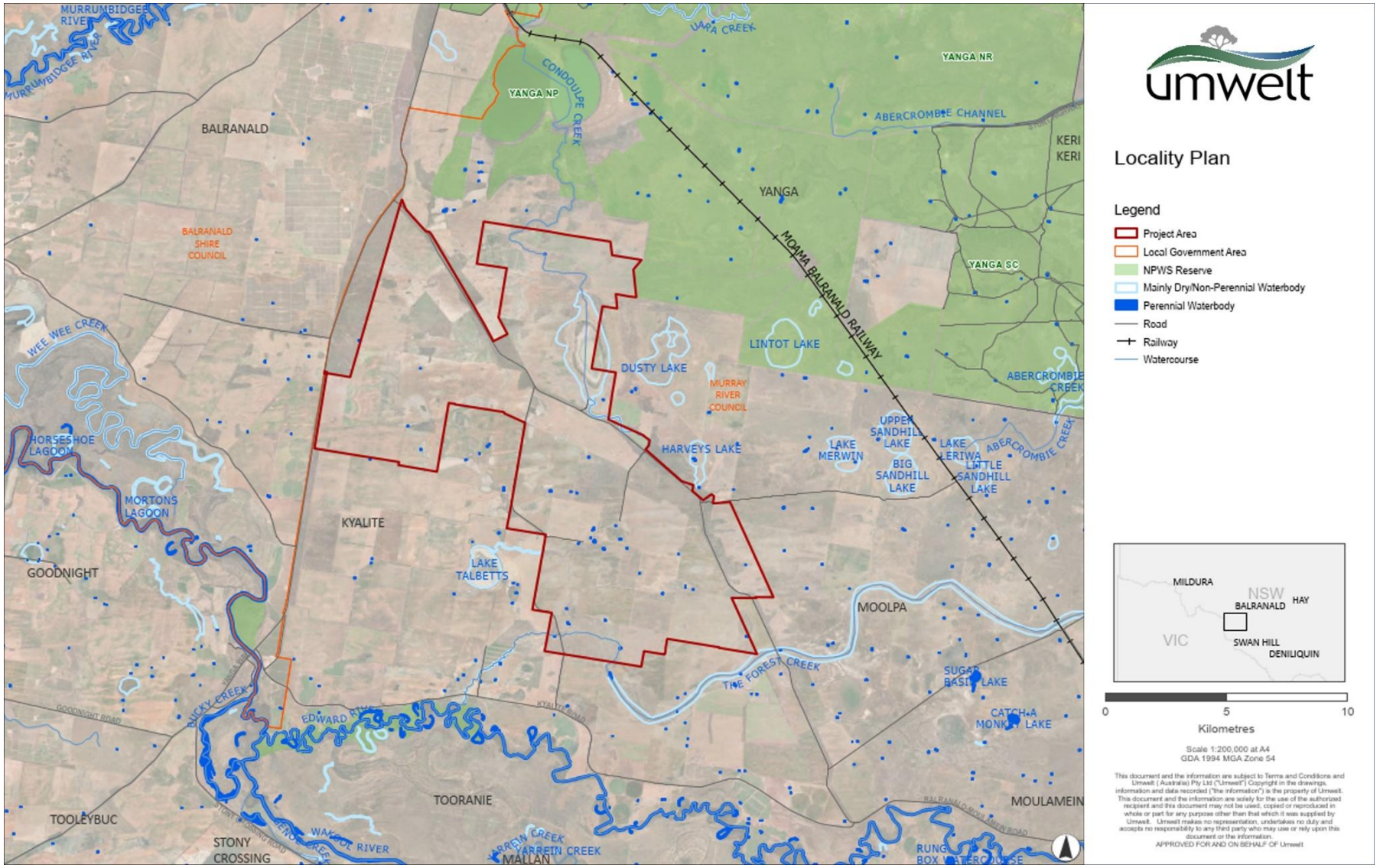


Figure 1 Site Locality - Junction Rivers Wind Farm [Source: Umwelt]

1.4 Project Context

An initial traffic and transport impact assessment (TTIA Ver B - Access Traffic Consulting (ATC) dated 15 May 2024) was prepared in support of the EIS for the Project, with government agency feedback subsequently received from Transport for New South Wales (TfNSW).

This revision to the TTIA has therefore been prepared to provide the additional detail and clarifications requested in the TfNSW Request for Information dated 20 August 2024 (Ref: WST24/00121 SF2024/064488), which identified a number of traffic and transport related queries regarding the initial TTIA. A summary of the specific traffic and transport queries identified by TfNSW, and the corresponding technical responses to the items raised is provided in **Table 1** overpage.

In addition to the traffic items raised by TfNSW, the assessment has also been revised to reflect a number of minor amendments to the previous proposal in relation to the site configuration, access arrangements, construction quantities, Project staging and the timing of the proposed construction works. A summary of the amendments to the proposal considered in this revision of the TTIA are as follows:

- **Site Access 1 operation** – Previously, Site Access 1 (SA1) on Yanga Way was assumed to provide vehicular site access to all Project traffic (i.e. OSOM movements, material and equipment delivery movements and staff movements. As part of this revision, Windlab has advised that the operation of SA1 will be modified to an access restricted (gated) emergency access only. Based on this revision, the Project traffic previously identified to utilise SA1 has been redistributed to utilised Site Access 2 (SA2) on Balranald-Moulamein Road, which has led to increased volumes on Balranald-Moulamein Road and at the Yanga Way / Balranald-Moulamein Road intersection.
- **Site water quantity and haulage vehicle** – Based on further construction information, Windlab advised that the quantities of site water required for both the Stage 1 and Stage 2 construction works had significantly increased, from 48ML to 135ML for Stage 1 and 111ML to 275ML for Stage 2. Further to this, Windlab has identified that site water will be transported to site in larger 30KL tankers rather than the 26.5KL tankers identified in the previous assessment. Based on these changes, the overall number of water truck movements on the external road network has increased.
- **Minor site layout amendments** – Windlab has identified minor amendments to the site layout, most notably the removal of the previously proposed switching station and BESS facility in the central area of the Project, which were previously proposed to be accessed via Arundel Road and Site Access 4 (SA4). It is understood that the removal of these facilities will be offset by increasing the capacity of the remaining internal substation and BESS facilities. The removal of these areas via SA4 has lead to a slight reduction in Project vehicle movements on Arundel Road.
- **Pre construction or preliminary construction phase** – At the request of TfNSW, additional assessment has been undertaken of the traffic impacts of the initial pre-construction of preliminary construction phase of the Project. This preliminary construction phase was identified to include the initial 4 months of the construction phase of Stage 1, and includes preliminary site investigation, external road network upgrade and site mobilisation and establishment works. This period of early construction works is expected to be delivered by a significantly smaller construction workforce than the peak construction periods of both Stage 1 and Stage 2 of the Project, and as such much lower daily and peak hour volumes of traffic are anticipated on the external road network during this initial phase.
- **Proposed Project Timeframes** – Windlab has advised that the construction timings for the Project have been delayed by approximately 12 months, with the revised Project timings now anticipated to be between Q3 (July) 2026 to Q4 (December) 2027 for Stage 1 and Q1 (January) 2028 to Q2 (June) 2030 for Stage 2. The relevant road link and intersection assessments for the Project have therefore been updated as part of this revision to reflect the revised Project timings.

Table 1 Response to TfNSW Request for Information

TfNSW RFI Item		Reference / Response
Total Traffic Generation		
8.	The intersection of Yanga Way and SA1 has been proposed to be constructed as a BAR/BAL intersection, however no turn warrant assessment has been submitted. This needs to be provided.	As part of the proposed revisions to the Project, the proposed use of site access point SA1 by Project traffic has been modified, from previously catering to all Project traffic to now being identified as an emergency access only. All Project traffic previously proposed to utilise SA1 are now proposed to enter / exit the site via site access point SA2 on Balranald-Moulamein Road. As SA1 is now proposed to be an emergency only access, vehicle movements utilising the access point are anticipated to be very infrequent. As such the access point is proposed to be configured as a standard rural property access. Based on the infrequent use of this access, the very low traffic volumes, and the proposed provision of a standard rural property access configuration (in lieu of a full intersection configuration) means that the requested turn warrant assessment is not required.
9.	No consideration has been given to pre-construction minor works. Identify traffic generation and types of vehicles required at each stage of construction inclusive of pre-construction minor works. It is noted that the applicant is reliant on the delivery of intersection upgrades for the Sturt Highway/ Yanga Way intersection to a CHR(s). This is required before this development can commence construction.	Please refer to **Section 4.1.1.1** which identifies the expected Project traffic volumes during the identified preliminary construction period for the Project, including preliminary site investigations, external road upgrade works and mobilisation and site establishment for Stage 1. As it is anticipated that Stage 2 construction will likely follow directly after the completion of the Stage 1 works, it is noted that the preliminary construction works will be limited to the start of the Stage 1 construction phase (i.e. no preliminary works in Stage 2). Further details of the traffic impact assessment for the identified preliminary construction phase (Stage 1) for the Project are provided in **Section 5.0**. In terms of the identified upgrade works (provision of CHRs) to the Sturt Highway / Yanga Way intersection, it is noted that the provision of these works has previously been conditioned to be provided by the nearby Balranald Mineral Sands Project, which is expected to begin operation in Q3 2025. As such it is expected that these works will be completed and available for use prior to the start of the construction phase for the Junction Rivers Wind Farm Project.
10.	Further assessment is required to identify if the peak traffic volumes will be representative of the traffic volumes in Stage 2 of the project. This is required to ensure that the assessed intersection treatments for Yanga Way and SA1, for Stage 1 are suitable for Stage 2 of Yanga Way and SA1 are suitable for the entirety of the project. This will be applicable to any further intersection or access connecting with the State road network.	It is highlighted that **Section 4.0** of this report includes estimates of peak construction traffic volumes for both Stage 1 and Stage 2, and that assessments of all relevant intersections and access points for the Project were also completed using the identified peak construction phase volumes for both Stage 1 and Stage 2 (refer **Section 5.2** & **Section 5.3**). As such it is concluded that the identified intersection and access treatments within this report (refer **Section 6.1**) will be suitable to cater for traffic volumes in both Stage 1 and Stage 2.

11.	TfNSW notes that intersection count and project traffic peak hour has been assumed as 6am-7am and 5:30pm-6:30pm. If these hours are to change, updated traffic counts and turn warrant assessment would be required. The peak traffic hours should be considered as a condition of consent.	It is noted that the previously proposed Project traffic peak hours (6-7am) and (5:30-6:30pm) are proposed to be retained and are considered as a condition of consent for the Project.
12.	The traffic generation of the construction staff has assumed 2 people per light vehicle and the use of shuttle buses. Limits may be required in the conditions to ensure the volumes of the development are within the limits of the TIA.	The previously proposed construction staff generation rates (refer **Section 4.1.1.1 Section 4.1.1.3** & **Section 4.1.2.3**) which adopt the assumption of 2 staff members per light vehicle and the use of shuttle buses for the Project has also been retained. It is understood that limits may be required in the conditions for the Project to ensure the volumes of the Project are within the limits identified in the TIA.
13.	Table 23 and 24 of the TIA has HV and LV headings seemingly in the wrong columns. Please review this table to ensure the headings are correct.	Noted. The relevant heading text has been amended to correctly identify LV and HV columns for the traffic volumes at the relevant intersections (now **Table 27** and **Table 28**).
14.	No strategic designs have been submitted for the intersection upgrades. These are required to be submitted for any physical changes to the state road network.	Please refer to the strategic concept designs included for reference in **Appendix M**, which includes designs for all the relevant intersection and access upgrade works identified for the Project, including the proposed BAR / BAL turn treatments at the Yanga Way / Balranald-Moulamein Road intersection.
15.	Strategic designs must be accompanied by swept paths for the largest vehicle required to access each public and private access with the State road network. Swept paths must demonstrate the largest heavy vehicle can turn concurrently in all turn directions without crossing into the incorrect lane, well within proposed/existing pavement and within existing intersection treatments (where applicable). Intersection upgrades are to be in accordance with Austroads and relevant TfNSW supplements.	Please refer to the swept paths provided for all strategic concept designs included for reference in **Appendix M**, in particular the swept paths associated with the proposed BAR / BAL turn treatments at the Yanga Way / Balranald-Moulamein Road intersection which demonstrated concurrent turn movements for the 26.0m B-double design vehicle.
16.	Strategic designs must identify any acquisition required to facilitate the scope of the road upgrades and road works inclusive of pinch point. The Developer is responsible for dedication and acquisition of land, if necessary, to accommodate road infrastructure, including but not limited	Please refer to the strategic concept designs and swept paths for the proposed blade and tower component transport routes included for reference in **Appendix M**. The designs highlight the extent of civil works and/or acquisition required at each location. The designs have been prepared in accordance with the TfNSW Strategic Design Fact Sheet.

	to footways, structures, stormwater drainage, batters, maintenance access, and utilities, to TfNSW's satisfaction.	
17.	Sturt Highway and Yanga Way are Road Train routes (36.5m Type 1 Road Train/ PBS3). Intersections on these roads should be designed to cater to road train movements.	The project does not propose to construct any additional turn treatments along Sturt Highway. Strategic concept designs and swept paths are included in **Appendix M**, including for the construction of BAR/BAL turn treatments at the Yanga Way / Balranald-Moulamein Road intersection. The designs indicate road widening to achieve 7.0 metres from the road centreline to the edge of seal on Yanga Way, in accordance with the design requirements for Road Train routes. It is noted that Balranald-Moulamein Road is not an approved Road Train route and so the intersection has been designed for 26.0m B-Double turning movements.
18.	Swept paths for the high risk OSOM will be required for each site access point to the site that will be required to be used for the high risk OSOM. The swept paths are required to demonstrate that the high risk OSOM can be delivered within the existing or proposed pavement and if further pavement widening is required to accommodate these movements.	All site access points to be utilised by high risk OSOM vehicles are on the local road network, noting that site access point SA1 on Yanga Way is now proposed to be utilised for emergency access only. Strategic concept designs and swept paths for the relevant site access points on Balranald-Moulamein Road are included for reference in **Appendix M**.
19.	The EIS suggests that Site Access Point 1 is an emergency access only, however the TIA suggests in is a normal site access used by OSOM vehicles. Clarification by the applicant is required.	As identified above, as part of the proposed revisions to the Project site access point SA1on Yanga Way has been modified from catering to all Project traffic to now being identified as an emergency access only.
20.	If emergency accesses are proposed to a state classified road it must identify how the access will be managed (i.e gates) to prevent the use of the access for other vehicles associated with the development during peak of construction and operation.	It is understood that the SA1 access point will be managed via the use of property gates located on the property boundary to the Project Area. The gated nature of this access point (as shown in Figure SA1-1 in **Appendix M**) will assist in restricting the use of the access to emergency vehicles only, with Project traffic required to utilise the remaining site access points for the Project off Balranald-Moulamein Road, which is expected to be documented as part of a Construction Traffic Management Plan, expected to be developed as part of the next delivery phase of the Project.
21.	Identify the emergency design vehicle and provide a swept path analysis identifying.	Strategic concept design and swept paths for the proposed emergency access only site access SA1 on Yanga Way are included for reference in Figure SA1-1 and SA1-2 of **Appendix M.** This figure demonstrates that the SA1 emergency access has been suitably designed to accommodate a 12.5m long Heavy Rigid Vehicle (HRV) configuration which is proposed to represent the movements of a specialist fire truck, which is the proposed design vehicle for the emergency access.
22.	Provision of sufficient storage at the throat of the access to allow for the emergency vehicle to store within the	The design vehicle (HRV – specialist fire truck) swept paths for the proposed emergency access only site access SA1 on Yanga Way identified in Figure SA1-2 (refer **Appendix M**) clearly show that the

	access and not within the through lane or shoulder.	proposed design vehicle can safely store within the throat of the access, clear of the adjacent traffic lane and road shoulder of the adjacent Yanga Way and the expected gate location at the existing property boundary to the Project Area .
23.	Identify compliance with SISD for the design speed (posted speed +10km/hr)	Please refer to **Section 3.4.2.5.1** of this report and Figure SA1-3 (in **Appendix M**), which clearly demonstrates the compliance of the site access location with the SISD requirements for a 110km/hr design speed.

Further information regarding the turbine component transport movements and routes for the Project is provided in the Preliminary Transport Route Assessment report (refer **Appendix A**) prepared by Rex J Andrews Transport, which should be read in conjunction with this TTIA.

In addition, the preparation of a detailed traffic management plan (TMP) is proposed to be undertaken as part of the detailed design phases of the Project once the detailed project design and configuration of the turbine components and associated transport vehicles, is confirmed.

1.5 Limitations

Whilst the assessment undertaken is deemed appropriate to assess the anticipated traffic impacts of the Project on the surrounding road network, the following limitations should be noted:

- No assessment has been undertaken to determine the acceptability of the use of the existing culvert and bridge infrastructure along the identified turbine component transport route from a structure load limits / restrictions perspective. This is due to the fact that the vehicle and load configurations for the turbine component transport operations adopted in this assessment are indicative only, with the exact vehicle and load configurations to be confirmed by a suitable transport contractor. It is therefore expected that the assessment of these structures will be completed by the relevant transport contractor as part of the preparation of a detailed route assessment / traffic management plan to be prepared during the detailed design phase of the Project.
- The assessment of the traffic impacts associated with the Project does not consider the works located outside of NSW anticipated to be required as part of the route preparation works for the turbine component transport operation, as identified in the associated Preliminary Transport Route Assessment completed for the Project (dated 14 April 2025). It is expected that these works will be subject to further consultation, detailed design and approval (as required).

2.0 Existing Conditions

2.1 Land Use and Zoning

The Project Area is generally used for agricultural purposes, with the full Project Area located within the identified "RU1 – Primary Production" zoning under the Wakool Shire Local Environmental Plan (2013), as shown in **Figure 2**.

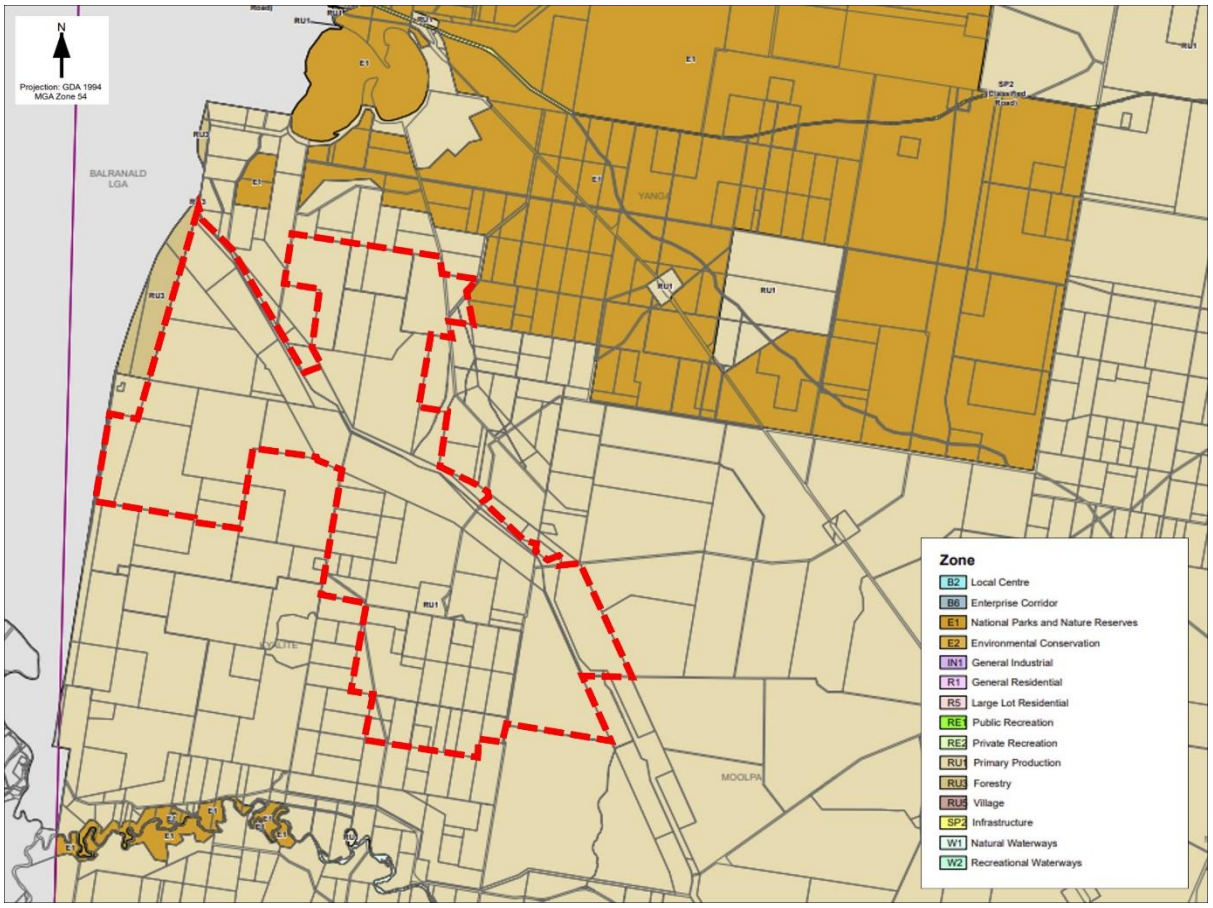


Figure 2 Project Area Land Use Zoning [Source: NSW Planning Portal ePlanning Spatial Viewer]

2.2 Adjacent Land Use / Approvals

As shown in **Figure 2** above, the adjacent land parcels to the Project Area are primarily zoned as "RU1 – Primary Production", while a section of land to the west is zoned as "RU3 – Forestry" and the land further to the north is zoned as "E1 – National Parks and Nature Resources".

Further to this, no active or planned development approvals which could influence this TTIA are understood to be currently held over the properties directly adjacent to the Project Area, while both the Limondale and Sunraysia Solar Farms are currently operating on the opposite (western) side of Yanga Way, to the north-west of the Project Area.

Notwithstanding this, it is noted that as part of the SEARs for the Project further assessment is required regarding the potential cumulative impacts of other State Significant Developments in the vicinity of the Project Area that are expected to utilise the same sections of the state and local government road networks. This assessment is to be completed generally in accordance with the requirements of NSW Government's *Cumulative Impact Assessment Guidelines for State Significant Projects*, with further detail regarding the cumulative assessment completed provided in **Section 4.5** of this report.

2.3 Surrounding Road Network Details

2.3.1 Road Links

Based on the transport routes for the construction, operations and decommissioning phases outlined above, the critical road links in terms of the potential impacts of the proposed Stage 1 and Stage 2 works for the Project were determined to be the section of the Sturt Highway between Mildura and Yanga Way, Swan Hill Road, Stony Crossing Road, Yanga Way, Balranald-Moulamein Road and Arundel Road, as shown in Figure 3.

All of the other road links identified were noted to only be utilised by turbine component transport vehicles. As these movements are only temporary and are expected to travel out of hours and under full escort, the Project is not anticipated to have a significant, ongoing impact on the operation of the road links forming the OSOM transport routes.

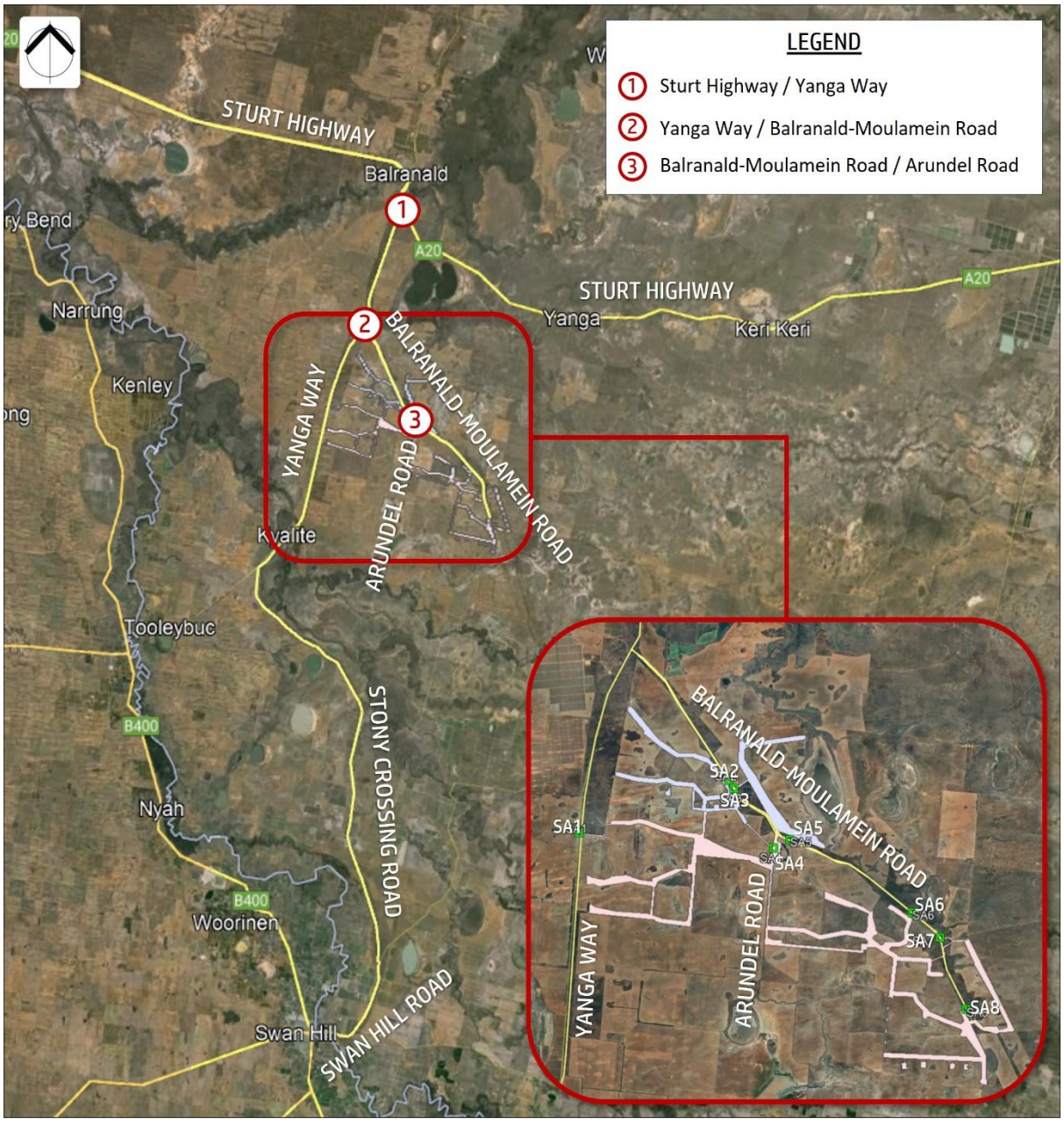


Figure 3 Surrounding Road Network – Relevant Road Links and Intersections

2.3.1.1 Sturt Highway (A20)

As noted above, the section of the Sturt Highway critical to the Project is the approximately 165km length of the link between Mildura and its intersection with Yanga Way, to the south-east of Balranald. The majority of this section of the Sturt Highway is currently operating as a high speed (100km/hr) two-way, two-lane rural highway (refer **Figure 4**), with lower speed (50km/hr) sections provided through regional townships, such as Balranald, where an urban cross section with wider parking lanes/shoulders is provided in both directions of travel (refer **Figure 5**).



Figure 4 Sturt Highway (A20) – Rural High Speed Configuration



Figure 5 Sturt Highway (A20) – Urban Low Speed Configuration

2.3.1.1 Yanga Way (Mallee Highway)

The section of Yanga Way (also known as the Mallee Highway) critical to the Project has been identified as the 49.100km section spanning between the Sturt Highway in the north to Tooleybuc in the south. The majority of this section of the link currently operates as a high speed (100km/hr) two-way, two-lane rural highway. In the vicinity of the Project Area, Yanga Way provides one lane of travel in each direction as well as sealed road shoulders typically 0.5-1.0m in width, with the existing configuration and condition of the road shown further in **Figure 6** and **Figure 7**.



Figure 6 Yanga Way – Looking South from Sturt Highway Intersection



Figure 7 Yanga Way – Looking South along Project Area frontage

2.3.1.1 Swan Hill Road

Based on the expected transport routes for the Project, the section of Swan Hill Road relevant to the Project is the 11.100km length between the Murray Valley Highway in Swan Hill and the intersection with Stony Crossing Road to the north-east, and is expected to primarily be utilised for staff and quarry material movements from Swan Hill and Lake Boga respectively. This section of the link currently operates as a high speed (100km/hr) two-way, two lane rural arterial road with a 6.0-6.5m wide central sealed pavement and 1.0m wide unsealed shoulders as shown in **Figure 8** and **Figure 9**.



Figure 8 Swan Hill Road – Looking North East on departure from Swan Hill



Figure 9 Swan Hill Road – Looking North East on Approach to Stony Crossing Road

2.3.1.1 Stony Crossing Road

The section of the Stony Crossing Road relevant to the Project is the 40.900km length of the link between Swan Hill Road in the south and Yanga Way in the north, which will primarily be utilised for staff and quarry material movements from Swan Hill and Lake Boga respectively. This section of road is currently operating as a high speed (100km/hr) two-way, two-lane rural collector road which provides 6.5m wide sealed pavement with narrow (0.5-1.0m wide) unsealed shoulders as indicatively shown in Figure 10 and Figure 11.



Figure 10 Stony Crossing Road – Looking North from Swan Hill Road Intersection



Figure 11 Stony Crossing Road – Looking North on Approach to Yanga Way Intersection

2.3.1.1 Balranald-Moulamein (Balranald) Road

The section of Balranald-Moulamein Road relevant to the Project varies for both Stage 1 and Stage 2, with Stage 1 initially utilising the 11.095km length between Yanga Way and the proposed Site Access 5, while Project traffic for Stage 2 is expected to utilise a longer length (approx. 22.140km) of the link between Yanga Way and the proposed Site Access 8.

The current configuration of Balranald-Moulamein Road varies along its length, with the initial 40m south-east of Yanga Way providing a sealed two-way, two-lane road section approx. 8m in width, which then transitions to an unsealed two-way, two-lane local collector carriageway which varies in width between 8.0-10.0m along the relevant length as shown in Figure 12 and Figure 13.

Further to this, the relevant length of Balranald-Moulamein Road currently carries relatively low traffic volumes (approx. 50-60vpd), with the existing alignment generally enabling the provision of suitable sight distances along its length.



Figure 12 Balranald-Moulamein Road – Looking South East from Proposed Site Access 3



Figure 13 Balranald-Moulamein Road – Looking North West from Proposed Site Access 7

2.3.1.1 Arundel Road

The section of Arundel Road expected to be utilised by Project traffic is the 710m long length spanning between Balranald-Moulamein Road and the proposed Site Access 4 location, noting that this section of road is only proposed to be utilised during Stage 2 of the Project.

As shown in **Figure 14** and **Figure 15** below, the current configuration of the relevant length of Arundel Road provides a two-way, one-lane unsealed rural access road carriageway, with varying road widths of 4.0-4.5m.



Figure 14 Arundel Road – Looking North to Balranald-Moulamein Road from Proposed Site Access 4



Figure 15 Arundel Road – Looking South from Proposed Site Access 4

2.3.2 Intersections

In terms of the traffic impact assessment for the Project, the key intersections on the external road network were identified to be the intersections of Sturt Highway / Yanga Way, Yanga Way / Balranald-Moulamein Road and Balranald-Moulamein Road / Arundel Road, with the indicative location of these intersections provided in **Figure 3** above and further details of the current configuration of these intersections provided below.

All other intersections on the external road network were noted to primarily only be utilised by turbine component transport vehicles. The movements of these Project related vehicles are only temporary and as they are expected to travel out of hours and under full escort, they are not anticipated to have a significant impact on the operation of any relevant intersections. As such no further assessment of these intersections was deemed warranted.

2.3.2.1 Sturt Highway / Yanga Way

The existing configuration of the Sturt Highway / Yanga Way intersection currently operates as a three-way, priority controlled (give way) intersection, with the Sturt Highway approaches having priority as the major road and Yanga Road forming the minor side road approach to the intersection. Two lanes are provided in each direction on the Sturt Highway through the intersection, providing auxiliary left and right turn treatments for movements turning into Yanga Way, while one lane in each direction is provided on the Yanga Way approach/departure to the intersection, as shown in Figure 16 below.

It is noted that as part of the traffic assessment undertaken for the nearby Balranald Mineral Sands project, it was identified that the existing AUR treatment configuration on the western approach to the intersection should be modified to provide the new standard of a short channelised (or CHRs) treatment for right turn movements into Yanga Way. Construction of the Balranald Mineral Sands project commenced in August 2023 and is expected to take approximately 18-months[1]. As such it is expected that the identified upgrade works will be provided at this intersection prior to the commencement of the Stage 1 construction works for the proposed Junction Rivers Wind Farm Project.

Finally it is noted that based on site observations, adequate sight distance (Safe Intersection Sight Distance – approx. 226m for 90km/hr design speed / 2.5sec R_T / d=0.36) is available to/from the intersection in both directions on the Sturt Highway.



Figure 16 Existing Sturt Highway / Yanga Way Intersection [Source: Google Earth Pro]

2.3.2.2 Yanga Way / Balranald-Moulamein Road

The existing configuration of the Yanga Way / Balranald-Moulamein Road intersection also currently operates as a three-way, priority controlled (give way) intersection, with the Yanga Way approaches having priority as the major road and Balranald-Moulamein Road acting as the minor side road approach. One lane is provided in each direction on all approaches, with no specific turn treatments or widenings provided on Yanga Way for movements entering Balranald-Moulamein Road, as depicted in Figure 17.

[1] Refer https://iluka.com/media/vkhp0eet/iluka-murray-basin-update-nov-23.pdf and https://iluka.com/media/s3gl3yyt/balranald-community-factsheet-a4-final-web.pdf

Finally it is noted that based on site observations, adequate sight distance (SISD – approx. 300m for 110km/h design speed/ 2.5sec R_T / d=0.36) is available to/from the intersection in both directions on Yanga Way.



Figure 17 Existing Yanga Way / Balranald-Moulamein Road Intersection [Source: Google Earth Pro]

2.3.2.3 Balranald-Moulamein Road / Arundel Road

The existing configuration of the Balranald-Moulamein Road / Arundel Road intersection is configured as a three-way, priority-controlled intersection, with one lane in each direction of traffic provided on each approach to the intersection. As shown in **Figure 18** below, a large splitter island is located in the centre of the intersection, with right and left turn movements from the various approaches undertaken using two, two-way, one lane slip lanes from the Arundel Road approach.



Figure 18 Existing Balranald-Moulamein Road / Arundel Road Intersection [Source: Google Earth Pro]

2.3.3 Public Transport Routes

It is understood that a bus services currently operates out of a depot in Balranald, with school bus services provided between both Balranald and Kyalite and Balranald and Swan Hill. All services are noted to operate twice daily across Monday-Friday during the NSW school term, with the services travelling outbound from Balranald in the AM and inbound in the PM, as outlined in the indicative timetables for the school services in **Table 2** below.

Table 2 Balranald School Bus Service Stop Locations and Indicative Timings

Balranald - Kyalite			
AM		**PM**	
Depart Depot	8:05 AM	Depart Depot	2.50 PM
Condoulpe	8:25 AM	Balranald Central School	2.55 PM
Gastons	8.30 AM	Court Street	3.09 PM
Malcolm Street	8.40 AM	Malcolm Street	3.15 PM
St Joseph's	8:45 AM	Gaston's Stop	3.20 PM
Balranald Central School	8.46 AM	Condoulpe	3.27 AM
Depot	8.50 AM	Depot	3.40 PM
Balranald – Swan Hill			
AM		**PM**	
Depart Depot	7:20 AM	Depart Depot	2.50 PM
Information Centre	7:25 AM	MacKillop	3:10 PM
Gracedale	7:52 AM	Swan Hill College	3:24 PM
Kyalite Store	8:00 AM	Bonnie Doon	3:51 PM
Bonnie Doon	8:22 AM	Kyalite Store	4:13 PM
MacKillop	8:42 AM	Information Centre	4:43 PM
Swan Hill College	8:46 AM	Depot	4:48 PM
Swan Hill Primary	8:52 AM		
Depot	10:05 AM		

It was also advised that the bus operator also provides additional daily service from Balranald to Swan Hill, as well as services along the Sturt Highway to both Euston (twice daily) and approx. 55km to the east towards Hay.

Based on the information above, it is anticipated that the bus services in the area will primarily utilise the Sturt Highway, Yanga Way, Stony Crossing Road and Swan Hill Road to travel between Balranald, Kyalite and Swan Hill, with no bus movements anticipated to utilise either Balranald-Moulamein Road or Arundel Road. Furthermore, it is noted that the school bus movements on the road network are shown to occur outside of what is expected to be the peak hours for traffic movements associated with either stage of the proposed Junction Rivers Wind Project.

2.3.4 Travelling Stock Reserve Network

Based on the available mapping from the NSW Government (refer **Figure 19**), it is noted that a number of travelling stock reserves (TSR) are located along the lengths of the relevant roads for the Project, including Yanga Way, Balranald-Moulamein Road, Stony Crossing Road and Swan Hill Road.

In particular, it is identified that mapped TSRs are located within the road reserves for the section of Yanga Way fronting the site, and along Balranald-Moulamein Road from Yanga Way to the approximate location of the proposed Site Access 7 (SA7). The TSRs in these key areas are noted to generally be designated as Category 2 TSRs, which as per the NSW Government's *Travelling Stock Reserves State-Wide Plan of Management* are identified to be used for travelling stock, emergency management or biosecurity purposes, and are important for other reasons, e.g. biodiversity conservation, First Nations People's heritage or recreational purposes.

Notwithstanding this, based on discussions with the Project's host landholders it is understood that the TSR's along Yanga Way and Balranald-Moulamein Road are rarely utilised by others or the landholders themselves, with the TSR on Balranald-Moulamein Road also advised to be unfit for use unless used in conjunction with water truck/tanks due to the lack of waterways for stock to drink along this road.

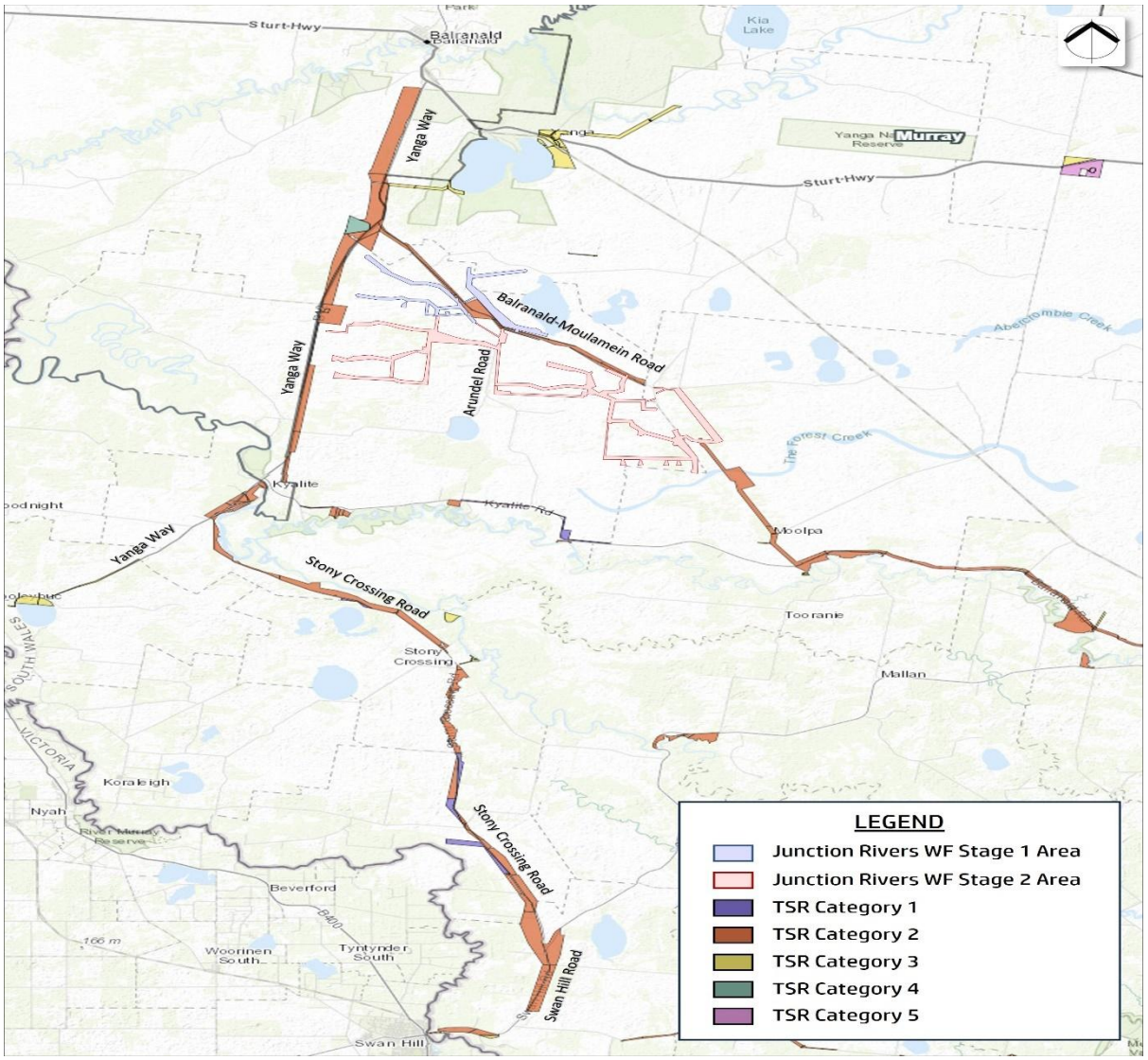


Figure 19 Travelling Stock Reserve Locations [Source: NSW Government]

2.3.5 Active Transport Network

Based on the isolated, rural nature of the Project Area there are no specific active transport facilities or infrastructure on the surrounding road network (i.e. bike lanes or pedestrian pathways) that could be utilised as part of required movements for the Project.

2.4 Existing Traffic Volumes

2.4.1 Road Link Volumes

The road link volumes for the relevant sections of the external state-controlled road network have been estimated from the available historical link count data from TfNSW, while an estimate of the daily volume on Balranald-Moulamein Road was established from the observed peak hour traffic volumes on the Balranald-Moulamein Road leg of the Yanga Way / Balranald-Moulamein Road intersection, with a factor (x5) applied to the combined AM and PM volumes on the leg. Finally a conservative estimate of 20vpd (10vpd each direction) was assumed for Arundel Road based on the low volumes observed on site.

A conservative background growth of 2% per annum (compound) was then applied to the identified baseline year volumes to establish forecasts of the current (2025) volumes on the link (refer **Table 3**), as well as the expected background volumes at future design horizons for the Project.

Table 3 Current (2025) External Road Network AADT Traffic Volumes

Road Seg. ID	Road Segment		Base Data Year	Base Year AADT				10 Yr. GR %	Current (2025) AADT Estimate			
	Start (km)	End (km)		Gaz	% HV	A-Gaz	% HV		Gaz		A-Gaz	
									Total	HV	Total	HV
A20 Sturt Highway (Mildura to Yanga Way)												
98064	0.000	82.400	2007	1,023	26.7%	1,047	26.9%	2.0%	1,461	390	1,495	403
98064	82.400	162.100	2007	1,023	26.7%	1,047	26.9%	2.0%	523	308	535	321
T0234	162.100	165.500	2021	483	59.0%	494	60.1%	2.0%	523	308	535	321
Yanga Way (Sturt Highway to Tooleybuc)												
97488	0.000	11.800	2012	272	26.9%	376	27.7%	2.0%	352	95	486	135
97494	11.800	19.800	2012	283	26.9%	285	27.7%	2.0%	366	98	369	102
97494	19.800	36.200	2012	283	26.9%	285	27.7%	2.0%	366	98	369	102
97207	36.200	49.100	2006	221	34.8%	220	34.1%	2.0%	322	112	320	109
Balranald-Moulamein Road (Yanga Way to Site Access 8)												
MRC	0.000	6.930	2022	25	40.0%	30	50.0%	2.0%	27	11	32	16
MRC	6.930	7.750	2022	25	40.0%	30	50.0%	2.0%	27	11	32	16
MRC	7.750	10.402	2022	25	40.0%	30	50.0%	2.0%	27	11	32	16
MRC	10.402	11.095	2022	25	40.0%	30	50.0%	2.0%	27	11	32	16
MRC	11.095	17.340	2022	25	40.0%	30	50.0%	2.0%	27	11	32	16
MRC	17.340	18.955	2022	25	40.0%	30	50.0%	2.0%	27	11	32	16
MRC	18.955	22.140	2022	25	40.0%	30	50.0%	2.0%	27	11	32	16
Arundel Road (Balranald-Moulamein Road to Site Access 4)												
-	0.000	0.710	2022	10	40.0%	10	40.0%	2.0%	11	4	11	4
Stony Crossing Road (Yanga Way to Swan Hill Road)												
97206	0.000	40.900	2006	122	18.9%	123	26.8%	2.0%	178	34	179	48
Swan Hill Road (Swan Hill to Stony Crossing Road)												
97200	0.000	11.100	2010	342	17.0%	362	16.9%	2.0%	460	78	487	82

Road Seg. ID	Road Segment		Base Data Year	Base Year AADT				10 Yr. GR %	Current (2025) AADT Estimate			
	Start (km)	End (km)		Gaz	% HV	A-Gaz	% HV		Gaz		A-Gaz	
									Total	HV	Total	HV
B400 Murray River Highway (Swan Hill to Lake Boga)												
-	0.000	16.000	2020	2,000	9.6%	2,100	9.0%	2.0%	2,208	212	2,319	208

Gaz (Gazettal direction of travel or with chainage) | A-Gaz (Against Gazettal direction of travel or against chainage) | H V (Heavy vehicles)
Sturt Highway chainage assumed to run east from Mildura | Yanga Way chainage assumed to run south from Sturt Highway | Swan Hill Road chainage assumed to run north-east from Swan Hill | Stony Crossing Road chainage assumed to run south from Yanga Way | Balranald-Moulamein Road chainage assumed to run south-east from Yanga Way | Arundel Road chainage assumed to run south from Balranald-Moulamein Road.
A20 Ch. 82.400km Euston | A20 Ch. 162.100km Balranald | A20 Ch. 165.500km Intersection Sturt Highway / Yanga Way | Ch. 11.800km Yanga Way – Intersection with Balranald-Moulamein Road | Ch. 19.800km Yanga Way – Site Access 1 (LHS) | Ch. 36.200km Yanga Way – Intersection with Stony Crossing Road | Ch. 49.100km Yanga Way – Tooleybuc | Ch. 6.930km Balranald-Moulamein Road – Site Access 2 (RHS) | Ch. 7.750km Balranald-Moulamein Road – Site Access 3 (LHS) | Ch. 10.402km Balranald-Moulamein Road – Intersection with Arundel Road | Ch. 11.095km Balranald-Moulamein Road – Site Access 5 (LHS) | Ch. 17.340km Balranald-Moulamein Road – Site Access 6 (RHS) | Ch. 18.955km Balranald-Moulamein Road – Site Access 7 (LHS) | Ch. 22.140km Balranald-Moulamein Road – Site Access 8 (RHS) | Ch. 0.710km Arundel Road – Site Access 4 (LHS).

2.4.2 Intersection Volumes

As noted above, turning movement counts were undertaken at the Sturt Highway / Yanga Way and Yanga Way / Balranald-Moulamein Road intersections on the 6th and 7th December 2022 respectively, with the counts undertaken for the expected AM and PM peak hours for Project traffic at the intersections (6-7am and 5:30-6:30pm). The raw count data for these intersections is provided for reference in **Appendix B**.

A conservative 2% per annum (compound) growth rate has been applied to all movements at the intersections to establish forecasts of the current (2025) peak hour volumes at the intersection and future year forecast volumes. A summary of the resultant 2025 AM and PM peak hour volume forecasts for the intersections are provided in **Table 4** and **Table 5.**

Finally it is noted that no requirement to undertake a count was identified for the minor intersection of Balranald-Moulamein Road and Arundel Road based on the extremely low volumes observed at this intersection, with minimal turning movements into/out of Arundel Road (i.e. 0-1vph).

Table 4 Existing (2025) Peak Hour (Project) Traffic Volumes, Sturt Highway / Yanga Way

Year	Sturt Highway (NW)				Yanga Way (S)				Sturt Highway (SE)			
	Through		Right		Left		Right		Left		Through	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Sturt Highway / Yanga Way												
2025 AM Peak (Project)	21	10	15	6	8	1	5	0	5	3	15	18
2025 PM Peak (Project)	18	28	17	3	15	3	5	2	4	0	22	21

Table 5 Existing (2025) Peak Hour (Project) Traffic Volumes, Yanga Way Highway / Balranald-Moulamein Road

Year	Yanga Way (SW)				Balranald-Moulamein Road (E)				Yanga Way (NE)			
	Through		Right		Left		Right		Left		Through	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Yanga Way / Balranald-Moulamein Road												
2025 AM Peak (Project)	15	7	1	0	1	0	1	1	1	1	16	3
2025 PM Peak (Project)	18	3	0	1	0	2	1	0	1	0	22	3

2.5 Existing Intersection and Network Performance

2.5.1 Road Links

Based on the road link volumes forecasts in **Table 3** above, it is expected that the existing configurations of the relevant external road links will have adequate capacity to cater for the current 2025 volume forecasts, considering the generally accepted capacities of two-lane rural highways (approx. 12,000-15,000vpd – Sturt Highway & Murray River Highway), rural arterial roads (approx. 3,000vpd – Yanga Way and Swan Hill Road), rural collector roads (sealed approx. 1,500vpd – Stony Crossing Road, and unsealed rural collector (approx. 500vpd – Balranald-Moulamein Road) and rural access roads (approx. 150vpd – Arundel Road).

In addition, it is noted that no assessment has been made on the current operation of the additional road links identified to form part of the proposed OSOM turbine component transport routes. As these movements are expected to be temporary in nature, undertaken out of hours and under escort and be of relatively low volume (max 15vpd including 5 OSOM vehicles) it is not anticipated that they will have a significant ongoing impact to the operation or capacity of the road links forming the turbine transport routes.

2.5.2 Intersections

2.5.2.1 Performance Metrics

To understand the current operational performance of the Sturt Highway / Yanga Way and Yanga Way / Balranald-Moulamein Road intersections, detailed intersection analysis was undertaken utilising the Signalised Intersection Design and Research Aid (SIDRA) software package (Ver 9.1.6.228).

The critical performance metrics of the intersection analysis, and acceptable limits of operation outputs for such priority-controlled intersections are provided below, with further details identified in Section 4.4.10 of Austroads *Guide to Traffic Management Part 12: Traffic Impacts of Development* and Section 4.2.2 of RTA's (now TfNSW) *Guide to Traffic Generating Developments.*

Degree of Saturation (DOS) – Defined as the ratio of the volume of traffic observed making a movement (in vehicles per hour) compared to the maximum capacity for that movement (vehicles per hour). For priority-controlled intersections, the maximum acceptable degree of saturation is noted to be 80% or 0.800.

Level of Service (LOS) & Average Delay (sec) – Is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. The LOS is closely linked to the delay time (in seconds), which can be expected over all vehicles making a movement in the peak hour. The different Levels of Service (RTA NSW criteria) can generally be described as per **Table 6** below:

Table 6 Level of Service (LOS) Criteria – Priority Controlled Intersections

LOS	Description	Average Delay
A	Free-flow operation (best conditions)	≤ 14.5 sec
B	Reasonable free-flow operations	14.5 – 28.5 sec
C	At or near free-flow operations	28.5 – 42.5 sec
D	Decreasing free-flow operations	42.5 – 56.5 sec
E	Operations at capacity	56.5 – 70.5 sec
F	A breakdown in vehicular flow (worst conditions)	≥ 70.5 sec

In terms of acceptable limits of operation for priority-controlled intersections, a maximum LOS of C and delay of 42.5 seconds applies.

95th Percentile (95%ile) Queue – Defined as the maximum queue length, in metres, that can be expected in 95% of observed queue lengths in the peak hour. For acceptable operation of a priority-controlled intersection, all vehicle queues for individual movements must be contained within the extents of their own lane (in particular for turning lanes), with no vehicle flows or movements to be blocked by queued vehicles.

2.5.2.2 Intersection Assessment

An assessment of the current operational performance of the key Sturt Highway / Yanga Way and Yanga Way / Balranald-Moulamein Road intersections has been undertaken, based upon the current (2025) AM peak and PM peak period volumes forecasts identified in **Table 4** and **Table 5** above.

It is noted that no assessment has been completed for the existing traffic conditions at the Balranald-Moulamein Road / Arundel Road intersection as based on the extremely low volumes observed at this intersection, with minimal turning movements into/out of Arundel Road (i.e. 0-1vph) it is expected to be operating well within capacity.

The results of these analyses are summarised in **Table 7** below, with the detailed results provided for reference in **Appendix C** and **Appendix D** respectively. These results revealed that the current configurations of both intersections are expected to operate satisfactorily for current (2025) background or pre-Project traffic conditions, with all calculated values of Degree of Saturation (DOS), Level of Service (LOS), average delay and vehicle queue lengths for both intersections well within the acceptable limits of operation for priority-controlled intersections (as identified above) for all scenarios assessed.

Table 7 SIDRA Results – Existing (2025) Traffic Conditions

Analysis Scenario	Intersection Degree of Saturation	Level of Service**	Intersection Average Delay (sec)	Maximum 95% Back of Queue Length (m)
Unsignalised / Priority Controlled Intersections				
Acceptable Limits of Operation	< 0.800	LOS C	< 42.5	Varies *
Sturt Highway / Yanga Way Intersection				
2025 AM Peak (Project)	0.019	LOS A	2.4	0.7
2025 PM Peak (Project)	0.025	LOS A	2.2	0.9
Yanga Way / Balranald-Moulamein Road Intersection				
2025 AM Peak (Project)	0.015	LOS A	0.8	0.1
2025 PM Peak (Project)	0.015	LOS A	0.6	0.1

** LOS value identified is for worst movement at the intersection, not the overall intersection.

2.6 Road Crash History Review

A review of the road crash history on the relevant sections of the external road network in the vicinity of the Project Area was undertaken using the interactive crash statistic data available from the TfNSW Centre for Road Safety database for the period between 2019-2023.

The results of this search recorded seven (7) crashes within the relevant sections of the network, as shown in **Figure 20**, with a summary of the details of the recorded crash data provided for reference in **Table 8**.

Table 8 Summary of Road Crash History

Crash Reference Number	Crash Year	Degree of Crash	Crash Type	RUM Code	RUM Description
Yanga Way - Eastern Approach to Tooleybuc					
1252609	2021	Non-Casualty (Towaway)	Single Vehicle	88	Out of Control on Carriageway (Bend)
1273362	2021	Minor/Other Injury	Single Vehicle	81	Off Left / Right Bend into Object
1311034	2022	Non-Casualty (Towaway)	Single Vehicle	70	Off Road to Left
Yanga Way – South of Stony Crossing Road					
1336732	2023	Non-Casualty (Towaway)	Single Vehicle	70	Off Road to Left
Yanga Way - Kyalite					
1297301	2022	Non-Casualty (Towaway)	Single Vehicle	73	Off Road to Right into Object
Yanga Way – South of Balranald-Moulamein Road					
1217824	2019	Non-Casualty (Towaway)	Single Vehicle	71	Off Road to Left into Object
Stony Crossing Road – Approach to Swan Hill Road					
1218699	2019	Minor/Other Injury	Single Vehicle	80	Off Left / Right Bend

Based on the relatively low number (7) of crashes recorded, the spread of the locations on the network and the type of crashes recorded being primarily single vehicle off road accidents typical for rural conditions, it can be concluded that there is not any particular existing road feature or design deficiency which is likely to be contributing to crashes in the vicinity of the Project Area.

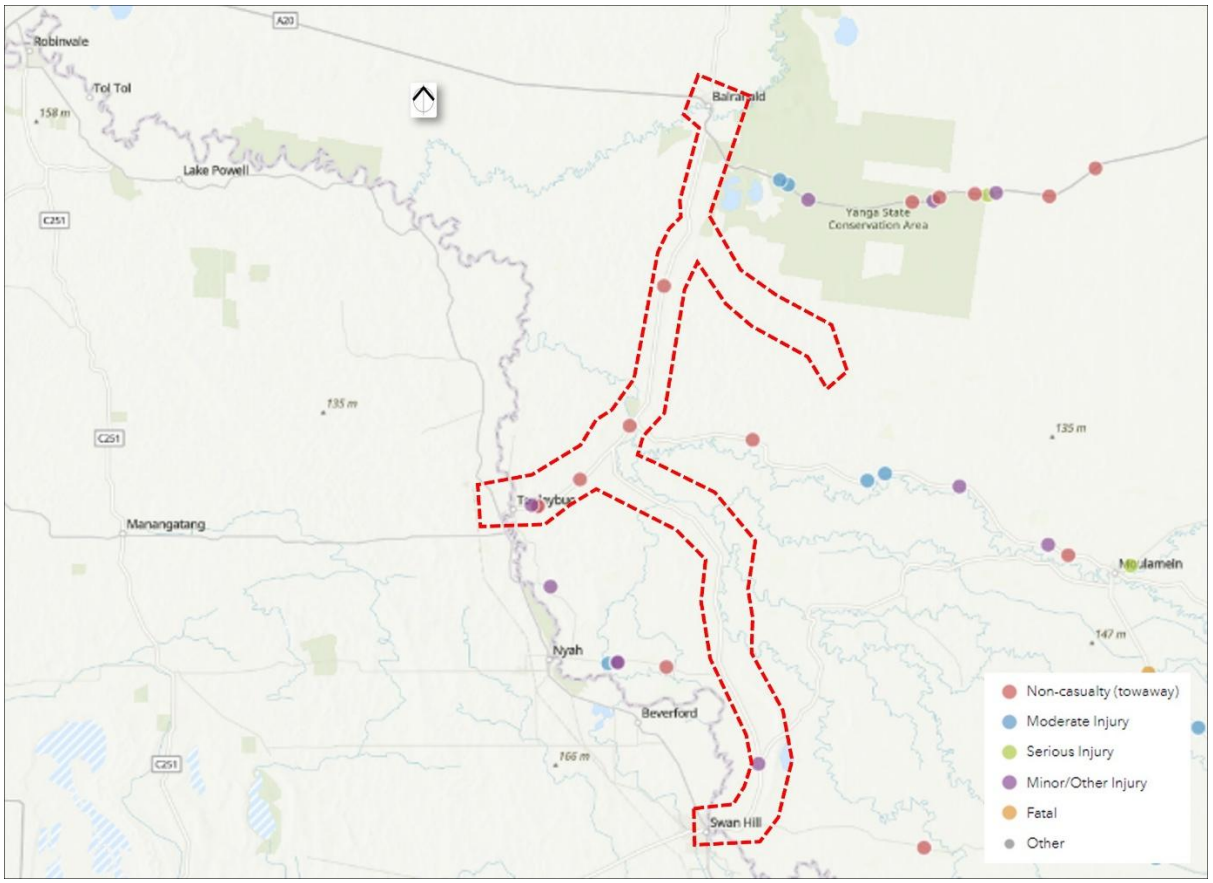


Figure 20 Road Crash Locations [Source: TfNSW Crash & Casualty Statistics]

3.0 Project Details

3.1 Conceptual Project Layout

As shown in **Figure 21**, the overall Project includes up to 96 turbines and associated infrastructure, including up to 30 turbines as part of the Stage 1 works, and the remaining of the 96 total Project turbines as part of Stage 2.

Vehicular access to the Project area is proposed via 3 site access locations off Balranald-Moulamein Road (SA2, SA3 & SA5) for the Stage 1 works, while the wider Stage 2 works proposes to utilise a combination of access points to service the overall Project Area, including a single, emergency only access location on Yanga Way (SA1), the SA2 access location established as part of Stage 1, 3 additional locations on Balranald-Moulamein Road (SA6, SA7 & SA8) and a single access from Arundel Road (SA4).

The conceptual Project layout also identifies a number of internal construction site facilities, including construction compounds, site laydown areas, batching plant areas, operations and maintenance compounds, substations and battery energy storage system areas within each stage of the Project.

A copy of the overall conceptual layout for the Project has been included for reference in **Appendix E**, while further details of the Stage 1 and Stage 2 works are shown in **Figure 22** and **Figure 23**.

3.2 Project Details

Information regarding the proposed construction activities, day to day operations and decommissioning of the Project has been provided by the proponent (Windlab), with a summary of the key elements of each stage of the Project provided in **Table 9**.

Table 9 Key Elements of Junction Rivers Wind Farm

Element	Stage 1	Stage 2
Turbines	Up to 30	66 or remainder following Stage 1, up to 96 in total
Site Accesses – Yanga Way	0	1 (SA1 – Emergency Only)
Site Accesses – Balranald-Moulamein Road	3 (SA2, SA3 & SA5)	4 (SA2, SA6, SA7 & SA8)
Site Accesses – Arundel Road	0	1 (SA4)
Length of Balranald-Moulamein Road Upgrade	11,095 m	11,045 m
Length of Arundel Road Upgrade	0 m	710 m
Length of Internal Access Roads	29,866 m	64,299 m
Substations / Switching Stations	1	2
Battery Energy Storage Systems / STATCOM	1	2
Turbine Construction Hardstand Areas	30	66
Site Construction Compounds	1	4
Site Laydown Areas	1	4
Site Batch Plant Areas	1	3
Site Operational and Maintenance Facility Areas	1	1
Meteorological Masts (PPM)	2	5
Length of Underground Electrical Reticulation	51,170 m	126,557 m
Length of Overhead Transmission Line	0 m	17,417 m

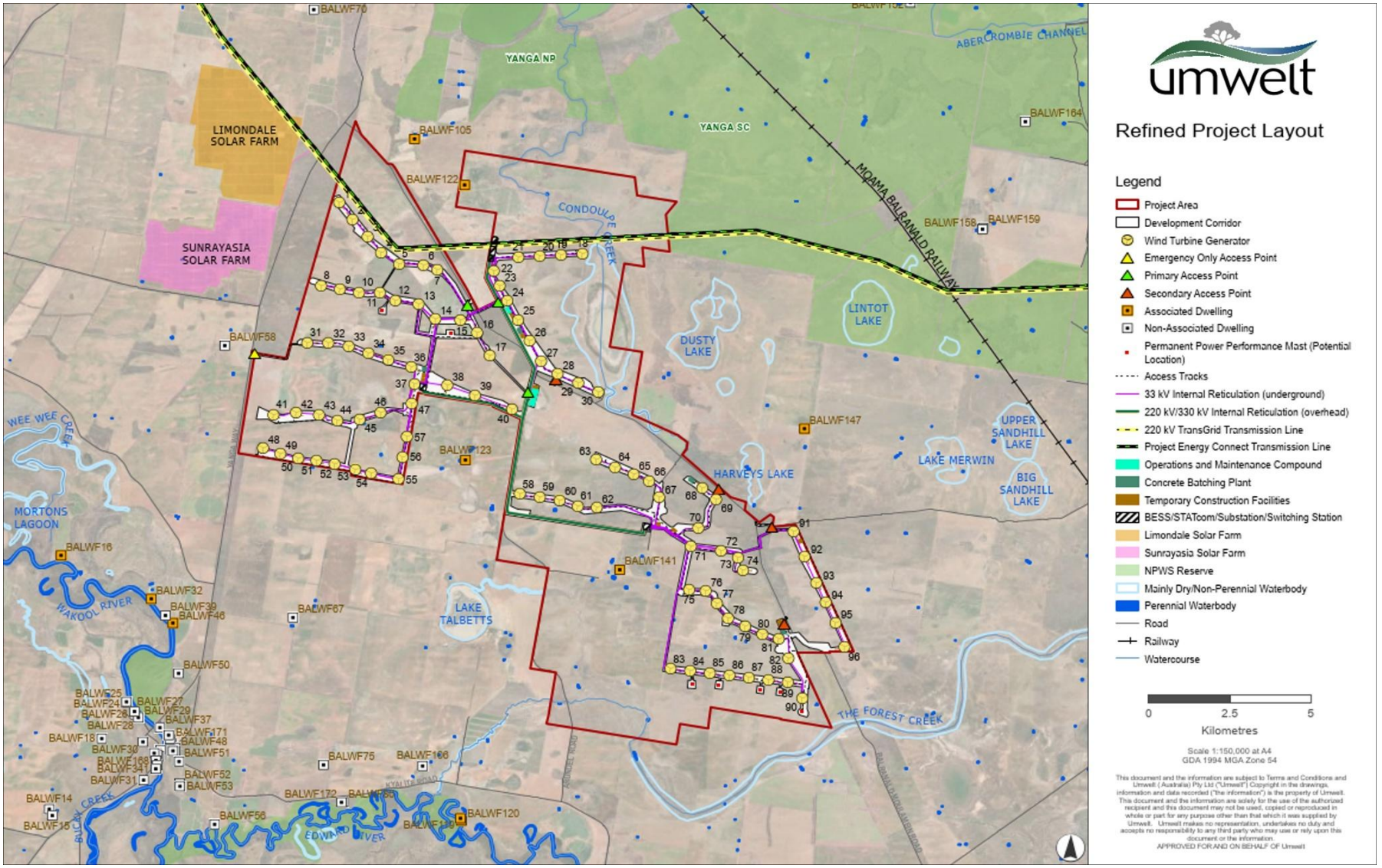


Figure 21 Junction Rivers Wind Farm – Project Layout (Stage 1 & 2 Combined) [Source: Umwelt]

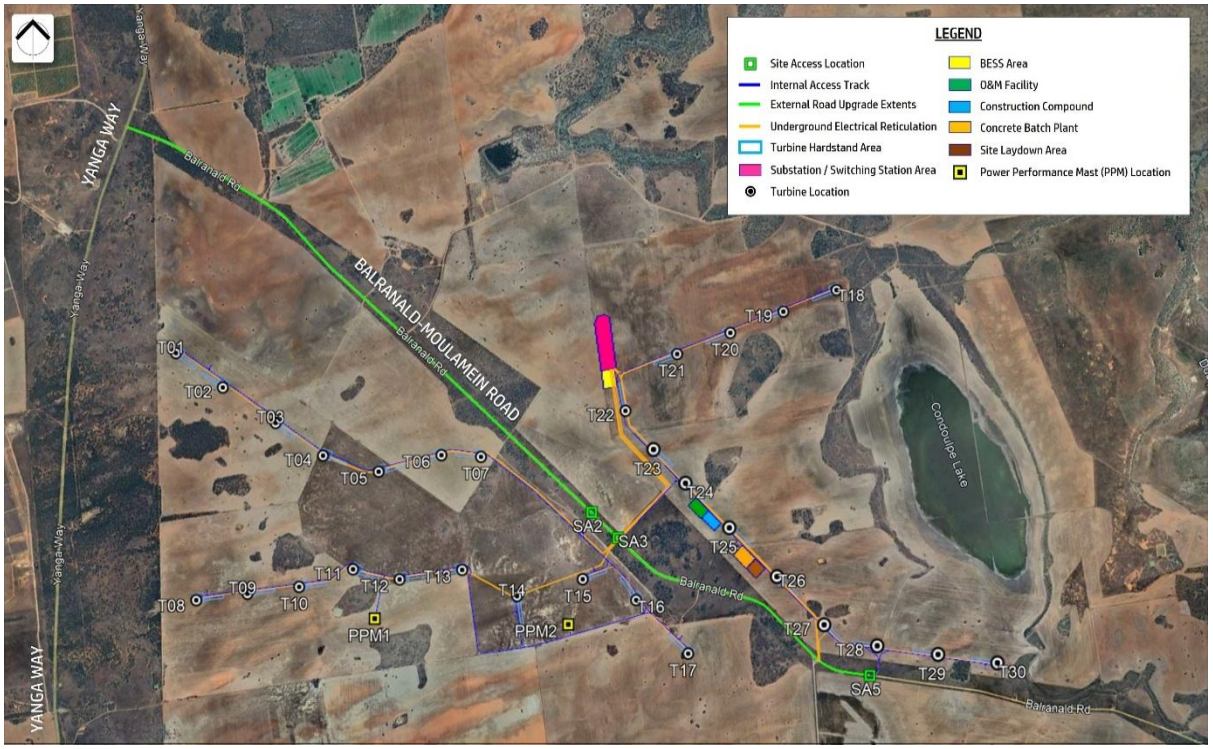


Figure 22 Junction Rivers Wind Farm – Conceptual Stage 1 Project Layout [Source: Windlab & Google Earth Pro]

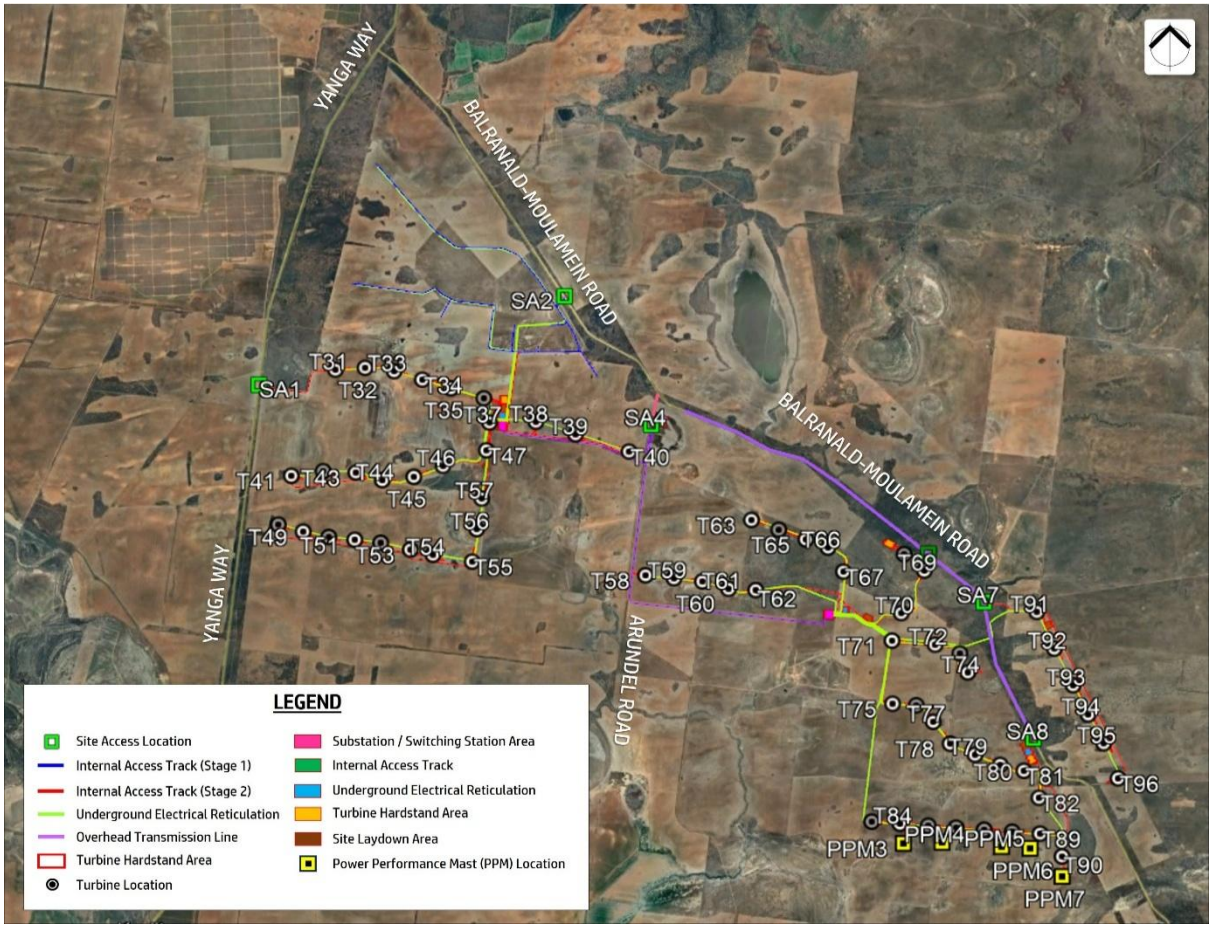


Figure 23 Junction Rivers Wind Farm – Conceptual Stage 2 Project Layout [Source: Windlab & Google Earth Pro]

3.2.1 Construction Phase

The construction of the overall Project is anticipated to be completed over a 48-month period (approx. 4 years), which is made up of the proposed Stage 1 works (approx. 18 months) and the proposed Stage 2 works (approx. 30 months).

The Stage 1 works are expected to commence in Q3 2026 (July 2026) (pending approvals) with all construction works (Stage 1) to be completed by the end of Q4 2027 (December 2027), with the peak period of construction for Stage 1 expected to occur within Q1 and Q2 2027.

At the request of TfNSW, an initial period of pre-construction works has been identified for the Project, with this period expected to occur in the initial 4 months of the Stage 1 construction period, and include the preliminary site investigations, external road upgrade works and site mobilisation and establishment works as identified in **Table 10** below.

The Stage 2 works are expected to commence following the completion of Stage 1, in Q1 2028 (January 2028) (pending approvals), with all construction works to be completed by the end of Q2 2030 (June 2030), with the peak period of construction for Stage 2 expected to occur over the 12-month period between Q4 2028 and Q3 2029.

Based on information provided by Windlab, it is understood that the proposed hours of the construction operations for the Project will typically be 11 hours per day Monday to Friday (7am to 6pm), with an additional 5 hours on Saturdays (8am to 1pm). This equates to approximately 6 working days per week and 24 working days per month, noting that there may be minor exceptions to these timings as required throughout the construction process.

Preliminary details of the proposed construction phase activities have been provided by Windlab, with a high-level summary of the key construction tasks, the likely order of completion and anticipated timeframes for Stage 1 and Stage 2 provided in **Table 10** and **Table 11** respectively.

Table 10 Proposed Construction Schedule – Junction Rivers Wind Farm (Stage 1) [Source: Windlab]

TASK ID	TASK	DURATION (MONTHS)	MONTH																	
			Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27	Nov-27	Dec-27
			Q3 2026			Q4 2026			Q1 2027			Q2 2027			Q3 2027			Q4 2027		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1A	Preliminary Site Investigations	3																		
1B	Off Site Road Works	4																		
1C	Mobilisation & Site Establishment	1																		
1D	Internal Access Roads and Hardstands	9																		
1E	Site Compound Areas (Civil Works)	4																		
1F	Turbine Foundations	9																		
2A	Cabling	9																		
2B	Site Compound Areas (Electrical Works)	9																		
3A	Turbine Transportation	9																		
3B	Turbine Erection	9																		
4	Finalisation / Commissioning / Demobilisation	3																		

Table 11 Proposed Construction Schedule – Junction Rivers Wind Farm (Stage 2) [Source: Windlab]

TASK ID	TASK	DURATION (MONTHS)	MONTH
			Jan-28 Feb-28 Mar-28 Apr-28 May-28 Jun-28 Jul-28 Aug-28 Sep-28 Oct-28 Nov-28 Dec-28 Jan-29 Feb-29 Mar-29 Apr-29 May-29 Jun-29 Jul-29 Aug-29 Sep-29 Oct-29 Nov-29 Dec-29 Jan-30 Feb-30 Mar-30 Apr-30 May-30 Jun-30
			Q1 2028 Q2 2028 Q3 2028 Q4 2028 Q1 2029 Q2 2029 Q3 2029 Q4 2029 Q1 2030 Q2 2030
			1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
1A	Mobilisation & Site Establishment	2 M	
1B	Access Roads, Hardstands and Site Entrances	18 M	
1C	Site Compound Areas (Civil Works)	9 M	
1D	Turbine Foundations	18 M	
2A	Cabling	15M	
2B	Site Compound Areas (Electrical Works)	10 M	
3A	Turbine Transportation	15 M	
3B	Turbine Erection	15 M	
4	Finalisation / Commissioning / Demobilisation	5 M	

3.2.2 Operations Phase

Based on information provided by Windlab, it is understood that the operations phases of both stages of the Project will commence upon completion of the relevant construction works, meaning that Stage 1 is expected to be operating during the construction phase for Stage 2.

Furthermore, it has been advised that both stages of the wind farm are proposed to be operated by a relatively small number of staff (approximately 15), with limited numbers of heavy vehicles anticipated to access the Project Area during operations, with only periodic maintenance (monthly) and routine service/refuse collection vehicles (approx. 1 per week) anticipated to travel to/from the Project Area.

3.2.3 Decommissioning Phase

Finally, at the end of the operational life of the Project infrastructure (approx. 30 - 35 years) it is proposed that decommissioning works will be undertaken to remove wind turbine structures and site building infrastructure, as well as complete rehabilitation works to the access roads and hardstand areas throughout the Project Area (as required).

As part of the removal of the wind turbines it is understood that the components will be removed from the Project Area and recycled pending technical feasibility at decommissioning time.

Based on information provided by Windlab it is understood that at this stage the decommissioning phase works are anticipated to be completed over a 12–18-month period, with the peak traffic movements to/from the Project Area during decommissioning conservatively estimated to be approximately 70% of the identified peak construction movements (both material/equipment delivery and peak staff movements).

It should be noted that after 35 years of operation the Project may be repowered, utilising contemporary equipment. In this situation, there would not be a decommissioning phase with any works to be undertaken as part of repowering to be subject to a subsequent, separate project approval process.

3.3 Project Transport Routes

3.3.1 Construction Phase

Based on preliminary operational details provided by Windlab, the following transport routes have been identified for traffic associated with the Project, as indicatively shown in **Figure 24** (OSOM transport routes) and **Figure 25** (General construction transport routes).

Further to this, it is noted that the identified routes are anticipated to be utilised for both Stage 1 and Stage 2 of the Project:

- The construction workforce is assumed to commute daily to/from the Project Area from the nearby townships of Balranald (80%) to the north, or Tooleybuc (5%) and Swan Hill (15%) to the south.
- Construction equipment (bulk earthworks plant, prefabricated buildings) and general construction materials (such as cement, reinforcing steels, diesel fuel, waste removal etc) are proposed to be sourced from larger regional centres such as Mildura or Swan Hill, travelling to/from the Project Area via the Sturt Highway, Yanga Way and Balranald-Moulamein Road.
- Quarry materials (gravel, sand, aggregates) are proposed to be sourced from local quarry operations in Lake Boga to the south of the Project Area and transported via Swan Hill Road, Stony Crossing Road, Yanga Way and Balranald-Moulamein Road.
- Site water requirements are also proposed to be sourced locally from Balranald, and transported to the Project Area via the Sturt Highway, Yanga Way and Balranald-Moulamein Road.
- Significant turbine components and specialist equipment will be imported from overseas and shipped to the Port Adelaide, before being transported by road to the Project Area utilising both state and local government controlled roads.

  A preliminary transport route assessment for the proposed routes has been undertaken (refer **Appendix A**), with the following routes to the Project Area for the transportation of turbine components from the Port of Adelaide identified as outlined in **Table 12** overpage.

3.3.2 Operations Phase

The following transport routes relevant to the operations phase of the Project have been identified:

- The workforce during operation will consist of a small number of local workers (i.e. approx. 10-15 staff) who are expected to reside locally to the Project Area (likely in Balranald).
- Heavy vehicle movements during the operations stage of the Project are anticipated to be extremely low, with only occasional movements to/from the Project Area (in the order of 1 vehicle per week) associated with maintenance activities, routine removal of waste and delivery of consumables to the Project operations facility. These heavy vehicle movements are expected to originate from either Mildura or Swan Hill and travel to the Project Area via the Sturt Highway (from Mildura), Yanga Way and Balranald-Moulamein Road.

Table 12 Preliminary Turbine Component Transport Routes

From Port Adelaide			
Route 1: Blade Route	Route 2: Smaller Components with a Max Loads Under 40m Overall Length & Max Loaded Height 5.2m (Hub / Nacelle / Drivetrain)	Route 3: High Load Detour (Option 1) Loads Under 35m Overall Length & Max Loaded Height 6.4m (Tower Sections)	Route 4: High Load Detour (Option 2) Loads Under 35m Overall Length & Max Loaded Height 6.4m (Tower Sections)
Distance: 658 km	Distance: 610 km	Distance: 641 km	Distance: 659 km
Ocean Steamers Road / Eastern Parade / Port River Expressway (A9) / North South Motorway (M2) / Northern Expressway / Sturt Highway (A20) / Kingston Rd / Karoonda Highway (B55) / Bookpurnong Road / Stanitzki Road / Sturt Highway (A20) / Werrimull North Road / Millewa Road (C254) / Calder Highway (A79) / Hattah Robinvale Road (C252) / Robinvale-Sea Lake Road (C251) / Murray Valley Highway (B400) / Sturt Highway (A20) / Mallee Hwy (Yanga Way) / Balranald Rd	Ocean Steamers Road / Eastern Parade / Port River Expressway (A9) / North South Motorway (M2) / Northern Expressway / Sturt Highway (A20) / Kingston Rd / Karoonda Highway (B55) / Bookpurnong Road / Stanitzki Road / Sturt Highway (A20) / Seventeenth Street / Benetook Avenue / Seventh Street / Sturt Highway (A20) / Mallee Hwy (Yanga Way) / Balranald Rd	Ocean Steamers Road / Eastern Parade / Port River Expressway (A9) / Northern Connector / Port Wakefield Highway (A1) / Mallala Road / Old Port Wakefield Road / Gawler Road / Wilkinson Road / Hatcher Road / Oates Road / Redbanks Road / Mudla Wirra Road / College Road / Cliff Road / Gartrell Street / Roseworthy Road / Thiele Highway / East Terrace / Truro Road / Sturt Highway (A20) / Heinrich Road / Drogemuller Road / Kingstone Road / Karoonda Highway (B55) / Bookpurnong Road / Stanitzki Road / Sturt Highway (A20) / Seventeenth Street / Benetook Avenue / Seventh Street / Sturt Highway (A20) / Kidman Way / Mallee Hwy (Yanga Way) / Balranald Rd	Ocean Steamers Road / Eastern Parade / Port River Expressway (A9) / Northern Connector / Port Wakefield Highway (A1) / Mallala Road / Old Port Wakefield Road / Gawler Road / Wilkinson Road / Hatcher Road / Oates Road / Redbanks Road / Mudla Wirra Road / College Road / Cliff Road / Gartrell Street / Roseworthy Road / Thiele Highway / East Terrace / Thiele Highway / Goyder Highway / Sturt Highway (A20) / Airport Road / Government Road / Ral Ral Avenue / Wentworth-Renmark Road / Renmark Road / Silver City Highway / Armstrong Street / Silver City Highway, Sturt Highway (A20) / Mallee Hwy (Yanga Way) / Balranald Rd



Figure 24 Project Construction Phase Transport Routes (OSOM Turbine Component Transport) [Source: Rex J Andrews Transport]

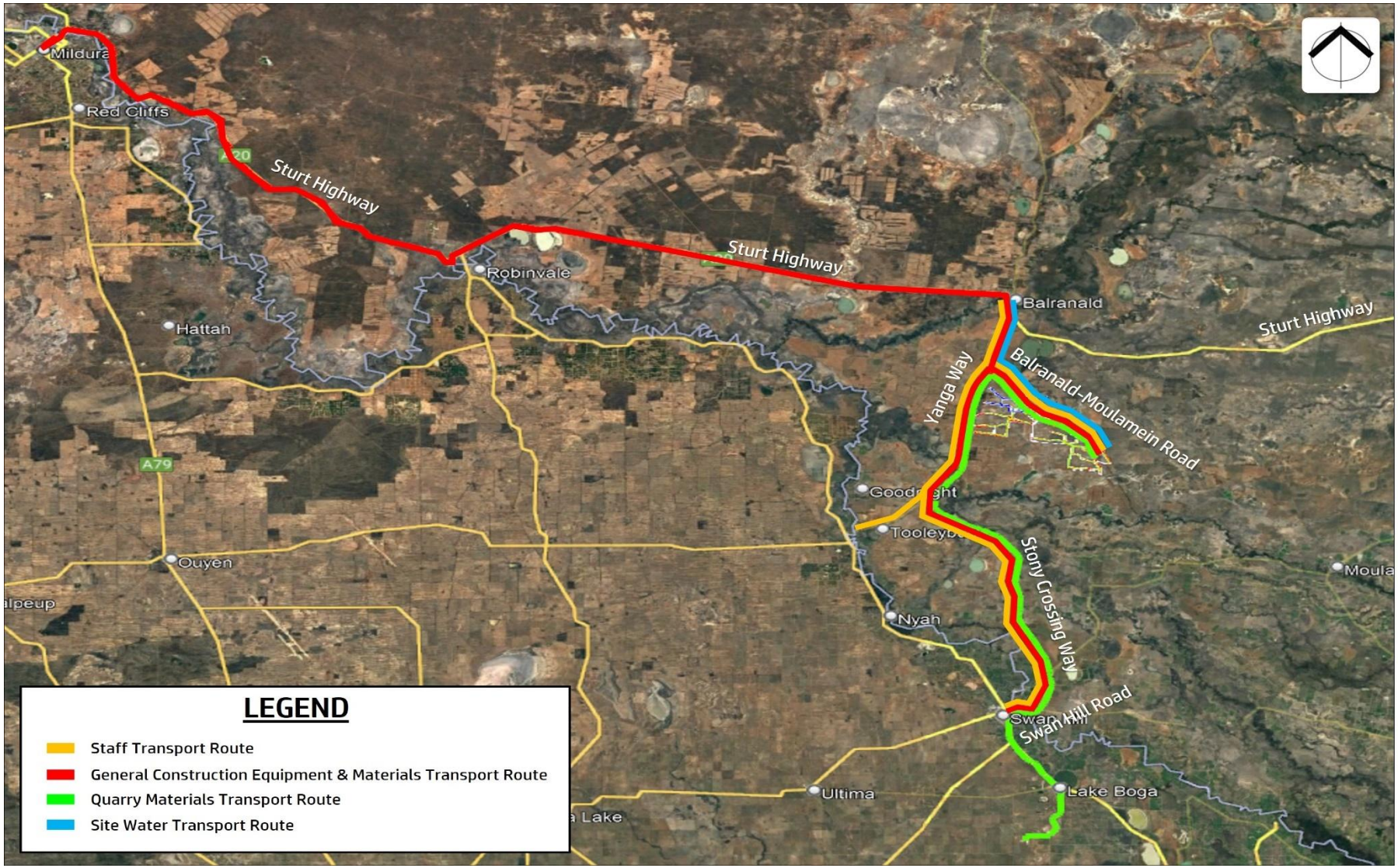


Figure 25 Project Transport Routes (General Construction Traffic) [Source: Google Earth Pro]

3.3.3 Decommissioning Phase

While the details regarding the expected vehicle movements during the decommissioning phase of the Project are difficult to confirm at this stage, it is understood that they are likely to be similar to the construction phase in relation to the movements of staff and materials, equipment and site components. Based on this, the following assumptions have been made regarding the transport routes for the Project during decommissioning:

- The workforce during decommissioning is assumed to commute daily to/from the Project Area from Balranald, Tooleybuc or Swan Hill and travel to the Project Area via the Sturt Highway (from Mildura), Yanga Way and Balranald-Moulamein Road.
- Plant and equipment required for decommissioning (bulk earthworks plant, prefabricated buildings and other general materials) are proposed to be sourced from larger regional centres such as Mildura or Swan Hill, travelling to/from the Project Area via the Sturt Highway, Yanga Way and Balranald-Moulamein Road.
- Quarry materials (gravel, sand, aggregates) for decommissioning and reinstatement are proposed to be sourced from local quarry operations in Lake Boga to the south of the Project Area and transported via Swan Hill Road, Stony Crossing Road, Yanga Way and Balranald-Moulamein Road.
- Site water requirements are also proposed to be sourced locally from Balranald, and transported to the Project Area via the Sturt Highway, Yanga Way and Balranald-Moulamein Road.
- The turbines are expected to be dismantled, removed and transported to nearby metal recycling facilities, which are expected to be located in the larger regional centres of Mildura and Swan Hill.

It should be noted that after approximately 30 - 35 years of operation the Project may be repowered, utilising contemporary equipment. In this situation, there would not be a decommissing phase with any works to be undertaken as part of repowering to be subject to a subsequent, separate project approval process.

3.4 Site Access Arrangements

Based on the proposed site configurations for the Project provided by Windlab, it is noted that 8 site access locations are proposed to be utilised to access the Project Area by Project traffic, including 3 site access locations off Balranald-Moulamein Road (SA2, SA3 & SA5) for the Stage 1 works, while the wider Stage 2 works proposes to utilise a combination of access points to service the overall Project Area, including a single, emergency only access location on Yanga Way (SA1), the SA2 access location established as part of Stage 1, 3 additional locations on Balranald-Moulamein Road (SA6, SA7 & SA8) and a single access from Arundel Road (SA4).

The indicative locations of these proposed site access points from the external road network for the proposed Junction Rivers Wind Project are shown further in **Figure 26** overpage.

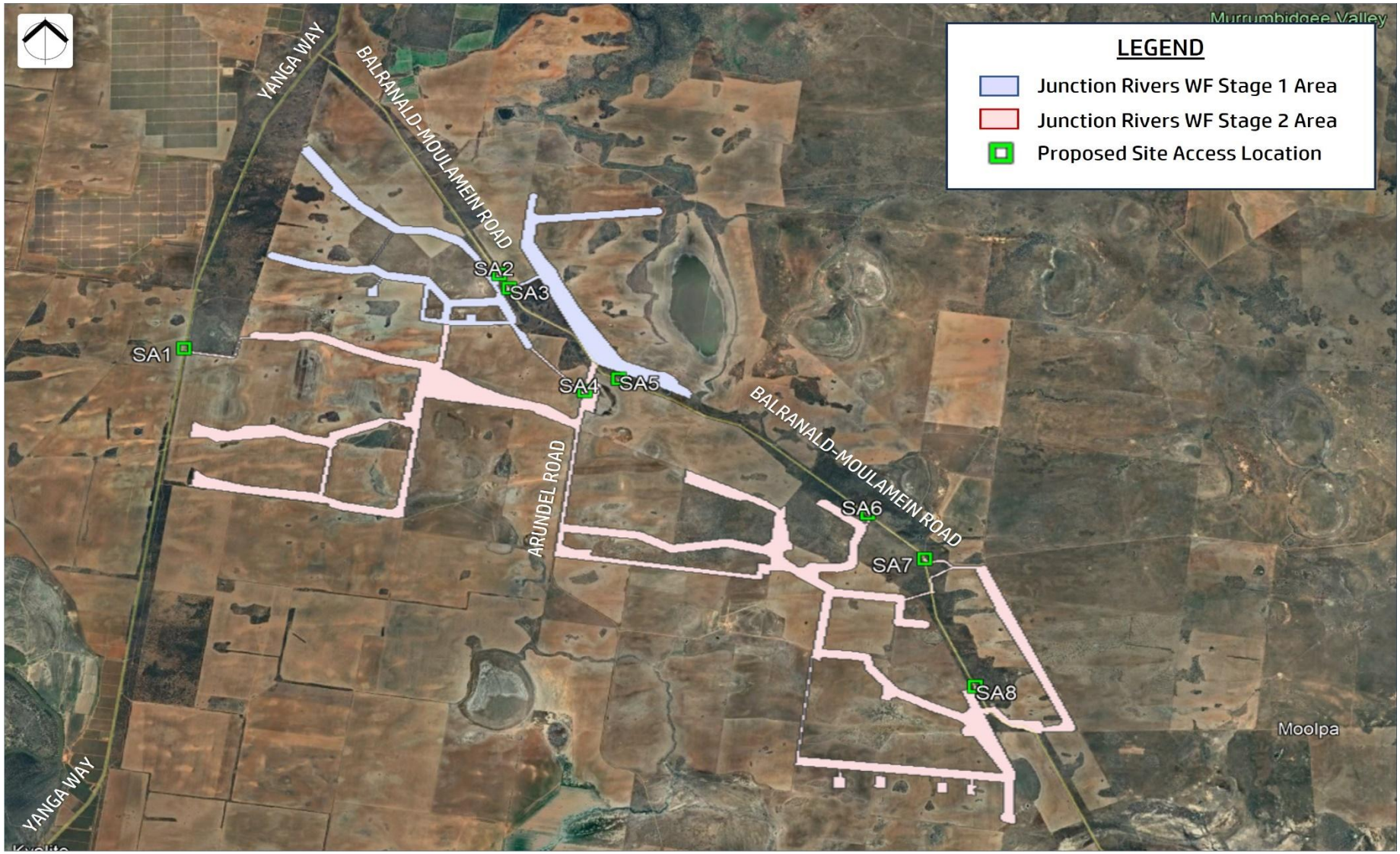


Figure 26 Junction Rivers Wind Farm – Stage 1 & Stage 2 Site Access Locations [Source: Windlab & Google Earth Pro]

3.4.1 Stage 1

As identified above, it is expected that all transport routes associated with Stage 1 of the Project will utilise the intersection of Yanga Way / Balranald-Moulamein Road as the sole access point from the external state-controlled road network, with direct access to the proposed Stage 1 Project Area proposed to be gained via three access locations (SA2, SA3 and SA5) located on the MRC controlled Balranald-Moulamein Road. Further details of the proposed access arrangements for the Stage 1 works are provided in the following sections.

3.4.1.1 Yanga Way / Balranald-Moulamein Road Intersection

As outlined in **Section 2.3.2.2** above, the existing configuration of the Yanga Way / Balranald-Moulamein Road intersection operates as a three-way priority controlled (give way) intersection, with no turn treatments currently provided.

An assessment of the currently available sight distances at the intersection was also undertaken based on the requirements of Part 4A of Austroads *Guide to Road Design*, which specifies the requirement for the following sight distance lengths to be available at intersection, based on an adopted design speed of 110 km/hr (posted speed + 10k m/hr) as per standard requirements, with a summary of this assessment provided in **Table 13**.

Table 13 Intersection Sight Distance Requirements

Sight Distance Type	Adopted Parameters	Required Sight Distance (m)	
		Light Vehicles (Car)	Trucks
Approach Sight Distance (ASD)	Cars R_T = 2.5 sec / d = 0.36 Trucks R_T = 2.5 sec / d = 0.22	209 m	241 m
Safe Intersection Sight Distance (SISD)	Cars R_T = 2.5 sec / d = 0.36 / a = 0% Trucks R_T = 2.5 sec / d = 0.24 / V = 100km/h / a = 0%	300 m	317 m
Minimum Gap Sight Distance (MGSD)	Critical Acceptance Gap - Right Turn from Major Road / Two Way - t_a = 5.0 sec	153 m	

A site inspection was also undertaken to establish the currently available sight distances to/from the sight access on all approaches. Based on this inspection, it was observed that suitable approach site distance (>241m – Truck ASD) is available along Balranald-Moulamein Road to the intersection, while the available sight distances to/from the intersection along Yanga Way in both directions (refer **Figure 27**, **Figure 28** and Figure BL3-6 of **Appendix M**) exceeded the requirements for both safe intersection sight distance (SISD >300m light vehicles / >317m heavy vehicles) and minimum gap sight distance (MGSD > 153m).



Figure 27 Available Sight Distances South on Yanga Way from Balranald-Moulamein Road



Figure 28 Available Sight Distances North on Yanga Way from Balranald-Moulamein Road

Notwithstanding this, based on the forecast increase in turning volumes at this intersection as a result of both the proposed Stage 1 peak construction works, and the completed turn warrant assessment completed for the intersection in **Section 5.3**, it is proposed that the intersection be upgraded to provide basic left (BAL) and basic right (BAR) turn treatments.

It is recommended that these upgrade works be provided generally in accordance with Figure 8.2 of Part 4A (rural BAL) and Figure A6 of Part 4 (rural BAR) of Austroads *Guide to Road Design*, adopting a design speed of 110km/h and a 26m B-Double design vehicle. A strategic concept design of the proposed intersection upgrade works has been undertaken, with further details of the proposed upgraded configuration of the intersection shown further in Figure BL3-1 to Figure BL3-7 in **Appendix M**.

It is noted that the concept design undertaken also identifies the requirement for the provision of additional sealed hardstand area to the north-eastern corner of the intersection to is required to accommodate the swept paths of the oversize blade transport vehicle movements. The extents of the additional hardstand area as part of the proposed intersection works are shown in refer Figure BL3-1 to BL3-3 of **Appendix M**, and extract of which is provided in **Figure 29** below, noting that the exact configuration of the works will be confirmed in subsequent detailed design phases of the Project once the final configuration of the turbine components and OSOM transport vehicles are confirmed.

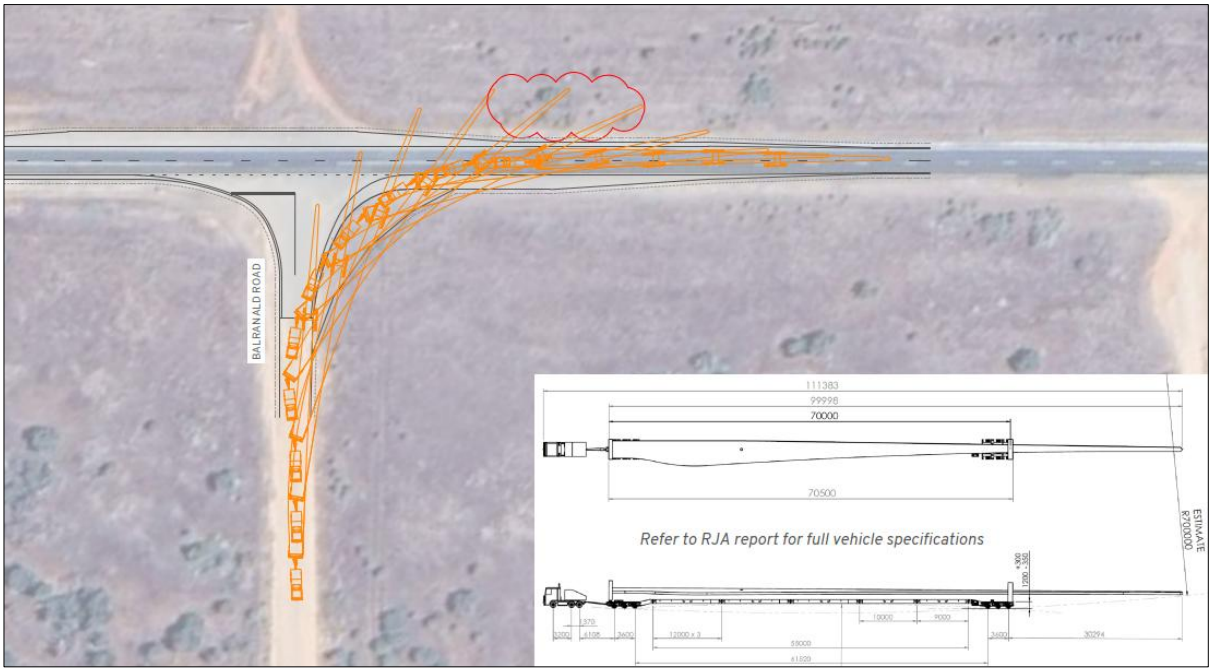


Figure 29 Additional Hardstand Area – Yanga Way / Balranald-Moulamein Road [Source: Amber Organisation Pty Ltd]

3.4.1.2 Balranald-Moulamein Road Upgrade

The Stage 1 works for the Project will also lead to an increase in traffic volumes on the 11.095km long section of Balranald-Moulamein Road between its intersection with Yanga Way and the easternmost access point proposed for Stage 1 (SA5 – refer **Figure 22** above). Based on this increase it is recommended that upgrade works be completed on this section of Balranald-Moulamein Road to offset the impacts of the Stage 1 works, with these upgrade works to include road grading and resheeting works to provide a suitable unsealed (gravel) road surface up to 8m minimum in width (to match the current minimum road width on this link).

It is also noted that as part of Stage 1, pre and post construction phase dilapidation surveys will be required to be undertaken on this section of Balranald-Moulamein Road (Yanga Way to SA5). The pre construction inspection is to be undertaken upon the completion of the proposed regrading / resheeting works and is to

establish the pre-construction road condition, with the post construction dilapidation survey then used to identify rehabilitation works required to be completed by the Project to bring road conditions / standards on this section of Balranald-Moulamein Road back to the recorded pre construction condition.

3.4.1.3 Site Access Locations & Configurations

3.4.1.3.1 Site Access 2 / 3 / 5 on Balranald-Moulamein Road

As shown in **Figure 24** above, the proposal identifies the provision of three access points to the Stage 1 Project area from Balranald-Moulamein Road. The first of which (SA2) is located at an existing property access on the western (RHS) side of Balranald-Moulamein Road, approximately 6.930km from the intersection with Yanga Way, the second (SA3) is proposed to be constructed on the eastern (LHS) of the link, approximately 7.750km from Yanga Way and the third (SA5) is proposed to also be constructed at an existing access on the LHS of the road, 11.095km from Yanga Way.

Based on site observations, appropriate sight distances are available to/from each of the proposed Stage 1 access points in both directions on Balranald-Moulamein Road, with the existing sightlines from SA2 and SA5 shown in **Figure 30** to **Figure 33**.



Figure 30 Available Sight Distances South-East on Balranald-Moulamein Road from SA2



Figure 31 Available Sight Distances North-West on Balranald-Moulamein Road from SA2



Figure 32 Available Sight Distances South-East on Balranald-Moulamein Road from SA5



Figure 33 Available Sight Distances North-West on Balranald-Moulamein Road from SA5

Also in lieu of an available Council standard for rural property accesses, it is proposed that the existing accesses at SA2 and SA5 be upgraded and the new SA3 access be constructed generally in accordance with the site access arrangement for articulated vehicles outlined in Figure 7.4 of Austroads *Guide to Road Design Part 4: Intersections and Crossings – General,* as shown in **Figure 34** overpage.

Strategic concept designs of the proposed site access works has been undertaken, with further details of the proposed configuration of the SA2, SA3 and SA5 site access points shown further in Figure SA2-1 to SA2-4, SA3-1 to SA3-4 and SA5-1 to SA5-2 respectively in **Appendix M**.

It is noted that the concept designs of the access points undertaken also identifies the required additional hardstand area at the access points required to accommodate the swept paths of the oversize blade transport vehicle movements.

The extents of the additional hardstand areas proposed as part of the SA2, SA3 and SA5 site access works are identified in Figure SA2-4, Figure SA3-4 and Figure SA5-4 of **Appendix M**, noting that the exact configuration of the works will be confirmed in subsequent detailed design phases of the Project once the final configuration of the turbine components and OSOM transport vehicles are confirmed.

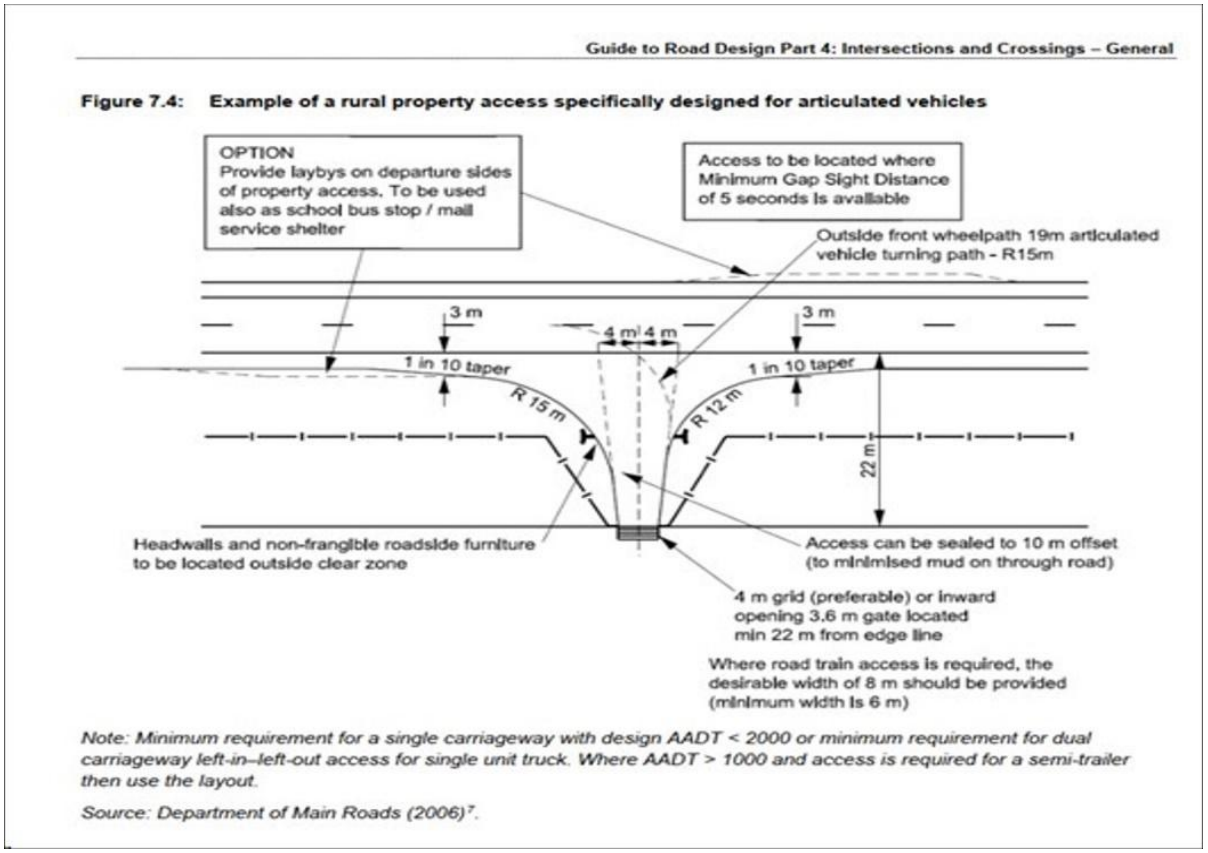


Figure 34 Proposed Site Access Configuration – Balranald-Moulamein Road [Source: Fig 7.4 Austroads GTRD Pt 4]

3.4.2 Stage 2

As identified above, it is expected that all transport routes associated with Stage 2 of the Project will also utilise the intersection of Yanga Way / Balranald-Moulamein Road as the main access point from the external state-controlled road network, with direct access to the proposed Stage 2 Project Area proposed to be gained via 5 access locations on the MRC controlled road network, including 4 access points (SA2, SA6, SA7 and SA8) located on Balranald-Moulamein Road and 1 access point (SA4) located on Arundel Road.

In addition to the general site access points to the Project Area, the Stage 2 works are also proposed to introduce an emergency only access point, located on the eastern side of the state controlled Yanga Way, to the south of Balranald-Moulamein Road.

Further details of the proposed access arrangements for the Stage 2 works are provided in the following sections.

3.4.2.1 Yanga Way / Balranald-Moulamein Road Intersection

The proposed upgraded BAR / BAL configuration of the Yanga Way / Balranald-Moulamein Road intersection to be provided as part of the Stage 1 construction works of the Project is noted to also be adequate to cater for the expected peak construction phase volumes from Stage 2 of the Project. This is shown by the turn warrant assessment and intersection operation analysis (SIDRA) undertaken for the forecast Stage 2 volumes at the intersection as outlined in **Section 5.3.2** below.

3.4.2.2 Balranald-Moulamein Road / Arundel Road Intersection

In addition to the Yanga Way / Balranald-Moulamein Road intersection, the Stage 2 works will also see an increase in turning movements at the Balranald-Moulamein Road / Arundel Road intersection as a result of Stage 2 Project traffic travelling to/from site access SA4.

As such it is recommended that the current non-standard configuration of this intersection be upgraded to remove the existing slip lanes to/from Arundel Road, with the Arundel Road approach amended to intersect Balranald-Moulamein Road at 90 degrees.

Further to this, to cater for the expected traffic volumes at the intersection it is recommended that the intersection be provided with basic left (BAL) and basic right (BAR) turn treatments / widenings as part of the Stage 2 works, generally in accordance with Figure 8.2 of Part 4A (rural BAL) and Figure A6 of Part 4 (rural BAR) of Austroads *Guide to Road Design*, noting that no OSOM vehicles are expected to undertake turning movements either into or from Arundel Road at this intersection.

3.4.2.3 Balranald-Moulamein Road Upgrade

The Stage 2 works will also see an extension to the length of Balranald-Moulamein Road utilised by Project traffic, with vehicles now anticipated to travel on the full 22.140km long section between Yanga Way and proposed site access SA8 (refer **Figure 23** above).

Based on this increase it is recommended that upgrade works are undertaken to the section of Balranald-Moulamein Road between Site Access 5 (SA5 – approx. 11.095km) and Site Access 8 (SA8 – approx. 22.140km), noting that the length of the link between Yanga Way and SA5 is expected to be upgraded and maintained as part of the previous Stage 1 works. These upgrade works are proposed to include road grading and resheeting works to provide a suitable unsealed (gravel) road surface up to 8m minimum in width (to match the current minimum road width on this link).

As with the recommendation for Stage 1, pre and post construction phase dilapidation surveys will be required to be undertaken on the full section of Balranald-Moulamein Road between Yanga Way to Site Access 8 (SA8 – approx. 22.140km). The pre construction inspection is to be undertaken upon the completion of the proposed regrading / resheeting works and is to establish the pre-construction road condition, with the post construction dilapidation survey then used to identify rehabilitation works required to be completed by the Project to bring road conditions / standards on this section of Balranald-Moulamein Road back to the recorded pre construction condition.

3.4.2.4 Arundel Road Upgrade

In addition to Balranald-Moulamein Road, the Stage 2 works will also see increase in traffic on the 710m section of Arundel Road between Balranald-Moulamein Road and the proposed site access SA4 (refer **Figure 23** above). Based on this increase it is recommended that upgrade works are undertaken to this section of Arundel Road to offset the impacts of the Stage 2 works, with these to include road widening, regrading and resheeting works to provide a suitable unsealed (gravel) road surface of 7m (on 9m formation) in accordance with the requirements for an unsealed, rural minor road (50-150vpd) as per Table 3.9 of ARRB's *Unsealed Roads Best Practice Guide*.

As with the proposed Balranald-Moulamein Road upgrade works, it is recommended that pre and post construction phase dilapidation surveys be undertaken on this section of Arundel Road (Balranald-Moulamein Road to SA4), with the pre-construction inspection is to be undertaken upon the completion of the proposed upgrade works and is to establish the pre-construction road condition, with the post construction dilapidation survey then used to identify rehabilitation works required to be completed by the Project to bring road conditions / standards on this section of Arundel Road back to the recorded pre construction condition.

3.4.2.5 Site Access Locations & Configurations

3.4.2.5.1 Site Access 6 / 7 / 8 on Balranald-Moulamein Road

As shown in **Figure 23** above, the proposal identifies the provision of three additional access points to the Stage 2 Project area from Balranald-Moulamein Road and the utilisation of access SA2 which will be provided as part of the Stage 1 works. The three additional Stage 2 site access points are located to the south-east of Arundel Road, with a summary of the proposed locations of these additional access points from Balranald-Moulamein Road provided in **Table 14** below.

Table 14 Proposed Stage 2 Site Access Locations from Balranald-Moulamein Road

Access ID	Distance from Yanga Way	LHS / RHS	Existing Access / New Access Location	No. Turbines Serviced
SA6	17.340km	RHS	New Access Location	17
SA7	18.955km	LHS	Upgrade Existing	6
SA8	22.140km	RHS	New Access Location	16

Furthermore, based on site observations it is concluded that based on the relatively flat terrain and limited adjacent vegetation, appropriate sight distances are available to/from both directions on Balranald-Moulamein Road at each of the proposed Stage 2 access points, with the existing sightlines from each access shown further in **Figure 35** to **Figure 40** overpage.

It is also proposed that the upgraded access at SA7, and the new access locations at SA6 and SA8 be constructed generally in accordance with the site access arrangement for articulated vehicles outlined in Figure 7.4 of Austroads *Guide to Road Design Part 4: Intersections and Crossings – General,* as shown in **Figure 34** above.

Strategic concept designs of the proposed site access works at SA6, SA7 and SA8 have been undertaken, with further details of the proposed configurations of the access points shown further in Figure SA6-1 to SA6-4, SA7-1 to SA7-4 and SA8-1 to SA8-4 respectively in **Appendix M**.

These concept designs also identify the required additional hardstand area at the access points required to accommodate the swept paths of the oversize blade transport vehicle movements. The extents of the additional hardstand areas proposed as part of the SA6, SA7 and SA8 site access works are identified in Figure SA6-4, Figure SA7-4 and Figure SA8-4 of **Appendix M**, noting that the exact configuration of the works will be confirmed in subsequent detailed design phases of the Project once the final configuration of the turbine components and OSOM transport vehicles are confirmed.



Figure 35 Available Sight Distances South-East on Balranald-Moulamein Road from SA6



Figure 36 Available Sight Distances North-West on Balranald-Moulamein Road from SA6



Figure 37 Available Sight Distances South-East on Balranald-Moulamein Road from SA7



Figure 38 Available Sight Distances North-West on Balranald-Moulamein Road from SA7



Figure 39 Available Sight Distances South-East on Balranald-Moulamein Road from SA8



Figure 40 Available Sight Distances North-West on Balranald-Moulamein Road from SA8

3.4.2.5.2 Site Access 4 on Arundel Road

It is also proposed that a new site access (SA4) be constructed on the eastern side of Arundel Road, approximately 710m south of Balranald-Moulamein Road. This access is proposed to be a relocation of the exiting site access approximately 125m to the south (refer **Figure 23** above). Based on site observations, appropriate sight distances are available to/from each direction on Arundel Road from SA4 as shown in **Figure 41** and **Figure 42** below.

Again, the SA4 access is proposed to be constructed generally in accordance with the site access arrangement for articulated vehicles outlined in Figure 7.4 of Austroads *Guide to Road Design Part 4: Intersections and Crossings – General,* as shown in **Figure 34** above. A strategic concept design of the proposed SA4 access works has been completed with further details of the proposed configuration of the access shown further in Figure SA4-1 to SA4-4 in **Appendix M**.



Figure 41 Available Sight Distances South on Arundel Road from Site Access SA4



Figure 42 Available Sight Distances North on Arundel Road from Site Access SA4

3.4.2.5.1 Yanga Way / Site Access 1

As part of the Stage 2 works, a direct access (SA1 refer **Figure 23**) is proposed to be constructed at the location of an existing property access on the eastern side of Yanga Way, approximately 8km to the south of the existing Yanga Way / Balranald-Moulamein Road intersection.

An assessment of the currently available sight distances at the intersection were undertaken based on the requirements of Part 4A of Austroads *Guide to Road Design*, which specifies the requirement for the following sight distance lengths to be available at intersection, based on an adopted design speed of 110 km/hr (posted speed + 10k m/hr) as per standard requirements, with a summary of this assessment provided in **Table 15** .

Table 15 Intersection Sight Distance Requirements

Sight Distance Type	Adopted Parameters	Required Sight Distance (m)	
		Light Vehicles (Car)	Trucks
Safe Intersection Sight Distance (SISD)	Cars R_T = 2.5 sec / d = 0.36 / a = 0% Trucks R_T = 2.5 sec / d = 0.24 / V = 100km/h / a = 0%	300 m	317 m
Minimum Gap Sight Distance (MGSD)	Critical Acceptance Gap - Right Turn from Major Road / Two Way - t_a = 5.0 sec	153 m	

A site inspection was also undertaken to establish the currently available sight distances to/from the sight access on all approaches. Based on this inspection, it was observed that the currently available sight distances to/from the access along Yanga Way in both directions (refer **Figure 43**, **Figure 44,** and Figure SA1-3 of **Appendix M**) exceeded the requirements for both safe intersection sight distance (SISD >300m light vehicles / >317m heavy vehicles) and minimum gap sight distance (MGSD > 153m).



Figure 43 Available Sight Distances South on Yanga Way from proposed SA1



Figure 44 Available Sight Distances North on Yanga Way from proposed SA1

As previously identified, this access point is proposed to be provided as an emergency access only which would provide a secondary access / egress points for both emergency vehicles and Project vehicles in the unlikely event of an emergency on site. As such, the access is not proposed to be utilised day to day by Project traffic and is proposed to be gated to control the movements at the access.

As the proposed site access SA1 is only proposed to be utilised for infrequent emergency access, the provision of a full intersection treatment is not considered to be necessary, with the upgrade works at the access proposed to be constructed generally in accordance with the site access arrangement for articulated vehicles outlined in Figure 7.4 of Austroads *Guide to Road Design Part 4: Intersections and Crossings – General* (as per **Figure 34** above).

Again, a strategic concept design of the proposed SA1 site access works on Yanga Way has been been undertaken, with further details of the proposed configuration of the access point shown further in Figure SA1-1 to SA1-3 in **Appendix M**.

This concept design identifies that the proposed access design can accommodate the swept paths of the largest emergency vehicle expected (Heavy Rigid Vehicle (HRV) to reflect a specialist fire truck) and that the emergency vehicle can easily store within the throat of the access, clear of the adjacent traffic lane and road shoulder of the adjacent Yanga Way and the expected gate location at the existing property boundary to the Project Area.

3.5 Internal Site Facilities

As previously identified, the conceptual layouts for both Stage 1 and Stage 2 of the Project (refer **Figure 22** and **Figure 23** above and overall Project Area layout in **Appendix E**) includes a series of internal access tracks throughout the Project Area which provide vehicular access between the external road network and the turbine locations and associated internal infrastructure. The access track layout has been designed to utilise the existing topography of the land, avoiding steep areas where possible, and to avoid areas of sensitive native vegetation.

The Project will comprise a total of approximately 90.2km of access roads in total, with a summary of the intended design criteria for the internal tracks provided below:

- The internal access tracks will typically between 5.5m (light vehicle only track) to 10min width.
- Regular passing places and turning areas will be provided.
- The access tracks will only link to the identified Project Area access points, with no other connections to adjacent external roads proposed.

- Tracks will not be sealed but will be constructed from aggregate which is expected to be sourced from local quarries (Lake Boga).

The conceptual layout also identifies that a number of site facilities/compounds, including the proposed substations, switching stations, construction compounds, operations and maintenance compound, laydown areas and onsite concrete batch plant areas, as shown in **Figure 22** (Stage 1) and **Figure 23** (Stage 2) above.

3.5.1 On Site Vehicle Parking

Further to this, whilst not currently shown on the conceptual layout it is understood that the suitable parking facilities will be provided for the Project in accordance with the requirements of all relevant standards, guidelines and policies.

In addition, due to the large area of land available within the Project Area for the required internal facilities (including the construction site office and parking facilities), and the current setback from the external road network, it is not anticipated that any of the construction, operations or decommissioning phases of the Project will lead to an overspill of parking or vehicle queuing at the Project Area access that would lead to negative impacts to the operation of the surrounding road network.

3.6 Turbine Component Transport Route Upgrades

As previously identified, a transport route assessment has been separately undertaken for the Project by Rex J Andrews Transport to assess the impact of the movements of the various turbine component transport vehicle configurations on the sections of the external road network proposed to form part of the proposed transport routes for these oversize, over-mass (OSOM) vehicles between the port facilities in Adelaide and the Project Area.

The transport route assessment completed (refer **Appendix A**) has identified four separate routes to the Project Area from the Port Adelaide, including one for blade transport vehicles, one for other components less than 40m long and 5.2m high (hub / nacelle / drivetrain) and two options for high load diversion for loads less than 35m long and 6.4 high (tower sections). A summary of these identified transport routes was provided previously in **Table 12** above.

In addition to identifying the proposed transport routes, the assessment also highlighted a number of specific locations or pinch points along the four transport routes where additional works are expected to be required to accommodate the swept paths and vehicle clearance envelopes of the proposed turbine component transport vehicle configurations.

Further details of the route pinch points, and the currently proposed works are outlined in the transport route assessment included for reference in **Appendix A**. It is noted that the majority of the route pinch points identified will only require traffic management measures or minimal works (signage relocation works) to accommodate the expected OSOM vehicle movements, while a summary of the pinch points requiring modification works is provided in **Table 16** to **Table 19** for identified turbine transport routes 1 and 4 respectively.

It is anticipated that those works located outside of NSW will form part of additional approvals for the Project, with the extent and scope of the additional works to be clarified through a subsequent route assessment to be undertaken in subsequent stages of the Project, once the exact configurations of both the turbine components and associated transport vehicles proposed to be utilised for both stages of the Junction Rivers Wind Farm are confirmed by Windlab.

Furthermore, a number of strategic concept designs have been prepared (refer **Appendix M**) for the key pinch points identified along the proposed blade transport (Route 1) and tower section transport (Route 3 & Route 4), including:

Route 1: Blade Transport Route

- Murray River Highway onto Sturt Highway at Euston (refer Figure BL1-1 & BL1-2).
- Sturt Highway (Market Street) onto Sturt Highway at Balranald (refer Figure BL2-1 & BL2-2).
- Yanga Way onto Balranald Road (refer Figure BL3-1 to BL3-7).

Route 3 & Route 4: Loads Under 35m Overall Length & Max Loaded Height 6.4m (Tower Section Route)

- Sturt Highway onto Sturt Highway at Euston (Carey Street) (Route 3 - refer Figure TO1-1 & TO1-2).
- Armstrong Street onto Silver City Highway at Wentworth (Route 4 - refer Figure TO2-1 & TO2-2).

Table 16 Turbine Transport Route 1 – Route Modification Works Pinch Point Summary [Source: Rex J Andrews]

KM Index	Location	Section of Road	Procedure	Comments
0.00	Port Adelaide (SA)	Ocean Steamers Rd and Eastern Pde	Slight right hand turn	The perimeter fence will need to be modified to allow transit. Sign to be made removable and overhead conductor clearances confirmed.
0.25	Port Adelaide (SA)	Eastern Parade over rail crossing	Travel directly ahead	Height of 3 signals to be checked for blade tip clearance. Approval required from rail network provider before crossing this structure. Spotter to guide load through this pinch point.
0.75	Port Adelaide (SA)	Eastern Parade onto Port River Expressway	Left Hand Merge	To enable the blade to make this corner 1 x light poles and 1x street sign need to be removed. An area of hardstand is also required on the outside of the corner on the Port River on ramp. The blade tip will hang over the drain on the outside of the corner and traffic light on centre island. Blade must be able to lift over traffic signals (4m) The area must be clear of obstacles.
246.45	Loxton (SA)	Karoonda Highway onto Bookpurnong Road	Second Exit on Roundabout	Hardstand is required on the edge of the roundabout so the blade can cut straight across. 2x signs need to be made removable. Spotter to guide load throughout the intersection. Police to control traffic, pilots to warn all traffic.
284.45	Pike River (SA)	Stanitzki Road onto Sturt Highway	Right Hand Turn	A large amount of hardstand is required on the inside of the corner. Existing shoulder on entry to be made trafficable. Vegetation on the outside of the corner to be trimmed or removed. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
355.5	Cullelleraine (VIC)	Sturt Highway onto Werrimull North Road	Right Hand Turn	Hardstand is required on the outside of the corner. Numerous trees will need to be removed to allow the tail swing to pass. 2x signs need to be made removable. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
368.1	Werrimull (VIC)	Werrimull North Road onto Millewa Road	Left Hand Turn	Hardstand is required on the entry and inside of the corner. 1x sign needs to be made removable. Vegetation to be removed or trimmed. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
422.6	Red Cliffs (VIC)	Bend on Millewa Road	Right Hand Turn	Hardstand to be installed on inside and outside of corner. Signs removed and vegetation trimmed as required. Overhead conductor clearance to be confirmed.

KM Index	Location	Section of Road	Procedure	Comments
422.7	Red Cliffs (VIC)	Millewa Road onto Calder Highway	Right Hand Turn	The sharp right hand turn on to the Calder highway will need a significant amount of work, including a new bypass road and a new rail crossing. Signs and obstacles to be removed. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
474.5	Hattah (VIC)	Calder Highway onto Hattah-Robinvale Road	Left Hand Turn First Exit off Roundabout	New bypass road to be installed, vegetation removed and trimmed as required. Overhead conductor clearance to be confirmed. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
527.7	Bannerton (VIC)	Hattah-Robinvale Road onto Robinvale-Sea Lake Road	Left Hand Turn	Hardstand is required on the centre island and 6x signs will need to be made removable. Delineators made removable, Vegetation trimmed as required. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
546.0	Euston (NSW)	Murray River Highway onto Sturt Highway	Right Hand Turn	This is a very tight corner that cuts back on itself. A large amount of hardstand is required. The new alignment will need a lot of fill to bring it level with the highway. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
623.7	Balranald (NSW)	Sturt Highway (Market Street) onto Sturt Highway	Right Hand Turn	This section is very tight. A large area of hardstand will be required along with the removal of 5 x trees, 2x light poles and numerous signs. Median strip to be made trafficable. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
636.8	Yanga (NSW)	Yanga Way onto Balranald-Moulamein Road	Left Hand Turn	An area of hardstand is required on the inside of the corner. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
645.8	Kyalite (NSW)	Balranald-Moulamein Road onto Arundel Road	Site Entrances	Some vegetation may need to be trimmed/removed on the inside and outside of this corner. The first site entrances are proposed in this location. The land is very flat with limited vegetation. Client to provide adequate swept path for the blade to enter site.
659.0	Moolpa (NSW)	Balranald-Moulamein Road into Western Site Entrances	Site Entrances	The western site entrances are proposed in this location. As with the eastern entrances the land is very flat with limited vegetation. Client to provide adequate swept path for the blade to enter site.

Table 17 Turbine Transport Route 2 – Route Modification Works Pinch Point Summary [Source: Rex J Andrews]

KM Index	Location	Section of Road	Procedure	Comments
596.0	Kyalite (NSW)	Balranald-Moulamein Road onto Arundel Road	Site Entrances	Client to provide adequate swept path for the load to enter site.
587.0 to 610.0	Moolpa (NSW)	Balranald-Moulamein Road into Western Site Entrances	Site Entrances	Client to provide adequate swept path for the load to enter site.

Table 18 Turbine Transport Route 3 – Route Modification Works Pinch Point Summary [Source: Rex J Andrews]

KM Index	Location	Section of Road	Procedure	Comments
33.7	Two Wells (SA)	Mallala Road onto Old Port Road	Right Hand Turn	Centre island to be made trafficable.
46.8	Gawler River (SA)	Two Wells Road onto Wilkinson Street	Left Hand Turn	Hardstand to be added prior and after the corner.
54.5	Kangaroo Flat (SA)	Oates Road onto Redbank Road	Right Hand Turn	Hardstand to be added to the outside of the corner.
56.5	Roseworthy (SA)	Mudla Wirra Road onto College Road	Right Hand Turn	Vegetation to be trimmed.
60.8	Roseworthy (SA)	College Road onto Cliff Road	Left Hand Turn	If loads exceed an overall length of 40m, there will need to be some hardstand added to this intersection.
246.0	Yinkanie (SA)	Heinrich Road onto Drogemuller Road	Left Hand Turn	Hardstand will need to be added to this intersection.
249.0	Moorook South (SA)	Drogemuller Road onto Kingston Road	Right Hand Turn	Hardstand will need to be added to this intersection.
434.0	Mildura (VIC)	Sturt Highway onto Seventeenth Street	Right Hand Turn	Loads to cross to the incorrect side. Median strips will need to be made trafficable and signs relocated or made removable.
436.0 to 442.0	Mildura (VIC)	Benetook Avenue	Travel directly ahead	A roundabout will need the centre filled with hardstand and temporary bollards installed. Vegetation will need to be trimmed on sections of this road.
442.0	Mildura (VIC)	Benetook Avenue at Eleventh Street	Travel directly ahead.	A temporary hardstand will need to be added to the centre of the roundabout. This will allow the loads a direct path across the railway crossing. Temporary bollards would need to be installed over this hardstand. If loads exceed 26m in overall length or 4.5m in width, rail clearance will be required.
444.0	Mildura (VIC)	Seventh Street E onto Sturt Highway	Right Hand Turn	Load to cross the incorrect side of the roundabout. 2 Median strips will need to be made trafficable, and signs made removable.
522.0	Euston (NSW)	Sturt Highway	Left Hand Turn	Travel left at round-about. Median strips will need to be made trafficable, and signs made removable.
602.0	Balranald (NSW)	Sturt Highway (Market Street) onto Sturt Highway	Right Hand Turn	Load to cross the incorrect side of the corner. Median strips will need to be made trafficable, and signs made removable.
626.0	Kyalite (NSW)	Balranald-Moulamein Road onto Arundel Road	Site Entrances	Client to provide adequate swept path for the load to enter site.
641.0	Moolpa (NSW)	Balranald-Moulamein Road into Western Site Entrances	Site Entrances	Client to provide adequate swept path for the load to enter site.

Table 19 Turbine Transport Route 4 – Route Modification Works Pinch Point Summary [Source: Rex J Andrews]

KM Index	Location	Section of Road	Procedure	Comments
88.3	Kapunda (SA)	Thiele Highway onto East Terrace	Right Hand Turn	Sign to be made removable
281.4	Renmark South (SA)	Airport Road onto Government Road	Left Hand Turn	Hardstand to be installed on outside of corner. Overhead conductor clearance to be confirmed.
434.0	Wentworth (NSW)	Silver City Highway onto Armstrong Avenue	Left Hand Turn	Signs to be made removable as required and island made trafficable
540.0	Euston (NSW)	Sturt Highway roundabout at Carey Street	Left Hand Turn	Signs on entry and exit island to be relocated or made removable and islands made trafficable and hardstand to be added to side of road.
620.0	Balranald (NSW)	Sturt Highway (Market Street) onto Sturt Highway	Right Hand Turn	Load to cross the incorrect side of the roundabout. Median strips will need to be made trafficable, and signs made removable.
644.0	Kyalite (NSW)	Balranald-Moulamein Road onto Arundel Road	Site Entrances	Client to provide adequate swept path for the load to enter site.
659.0	Moolpa (NSW)	Balranald-Moulamein Road into Western Site Entrances	Site Entrances	Client to provide adequate swept path for the load to enter site.

4.0 Project Traffic

As required by the SEARs for the Project, this assessment considers three distinct periods of traffic generation for the Project, including the construction, operations and decommissioning phases. Further to this, TfNSW has requested the consideration of a pre-construction or preliminary construction period of the Project. Based on the proposed sequential delivery of Stage 1 and Stage 2 of the Project, this preliminary construction phase is only anticipated to occur within the initial stage (4 months) of the Stage 1 works and include the preliminary site investigations, external road upgrade works and site mobilisation and establishment works.

The expected traffic generation and distribution during all the identified phases of the Project is discussed further in the sections below.

4.1 Construction Phase

4.1.1 Stage 1

As identified above, the overall Stage 1 construction phase of the Project is proposed to commence in Q3 2026 (July 2026 - pending approvals) with an overall construction period of 18 months. Adopting an assumed 18-month overall construction period, it is expected that all Stage 1 construction works will be completed by the end of Q4 2027 (December 2027), with the peak period of construction expected to occur between Q1 and Q2 2027 (refer **Table 10** above).

Within the overall Stage 1 construction phase, the initial 4 month period (July 2026 to October 2026) has been identified for the completion of pre-construction or preliminary construction activities, including preliminary site investigations, external road upgrades and site mobilisation and establishment works.

Further details of the expected traffic volumes for both the preliminary and main construction works for Stage 1 of the Project are provided below.

4.1.1.1 Preliminary Construction

As identified above, the initial four months of the Stage 1 construction phase has been identified for pre-construction or preliminary construction works, including preliminary site investigations, external road upgrades and site mobilisation and establishment works.

The main traffic generating activities occurring within the preliminary construction phase are the transport of the various construction materials for the external road upgrade works, the transport of equipment as part of the site mobilisation and establishment and the daily construction staff movements.

The expected Project traffic generation and its expected distribution on the surrounding road network during the preliminary construction phase, are based on the following general assumptions, with the forecast traffic volumes identified in Table 16 and the detailed Project traffic calculations provided in **Appendix F**.

- The required gravel materials for the external road upgrade works have conservatively been assumed to be 100% imported from external quarry sources in Lake Boga, with no internal sources currently identified within the Project Area.
- The preliminary site investigation works are expected to generate up to 5 light vehicle round trips to/from the Project Area daily, with the staff completing these works to travel daily from either Mildura or Swan Hill.
- Other miscellaneous site equipment (site buildings, earthworks plant) are expected to be imported from external sources in Mildura or Swan Hill.
- The preliminary construction workforce will comprise of up to staff 70 staff, of which 80% are assumed to travel from Balranald, 5% from Tooleybuc and 15% from Swan Hill.

- Construction staff commuting from Balranald are expected to commute to the Project Area using a mix of private vehicles (light vehicles and 4WDs) and minibuses, with an average capacity of 2 staff per vehicle and 15 staff members per bus, and a split of private vehicles and minibus usage by staff is anticipated to be approximately 50% / 50%.
- Construction staff commuting to/from both Tooleybuc and Swan Hill are anticipated to travel using private vehicles only, with an average capacity of 2 staff per vehicle.

4.1.1.2 General Construction

The main traffic generating activities occurring within the remaining Stage 1 construction phase of the Project are the transport of the various construction materials / equipment to the Project Area and the daily construction staff movements.

Further details of these activities, including the Project traffic generation and its expected distribution on the surrounding road network, are provided in the following sections.

4.1.1.2.1 OSOM Turbine Component Transport Movements

As previously identified, the components for the 30 turbines within Stage 1 will be imported from overseas, shipped to port facilities in Port Adelaide, before being transported by road to the Project Area. Based on information provided by Windlab, it is understood that each of the turbines will likely consist of up 13 main turbine components depending on the configuration adopted, including 3 blade pieces, hub, nacelle and drivetrain components, and up to 7 tower sections.

Further to this, additional ancillary turbine components (such as base rings and other assembly components) and performance monitoring masts for the Project are also anticipated to be delivered to site from Port Adelaide utilising standard semi-trailer vehicles.

Finally, on average, two light escort vehicles will accompany each over dimension turbine component to site. Based on these numbers, the proposed turbine transport traffic volumes for Stage 1 of the Project were established, as summarised below:

- 1,216 vehicles total from Port Adelaide, including:
  - 780 light vehicle escorts.
  - 390 turbine component transport vehicles.
  - 41 ancillary turbine component transport vehicles.
  - 5 performance monitoring mast transport vehicles.

Based on a potential turbine component haulage rate of 2 full turbines per week, and an assumed 6 day a week haulage operation, this would equate to up to 26 main turbine components per week or a maximum of 5 components per day.

Combined with the assumed 2 light escort vehicles per component and the 1-2 semi-trailer vehicles for the turbine ancillary components, the maximum daily vehicles on the network from the turbine transport operations would be in the order of 16-17 vehicles (including 5 OSOM turbine component transport vehicles / 10 light vehicle escorts / 1-2 ancillary turbine component semi-trailers).

Further to this, it is noted that as various routes have been identified for the different turbine components, a number of the identified road sections (particularly those forming over dimension bypasses) would be utilised less frequently and see lower daily traffic volumes from the haulage operations.

4.1.1.3 Materials and Equipment Delivery Movements

Windlab has provided preliminary information and assumptions regarding the construction phase of Stage 1 of the Project based on their experience in developing similar wind farm developments, as well as insights post-construction from large infrastructure projects located locally such as the Limondale and Sunraysia solar farms (adjacent to the Project also on Yanga Way).

This information has been used to calculate the expected material and equipment quantities for the Project and the associated vehicle movements for the delivery of these items, based on the following general assumptions regarding the expected Project traffic numbers.

- The required gravel materials for the internal access roads, infrastructure areas and cable trench sand and concrete aggregates have conservatively been assumed to be 100% imported from external quarry sources in Lake Boga, with no internal sources currently identified within the Project Area.
- Similarly, while it may not eventuate this way, it has been conservatively assumed 100% of the construction water requirements will be imported from an external source (likely standpipe) in Balranald.
- Concrete is to be sourced from the on-site batch plant facility, with the associated materials (cement / aggregates etc.) proposed to be 100% imported to the Project Area from either Mildura or Swan Hill.
- Other miscellaneous site equipment (site buildings, fencing etc.) and materials, including diesel fuel, steel reinforcement etc. are expected to be imported from external sources in Mildura or Swan Hill.
- Waste from the Project Area is proposed to be removed and transported to management facilities in Mildura or Balranald.

A calculated breakdown of the Project generated traffic movements by construction task, is summarised in **Table 20** , while the detailed calculations completed in order to convert operational / construction information into vehicle movements are included for reference in **Appendix F**.

Table 20 Summary of Total Project Material / Equipment Delivery Movement Volumes – Stage 1

Task	Duration	Total Vehicles	Type of Vehicles	Max Vehicles per Day (Avg)
Preliminary Construction				
Task 1A – Preliminary Site Investigations	3 months	360 light vehicles (external)	Light Vehicles	5 vehicles / day
Task 1B – Off Site Road Works	4 months	779 vehicle (external)	Truck and Dog Combinations	8 vehicles / day (external)
Task 1C – Mobilisation and Site Establishment	1 month	185 vehicles (external)	Semi-Trailers Low Loaders (Plant)	8 vehicles / day (external)
General Construction				
Task 1D – Internal Access Roads & Hardstands	9 months	11,033 vehicles (external)	Semi-Trailers Truck and Dog Combinations	52 vehicles / day (external)
Task 1E – Site Compound Areas (Civil Works)	4 months	2,528 vehicles (external) 997 internal concrete truck movements	Semi-Trailers Water Trucks Truck and Dog Combinations Concrete Trucks	27 vehicles / day (external)

Task	Duration	Total Vehicles	Type of Vehicles	Max Vehicles per Day (Avg)
Task 1F – Turbine Foundations	9 months	1,588 vehicles (external) 4,000 internal concrete truck movements	Semi-Trailers Water Trucks Truck and Dog Combinations Concrete Trucks	8 vehicles / day (external)
Task 2A – Cabling (Underground & Overhead)	9 months	346 vehicles (external)	Semi-Trailers Truck and Dog Combinations	2 vehicles / day (external)
Task 2B – Site Compound Areas (Electrical Works)	9 months overall 3 months (for transport task)	307 vehicles (external), including 2 special permit vehicles (transformer and switch room).	Semi-Trailers Special Transport Vehicles (Permit)	5 vehicles / day (external) 1 OSOM vehicle /day for transformer and switch room delivery
Task 3A – Turbine Transportation	9 months	1,216 vehicles total (including 650 light vehicle escorts)	Special Transport Vehicles (Permit) Escorts (light vehicle) Semi-Trailers	16-17 vehicles / day (including 5 OSOM vehicles)
Task 3B – Turbine Erection	9 months overall 1 week (for transport task)	9 vehicles required for crane delivery.	Special Transport Vehicles (Permit) Crane	2 vehicles / day (external)
Task 4 – Finalisation / Commissioning / Demobilisation	3 months	185 vehicles (external)	Semi-Trailers Low Loaders (Plant)	3 vehicles / day (external)
Other – Site Water (Does not include internal water truck movements)	18 months	4,500 vehicles (external)	Water Trucks	11 vehicles / day (external)
Other – Fuel	18 months	115 vehicles (external)	Semi-Tankers	1 vehicle / day (external)
Other – Waste Removal	18 months	235 vehicles (external)	Semi-Trailers	1 vehicle / day (external)

4.1.1.4 Construction Staff Movements

The proponent has also provided the following information and assumptions regarding the proposed staff movements for the construction phase for Stage 1 of the Project:

- Maximum (peak) construction workforce will comprise approximately 200 staff, of which 80% are assumed to travel from Balranald, 5% from Tooleybuc and 15% from Swan Hill.
- Outside of the peak construction period, the daily staff numbers associated with the Project are expected to be significantly less (average 85 staff).
- Construction staff commuting from Balranald are expected to commute to the Project Area using a mix of private vehicles (light vehicles and 4WDs) and minibuses, with an average capacity of 2 staff per

vehicle and 15 staff members per bus, and a split of private vehicles and minibus usage by staff is anticipated to be approximately 50% / 50%.

- Construction staff commuting to/from both Tooleybuc and Swan Hill are anticipated to travel using private vehicles only, with an average capacity of 2 staff per vehicle.

Based on these general staff assumptions, the expected staff numbers and associated vehicle movements were established, with **Table 21** summarising the expected number of staff by construction task and by month and **Table 22** converting the estimated staff numbers to anticipated vehicle movement numbers.

Table 21 Forecast Staff Numbers during Construction (Stage 1)

ID	TASK	MAX STAFF	MONTH																		
			Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27	Nov-27	Dec-27
			Q3 2026			Q4 2026			Q1 2027			Q2 2027			Q3 2027			Q4 2027		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1A	Preliminary Site Investigations	10	10	10	10																
1B	Off Site Road Works	40	20	40	40	20															
1C	Mobilisation & Site Establishment	20			20																
1D	Internal Access Roads & Hardstands	40				40	40	40	40	40	40	40	40	40							
1E	Site Compound Areas (Civil Works)	20					20	20	20	20											
1F	Turbine Foundations	50						50	50	50	50	50	50	50	50	50					
2A	Cabling	40							40	40	40	40	40	40	40	40	40				
2B	Site Compound Areas (Electrical Works)	20								10	20	20	20	20	20	20	20	20			
3A	Turbine Transportation	20							20	20	20	20	20	20	20	20	20				
3B	Turbine Erection	30								20	30	30	30	30	30	30	30	20			
4	Finalisation / Commissioning / Demobilisation	20																20	20	20	
	Total Daily Staff Numbers		**30**	**50**	**70**	**60**	**60**	**110**	**170**	**200**	**200**	**200**	**200**	**200**	**160**	**160**	**110**	**60**	**20**	**20**

Table 22 Forecast Daily Staff Vehicle Volumes (Stage 1)

				MONTH																	
				Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27	Nov-27	Dec-27
				Q3 2026			Q4 2026			Q1 2027			Q2 2027			Q3 2027			Q4 2027		
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Total Daily Staff Numbers				**30**	**50**	**70**	**60**	**60**	**110**	**170**	**200**	**200**	**200**	**200**	**200**	**160**	**160**	**110**	**60**	**20**	**20**
Local Staff	**Vehicle**	80%																			
		Capacity	**Utilisation by Staff**	*24*	*40*	*56*	*48*	*48*	*88*	*136*	*160*	*160*	*160*	*160*	*160*	*128*	*128*	*88*	*48*	*16*	*16*
Required Vehicle Movements (1-Way)	Mini Bus (Balranald)	15	40%	1	2	2	2	2	3	4	5	5	5	5	5	4	4	3	2	1	1
	LV (Balranald)	2	40%	5	8	12	10	10	18	28	32	32	32	32	32	26	26	18	10	4	4
	LV (Tooleybuc)	2	5%	1	1	2	2	2	3	4	4	4	4	4	4	4	4	3	2	1	1
	LV (Swan Hill)	2	15%	2	3	5	4	4	7	11	12	12	12	12	12	10	10	7	4	2	2
Non-Local (FIFO) Staff	**Vehicle**	20%																			
		Capacity	**Utilisation by Staff**	*6*	*10*	*14*	*12*	*12*	*22*	*34*	*40*	*40*	*40*	*40*	*40*	*32*	*32*	*22*	*12*	*4*	*4*
Required Vehicle Movements (1-Way)	Mini Bus (Balranald)	15	75%	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	1	1	1
	LV (Balranald)	2	25%	1	2	2	2	2	3	5	5	5	5	5	5	4	4	3	2	1	1
Total Daily Staff Vehicle Movements				**11**	**17**	**24**	**21**	**21**	**36**	**54**	**60**	**60**	**60**	**60**	**60**	**50**	**50**	**36**	**21**	**10**	**10**

4.1.2 Stage 2

As previously outlined, the construction phase of Stage 2 of the Project is proposed to commence in Q1 2028 (January 2028 - pending approvals) with an overall Stage 2 construction period of 30 months, with all construction works expected to be completed by the end of Q2 2030 (June 2030), with the peak period of construction expected to occur for a 12 month period between Q4 2028 and Q3 2029 (refer **Table 11** above).

As with the Stage 1 works, the main traffic generating activities within the construction phase of Stage 2 are the transport of the various construction materials / equipment to the Project Area and the daily construction staff movements. Further details of these activities, including the Project traffic generation and its expected distribution on the surrounding road network, are provided in the following sections.

4.1.2.1 Turbine Component Transport Movements

For the purpose of this assessment it has been assumed that the turbine components for Stage 2 of the Project will also be imported from overseas and transported from Port Adelaide to the Project area. Based on the 66 proposed turbines in Stage 2 of the Project, the anticipated turbine transport traffic volumes for Stage 2 were established:

- 2,666 vehicles total from Port Adelaide, including:
  - 1,716 light vehicle escorts.
  - 858 turbine component transport vehicles.
  - 89 ancillary turbine component transport vehicles.
  - 3 performance monitoring mast transport vehicles.

Again assuming a proposed turbine component haulage rate of 2 full turbines per week, and an assumed 6 day a week haulage operation, this would equate to up to 26 main turbine components per week or a maximum of 5 components per day.

Combined with the assumed 2 light escort vehicles per component and the 1-2 semi-trailer vehicles for the turbine ancillary components, the maximum daily vehicles on the network from the turbine transport operations would be in the order of 16-17 vehicles (including 5 OSOM turbine component transport vehicles / 10 light vehicle escorts / 1-2 ancillary turbine component semi-trailers).

Further to this, it is noted that as various routes have been identified for the different turbine components, a number of the identified road sections (particularly those forming over dimension bypasses) would be utilised less frequently and see lower daily traffic volumes from the haulage operations.

4.1.2.2 Materials and Equipment Delivery Movements

Project traffic volumes for the Stage 2 works have been established assuming the same sources for the general construction material and equipment as those previously identified for Stage 1.

Based on this, the calculated breakdown for Stage 2 generated traffic movements by construction task is summarised in **Table 23** overpage, while the detailed calculations are included for reference in **Appendix G**.

Table 23 Summary of Total Project Material / Equipment Delivery Movement Volumes – Stage 2

Task	Duration	Total Vehicles	Type of Vehicles	Max Vehicles per Day (Avg)
Task 1A – Mobilisation and Site Establishment	2 months	400 vehicles (external)	Semi-Trailers Low Loaders (Plant)	7 vehicles / day (external)
Task 1B – Access Roads, Hardstands & Site Entrances	18 months	25,028 vehicles (external)	Semi-Trailers Truck and Dog Combinations	62 vehicles / day (external)
Task 1C – Site Compound Areas (Civil Works)	9 months	3,944 vehicles (external) 1,422 internal concrete truck movements	Semi-Trailers Water Trucks Truck and Dog Combinations Concrete Trucks	19 vehicles / day (external)
Task 1D – Turbine Foundations	18 months	3,494 vehicles (external) 8,800 internal concrete truck movements	Semi-Trailers Water Trucks Truck and Dog Combinations Concrete Trucks	9 vehicles / day (external)
Task 2A – Cabling (Underground & Overhead)	15 months	832 vehicles (external)	Semi-Trailers Truck and Dog Combinations	3 vehicles / day (external)
Task 2B – Site Compound Areas (Electrical Works)	10 months overall 6 months (for transport task)	409 vehicles (external), including 4 special permit vehicles (transformers & switch rooms).	Semi-Trailers Special Transport Vehicles (Permit)	3 vehicles / day (external) 1 OSOM vehicle /day for transformer and switch room delivery
Task 3A – Turbine Transportation	15 months	2,666 vehicles total (including 1,716 light vehicle escorts)	Special Transport Vehicles (Permit) Escorts (light vehicle)	16-17 vehicles / day (including 5 OSOM vehicles)
Task 3B – Turbine Erection	1 week (for transport task)	9 vehicles required for crane delivery.	Special Transport Vehicles (Permit) Crane	2 vehicles / day (external)
Task 4 – Finalisation / Commissioning / Demobilisation	5 months	400 vehicles (external)	Semi-Trailers Low Loaders (Plant)	4 vehicles / day (external)
Other – Site Water (Not including internal water trucks)	30 months	9,169 vehicles (external)	Water Trucks	13 vehicles / day (external)
Other – Fuel	30 months	263 vehicles (external)	Semi-Tankers	1 vehicle / day (external)
Other – Waste Removal	30 months	652 vehicles (external)	Semi-Trailers	1 vehicle / day (external)

4.1.2.3 Construction Staff Movements

The proponent has also provided the following information and assumptions regarding the proposed staff movements for the construction phase of Stage 2 of the Project:

- Maximum (peak) construction workforce will comprise approximately 400 staff, of which 80% are assumed to travel from Balranald, 5% from Tooleybuc and 15% from Swan Hill.
- Outside of the peak construction period, the daily staff numbers associated with the Project are expected to be significantly less (i.e. 50-275 staff).
- Construction staff commuting from Balranald are expected to commute to the Project Area using a mix of private vehicles (light vehicles and 4WDs) and minibuses, with an average capacity of 2 staff per vehicle and 15 staff members per bus, and a split of private vehicles and minibus usage by staff is anticipated to be approximately 50% / 50%.
- Construction staff commuting to/from both Tooleybuc and Swan Hill are anticipated to travel using private vehicles only, with an average capacity of 2 staff per vehicle.

Based on these general staff assumptions, the expected staff numbers and associated vehicle movements were established, with **Table 24** summarising the expected number of staff by construction task and by month and **Table 25** converting the estimated staff numbers to anticipated vehicle movement numbers.

Table 24 Forecast Staff Numbers during Construction (Stage 2)

ID	Duration (Days)	Task	Max Staff	MONTH																															
				Jan-28	Feb-28	Mar-28	Apr-28	May-28	Jun-28	Jul-28	Aug-28	Sep-28	Oct-28	Nov-28	Dec-28	Jan-29	Feb-29	Mar-29	Apr-29	May-29	Jun-29	Jul-29	Aug-29	Sep-29	Oct-29	Nov-29	Dec-29	Jan-30	Feb-30	Mar-30	Apr-30	May-30	Jun-30
				Q1 2028			Q2 2028			Q3 2028			Q4 2028			Q1 2029			Q2 2029			Q3 2029			Q4 2029			Q1 2030			Q2 2030		
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1A	48	Mobilisation & Site Establishment	40	40	40																														
1B	432	Access Roads, Hardstands and Site Entrances	100			75	75	100	100	100	100	100	100	100	100	100	100	100	100	100	100	75	75												
1C	216	Site Compound Areas (Civil Works)	75				50	75	75	75	75	75	75	75	50																				
1D	432	Turbine Foundations	100						75	75	100	100	100	100	100	100	100	100	100	100	100	100	100	75	75										
2A	360	Cabling	75										50	75	75	75	75	75	75	75	75	75	75	75	75	75	50								
2B	240	Site Compound Areas (Electrical Works)	75																		50	75	75	75	75	75	75	75	50	50					
3A	360	Turbine Transportation	20											20	20	20	20	20	20	20	20	20	20	20	20	20	20	20							
3B	360	Turbine Erection	50												30	50	50	50	50	50	50	50	50	50	50	50	50	50	30						
4	120	Finalisation / Commissioning / Demobilisation	50																										50	50	50	50	50		
		Total Daily Staff Numbers		40	40	75	75	150	175	250	250	275	275	345	400	395	345	345	345	345	395	395	395	320	320	295	295	195	130	100	50	50	50		

Table 25 Forecast Daily Staff Vehicle Volumes (Stage 2)

				MONTH																															
				Jan-28	Feb-28	Mar-28	Apr-28	May-28	Jun-28	Jul-28	Aug-28	Sep-28	Oct-28	Nov-28	Dec-28	Jan-29	Feb-29	Mar-29	Apr-29	May-29	Jun-29	Jul-29	Aug-29	Sep-29	Oct-29	Nov-29	Dec-29	Jan-30	Feb-30	Mar-30	Apr-30	May-30	Jun-30
				Q1 2028			Q2 2028			Q3 2028			Q4 2028			Q1 2029			Q2 2029			Q3 2029			Q4 2029			Q1 2030			Q2 2030		
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Total Daily Staff Numbers				40	40	75	75	150	175	250	250	275	275	345	400	395	345	345	345	345	395	395	395	320	320	295	295	195	130	100	50	50	50
Local Staff	Vehicle	80% Capacity	80% Utilisation by Staff	*32*	*32*	*60*	*60*	*120*	*140*	*200*	*200*	*220*	*220*	*276*	*320*	*316*	*276*	*276*	*276*	*276*	*316*	*316*	*316*	*256*	*256*	*236*	*236*	*156*	*104*	*80*	*40*	*40*	*40*
Required Vehicle Movements (1-Way)	Mini Bus	15	40%	1	1	2	2	4	4	6	6	6	6	8	9	9	8	8	8	8	9	9	9	7	7	7	7	5	3	3	2	2	2
	LV (Balranald)	2	40%	7	7	12	12	24	28	40	40	44	44	56	64	64	56	56	56	56	64	64	64	52	52	48	48	32	21	16	8	8	8
	LV (Tooleybuc)	2	5%	1	1	2	2	3	4	5	5	6	6	7	8	8	7	7	7	7	8	8	8	7	7	6	6	4	3	2	1	1	1
	LV (Swan Hill)	2	15%	3	3	5	5	9	11	15	15	17	17	21	24	24	21	21	21	21	24	24	24	20	20	18	18	12	8	6	3	3	3
Non-Local (FIFO) Staff	Vehicle	20% Capacity	20% Utilisation by Staff	*8*	*8*	*15*	*15*	*30*	*35*	*50*	*50*	*55*	*55*	*69*	*80*	*79*	*69*	*69*	*69*	*69*	*79*	*79*	*79*	*64*	*64*	*59*	*59*	*39*	*26*	*20*	*10*	*10*	*10*
Required Vehicle Movements (1-Way)	Mini Bus	15	75%	1	1	1	1	2	2	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	3	3	2	2	1	1	1	1
	LV	2	25%	1	1	2	2	4	5	7	7	7	7	9	10	10	9	9	9	9	10	10	10	8	8	8	8	5	4	3	2	2	2
Total Daily Staff Vehicle Movements				14	14	24	24	46	54	76	76	83	83	105	119	119	105	105	105	105	119	119	119	98	98	90	90	60	41	31	17	17	17

4.2 Operations Phase

The estimated workforce during the proposed 30-year operations phase of the Project (i.e. following the completion of the construction stages) is anticipated to only consist of a small number of local workers (i.e. approximately 15 staff) who are expected to reside locally to the Project Area and commute daily (most likely to/from Balranald). Further to this, the heavy vehicle movements during the operations phase of the Project are also likely to be extremely low (approx. 1 HV per week) and are considered to be negligible from a traffic engineering or transport planning perspective.

4.3 Decommissioning Phase

As previously identified, based on information provided by Windlab it is understood the decommissioning phase works associated with the Project are anticipated to be completed over a 12-18 month period for the overall Project Area, with the peak traffic movements to/from the Project Area during decommissioning conservatively estimated to be approximately 70% of the peak construction movements for the Project to/from the Project Area (both daily and during AM and PM peak periods).

However, as these works are likely to occur in more than 30 years the exact nature of the works and associated traffic movements are difficult to confirm at this stage. As such it is proposed that prior to the start of the decommissioning works, an updated traffic impact assessment be completed as part of the required decommissioning and rehabilitation strategy, to clearly outline the proposed decommissioning works, the associated traffic movements, their anticipated impact on the surrounding road network and any management and mitigation required.

4.4 Project Traffic Volumes on the Network

The calculated Project traffic volumes for the construction, operations and decommissioning phases of the Project outlined above have been distributed onto the public road network based upon assumed trip origins and destinations based on known equipment / materials sources and other Project operational information provided by the proponent.

Further details of the expected Project traffic volumes on the key road links and intersections of the relevant sections of the external road network are provided in the following sections.

4.4.1 Road Links

As previously identified, the use of the external road network by general Project traffic during each stage of the Project is anticipated to be generally limited to the relevant sections of the Sturt Highway, Yanga Way, Swan Hill Road, Stony Crossing Road, Balranald-Moulamein Road and Arundel Road in close proximity to the Project Area.

Detailed calculations were undertaken to establish the peak daily traffic volumes from each stage of the Project for each phase (i.e. construction / operations / decommissioning) of the works on the relevant sections of the external road network, with a copy included for reference as **Appendix F** (Stage 1) and **Appendix G** (Stage 2).

A summary of the calculated construction, operations and decommissioning Project traffic volumes on the identified road links is provided in **Table 26**, noting:

- The preliminary construction phase (pre-construction works) for the Project is only anticipated to occur during Stage 1 of the Project, and occurs during the initial construction period where Task 1A (Preliminary Site Investigations), Task 1B (Off Site Road Works) and Task 1C (Mobilisation & Site Establishment) are being completed simultaneously with typical site water, fuel, waste management and peak construction staff movements on the network.

- The Stage 1 peak construction phase Project volumes are experienced during the construction period where Task 1D (turbine foundations), Task 1E (site compound areas – civil works), Task 2A (cabling), Task 2B (site compound areas - electrical) and Task 3B (turbine erection) (refer **Table 10**) are being completed simultaneously with typical site water, fuel, waste management and peak construction staff movements on the network.

  It is noted that these volumes do not include volumes associated with Task 3A Turbine Transport which also occurs concurrently in the period of peak construction. This is due to the fact that these movements occur under full escort and out of hours for the construction works.
- The Stage 2 peak construction phase Project volumes are experienced during the construction period where Task 1B (access roads, hardstands and site entrances), Task 1C (site compound areas – civil works), Task 1D (turbine foundations), Task 2A (cabling) and Task 3B (turbine erection) (refer **Table 11**) are being completed simultaneously with typical site water, fuel, waste management and peak construction staff movements on the network (noting that for the Stage 2 works the peak construction phase will also include operations staff movements for Stage 1).

  Again it is noted that these volumes do not include volumes associated with Task 3A (Turbine Transport) which also occurs concurrently in the period of peak construction. This is due to the fact that these movements occur under full escort and out of hours for the construction works.
- The operations phase Project volumes are based on the potential maximum volumes for staff movements on each section of the link (maximum 15 staff), noting that these staff are assumed to commute to/from the Project Area daily from Balranald, with a maximum of 1 HV movement to/from the Project Area also anticipated (per stage area).
- The decommissioning phase Project volumes are conservatively assumed to be 70% of the calculated maximum peak construction phase volumes for the Project.

Notwithstanding this, a number of other state and local government controlled roads were also identified in the preliminary transport route assessment (refer **Appendix A**) to be utilised as part of the turbine component transport operations from the Port Adelaide to the Project Area during construction.

However, these turbine transport movements will typically be completed in off peak (or night) periods and under permit utilising escort vehicles. Further to this, based on the proposed transport schedule the maximum number of Project vehicles per day on the road links forming the turbine transport routes is 18vpd (including 6 OSOM transport vehicles and 12 light escort vehicles), with several road sections forming part of the alternate routes for the over dimension components likely to see even lower Project traffic volumes.

Table 26 Project Traffic Volumes on External Road Network Links

AADT Segment		Maximum Daily Project Traffic Volumes														
		Stage 1 Prelim. Construction			Stage 1 Peak Construction			Stage 2 Peak Construction**			Operations			Decommissioning		
Start (km)	End (km)	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
A20 Sturt Highway (Mildura to Yanga Way																
0.000	82.400	9	9	18	12	12	24	9	9	18	2	2	4	6	6	13
82.400	162.100	9	9	18	12	12	24	9	9	18	2	2	4	6	6	13
162.100	165.500	37	37	74	67	67	134	124	124	248	32	32	64	87	87	174
Yanga Way (Sturt Highway to Tooleybuc)																
0.000	11.800	37	37	74	67	67	134	124	124	248	32	32	64	87	87	174
11.800	19.800	24	24	48	106	106	212	123	123	246	0	0	0	86	86	172
19.800	36.200	24	24	48	106	106	212	123	123	246	0	0	0	86	86	172
36.200	49.100	2	2	4	4	4	8	8	8	16	0	0	0	6	6	11
Balranald-Moulamein Road (Yanga Way to Site Access SA8)																
0.000	6.930	58	58	116	169	169	338	244	244	488	32	32	64	171	171	342
6.930	7.750	44	44	88	143	143	286	244	244	488	32	32	64	171	171	342
7.750	10.402	22	22	44	44	44	88	244	244	488	16	16	32	171	171	342
10.402	11.095	22	22	44	44	44	88	187	187	374	0	0	0	131	131	262
11.095	17.340	0	0	0	0	0	0	186	186	372	0	0	0	130	130	260
17.340	18.955	0	0	0	0	0	0	99	99	197	0	0	0	69	69	138
18.955	22.140	0	0	0	0	0	0	59	59	118	0	0	0	41	41	82
Arundel Road (Balranald-Moulamein Road to Site Access SA4)																
0.000	0.710	0	0	0	0	0	0	15	15	31	16	16	32	11	11	22
Stony Crossing Road (Yanga Way to Swan Hill Road)																
0.000	40.900	22	22	44	102	102	204	115	115	230	0	0	0	81	81	161
Swan Hill Road (Swan Hill to Stony Crossing Road)																
0.000	11.100	22	22	44	102	102	204	115	115	230	0	0	0	81	81	161
B400 Murray River Highway (Swan Hill to Lake Boga)																
0.000	16.000	9	9	18	84	84	168	88	88	176	0	0	0	62	62	123

** Stage 2 Construction phase includes operations phase movements from Stage 1.

4.4.2 Intersections

Based on the information provided by Windlab and the subsequent traffic calculations undertaken, the peak hour traffic volumes from the construction, operations and decommissioning phases of the Project were also established at the key intersections of the Sturt Highway / Yanga Way and Yanga Way / Balranald-Moulamein Road. As noted above, the AM and PM periods of peak Project traffic generation (6-7am and 5:30-6:30pm) from the Project has been assessed, with the relevant Project traffic volumes established by combining the expected staff / visitor movements to the Project Area with the calculated hourly heavy vehicle movements for each Project phase.

A summary of the identified construction, operations and decommissioning phase Project traffic volumes at these two intersections are outlined in **Table 27** and **Table 28** for the project traffic peaks, with further detailed traffic volume calculations provided for reference in **Appendix H**.

Table 27 Peak Hour (Project) Traffic Volumes, Sturt Highway / Yanga Way Intersection

Year	Sturt Highway NW				Yanga Way S				Sturt Highway SE			
	Through		Right		Left		Right		Left		Through	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Preliminary Construction Phase – Stage 1												
AM Peak (Project)	0	0	17	2	0	2	0	0	0	0	0	0
PM Peak (Project)	0	0	0	2	17	2	0	0	0	0	0	0
Peak Construction Phase – Stage 1												
AM Peak (Project)	0	0	44	3	0	3	0	0	0	0	0	0
PM Peak (Project)	0	0	0	3	44	3	0	0	0	0	0	0
Peak Construction Phase – Stage 2												
AM Peak (Project)	0	0	102	2	0	2	0	0	0	0	0	0
PM Peak (Project)	0	0	0	2	102	2	0	0	0	0	0	0
Operations Phase												
AM Peak (Project)	0	0	30	2	0	2	0	0	0	0	0	0
PM Peak (Project)	0	0	0	2	30	2	0	0	0	0	0	0
Decommissioning Phase												
AM Peak (Project)	0	0	61	2	0	2	0	0	0	0	0	0
PM Peak (Project)	0	0	0	2	61	2	0	0	0	0	0	0

Table 28 Peak Hour (Project) Traffic Volumes, Yanga Way / Balranald-Moulamein Road Intersection

Year	Yanga Way SW				Balranald-Moulamein Road E				Yanga Way NE			
	Through		Right		Left		Right		Left		Through	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Preliminary Construction Phase – Stage 1												
AM Peak (Project)	0	0	7	2	0	2	0	2	17	2	0	0
PM Peak (Project)	0	0	0	2	7	2	17	2	0	2	0	0
Peak Construction Phase – Stage 1												
AM Peak (Project)	0	0	16	9	0	9	0	3	44	3	0	0
PM Peak (Project)	0	0	0	9	16	9	44	3	0	3	0	0
Construction Phase – Stage 2												

Year	Yanga Way SW				Balranald-Moulamein Road E				Yanga Way NE			
	Through		Right		Left		Right		Left		Through	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak (Project)	0	0	32	9	0	9	0	2	102	2	0	0
PM Peak (Project)	0	0	0	9	32	9	102	2	0	2	0	0
Operations Phase												
AM Peak (Project)	0	0	0	0	0	0	0	2	30	2	0	0
PM Peak (Project)	0	0	0	0	0	0	30	2	0	2	0	0
Decommissioning Phase												
AM Peak (Project)	0	0	22	7	0	7	0	2	61	2	0	0
PM Peak (Project)	0	0	0	7	22	7	61	2	0	2	0	0

4.5 Cumulative Project Traffic Volumes

As identified in the SEARs for this Project, an assessment of the potential cumulative traffic impact of the Project in conjunction with other State Significant Developments in the area was requested to be undertaken. As such a review of the known projects in the vicinity of the Project Area (as shown in **Figure 45**) was undertaken to determine which were expected to lead to an increase in traffic volumes on the relevant sections of the road network concurrently with anticipated increases from the Project. A summary of this review, including commentary regarding the requirements to consider each identified Project in the area are provided for reference in **Table 29**.

As shown by this review, a number of projects in the region were identified to likely have overlapping periods of construction with the Project, and be likely to lead to increases in traffic volumes on the critical sections of the Sturt Highway (near Balranald) and/or Yanga Way. The identified projects included:

- Balranald Mineral Sands Project.
- Baldon Wind Farm.
- Keri Keri Solar Farm.
- Keri Keri Wind Farm.
- Tchelery Wind Farm.
- Wilan Wind Farm.

In regard to the haulage of the large OSOM turbine components associated with the other wind farm projects identified, it is expected that some of the required OSOM movements will originate from the Port Adelaide and follow a similar route to that identified for the Project. However, as all of these OSOM movements will be required to be undertaken under permit, it is expected that restrictions and management measures will be implemented to ensure that movements from one Project only will occur at any time, to minimise the impacts on the operation of the road links forming part of the identified transport routes. As such the additional traffic expected to travel past the Project Area on the Sturt Highway from the identified wind farm projects to the east is anticipated to be limited to turbine transport volumes from one wind farm only at any one time (approx. 18 vpd).

It is noted however, that higher traffic volumes from the identified projects are anticipated to be generated during their construction phase (solar and wind farms) or their operations phase (Balranald Mineral Sands Project). While specific project traffic volumes on the relevant links adjacent to the Project Area have been identified in the TTIA for the Balranald Mineral Sands Project (EMM, 2015), no data is available for the other projects identified. As such, to account for the potential concurrent traffic from these projects, an allowance

for additional traffic volumes on the Sturt Highway has been made to reflect the material/equipment deliveries from Mildura, as well as potential staff movements to/from Balranald.

A summary of the traffic volumes adopted for each of the identified projects in the following sections, while further details of the cumulative impact assessment undertaken for the Project are provided in Section 5.2 and Section 5.3 below.

4.5.1 Balranald Mineral Sands Project

As noted above the volumes adopted for Balranald Mineral Sands Project as part of the cumulative assessment were sourced from the previous EMM TTIA for the project, and included:

- Operations phase of the Balranald Mineral Sands Project was shown to generate the largest volumes on the sections of the Sturt Highway and Yanga Way relevant to the proposed Junction Rivers Project.
- Additional daily volumes of:
  - 86vpd (43vpd each direction – heavy vehicles) on Sturt Highway west of Balranald.
  - 190vpd (95vpd each direction – heavy vehicles) on Sturt Highway between Balranald and Yanga Way.
  - 20vpd (10vpd each direction – heavy vehicles) on Sturt Highway east of Yanga Way.
  - 170vpd (85vpd each direction – heavy vehicles) on Yanga Way between Sturt Highway and Tooleybuc.
- Peak hour volumes for conservatively assumes 10hr haulage operation daily for Balranald Mineral Sands Project, which equates to:
  - 9vph (heavy vehicles) travelling in each direction between Yanga Way and Sturt Highway (west) at Sturt Highway / Yanga Way intersection.
  - 1vph (heavy vehicle) travelling in each direction on Sturt Highway through the Sturt Highway / Yanga Way intersection.
  - 9vph (heavy vehicle) travelling in each direction on Yanga Way through the Yanga Way / Balranald-Moulamein Road intersection.

4.5.2 Baldon Wind Farm

The volumes adopted for the Baldon Wind Farm as part of the cumulative assessment included:

- Allowance of 22vpd (11vpd each direction – heavy vehicles) on Sturt Highway for peak material / equipment delivery movements to/from Mildura. This equates to approx. 1vph each direction during the AM and PM peak periods.
- Allowance for movements for up to 50 staff to/from Balranald, which equates to approx. 50vpd (25vpd each direction) on Sturt Highway east of Balranald. This would also equate to 25vph heading east in AM peak and 25vph heading west in PM peak. Due to remote location of the Baldon Wind Farm site, it is anticipated that an on-site construction camp will be provided to accommodate the majority of staff.

4.5.3 Keri Keri Solar Farm

The volumes adopted for the Keri Keri Solar Farm as part of the cumulative assessment included:

- Allowance of 22vpd (11vpd each direction – heavy vehicles) on Sturt Highway for peak material / equipment delivery movements to/from Mildura. This equates to approx. 1vph each direction during the AM and PM peak periods.
- Allowance for movements for up to 50 staff to/from Balranald, which equates to approx. 50vpd (25vpd each direction) on Sturt Highway east of Balranald. This would also equate to 25vph heading

east in AM peak and 25vph heading west in PM peak. Due to remote location of Keri Keri Solar Farm site, it is anticipated that an on-site construction camp will be provided to accommodate the majority of staff.

4.5.4 Keri Keri Wind Farm

The volumes adopted for the Keri Keri Wind Farm as part of the cumulative assessment included:

- Allowance of 22vpd (11vpd each direction – heavy vehicles) on Sturt Highway for peak material / equipment delivery movements to/from Mildura. This equates to approx. 1vph each direction during the AM and PM peak periods.
- Allowance for movements for up to 50 staff to/from Balranald, which equates to approx. 50vpd (25vpd each direction) on Sturt Highway east of Balranald. This would also equate to 25vph heading east in AM peak and 25vph heading west in PM peak. Due to remote location of Keri Keri Wind Farm site, it is anticipated that an on-site construction camp will be provided to accommodate the majority of staff.

4.5.5 Tchelery Wind Farm

The volumes adopted for the Tchelery Wind Farm as part of the cumulative assessment included:

- No allowance on Sturt Highway for peak material / equipment delivery movements to/from Mildura. It is assumed that these movements will be via the regional centre of Hay, which is closer to the Tchelery Wind Farm site.
- Allowance for movements for up to 25 staff to/from Balranald, which equates to approx. 26vpd (13vpd each direction) on Sturt Highway east of Balranald. This would also equate to 8vph heading east in AM peak and 8vph heading west in PM peak. Due to remote location of Tchelery Wind Farm site, it is anticipated that an on-site construction camp will be provided to accommodate the majority of staff.

4.5.6 Wilan Wind Farm

The volumes adopted for the Wilan Wind Farm as part of the cumulative assessment included:

- Allowance of 22vpd (11vpd each direction – heavy vehicles) on Sturt Highway for peak material / equipment delivery movements to/from Mildura. This equates to approx. 1vph each direction during the AM and PM peak periods.
- Allowance for movements for up to 50 staff to/from Balranald, which equates to approx. 50vpd (25vpd each direction) on Sturt Highway east of Balranald. This would also equate to 25vph heading east in AM peak and 25vph heading west in PM peak. Due to remote location of Wilan Wind Farm site, it is anticipated that an on-site construction camp will be provided to accommodate the majority of staff.

4.5.7 Summary of External Project Traffic Volumes for Cumulative Assessment

Based on the volumes for the individual projects above, the combined external traffic volumes on the relevant sections of the network were identified, with a summary of the additional daily volumes on the identified road links (refer **Table 30**) and peak hour volumes at the critical Sturt Highway / Yanga Way and Yanga Way / Balranald-Moulamein Road intersections provided in **Table 31** and **Table 32** respectively.

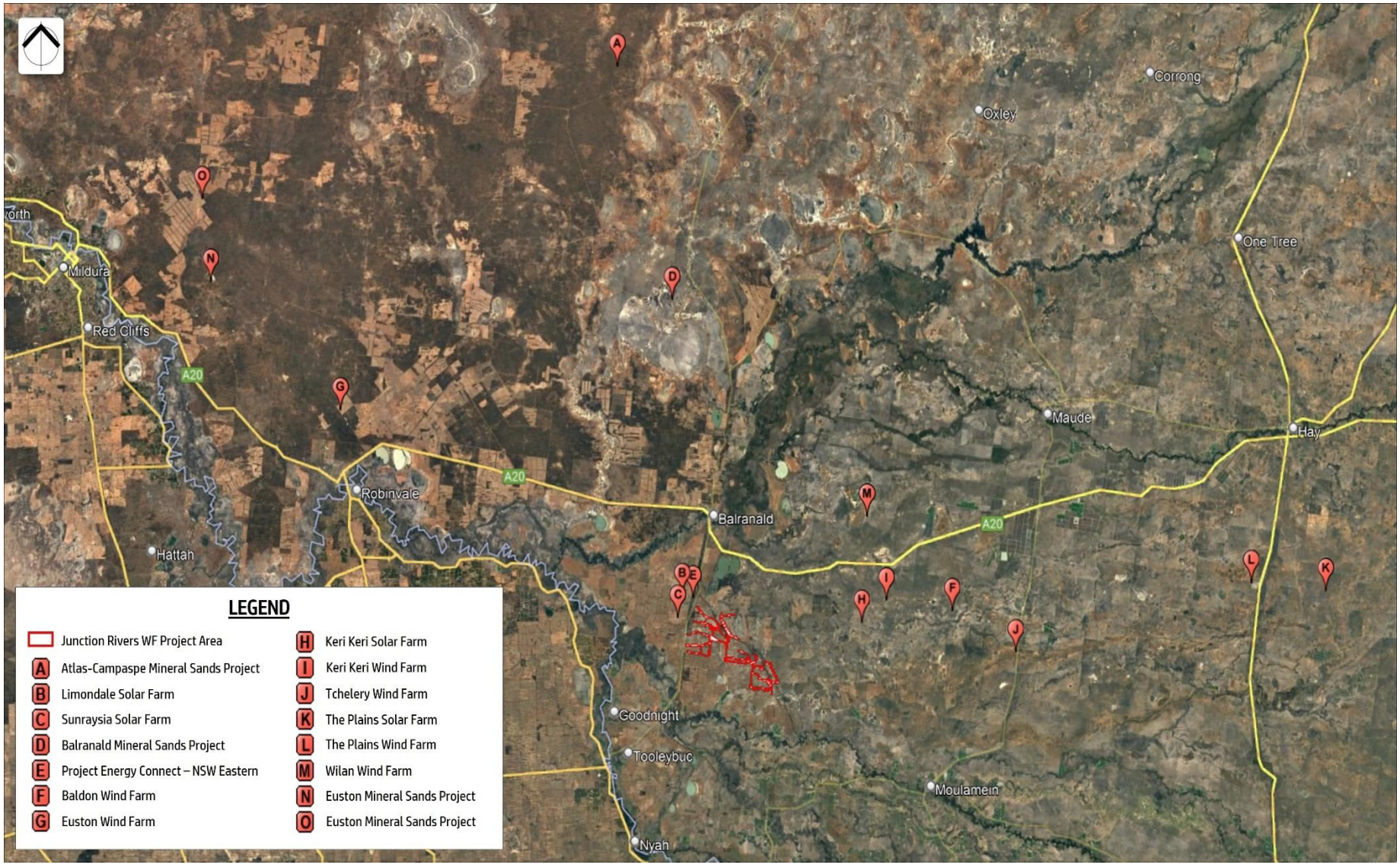


Figure 45 Identified SSD in Vicinity of Junction Rivers Wind Farm [Source: NSW State Significant Applications Database & Google Earth Pro]

Table 29 Cumulative Project Traffic Review Summary

ID	Project	Location	Status & Timeframes	Required for Cumulative Assessment	Review Comments	Relevant Project Scenario	
						Stage 1	Stage 2
A	Atlas – Campaspe Mineral Sands Project	108km north of Project Area.	Approved Operational	No	Atlas – Campaspe Mineral Sands Project traffic generally contained to network north of Balranald. Does generates minor (<10vpd) volumes of traffic on sections of Sturt Highway relevant to Project (east of Balranald) and up to 27vpd (west of Balranald), but this is within capacity of Highway. Also operations traffic would have already been included in background traffic volumes for intersection and link assessments for Project, including Sturt Highway / Yanga Way intersection.	×	×
B	Limondale Solar Farm	1km north-west (opposite side of Yanga Way) of Project Area.	Approved Operational	No	Operations phase traffic volumes from Limondale Solar Farm would have already been included in background traffic volumes for intersection and link assessment. In particular for volumes on Yanga Way and Sturt Highway / Yanga Way intersection.	×	×
C	Sunraysia Solar Farm	1km west of (opposite side of Yanga Way) Project Area.	Approved Operational	No	Operations phase traffic volumes from Sunraysia Solar Farm would have already been included in background traffic volumes for intersection and link assessment. In particular for volumes on Yanga Way and Sturt Highway / Yanga Way intersection.	×	×
D	*Balranald Mineral Sands Project*	*45km north west of Project Area.*	*Approved Construction 2023-2025 Operations 2025 Onwards*	*Yes*	*TTIA for Balranald Mineral Sands Project (BMSP) identifies significant increases in traffic on critical sections of Sturt Highway and Yanga Way during both construction and operations phase of BMSP*	✓	✓

ID	Project	Location	Status & Timeframes	Required for Cumulative Assessment	Review Comments	Relevant Project Scenario	
						Stage 1	Stage 2
E	Project Energy Connect - NSW Eastern Section	Runs through Project site. Balranald construction compound and substation for Energy Connect project located 1km to west of Project Area.	Approved Construction works to be completed in 2024	No	All construction works for Project EnergyConnect – NSW Eastern Section is expected to be completed prior to commencement of works on Project site, with negligible operations phase traffic in vicinity of Project Area.	✗	✗
F	*Baldon Wind Farm*	*40km east of Project Area.*	*Under Assessment – Prepare EIS Construction from 2024 for 2-3 years*	*Yes*	*Potential 162 WTGs., with option of transport from Port Adelaide for OSOM loads.* *Traffic volumes associated with construction phase of Baldon Wind Farm (BWF) expected to be primarily focussed to areas east of the Project Area.* *Expected to lead to increase in traffic on relevant sections of Sturt Highway due to material/equipment deliveries from Mildura, with potential for percentage of staff being located in Balranald and commuting to site.*	✓	✓
G	Euston Wind Farm	80km north-west of Project Area.	Under Assessment – Prepare EIS	No	Traffic volumes associated with construction and operations phase of Euston Wind Farm expected to be generally contained to Mildura & Euston/Robinvale areas. As such no additional traffic anticipated on critical sections of Sturt Highway, Yanga Way and Balranald-Moulamein Road in vicinity of Project Area.	✗	✗
H	*Keri Keri Solar Farm*	*20km east of Project Area.*	*Under Assessment – Prepare EIS Construction 2024-25 for up to 2 years*	*Yes*	*Traffic volumes associated with construction phase of Keri Keri Solar Farm (KKSF) expected to be primarily focussed to areas east of the Project Area.* *Expected to lead to increase in traffic on relevant sections of Sturt Highway due to material/equipment deliveries from Mildura, with potential for percentage of staff being located in Balranald and commuting to site.*	✓	✓

ID	Project	Location	Status & Timeframes	Required for Cumulative Assessment	Review Comments	Relevant Project Scenario	
						Stage 1	Stage 2
I	*Keri Keri Wind Farm*	*20km east of Project Area.*	*Under Assessment – Prepare EIS 2024-25 for up to 3 years*	*Yes*	*Potential 176 WTGs., with option of transport from Port Adelaide for OSOM loads.* *Traffic volumes associated with construction phase of Keri Keri Wind Farm expected to be primarily focussed to areas east of the Project Area.* *Expected to lead to increase in traffic on relevant sections of Sturt Highway due to material/equipment deliveries from Mildura, with potential for percentage of staff being located in Balranald and commuting to site.*	✓	✓
J	*Tchelery Wind Farm*	*50km east of Project Area*	*Under Assessment – Prepare EIS Construction 2026 for 2.5 years*	*Yes*	*Potential 120 WTGs., with option of transport from Port Adelaide for OSOM loads.* *Traffic volumes associated with construction phase of Tchelery Wind Farm expected to be primarily focussed to areas east of the Project Area* *Expected to lead to increase in traffic on relevant sections of Sturt Highway due to material/equipment deliveries from Mildura, with potential for small percentage of staff being located in Balranald and commuting to site.*	✓	✓
K	The Plains Solar Farm	110km east of Project Area.	Under Assessment – Prepare EIS Construction 2026 for 2 years		Traffic volumes associated with construction and operations phase of The Plains Solar Farm Project expected to be generally contained to Hay area to the east of the Project Area.	×	×
L	The Plains Wind Farm	100km east of Project Area.	Under Assessment – Prepare EIS Construction 2026 for 2 years		Potential 226 WTGs., with option of transport from Port Adelaide for OSOM loads, but more likely via Melbourne or Geelong. Traffic volumes associated with construction and operations phase of The Plains Wind Farm Project expected to be generally contained to Hay area to the east of the Project Area.	×	×

ID	Project	Location	Status & Timeframes	Required for Cumulative Assessment	Review Comments	Relevant Project Scenario	
						Stage 1	Stage 2
M	*Wilan Wind Farm*	*35km north-east of Project Area.*	*Under Assessment – Prepare EIS Construction 2025 for 2.5 years*	*Yes*	*Potential 138 WTGs., with option of transport from Port Adelaide for OSOM loads.* *Traffic volumes associated with construction phase of Wilan Wind Farm expected to be primarily focussed to areas east of the Project Area.* *Expected to lead to increase in traffic on relevant sections of Sturt Highway due to material/equipment deliveries from Mildura, with potential for percentage of staff being located in Balranald and commuting to site.*	✔	✔
N	Euston Mineral Sands Project	115km north-west of Project Area.	Under Assessment – Prepare EIS	No	Traffic volumes associated with construction and operations phase of Euston Mineral Sands Project expected to be generally contained to Mildura area. As such no additional traffic anticipated on critical sections of Sturt Highway, Yanga Way and Balranald-Moulamein Road in vicinity of Project Area.	✖	✖
O	Mallee Wind Farm	125km north-west of Project Area.	Under Assessment – Prepare EIS	No	Traffic volumes associated with construction and operations phase of Mallee Wind Farm expected to be generally contained to Mildura area. As such no additional traffic anticipated on critical sections of Sturt Highway, Yanga Way and Balranald-Moulamein Road in vicinity of Project Area.	✖	✖

Table 30 Project Traffic Volumes on External Road Network Links

AADT Segment		External Project Cumulative Traffic Volumes																				
		Balranald Mineral Sands			Baldon Wind Farm			Keri Keri Solar Farm			Keri Keri Wind Farm			Tchelery Wind Farm			Wilan Wind Farm			Total External Project		
Start (km)	End (km)	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
A20 Sturt Highway (Mildura to Yanga Way																						
0.000	82.400	43	43	86	11	11	22	11	11	22	11	11	22	0	0	0	11	11	22	87	87	174
82.400	162.100	43	43	86	11	11	22	11	11	22	11	11	22	0	0	0	11	11	22	87	87	174
162.100	165.500	95	95	190	36	36	72	36	36	72	36	36	72	13	13	26	36	36	72	252	252	504
Yanga Way (Sturt Highway to Tooleybuc)																						
0.000	11.800	85	85	170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85	85	170
11.800	19.800	85	85	170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85	85	170
19.800	36.200	85	85	170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85	85	170
36.200	49.100	85	85	170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85	85	170
Balranald-Moulamein Road (Yanga Way to Site Access SA8)																						
0.000	6.930	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.930	7.750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7.750	10.402	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10.402	11.095	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11.095	17.340	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17.340	18.955	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18.955	22.140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Arundel Road (Balranald-Moulamein Road to Site Access SA4)																						
0.000	0.710	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stony Crossing Road (Yanga Way to Swan Hill Road)																						
0.000	40.900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Swan Hill Road (Swan Hill to Stony Crossing Road)																						
0.000	11.100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B400 Murray River Highway (Swan Hill to Lake Boga)																						
0.000	16.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 31 External Project Peak Hour Traffic Volumes, Sturt Highway / Yanga Way Intersection

Year	Sturt Highway NW				Yanga Way S				Sturt Highway SE			
	Through		Right		Left		Right		Left		Through	
	LV	HV	LV	LV	HV	LV	LV	HV	LV	LV	HV	LV
External Projects												
AM Peak (Project)	113	5	0	9	0	9	0	0	0	0	0	5
PM Peak (Project)	0	5	0	9	0	9	0	0	0	0	113	5

Table 32 External Project Peak Hour Traffic Volumes, Yanga Way / Balranald-Moulamein Road Intersection

Year	Yanga Way SW				Balranald-Moulamein Road E				Yanga Way NE			
	Through		Right		Left		Right		Left		Through	
	LV	HV	LV	LV	HV	LV	LV	HV	LV	LV	HV	LV
External Projects												
AM Peak (Project)	0	9	0	0	0	0	0	0	0	0	0	9
PM Peak (Project)	0	9	0	0	0	0	0	0	0	0	0	9

5.0 Impact Assessment and Mitigation

Based on the information provided above, it was determined that the critical elements of the surrounding road network in terms of the potential impact of the Project were the identified road links forming the proposed transport routes for the Project and the key intersections of Sturt Highway / Yanga Way and Yanga Way / Balranald-Moulamein Road and Balranald-Moulamein Road / Arundel Road.

Further assessment of the impact of the Project on these elements is provided in the following sections.

5.1 With and Without Project Traffic Volumes

5.1.1 Road Link Volumes

As identified above, the peak traffic generation associated with each stage of the Project is expected to occur during the associated peak construction periods, with the expected maximum traffic volumes from the Project during the construction phase of both Stage 1 and Stage 2, the subsequent operations phase (10-year design horizon from Stage 2 construction – 2040) and decommissioning phase identified in **Table 26** above.

Based on these volumes, the forecast traffic volumes on the relevant sections of the road network were established for both with and without Project scenarios. These volumes were developed at the relevant design horizons for each phase of the Project, with summaries for the construction (preliminary and peak), operations and decommissioning phases outlined in **Table 33** and **Table 34**.

Further road link volumes were then also identified for the required cumulative assessment incorporating volumes from other state significant developments in the vicinity of the Project, with this assessment only completed for the critical Stage 1 (preliminary and peak) and Stage 2 (peak) construction periods. These additional link volume forecasts are summarised in **Table 35**.

Table 33 Forecast Road Link Traffic Volumes – Background Traffic Scenarios

AADT Segment		Daily Traffic Volumes														
		Background 2026			Background 2027			Background 2028			Background 2040			Background 2060		
Start (km)	End (km)	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
A20 Sturt Highway (Mildura to Yanga Way)																
0.000	82.400	1,490	1,525	3,016	1,520	1,556	3,076	1,551	1,587	3,137	1,966	2,013	3,979	2,922	2,991	5,913
82.400	162.100	1,129	1,156	2,285	1,152	1,179	2,331	1,175	1,203	2,378	1,490	1,525	3,016	2,215	2,266	4,481
162.100	165.500	533	545	1,079	544	556	1,100	555	567	1,122	704	720	1,423	1,046	1,069	2,115
Yanga Way (Sturt Highway to Tooleybuc)																
0.000	11.800	373	516	890	381	526	907	388	537	926	493	681	1,174	732	1,012	1,744
11.800	19.800	373	376	749	381	384	764	388	391	780	493	496	989	732	737	1,469
19.800	36.200	373	376	749	381	384	764	388	391	780	493	496	989	732	737	1,469
36.200	49.100	328	327	655	335	333	668	342	340	682	433	431	865	644	641	1,285
Balranald-Moulamein Road (Yanga Way to Site Access SA8)																
0.000	6.930	27	32	60	28	33	61	28	34	62	36	43	79	53	64	117
6.930	7.750	27	32	60	28	33	61	28	34	62	36	43	79	53	64	117
7.750	10.402	27	32	60	28	33	61	28	34	62	36	43	79	53	64	117
10.402	11.095	27	32	60	28	33	61	28	34	62	36	43	79	53	64	117
11.095	17.340	27	32	60	28	33	61	28	34	62	36	43	79	53	64	117
17.340	18.955	27	32	60	28	33	61	28	34	62	36	43	79	53	64	117
18.955	22.140	27	32	60	28	33	61	28	34	62	36	43	79	53	64	117
Arundel Road (Balranald-Moulamein Road to Site Access SA4)																
0.000	0.710	11	11	22	11	11	22	11	11	23	14	14	29	21	21	42
Stony Crossing Road (Yanga Way to Swan Hill Road)																
0.000	40.900	181	183	364	185	186	371	189	190	379	239	241	480	355	358	714
Swan Hill Road (Swan Hill to Stony Crossing Road)																
0.000	11.100	469	497	966	479	507	986	488	517	1,005	619	656	1,275	921	974	1,895
B400 Murray River Highway (Swan Hill to Lake Boga)																
0.000	16.000	3,266	3,266	6,532	3,331	3,331	6,662	3,398	3,398	6,796	4,309	4,309	8,618	6,403	6,403	12,807

Table 34 Forecast Road Link Traffic Volumes –Project Traffic Scenarios

AADT Segment		Daily Traffic Volumes														
		Stage 1 Preliminary Construction (2026)			Stage 1 Peak Construction (2027)			Stage 2 Peak Construction (2028)			Operations (2040)			Decommissioning (2060)		
Start (km)	End (km)	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
A20 Sturt Highway (Mildura to Yanga Way)																
0.000	82.400	1,499	1,534	3,034	1,532	1,568	3,100	1,560	1,596	3,155	1,968	2,015	3,983	2,928	2,997	5,925
82.400	162.100	1,138	1,165	2,303	1,164	1,191	2,355	1,184	1,212	2,396	1,492	1,527	3,020	2,221	2,273	4,494
162.100	165.500	570	582	1,153	611	623	1,234	679	691	1,370	736	752	1,487	1,132	1,156	2,289
Yanga Way (Sturt Highway to Tooleybuc)																
0.000	11.800	410	553	964	448	593	1,041	512	661	1,174	525	713	1,238	819	1,099	1,918
11.800	19.800	397	400	797	487	490	976	511	514	1,026	493	496	989	818	823	1,642
19.800	36.200	397	400	797	487	490	976	511	514	1,026	493	496	989	818	823	1,642
36.200	49.100	330	329	659	339	337	676	350	348	698	433	431	865	649	647	1,296
Balranald-Moulamein Road (Yanga Way to Site Access SA8)																
0.000	6.930	85	90	176	197	202	399	272	278	550	68	75	143	224	234	458
6.930	7.750	71	76	148	171	176	347	272	278	550	68	75	143	224	234	458
7.750	10.402	49	54	104	72	77	149	272	278	550	52	59	111	224	234	458
10.402	11.095	49	54	104	72	77	149	215	221	436	36	43	79	184	195	379
11.095	17.340	27	32	60	28	33	61	214	220	434	36	43	79	183	194	377
17.340	18.955	27	32	60	28	33	61	127	132	259	36	43	79	122	133	255
18.955	22.140	27	32	60	28	33	61	87	93	179	36	43	79	94	105	199
Arundel Road (Balranald-Moulamein Road to Site Access SA4)																
0.000	0.710	11	11	22	11	11	22	27	27	53	30	30	61	32	32	64
Stony Crossing Road (Yanga Way to Swan Hill Road)																
0.000	40.900	203	205	408	287	288	575	304	305	609	239	241	480	436	439	875
Swan Hill Road (Swan Hill to Stony Crossing Road)																
0.000	11.100	491	519	1,010	581	609	1,190	603	632	1,235	619	656	1,275	1,001	1,055	2,056
B400 Murray River Highway (Swan Hill to Lake Boga)																
0.000	16.000	3,275	3,275	6,550	3,415	3,415	6,830	3,486	3,486	6,972	4,309	4,309	8,618	6,465	6,465	12,930

Table 35 Forecast Road Link Traffic Volumes – Cumulative Assessment Scenarios

AADT Segment		Daily Traffic Volumes (Cumulative with External Projects)																	
		2026 Stage 1 Preliminary Construction (Project Only)			2026 Stage 1 Peak Construction (Cumulative including External)			2026 Stage 1 Peak Construction (Project Only)			2026 Stage 1 Peak Construction (Cumulative including External)			2028 Stage 2 Peak Construction (Project Only)			2028 Stage 2 Peak Construction (Cumulative including External)		
Start (km)	End (km)	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
A20 Sturt Highway (Mildura to Yanga Way																			
0.000	82.400	1,499	1,534	3,034	1,586	1,621	3,208	1,532	1,568	3,100	1,619	1,655	3,274	1,560	1,596	3,155	1,647	1,683	3,329
82.400	162.100	1,138	1,165	2,303	1,225	1,252	2,477	1,164	1,191	2,355	1,251	1,278	2,529	1,184	1,212	2,396	1,271	1,299	2,570
162.100	165.500	570	582	1,153	822	834	1,657	611	623	1,234	863	875	1,738	679	691	1,370	931	943	1,874
Yanga Way (Sturt Highway to Tooleybuc)																			
0.000	11.800	410	553	964	495	638	1,134	448	593	1,041	533	678	1,211	512	661	1,174	597	746	1,344
11.800	19.800	397	400	797	482	485	967	487	490	976	572	575	1,146	511	514	1,026	596	599	1,196
19.800	36.200	397	400	797	482	485	967	487	490	976	572	575	1,146	511	514	1,026	596	599	1,196
36.200	49.100	330	329	659	415	414	829	339	337	676	424	422	846	350	348	698	435	433	868
Balranald-Moulamein Road (Yanga Way to Site Access SA8)																			
0.000	6.930	85	90	176	85	90	176	197	202	399	197	202	399	272	278	550	272	278	550
6.930	7.750	71	76	148	71	76	148	171	176	347	171	176	347	272	278	550	272	278	550
7.750	10.402	49	54	104	49	54	104	72	77	149	72	77	149	272	278	550	272	278	550
10.402	11.095	49	54	104	49	54	104	72	77	149	72	77	149	215	221	436	215	221	436
11.095	17.340	27	32	60	27	32	60	28	33	61	28	33	61	214	220	434	214	220	434
17.340	18.955	27	32	60	27	32	60	28	33	61	28	33	61	127	132	259	127	132	259
18.955	22.140	27	32	60	27	32	60	28	33	61	28	33	61	87	93	179	87	93	179
Arundel Road (Balranald-Moulamein Road to Site Access SA4)																			
0.000	0.710	11	11	22	11	11	22	11	11	22	11	11	22	27	27	53	27	27	53
Stony Crossing Road (Yanga Way to Swan Hill Road)																			
0.000	40.900	203	205	408	203	205	408	287	288	575	287	288	575	304	305	609	304	305	609
Swan Hill Road (Swan Hill to Stony Crossing Road)																			
0.000	11.100	491	519	1,010	491	519	1,010	581	609	1,190	581	609	1,190	603	632	1,235	603	632	1,235
B400 Murray River Highway (Swan Hill to Lake Boga)																			
0.000	16.000	3,275	3,275	6,550	3,275	3,275	6,550	3,415	3,415	6,830	3,415	3,415	6,830	3,486	3,486	6,972	3,486	3,486	6,972

5.1.2 Intersection Volumes

In addition to road link volumes, traffic volumes at the key intersections of Sturt Highway / Yanga Way and Yanga Way / Balranald-Moulamein Road were established for the peak construction (Phase 1 & 2), operations and decommissioning phases of the Project.

To establish these volumes, the Project volumes as identified in **Section 4.1** above were added to the forecast background traffic volumes at the relevant design horizons for each phase of the Project. Further to this, volumes at the intersections were also established considering the cumulative traffic generated by the other identified state significant developments in the area, with the volumes identified in **Table 31** and **Table 32** above included with the Project traffic.

The resulting turning volumes for these traffic scenarios at the key intersections for the Project are summarised in **Table 36** and **Table 37** below.

Table 36 Project Scenario Traffic Volumes, Sturt Highway / Yanga Way Intersection

Year	Sturt Highway NW				Yanga Way S				Sturt Highway SE			
	Through		Right		Left		Through		Right		Left	
	LV	HV	LV	LV	HV	LV	LV	HV	LV	LV	HV	LV
Stage 1 Preliminary Construction												
2026 AM Peak (Project)	22	10	32	8	9	3	5	0	5	3	15	18
2026 PM Peak (Project)	18	28	17	5	32	5	5	2	4	0	23	22
Stage 1 Preliminary Construction - Cumulative												
2026 AM Peak (Project)	135	15	32	17	9	12	5	0	5	3	15	24
2026 PM Peak (Project)	18	34	17	14	32	14	5	2	4	0	136	27
Stage 1 Peak Construction												
2027 AM Peak (Project)	22	10	59	10	9	4	6	0	6	3	15	19
2027 PM Peak (Project)	19	29	18	6	59	6	6	2	4	0	23	22
Stage 1 Peak Construction - Cumulative												
2027 AM Peak (Project)	135	15	59	18	9	13	6	0	6	3	15	24
2027 PM Peak (Project)	19	34	18	15	59	15	6	2	4	0	136	27
Stage 2 Peak Construction												
2028 AM Peak (Project)	23	10	118	9	9	3	6	0	6	3	16	19
2028 PM Peak (Project)	19	29	18	5	118	5	6	2	5	0	24	23
Stage 2 Peak Construction - Cumulative												
2028 AM Peak (Project)	136	16	118	17	9	12	6	0	6	3	16	25
2028 PM Peak (Project)	19	35	18	14	118	14	6	2	5	0	137	28
Project Operations (10-year Design Horizon from Stage 2 completion)												
2040 AM Peak (Project)	29	13	50	11	11	3	7	0	7	4	20	24
2040 PM Peak (Project)	24	37	23	6	50	6	7	3	6	0	30	29
Project Decommissioning												
2060 AM Peak (Project)	42	19	91	15	17	4	11	0	11	6	30	36
2060 PM Peak (Project)	36	55	34	8	91	8	11	4	8	0	45	42

Table 37 Project Scenario Traffic Volumes, Yanga Way / Balranald-Moulamein Road Intersection

Year	Yanga Way SW				Balranald-Moulamein Road E				Yanga Way NE			
	Through		Right		Left		Through		Right		Left	
	LV	HV	LV	LV	HV	LV	LV	HV	LV	LV	HV	LV
Stage 1 Preliminary Construction												
2026 AM Peak (Project)	15	8	8	2	1	2	1	3	18	3	16	3
2026 PM Peak (Project)	18	3	0	3	7	4	18	2	1	2	23	3
Stage 1 Preliminary Construction - Cumulative												
2026 AM Peak (Project)	15	17	8	2	1	2	1	3	18	3	16	12
2026 PM Peak (Project)	18	12	0	3	7	4	18	2	1	2	23	12
Stage 1 Peak Construction												
2027 AM Peak (Project)	15	8	17	9	1	9	1	4	45	4	17	3
2027 PM Peak (Project)	19	3	0	10	16	11	45	3	1	3	23	3
Stage 1 Peak Construction - Cumulative												
2027 AM Peak (Project)	15	17	17	9	1	9	1	4	45	4	17	12
2027 PM Peak (Project)	19	12	0	10	16	11	45	3	1	3	23	12
Stage 2 Peak Construction												
2028 AM Peak (Project)	16	8	33	9	1	9	1	3	103	3	17	3
2028 PM Peak (Project)	19	3	0	6	28	7	93	2	1	2	24	3
Stage 2 Peak Construction - Cumulative												
2028 AM Peak (Project)	16	17	33	9	1	9	1	3	103	3	17	12
2028 PM Peak (Project)	19	12	0	10	32	11	103	2	1	2	24	12
Project Operations (10-year Design Horizon from Stage 2 completion)												
2040 AM Peak (Project)	20	10	1	0	1	0	1	3	31	3	21	4
2040 PM Peak (Project)	24	4	0	1	0	3	31	2	1	2	30	4
Project Decommissioning												
2060 AM Peak (Project)	30	15	25	7	2	7	2	4	63	4	32	6
2060 PM Peak (Project)	36	6	0	9	22	11	63	2	2	2	45	6

5.2 Access and Frontage Impact Assessment and Mitigation

As identified in Section 3.0 and Section 4.0 above, the Project proposal includes three direct vehicular access points to the Project Area from Balranald-Moulamein Road (Site Access 2, 3 & 5) as part of Stage 1, with an additional three access points on Balranald-Moulamein Road (Site Access 6,7 & 8), a single access point from Arundel Road (Site Access 4) and a single emergency access point from Yanga Way (Site Access 1) proposed to be provided in Stage 2.

For the access points from the Council controlled links of Balranald-Moulamein Road and Arundel Road, and the access controlled (gated) emergency access point on Yanga Way, it is proposed that the access locations be constructed generally in accordance with the site access arrangement for articulated vehicles outlined in Figure 7.4 of Austroads *Guide to Road Design Part 4: Intersections and Crossings – General* (refer

Figure 34 above), with strategic concept designs of each proposed site access point for both Stage 1 and Stage 2 included for reference within Appendix M.

Finally it is noted that assessments of the available sight distances at each of the proposed site access points, with these assessments (refer Section 3.4 above) identifying that adequate sight distances are expected to be available in each direction to/from each of the proposed site access points for the Project. Based on this, it can be determined that the proposed site access arrangements for both Stage 1 and Stage 2 of the Project are considered adequate to cater for the vehicle movements for all Project traffic scenarios.

5.3 Intersection Impact Assessment and Mitigation

5.3.1 Sturt Highway / Yanga Way

5.3.1.1 Turn Warrant Assessment

An assessment has been undertaken to establish the appropriate turn treatments at existing Sturt Highway / Yanga Way intersection. This assessment is based on the turn treatment warrants graph as per Figure 2.26(b) of Austroads *Guide to Traffic Management - Part 6: Intersections, Interchanges and Crossings* to reflect the high-speed rural highway traffic environment.

The forecast turning movement volumes at this intersection during the AM and PM peak periods of the construction, operations and decommissioning phase of the Project (both Project only and cumulative scenarios) as identified in Table 36 above have been used as the basis of this assessment, with a summary of the resultant turn warrants from the assessment shown in Table 38 below. Further details of the turn warrant calculations for each of the identified traffic scenarios is also included for reference as Appendix I.

Table 38 Intersection Turn Warrants Assessment – Sturt Highway / Yanga Way Intersection

Project Traffic Scenario	Recommended Turn Warrants	
	Left Turn Treatment	Right Turn Treatment
Stage 1 Preliminary Construction		
2026 AM Peak (Project)	BAL	BAR
2026 AM Peak (Project)	BAL	BAR
Stage 1 Preliminary Construction - Cumulative		
2026 AM Peak (Project)	BAL	BAR
2026 AM Peak (Project)	BAL	BAR
Stage 1 Peak Construction		
2026 AM Peak (Project)	BAL	BAR
2026 AM Peak (Project)	BAL	BAR
Stage 1 Peak Construction - Cumulative		
2026 AM Peak (Project)	BAL	**CHRs**
2026 AM Peak (Project)	BAL	BAR
Stage 2 Peak Construction		
2028 AM Peak (Project)	BAL	BAR
2028 AM Peak (Project)	BAL	BAR
Stage 2 Peak Construction - Cumulative		
2028 AM Peak (Project)	BAL	**CHRs**

Project Traffic Scenario	Recommended Turn Warrants	
	Left Turn Treatment	Right Turn Treatment
2028 AM Peak (Project)	BAL	BAR
Project Operations (10-year Design Horizon from Stage 2 completion)		
2038 AM Peak (Project)	BAL	BAR
2038 PM Peak (Project)	BAL	BAR
Project Decommissioning		
2058 AM Peak (Project)	BAL	BAR
2058 PM Peak (Project)	BAL	BAR
Recommended Intersection Turn Treatments	**BAL**	**CHRs**

As shown in **Table 33**, based on the forecast peak hour traffic volumes at the intersection during the critical periods of the Stage 1 and Stage 2 construction, operations and decommissioning phases of the Project, it was shown that the required intersection treatments at the Sturt Highway / Yanga Way intersection were a basic left (BAL) and a short channelised (CHRs) treatment.

Based on the expected provision of an AUL and CHRs treatment at the intersection (based on upgrade of right turn treatment to a CHRs standard as part of the approved Balranald Mineral Sands Project prior to the commencement of the Stage 1 works for the Project) it is expected that the pre-Project configuration will be adequate to cater for the additional traffic movements associated with the Stage 1 and Stage 2 construction (including cumulative assessment), operations and decommissioning phases of the proposed Junction Rivers Wind Project.

5.3.1.2 Intersection Capacity Assessment

SIDRA analysis was also undertaken to establish the operational performance of Sturt Highway / Yanga Way intersection for the relevant traffic scenarios for the Stage 1 (preliminary and peak) and Stage 2 (peak) construction, operations and decommissioning phases of the Project, considering the AM and PM peak periods at the critical design horizons for each phase as outlined in **Section 4.0** above.

A summary of the results of the completed analysis of the Sturt Highway / Yanga Way intersection is provided in **Table 39**, with detailed SIDRA output summaries included for reference in **Appendix C**. Further to this it is noted that the assessments completed assume that previous completion of the update works to provide a CHRs treatment for right turn movements into Yanga Way.

Table 39 SIDRA Results – Sturt Highway / Yanga Way Intersection

Analysis Scenario	Intersection Degree of Saturation	Level of Service**	Intersection Average Delay (sec)	Maximum 95% Back of Queue Length (m)
Unsignalised / Priority Controlled Intersections				
Acceptable Limits of Operation	**< 0.800**	**LOS C**	**< 42.5**	**Varies ***
Stage 1 Preliminary Construction				
2026 AM Peak (Project)	0.045	LOS A	3.0	1.6
2026 PM Peak (Project)	0.043	LOS A	2.7	1.4
Stage 1 Preliminary Construction - Cumulative				
2026 AM Peak (Project)	0.112	LOS A	2.0	3.3

Analysis Scenario	Intersection Degree of Saturation	Level of Service**	Intersection Average Delay (sec)	Maximum 95% Back of Queue Length (m)
2026 PM Peak (Project)	0.062	LOS A	2.2	2.6
Stage 1 Peak Construction				
2027 AM Peak (Project)	0.064	LOS A	3.6	2.2
2027 PM Peak (Project)	0.066	LOS A	3.2	1.9
Stage 1 Peak Construction - Cumulative				
2027 AM Peak (Project)	0.130	LOS A	2.4	4.4
2027 PM Peak (Project)	0.083	LOS A	2.5	2.7
Stage 2 Peak Construction				
2028 AM Peak (Project)	0.102	LOS A	4.1	3.2
2028 PM Peak (Project)	0.112	LOS A	3.7	3.2
Stage 2 Peak Construction - Cumulative				
2028 AM Peak (Project)	0.167	LOS A	3.0	6.1
2028 PM Peak (Project)	0.131	LOS A	3.0	3.9
Project Operations (10-year Design Horizon from Stage 2 completion)				
2040 AM Peak (Project)	0.066	LOS A	3.2	2.4
2040 PM Peak (Project)	0.063	LOS A	2.9	1.9
Project Decommissioning				
2060 AM Peak (Project)	0.109	LOS A	3.5	3.9
2060 PM Peak (Project)	0.110	LOS A	3.1	3.2

** LOS value identified is for worst movement at the intersection, not the overall intersection.

The results above indicate that the BAL / CHRs configuration of the Sturt Highway / Yanga Way intersection is expected to operate satisfactorily during all Project traffic scenarios identified for the Project (including cumulative assessments), with all values for intersection DOS, LOS, average delay and vehicle queue lengths being within acceptable limits of operation for a priority-controlled (give-way) intersection.

Based on these results, it can therefore be seen that the BAL / CHRs configuration of the Sturt Highway / Yanga Way intersection, will be adequate to cater for the additional traffic volumes generated by the peak construction, operations and decommissioning phases of the Project.

5.3.2 Yanga Way Intersection / Balranald-Moulamein Road

5.3.2.1 Turn Warrant Assessment

An assessment has been undertaken to establish the appropriate turn treatments at Yanga Way / Balranald-Moulamein Road intersection. This assessment is based on the turn treatment warrants graph as per Figure 2.26(a) of Austroads *Guide to Traffic Management - Part 6: Intersections, Interchanges and Crossings* to reflect the high-speed rural highway traffic environment.

The forecast turning movement volumes at this intersection during the AM and PM peak periods of the construction, operations and decommissioning phase of the Project (both Project only and cumulative scenarios) as identified in **Table 37** above have been used as the basis of this assessment, with a summary of the resultant turn warrants from the assessment shown in **Table 40** below. Further details of the turn warrant calculations for each of the identified traffic scenarios are included for reference as **Appendix J.**

Table 40 Intersection Turn Warrants Assessment - Yanga Way / Balranald-Moulamein Road Intersection

Project Traffic Scenario	Recommended Turn Warrants	
	Left Turn Treatment	Right Turn Treatment
Stage 1 Preliminary Construction		
2026 AM Peak (Project Peak)	BAL	BAR
2026 AM Peak (Project Peak)	BAL	BAR
Stage 1 Peak Construction - Cumulative		
2026 AM Peak (Project Peak)	BAL	BAR
2026 AM Peak (Project Peak)	BAL	BAR
Stage 1 Peak Construction		
2027 AM Peak (Project Peak)	BAL	BAR
2027 AM Peak (Project Peak)	BAL	BAR
Stage 1 Peak Construction - Cumulative		
2027 AM Peak (Project Peak)	BAL	BAR
2027 AM Peak (Project Peak)	BAL	BAR
Stage 2 Peak Construction		
2028 AM Peak (Project Peak)	BAL	BAR
2028 AM Peak (Project Peak)	BAL	BAR
Stage 2 Peak Construction - Cumulative		
2028 AM Peak (Project Peak)	BAL	CHRs
2028 AM Peak (Project Peak)	BAL	BAR
Project Operations (10-year Design Horizon from Stage 2 completion)		
2040 AM Peak (Project)	BAL	BAR
2040 PM Peak (Project)	BAL	BAR
Project Decommissioning		
2060 AM Peak (Project)	BAL	BAR
2060 PM Peak (Project)	BAL	BAR
Recommended Intersection Turn Treatments	**BAL**	**BAR**

As shown in **Table 40** above, based on the forecast peak hour traffic volumes at the intersection during the critical periods of the Stage 1 and Stage 2 construction, operations and decommissioning phases of the Project, it was shown that the recommended intersection treatments at the Yanga Way / Balranald-Moulamein Road intersection were a basic left (BAL) and basic right (BAR) treatments.

It was noted that the graph for the Stage 2 cumulative construction phase assessment identified that the right turn volumes into Balranald-Moulamein Road during the 2028 AM peak was slightly within the CHRs treatment area. However as the forecast Stage 2 cumulative peak construction phase volumes are considered conservative (assumes maximum volume for each coincident Project construction task and full development of estimated traffic volumes from external Projects – which is unlikely to occur), is noted to only be temporary (full peak construction volumes forecast for total of 5 months) and not ongoing at the

intersection, the adoption of the lower order BAR treatment was considered more reasonable and adequate to cater for the likely traffic volumes at the intersection.

Based on the assessment above, the provision of upgrade works to include BAL and BAR treatments at the intersection as part of the external network upgrade works for Stage 1 of the Project, will be appropriate to cater for the expected Project traffic volumes for all forecast Project traffic volumes scenarios.

Furthermore, it is recommended that the required turn treatments at the intersection be designed generally in accordance with Figure 8.2 of Austroads *Guide to Road Design Part 4A* (BAL) and Figure A6 of Austroads *Guide to Road Design Part 4* (BAR) respectively, as shown in Figure BL3-1 of **Appendix M**, which includes suitable additional sealed hardstand area on the eastern corner of the intersection to accommodate the swept paths of the identified turbine component transport vehicle.

In addition to the identified turn treatments at the site access intersection, it is also recommended that traffic management measures including advisory "truck turning" signage be installed on the Yanga Way approaches to the intersection (from both directions) during the peak construction phases of each stage of the Project, to highlight to motorists the potential presence of Project traffic at the intersection, including turning heavy vehicles to/from the side road.

5.3.2.2 Intersection Capacity Assessment

SIDRA analysis was also undertaken to establish the operational performance of the proposed upgraded configuration of the Yanga Way / Balranald-Moulamein Road intersection. This analysis was completed for the relevant traffic scenarios for the Stage 1 and Stage 2 construction, operations and decommissioning phases of the Project, considering the AM and PM peak periods at the critical design horizons for each phase as outlined in **Section 4.0** above.

A summary of the results of the completed analysis of the Yanga Way / Balranald-Moulamein Road intersection is provided in **Table 41**, with detailed SIDRA output summaries included for reference in **Appendix D**.

Table 41 SIDRA Results – Yanga Way / Balranald-Moulamein Road Intersection

Analysis Scenario	Intersection Degree of Saturation	Level of Service**	Intersection Average Delay (sec)	Maximum 95% Back of Queue Length (m)
Unsignalised / Priority Controlled Intersections				
Acceptable Limits of Operation	**< 0.800**	**LOS C**	**< 42.5**	**Varies ***
Stage 1 Preliminary Construction				
2026 AM Peak (Project)	0.024	LOS A	2.8	0.5
2026 PM Peak (Project)	0.027	LOS A	2.7	0.7
Stage 1 Preliminary Construction - Cumulative				
2026 AM Peak (Project)	0.032	LOS A	2.3	0.6
2026 PM Peak (Project)	0.027	LOS A	2.2	0.8
Stage 1 Peak Construction				
2027 AM Peak (Project)	0.041	LOS A	4.1	1.3
2027 PM Peak (Project)	0.065	LOS A	4.0	1.9

Analysis Scenario	Intersection Degree of Saturation	Level of Service**	Intersection Average Delay (sec)	Maximum 95% Back of Queue Length (m)
Stage 1 Peak Construction - Cumulative				
2027 AM Peak (Project)	0.049	LOS A	3.7	1.5
2027 PM Peak (Project)	0.066	LOS A	3.6	1.9
Stage 2 Peak Construction				
2028 AM Peak (Project)	0.072	LOS A	4.7	1.8
2028 PM Peak (Project)	0.124	LOS A	4.5	3.5
Stage 2 Peak Construction - Cumulative				
2028 AM Peak (Project)	0.080	LOS A	4.3	2.1
2028 PM Peak (Project)	0.127	LOS A	4.3	3.5
Project Operations (10-year Design Horizon from Stage 2 completion)				
2040 AM Peak (Project)	0.035	LOS A	2.4	0.2
2040 PM Peak (Project)	0.033	LOS A	2.3	0.8
Project Decommissioning				
2060 AM Peak (Project)	0.062	LOS A	3.5	1.7
2060 PM Peak (Project)	0.086	LOS A	3.4	2.4

** LOS value identified is for worst movement at the intersection, not the overall intersection.

The results above indicate that the proposed upgraded (BAL/BAR) configuration of the Yanga Way / Balranald-Moulamein Road intersection is expected to operate satisfactorily during all traffic scenarios identified for the Project (including cumulative assessment), with all values for intersection DOS, LOS, average delay and vehicle queue lengths being within acceptable limits of operation (refer Section 2.5.2.1 above) for a priority-controlled (give-way) intersection.

Based on these results, it can therefore be seen that the proposed upgraded (BAL/BAR) configuration of the Yanga Way / Balranald-Moulamein Road intersection, will be adequate to cater for the additional traffic volumes generated by all identified construction (Stage 1 and Stage 2), operations and decommissioning phases of the Project.

5.3.3 Balranald-Moulamein Road / Arundel Road

Finally it is noted that detailed intersection analysis of the operation of the Balranald-Moulamein Road / Arundel Road intersection was not considered necessary as the proposed upgrade works at the intersection (refer Section 3.4.2.4 above was considered adequate to provide adequate capacity for all Project traffic scenarios, based on the low background and Project traffic volumes forecast at the intersection.

5.4 Road Link Capacity Assessment and Mitigation

In addition to the analysis of the proposed Project Area access intersection, an assessment of the impact of the additional traffic generated by the various phases of the Project on the operation of the road links utilised has also been completed.

This assessment identifies the expected increase in daily traffic volumes on the road network during the key Stage 1 (preliminary and peak) and Stage 2 (peak) construction, operations and decommissioning phases of the Project, and comments on the level of impact the increase in traffic is anticipated to have on the operation of the road links.

The assessment is primarily focussed on the relevant sections of the Sturt Highway, Yanga Way, Swan Hill Road, Stony Crossing Road, Balranald-Moulamein Road and Arundel Road, as these links are proposed to be utilised by the additional traffic generated by the Project.

A summary of the assessment of the percentage increase in daily traffic volumes on the relevant sections of the external road network as a result of the Stage 1 and Stage 2 construction, operations and decommissioning phase traffic (refer **Table 34** and **Table 35** above) from the Project is shown in **Table 42** below, with further details of the calculations undertaken provided in **Appendix K**.

As can be seen by the results, the addition of the expected Stage 1 and Stage 2 construction (including cumulative assessment), operations and decommission phase traffic volumes from the Project is shown to lead to increases greater than 5% on the various sections of the Sturt Highway, Yanga Way, Balranald-Moulamein Road, Arundel Road (Stage 2 only), Stony Crossing Road and Swan Hill Road (increases greater than 5% shown in red). Further to this it is noted that the high percentage increases observed are generally as a result of the low background volumes on this fairly remote section of the road network.

Notwithstanding this, it is noted that with Project volumes identified for the various Project traffic scenarios in **Table 27** and **Table 28** above identified the total volumes on the relevant sections of the identified roads were all still within the generally accepted capacities for two lane rural highways (12,000-15,000vpd – Sturt Highway and Murray River Highway), rural arterial roads (3,000vpd – Yanga Way and Swan Hill Road) and rural collector roads (sealed approx. 1,500vpd – Stony Crossing Road). As such it can be considered that the existing configurations of these roads provide adequate capacity to cater for the additional traffic volumes generated by the Project.

Finally, it is noted that the proposed upgrade works to the relevant sections of Balranald-Moulamein Road and Arundel Road (as part of Stage 2 works) are expected to provide adequate road configurations (widths) with suitable capacity to accommodate the additional traffic volumes generated by the Project, in line with the requirements for a rural major (Balranald-Moulamein Road) and rural minor road (Arundel Road) as per ARRB's *Unsealed Roads Best Practice Guide*.

Table 42 Road Link Daily Traffic Volume Comparison (Construction Phase)

AADT Segment		% Increase in Daily Traffic from Background Traffic Volumes															
		Stage 1 Prelim Construction (2026)		Stage 1 Prelim Construction (Cumulative - 2026)		Stage 1 Peak Construction (2027)		Stage 1 Peak Construction (Cumulative - 2027)		Stage 2 Peak Construction (2028)		Stage 2 Peak Construction (Cumulative - 2028)		Project Operations (2038)		Decommissioning (2058)	
Start (km)	End (km)	Gaz	A-Gaz	Gaz	A-Gaz	Gaz	A-Gaz	Gaz	A-Gaz	Gaz	A-Gaz	Gaz	A-Gaz	Gaz	A-Gaz	Gaz	A-Gaz
A20 Sturt Highway (Mildura to Yanga Way																	
0.000	82.400	0.6%	0.6%	6.4%	6.3%	0.8%	0.8%	6.6%	6.5%	0.6%	0.6%	6.2%	6.0%	0.1%	0.1%	0.2%	0.2%
82.400	162.100	0.8%	0.8%	8.5%	8.3%	1.0%	1.0%	8.8%	8.6%	0.8%	0.7%	8.2%	8.0%	0.1%	0.1%	0.3%	0.3%
162.100	165.500	6.9%	6.8%	54.2%	53.0%	12.3%	12.0%	59.8%	58.5%	22.3%	21.9%	67.8%	66.3%	4.5%	4.4%	8.3%	8.1%
Yanga Way (Sturt Highway to Tooleybuc)																	
0.000	11.800	9.9%	7.2%	32.7%	23.6%	17.6%	12.7%	40.7%	29.4%	31.9%	23.1%	53.8%	38.9%	6.5%	4.7%	11.9%	8.6%
11.800	19.800	6.4%	6.4%	29.2%	29.0%	27.8%	27.6%	51.1%	50.8%	31.7%	31.4%	53.5%	53.2%	0.0%	0.0%	11.8%	11.7%
19.800	36.200	6.4%	6.4%	29.2%	29.0%	27.8%	27.6%	51.1%	50.8%	31.7%	31.4%	53.5%	53.2%	0.0%	0.0%	11.8%	11.7%
36.200	49.100	0.6%	0.6%	26.5%	26.6%	1.2%	1.2%	27.1%	27.2%	2.3%	2.4%	27.2%	27.3%	0.0%	0.0%	0.9%	0.9%
Balranald-Moulamein Road (Yanga Way to Site Access SA8)																	
0.000	6.930	214.3%	178.6%	214.3%	178.6%	612.3%	510.2%	624.5%	520.4%	866.7%	722.2%	866.7%	722.2%	89.6%	74.7%	321.9%	268.3%
6.930	7.750	162.6%	135.5%	162.6%	135.5%	518.1%	431.7%	528.4%	440.4%	866.7%	722.2%	866.7%	722.2%	89.6%	74.7%	321.9%	268.3%
7.750	10.402	81.3%	67.7%	81.3%	67.7%	159.4%	132.8%	162.6%	135.5%	866.7%	722.2%	866.7%	722.2%	44.8%	37.3%	321.9%	268.3%
10.402	11.095	81.3%	67.7%	81.3%	67.7%	159.4%	132.8%	162.6%	135.5%	664.2%	553.5%	664.2%	553.5%	0.0%	0.0%	246.7%	205.6%
11.095	17.340	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	660.7%	550.5%	660.7%	550.5%	0.0%	0.0%	245.4%	204.5%
17.340	18.955	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	349.9%	291.6%	349.9%	291.6%	0.0%	0.0%	130.0%	108.3%
18.955	22.140	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	208.7%	173.9%	208.7%	173.9%	0.0%	0.0%	77.5%	64.6%
Arundel Road (Balranald-Moulamein Road to Site Access SA4)																	
0.000	0.710	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	137.1%	137.1%	137.1%	137.1%	112.0%	112.0%	50.9%	50.9%
Stony Crossing Road (Yanga Way to Swan Hill Road)																	
0.000	40.900	12.1%	12.0%	12.1%	12.0%	55.2%	54.7%	56.3%	55.8%	61.0%	60.5%	61.0%	60.5%	0.0%	0.0%	22.6%	22.5%
Swan Hill Road (Swan Hill to Stony Crossing Road)																	
0.000	11.100	4.7%	4.4%	4.7%	4.4%	21.3%	20.1%	21.7%	20.5%	23.5%	22.2%	23.5%	22.2%	0.0%	0.0%	8.7%	8.3%
B400 Murray River Highway (Swan Hill to Lake Boga)																	
0.000	16.000	0.3%	0.3%	0.3%	0.3%	2.5%	2.5%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	0.0%	0.0%	1.0%	1.0%

5.4.1 Turbine Component Transport Routes

It is also noted that additional sections of the external road network have been identified to be temporarily utilised by the Project as part of the turbine component transport routes during both the Stage 1 and Stage 2 construction phases.

However, as the movement of these OSOM vehicles is required to be undertaken under permit (with escort vehicles) and likely out of hours, it is not anticipated that the relatively small increase in daily traffic volumes (up to 16-17vpd, including 5 OSOM vehicles) will have a significant ongoing impact on the operation or capacity of the roads forming the proposed turbine transport routes.

Notwithstanding this, it is noted that a detailed Traffic Management Plan (TMP) is proposed to be prepared as part of subsequent stages of the Project to identify the proposed measures and processes to be implemented to manage the Project traffic movements and reduce their impact traffic on the operation of external road network, in particular the OSOM turbine transport movements. The TMP will be developed in consultation with TfNSW, and the relevant local government agencies located along the proposed OSOM transport routes for the Project.

5.5 Pavement Impact Assessment and Mitigation

In addition to the assessment of the potential traffic impacts of the increased traffic movements associated with the Project, a high-level review of the potential increases in pavement loading as a result of the Project has also been undertaken.

Further details of the assessment of the expected pavement impacts of the construction, operations and decommissioning phase of the Project are provided below.

5.5.1 Construction Phase

The assessment of the potential pavement impact of the Stage 1 and Stage 2 construction traffic consists of a comparison of the overall pavement loading (in Equivalent Standard Axles) during the background traffic volumes on the network and those during the identified peak construction periods for both Stage 1 and Stage 2 of the Project, most notably from the associated heavy vehicle movements during these periods.

The pavement loading (in ESAs/SAR_4) for the background traffic periods was calculated based on the identified heavy vehicle percentages for the relevant sections of the network, adopting the following assumptions:

- The percentage of heavy vehicles identified in the available traffic data utilised for the assessment will be maintained for future years, with the overall background traffic numbers assumed to increase at approximately 2% (compound) per year.
- The impact of light vehicles can be ignored as the contribution to pavement loading is negligible in comparison to heavy vehicles.
- The adopted value for the Equivalent Standard Axles per Heavy Vehicle (ESAs/HV) was adopted from WIM site data (2017) for the Sturt Highway at Merbein South (Mildura – 3.19 ESAs/HV), as specified in Table E1 of Austroads *Guide to Pavement Technology Part 2: Pavement Structural Design*.
- The background period of the assessment for the relevant construction phases are the proposed duration of construction for both the Stage 1 (18 months or 548 days) and Stage 2 (30 months or 913 days).

The pavement loading generated by the Project construction traffic was then calculated based on the estimated number of heavy vehicle movements during construction and the average loaded and unloaded ESAs/HV values for each vehicle configuration. It is noted that the values for the OSOM turbine component

transport movements have been adopted from information provided from a previously assessed wind farm development and provide indicative component loading information which will need to be reassessed in subsequent stages of the Project when the turbine component and transport vehicle configurations have been confirmed.

A summary of the comparison of the background and Project generated pavement loadings is provided in **Table 43** and **Table 44** for Stage 1 and Stage 2 respectively, with further details of the Project pavement loading calculations undertaken included for reference in **Appendix L**.

Table 43 Pavement Loading Comparison – Stage 1 Construction Phase

Road ID	Road Segment		Background ESA			Stage 1 Construction Project-Generated ESA			% Increase in ESAs		
	Start (km)	End (km)	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	
A20 Sturt Highway (Mildura to Yanga Way)											
98064	0.000	82.400	694,609	717,509	1,412,118	*11,792*	*1,662*	*11,792*	1.7%	0.2%	1.0%
98064	82.400	162.100	694,609	717,509	1,412,118	*12,825*	*2,377*	*12,825*	1.8%	0.3%	1.1%
T0234	162.100	165.500	549,567	572,707	1,122,273	*35,266*	*4,699*	*35,266*	6.4%	0.8%	3.6%
Yanga Way (Sturt Highway to Tooleybuc)											
97488	0.000	11.800	175,135	249,889	425,025	*35,266*	*4,699*	*39,965*	20.1%	1.9%	9.4%
97494	11.800	19.800	175,142	182,056	357,198	*25,626*	*98,574*	*124,199*	14.6%	54.1%	34.8%
97494	19.800	36.200	175,142	182,056	357,198	*25,626*	*98,574*	*124,199*	14.6%	54.1%	34.8%
97207	36.200	49.100	199,834	194,643	394,477	*0*	*0*	*0*	0.00%	0.00%	0.00%
Balranald-Moulamein Road (Yanga Way to Site Access 5)											
MRC	0.000	6.930	18,905	28,357	47,262	*135,578*	*34,023*	*169,601*	717.2%	120.0%	358.8%
MRC	6.930	7.750	18,905	28,357	47,262	*74,529*	*26,442*	*100,972*	394.2%	93.2%	213.6%
MRC	7.750	11.095	18,905	28,357	47,262	*21,951*	*4,098*	*26,048*	116.1%	14.4%	55.1%
Stony Crossing Road (Yanga Way to Swan Hill Road)											
97206	0.000	40.900	59,691	85,643	145,334	*25,626*	*98,574*	*124,199*	42.9%	115.1%	85.5%
Swan Hill Road (Swan Hill to Stony Crossing Road)											
97200	0.000	11.100	139,061	146,254	285,315	*98,574*	*25,626*	*124,199*	70.9%	17.5%	43.5%
B400 Murray River Highway (Swan Hill to Lake Boga)											
-	0.000	16.000	847,721	1,007,038	1,854,759	*95,277*	*25,285*	*120,562*	11.2%	2.5%	6.5%

Table 44 Pavement Loading Comparison – Stage 2 Construction Phase

Road ID	Road Segment		Background ESA			Stage 2 Construction Project-Generated ESA			% Increase in ESAs		
	Start (km)	End (km)	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
A20 Sturt Highway (Mildura to Yanga Way)											
98064	0.000	82.400	1,204,453	1,244,160	2,448,613	*23,284*	*6,587*	*29,871*	1.9%	0.5%	1.2%
98064	82.400	162.100	912,825	942,918	1,855,743	*25,555*	*8,161*	*33,716*	2.7%	0.9%	1.8%
T0234	162.100	165.500	952,949	993,073	1,946,022	*46,776*	*10,357*	*57,133*	7.4%	1.3%	4.3%
Yanga Way (Sturt Highway to Tooleybuc)											
97488	0.000	11.800	303,685	433,308	736,993	*46,776*	*10,357*	*57,133*	23.3%	2.9%	11.3%
97494	11.800	19.800	303,697	315,685	619,381	*51,200*	*131,863*	*183,064*	17.3%	63.7%	40.9%
97494	19.800	36.200	303,697	315,685	619,381	*53,761*	*206,781*	*260,542*	17.2%	63.7%	40.9%
97207	36.200	49.100	346,512	337,512	684,023	*0*	*0*	*0*	0.0%	0.0%	0.0%
Balranald-Moulamein Road (Yanga Way to Site Access 8)											
MRC	0.000	6.930	32,781	49,172	81,953	*157,356*	*40,226*	*197,582*	828.8%	132.3%	410.9%
MRC	6.930	7.750	32,781	49,172	81,953	*157,356*	*40,226*	*197,582*	512.2%	83.2%	254.8%
MRC	7.750	10.402	32,781	49,172	81,953	*157,356*	*40,226*	*197,582*	512.2%	83.2%	254.8%
MRC	10.402	11.095	32,781	49,172	81,953	*144,681*	*40,356*	*185,038*	487.8%	79.4%	242.7%
MRC	11.095	17.340	32,781	49,172	81,953	*144,681*	*40,356*	*185,038*	487.8%	79.4%	242.7%
MRC	17.340	18.955	32,781	49,172	81,953	*77,313*	*19,881*	*97,194*	261.8%	42.2%	130.0%
MRC	18.955	22.140	32,781	49,172	81,953	*55,251*	*17,094*	*72,345*	187.4%	36.1%	96.6%
Arundel Road (Balranald-Moulamein Road to Site Access 4)											
MRC	0.000	0.710	13,112	13,112	26,225	*12,848*	*3,447*	*16,296*	35.6%	13.0%	24.3%
Stony Crossing Road (Yanga Way to Swan Hill Road)											
97206	0.000	40.900	103,504	148,505	252,009	*53,761*	*206,781*	*260,542*	50.6%	135.5%	100.6%
Swan Hill Road (Swan Hill to Stony Crossing Road)											
97200	0.000	11.100	241,132	253,604	494,736	*206,781*	*53,761*	*260,542*	83.4%	20.6%	51.2%
B400 Murray River Highway (Swan Hill to Lake Boga)											
-	0.000	16.000	1,469,949	1,746,204	3,216,152	*198,325*	*52,887*	*251,212*	13.1%	3.0%	7.6%

The results in **Table 43** and **Table 44** above indicate that the heavy vehicle movements associated with the construction phase of both Stage 1 and Stage 2 of the Project are expected to lead to a minor increase (<10%) in pavement loadings on the sections of the major state-controlled links of the Sturt Highway and Murray River Highway identified to form part of the transport routes for the Project.

The results did however indicate higher increases (>10%) in pavement loading as a result of Project traffic on the following sections of the external road network:

<u>Stage 1</u>

- Yanga Way (Balranald-Moulamein Road and Stony Crossing Road) – TfNSW.
- Stony Crossing Road (Yanga Way to Swan Hill Road) – TfNSW.
- Swan Hill Road (Swan Hill to Stony Crossing Road) – TfNSW.

- Balranald-Moulamein Road (Yanga Way to Site Access 5) - MRC.

Stage 2

- Yanga Way (Balranald-Moulamein Road and Stony Crossing Road) – TfNSW.
- Stony Crossing Road (Yanga Way to Swan Hill Road) – TfNSW.
- Swan Hill Road (Swan Hill to Stony Crossing Road) – TfNSW.
- Balranald-Moulamein Road (Yanga Way to Site Access 8) - MRC.
- Arundel Road (Balranald-Moulamein Road to Site Access 4) – MRC.

In terms of the state-controlled roads, as the calculated in pavement loadings are expected to only occur for the identified construction periods of both Stage 1 (18 months) and Stage 2 (30 months) of the Project, with negligible ongoing traffic volumes (and therefore pavement loadings) during the proposed 30-year operations phase of the Project. As such it is not considered that the temporary increase in traffic on these roads during the construction phases of the Project will to lead to a significant impact to the existing road pavements on the relevant sections of Yanga Way, Stony Crossing Road or Swan Hill Road.

Further to this, the identified state roads currently cater for long distance and interstate freight traffic, and as such the use of these roads by standard heavy vehicle configurations utilised by the Project should be considered part of the normal traffic utilising these routes under general heavy vehicle / mass conditions, with the relevant road authority to retain responsibility for sourcing an appropriate maintenance budget to maintain road pavement standards on these roads.

It is anticipated that the proposed upgrade works to the relevant sections of the Council controlled Balranald-Moulamein Road and Arundel Road for each stage of the Project will provide a suitable road pavement to cater for the expected loading from the forecast Project traffic for the construction phases of both Stage 1 and Stage 2.

Notwithstanding this, it is also proposed that pre and post construction phase dilapidation inspections to be undertaken on the relevant sections of Balranald-Moulamein Road (Stage 1 & 2) and Arundel Road (Stage 2) used by Project traffic, with these inspections to be completed by representatives of the proponent and Murray River Council. These inspections are required to identify and document the upgraded condition of the roads (pre construction) and to establish the required maintenance and/or rehabilitation works (to be completed by the proponent at no cost to Council) deemed necessary to reinstate the roads to their documented pre construction condition (post construction).

5.5.2 Turbine Component Transport Routes

In terms of the expected pavement impact on the identified road sections forming the proposed turbine transport routes, it is noted that the vast majority of the routes are comprised of higher order (and volume), state-controlled roads. As such it is expected that the existing road pavements on these links would be more than adequate to cater for the increase in pavement loadings from the proposed OSOM turbine transport vehicle movements during construction.

Notwithstanding this, it is noted that the identified turbine component transport routes propose the use of lower order, local government controlled road links in various local government authorities, particularly on the high load detour from Port Adelaide. As it is expected that these lower order roads are likely to not have been designed to cater for larger heavy vehicles like the OSOM turbine transport vehicles, it is recommended that further consultation be undertaken with the relevant local government agencies regarding the required mitigation works on the identified links to offset any potential pavement impacts of the Project.

It is also recommended that pre and post dilapidation inspections to be undertaken on the sections of the local government roads used by Project traffic prior to the commencement of construction, with these

inspections to be completed by representatives of the proponent and the appropriate Council. These inspections are required to identify and document the current condition of the roads (pre OSOM haulage) and establish the required maintenance and/or rehabilitation works relevant to the Project.

5.5.3 Operations Phase

As identified above, it is understood that the operations phase of the overall Project (Stage 1 and Stage 2) will only generate relatively low traffic volumes on the network (approx. 30vpd) with negligible heavy vehicle movements (approximately 1 HV per week). As such it can be considered that this phase of the Project will have a negligible impact to the operation (and pavement loadings) of all relevant road links.

5.5.4 Decommissioning Phase

As previously identified, based on information provided by Windlab it is understood the decommissioning phase works associated with the Project are anticipated to be completed over a 12-18 month period for the overall Project Area, with the peak traffic movements to/from the Project Area during decommissioning conservatively estimated to be approximately 70% of the peak construction movements for the Project to/from the Project Area (both daily and during AM and PM peak periods).

However, as these works are likely to occur in more than 30 years the exact nature of the works and associated traffic movements are difficult to confirm at this stage. As such it is proposed that when more accurate information is available closer to the start of the decommissioning works, an updated traffic impact assessment be completed as part of the required decommissioning and rehabilitation strategy, to clearly outline the proposed decommissioning works, the associated traffic movements, their anticipated impact on the surrounding road network and any management and mitigation required.

Notwithstanding this, as any pavement loading from a future decommissioning phase will only be temporary (12-18 months) with no ongoing increase in traffic (or loading), it is expected that the decommissioning phase of the Project will have a minimal impact to the existing road pavements of the external road network.

5.6 Road Safety Assessment

A high-level road safety assessment has also been undertaken to establish the existing and post development road safety risks relevant to the Project. To establish the level of risk regarding the existing and expected Project road safety considerations identified, a safety risk score matrix as shown in Figure 46 was utilised, with the results of the road safety risk assessment summarised in Table 45.

		Potential consequence				
		Property only (1)	Minor injury (2)	Medical treatment (3)	Hospitalisation (4)	Fatality (5)
Potential likelihood	Almost certain (5)	M	M	H	H	H
	Likely (4)	M	M	M	H	H
	Moderate (3)	L	M	M	M	H
	Unlikely (2)	L	L	M	M	M
	Rare (1)	L	L	L	M	M

L: Low risk
M: Medium risk
H: High risk

Figure 46 Adopted Risk Score Matrix

Table 45 Project Road Safety Assessment – Junction Rivers Wind Farm

		Existing / Pre-Development			With Project				With Project & Mitigation		
Risk Item		Likelihood	Consequence	Risk Score	Likelihood	Consequence	Risk Score	Mitigation Measure	Likelihood	Consequence	Risk Score
1	The Project is expected to lead to an increase in turning vehicle movements at the Sturt Highway / Yanga Way intersection. This increase in turning vehicles has the potential to lead to an increase in vehicle conflicts at the intersection.	Unlikely	Hospitalisation / Fatality	**Medium**	Moderate	Hospitalisation / Fatality	**Medium / High**	**Review of the current intersection configuration and nearby SSD Projects identified expected requirement of a CHRs turn treatment to be provided to cater for the additional turning movements at the intersection as part of Balranald Mineral Sands Project.** Based on the provision of these upgrade works prior to the Project, the detailed intersection analysis completed (refer **Section 5.3.1** above) identified that the intersection was expected to operate within acceptable limits of operation for a priority-controlled intersection for all construction (Stage 1&2) operations and decommissioning phase traffic scenarios for the Project. With these upgrade works also expected to provide safer turn facilities at the intersection, reducing the potential of vehicle conflicts associated with Project traffic at the intersection.	Unlikely	Hospitalisation / Fatality	**Medium**
2	The Project is expected to lead to an increase in turning vehicle movements at the Yanga Way / Balranald-Moulamein Road intersection. This increase in turning vehicles has the potential to lead to an increase in vehicle conflicts at this intersection.	Unlikely	Hospitalisation / Fatality	**Medium**	Moderate	Hospitalisation / Fatality	**Medium / High**	**Intersection is proposed to be upgraded as part of Stage 1 of the Project to provide required rural BAL / BAR turn treatments in accordance with the turn warrants assessment undertaken and the requirements of Austroads *Guide to Road Design*.** These upgrade works are expected to provide safer turn facilities at the intersection for Project traffic, reducing the potential of vehicle conflicts at the intersection. Further to this, the detailed analysis of the intersection (refer **Section 5.3.2** identified that the proposed BAR/BAL intersection configuration would operate satisfactorily for all Project traffic scenarios assessed.	Unlikely	Hospitalisation / Fatality	**Medium**

		Existing / Pre-Development			With Project				With Project & Mitigation		
Risk Item		Likelihood	Consequence	Risk Score	Likelihood	Consequence	Risk Score	Mitigation Measure	Likelihood	Consequence	Risk Score
3	Stage 2 of the Project is expected to lead to an increase in turning vehicle movements at the Balranald-Moulamein Road / Arundel Road intersection. This increase in turning vehicles has the potential to lead to an increase in vehicle conflicts at this intersection.	Unlikely	Hospitalisation / Fatality	**Medium**	Unlikely	Hospitalisation / Fatality	**Medium**	**Intersection is proposed to be upgraded as part of Stage 2 of the Project to provide required rural BAL / BAR turn treatments in accordance with the turn warrants assessment undertaken and the requirements of Austroads *Guide to Road Design*.** These upgrade works are expected to provide safer turn facilities at the intersection for Project traffic, reducing the potential of vehicle conflicts at the intersection.	Unlikely	Hospitalisation / Fatality	**Medium**
4	The Project is also expected to lead to an increase in vehicle movements on the relevant sections of the state-controlled links of the Sturt Highway, Yanga Way, Stony Crossing Road, Swan Hill Road and Murray River Highway. The increase in vehicle movements on these roads has the potential to lead to an increase in vehicle accidents along the links.	Unlikely	Hospitalisation / Fatality	**Medium**	Unlikely	Hospitalisation / Fatality	**Medium**	As identified in **Section 5.4** above, the road link capacity assessment undertaken identified that while the Project would lead to increases in traffic volumes on the identified sections of the state-controlled links of Sturt Highway, Murray River Highway, Yanga Way, Stony Crossing Road and Swan Hill Road, the traffic volumes during all Project traffic scenarios are expected to be within the existing mid-block capacities of the various road types. **No physical mitigation works are therefore expected to be required, however it is noted that a Traffic Management Plan will be developed and implemented as part of subsequent detailed design phases of the Project, with this TMP to outline the proposed measures to reduce the impact of Project traffic on the adjacent road network.**	Unlikely	Hospitalisation / Fatality	**Medium**
5	The Project is also expected to lead to an increase in vehicle movements on the relevant sections of the Council (MRC) controlled Balranald-Moulamein Road and Arundel Road. The increase in vehicle movements on these	Unlikely	Hospitalisation / Fatality	**Medium**	Unlikely	Hospitalisation / Fatality	**Medium**	**Upgrade works are proposed on both Balranald-Moulamein Road and Arundel Road to provide a suitable unsealed (gravel) road surface up to minimum 8m width and 7m width on 9m formation respectively.** The provision of these upgrade works is expected to provide adequate capacity for these road sections to cater for the identified Project traffic volumes.	Unlikely	Hospitalisation / Fatality	**Medium**

		Existing / Pre-Development			With Project				With Project & Mitigation		
Risk Item		Likelihood	Consequence	Risk Score	Likelihood	Consequence	Risk Score	Mitigation Measure	Likelihood	Consequence	Risk Score
	roads has the potential to lead to an increase in vehicle accidents along the links.										
6	The Project is also expected to lead to an increase in vehicle movements on the road sections proposed to form part of the identified OSOM turbine component transport routes. This increase in vehicle movements on the roads forming the turbine transport routes, in particular the OSOM vehicles has the potential to impact the operation of these links and lead to increased vehicle conflicts along the link.	Unlikely	Medical Treatment / Hospitalisation	**Medium**	Moderate	Medical Treatment / Hospitalisation	**Medium**	**Additional minor works are proposed to be undertaken at locations along the identified transport routes to enable the OSOM vehicle movements to traverse the network. In addition to the physical works, a Traffic Management Plan will be prepared and implemented as part of subsequent detailed design phase of the Project outlining the proposed measures and processes to reduce the impact of the OSOM vehicle movements on the external road network.**	Unlikely	Medical Treatment / Hospitalisation	**Medium**

5.7 Public Transport Route Impacts

As identified in **Section 2.3.3** above, the public transport (bus) services in the vicinity of the Project site currently operate out of Balranald to the nearby centres of Euston, Kyalite and Swan Hill, including and AM and PM school bus service to Kyalite and Swan Hill.

Based on this the bus movements are expected to be limited to the Sturt Highway, Yanga Way, Stony Crossing Road and Swan Hill Road, with no bus movements anticipated to utilise either Balranald-Moulamein Road or Arundel Road. Furthermore, it is noted that the school bus movements on the road network are shown to occur outside of what is expected to be the AM (6-7am) and PM (5:30-6:30pm) peak hours for traffic movements associated with either stage of the proposed Junction Rivers Wind Project.

In addition, it is noted that the proposed site and external road upgrade works are not anticipated to have a direct impact to the physical bus stop infrastructure in the vicinity of the Project area. As such it is not anticipated that the Project will have a significant impact on the operation of the existing bus services.

Notwithstanding this, consideration should be given within the future TMP for the Project to control/manage the movement of Project traffic (in particular any OSOM loads) on the relevant school bus routes during the AM (7:20-9am) and PM (2:45-4:45pm) school bus periods, to minimise the potential for conflict with bus movements and students waiting at the intermediate bus stop locations on the routes.

5.8 Travelling Stock Reserve Network Impacts

As previously identified in Section 2.3.4 above, travelling stock reserves (TSR) are identified to be located along the lengths of the relevant roads for the Project, including Yanga Way, Balranald-Moulamein Road, Stony Crossing Road and Swan Hill Road.

However, based on discussions with the Project's host landholders it is understood that the TSRs along Yanga Way and Balranald-Moulamein Road are rarely utilised by others or the landholders themselves, with the TSR on Balranald-Moulamein Road also advised to be unfit for use unless used in conjunction with water truck/tanks due to the lack of waterways for stock to drink along this road.

Notwithstanding this, it is noted that the proposed construction, operation and decommissioning of both stages of the Project is anticipated to lead to an increase in traffic volumes along the road links with identified TSRs, with the construction works also including the provision of additional vehicle access points to the Project area on Balranald-Moulamein Road that would cross the adjacent TSRs.

It is noted however that the larger increase in traffic volumes during the construction phase will be temporary (18 months Stage 1 / 30 months Stage 2), with Project traffic volumes being very minor during the ongoing (30 year) operations phase of the wind farm.

Finally, it is noted that all the Project impacts within the road areas with adjacent TSRs are standard activities associated with the operation and management of rural road reserves, including vehicle movements, use of access points, road maintenance and upgrade works. As such it is not anticipated that the Project will introduce any additional impediments to the access or use of the TSRs.

5.9 Active Transport Infrastructure Impacts

As outlined above, based on the isolated, rural nature of the Project site there are no specific active transport facilities or infrastructure on the surrounding road network (i.e. bike lanes or pedestrian pathways) that could be utilised as part of required movements for the Project.

Furthermore, due to the location of the site, approximately 15 km to the south-east of the regional township of Balranald, staff commuter movements to/from site using active transport modes such as walking or cycling are not considered feasible.

6.0 Conclusions and Recommendations

6.1 Summary of Impacts and Mitigation Measures Proposed

Based on the outcomes of this assessment and the increase in traffic numbers anticipated as a result of the construction, operations and decommissioning phases of the Project, it is anticipated that the Project will have a manageable impact on the traffic operation of the surrounding road network.

Notwithstanding this, the following mitigation treatments are recommended to be provided as part of the Project, with a summary of the recommended upgrade works outlined in **Table 46** and **Table 47**, and the indicative locations of the works shown in **Figure 47** and **Figure 48**:

6.1.1 Stage 1

- Completion of minor works along the identified transport route to accommodate the swept paths of the OSOM turbine component transport vehicles, including the relocation of signage and road lighting infrastructure and construction of required temporary hardstand pavement areas as identified in the Preliminary Transport Route Assessment for the Project (refer **Appendix A**). It is noted that the exact extents and scope of these works will be determined in subsequent detailed design phases of the Project once the turbine component and transport vehicle configurations are confirmed.

  In addition, further consultation with the relevant local government road authorities will be required to establish infrastructure or maintenance agreements to cover any required works to offset the potential pavement impacts of the OSOM vehicle movements for the Project on the lower order, local government controlled road links along the identified OSOM transport routes.

  This would also include pre and post dilapidation inspections to be undertaken on the sections of the local government roads used by Project traffic, with these inspections to be completed by representatives of Windlab and the appropriate Council. These inspections are required to identify and document the current condition of the roads (pre-construction) and establish the required maintenance and/or rehabilitation works deemed necessary to reinstate the roads to their documented condition prior to the introduction of Project traffic at the completion of their use.
- Provision of upgrade works to the Yanga Way / Balranald-Moulamein Road intersection to provide basic right (BAR) and basic left (BAL) turn treatments, generally in accordance with Figure 8.2 of Part 4A (rural BAL) and Figure A6 of Part 4 (rural BAR) of Austroads *Guide to Road Design*. Also provision of additional hardstand area required to accommodate OSOM turn movements (as per Rex J Andrews Route Assessment).
- Provision of upgrade works to the section of Balranald-Moulamein Road between Yanga Way and Site Access 5 (SA5– approx. 11.095km). These upgrade works are proposed to include road grading and resheeting works to provide a suitable unsealed (gravel) road surface up to 8m minimum in width. (to match the current minimum road width on this link).

  It is also noted that as part of Stage 1, pre and post construction phase dilapidation surveys will be required to be undertaken on this section of Balranald-Moulamein Road (Yanga Way to SA5). The pre construction inspection is to be undertaken upon the completion of the proposed regrading / resheeting works and is to establish the pre-construction road condition, with the post construction dilapidation survey then used to identify rehabilitation works required to be completed by the Project to bring road conditions / standards on this section of Balranald-Moulamein Road back to the recorded pre construction condition.
- Provision of suitable site access configurations at Site Access 2,3 & 5 on Balranald-Moulamein Road, with provision for additional hardstand areas as required to accommodate OSOM heavy vehicle movements. It is proposed that these site access points are to be provided generally in accordance

with the site access arrangement/configuration outlined in Figure 7.4 of Austroads Guide to Road Design Part 4: Intersections and Crossings – General.

- Installation of advisory "truck turning" signage be installed on the approaches to the Yanga Way / Balranald-Moulamein Road intersection, to highlight to motorists the potential for turning heavy vehicles to/from the side road.
- Preparation of traffic management plan for Stage 1 of the Project outlining proposed management measures and processes to minimise the impact of Project traffic (including OSOM turbine component transport vehicles) on the external road network.

Table 46 Stage 1 - External Road Network Upgrades

Road / Intersection	Treatment	Timing
Yanga Way / Balranald-Moulamein Road	Upgrade works to provide BAL / BAR turn treatments to intersection in accordance with relevant Austroads standards.	Prior to the commencement of Stage 1 main construction works (to be provided as part of Stage 1 preliminary works).
	Additional hardstand area on north-eastern corner of intersection to accommodate OSOM transport vehicle swept paths.	Prior to commencement of OSOM turbine component haulage operations.
Balranald-Moulamein Road (Yanga Way to SA5 – approx. Ch. 0.000 to 11.095km)	Road surface upgrade (regrading / resheeting works) to provide minimum 8m unsealed road surface.	Prior to the commencement of Stage 1 main construction works (to be provided as part of Stage 1 preliminary works).
	Completion of pre construction dilapidation inspection, including documentation of pre construction condition.	Prior to the commencement of Stage 1 construction works (but post upgrade works).
	Completion of post construction dilapidation inspection, identification of defects and completion of suitable maintenance/rehabilitation works to reinstate road to documented pre construction condition.	Within 3 months of the completion of Stage 1 construction works.
Site Access 2 (RHS) Balranald-Moulamein Road (Approx. Ch. 6.930km)	Upgrade existing property access to rural property access for articulated vehicles standard as per Figure 7.4 of Austroads Guide to Road Design Part 4: Intersections and Crossings – General.	Prior to the commencement of Stage 1 main construction works (to be provided as part of Stage 1 preliminary works).
	Additional hardstand area at access to accommodate OSOM transport vehicle swept paths.	Prior to commencement of OSOM turbine component haulage operations.
Site Access 3 (LHS) Balranald-Moulamein Road (Approx. Ch. 7.750km)	Provision of new site access to rural property access for articulated vehicles standard as per Figure 7.4 of Austroads Guide to Road Design Part 4: Intersections and Crossings – General.	Prior to the commencement of Stage 1 main construction works (to be provided as part of Stage 1 preliminary works).
	Additional hardstand area at access to accommodate OSOM transport vehicle swept paths.	Prior to commencement of OSOM turbine component haulage operations.

Site Access 5 (LHS) Balranald-Moulamein Road (Approx. Ch. 11.095km)	Upgrade existing property access to rural property access for articulated vehicles standard as per Figure 7.4 of Austroads Guide to Road Design Part 4: Intersections and Crossings – General.	Prior to the commencement of Stage 1 main construction works (to be provided as part of Stage 1 preliminary works).
	Additional hardstand area at access to accommodate OSOM transport vehicle swept paths.	Prior to commencement of OSOM turbine component haulage operations.
Various locations on OSOM transport routes	Various infrastructure relocation and hardstand construction works to accommodate vehicle paths of OSOM turbine component transport movements.	Prior to commencement of OSOM turbine component haulage operations.

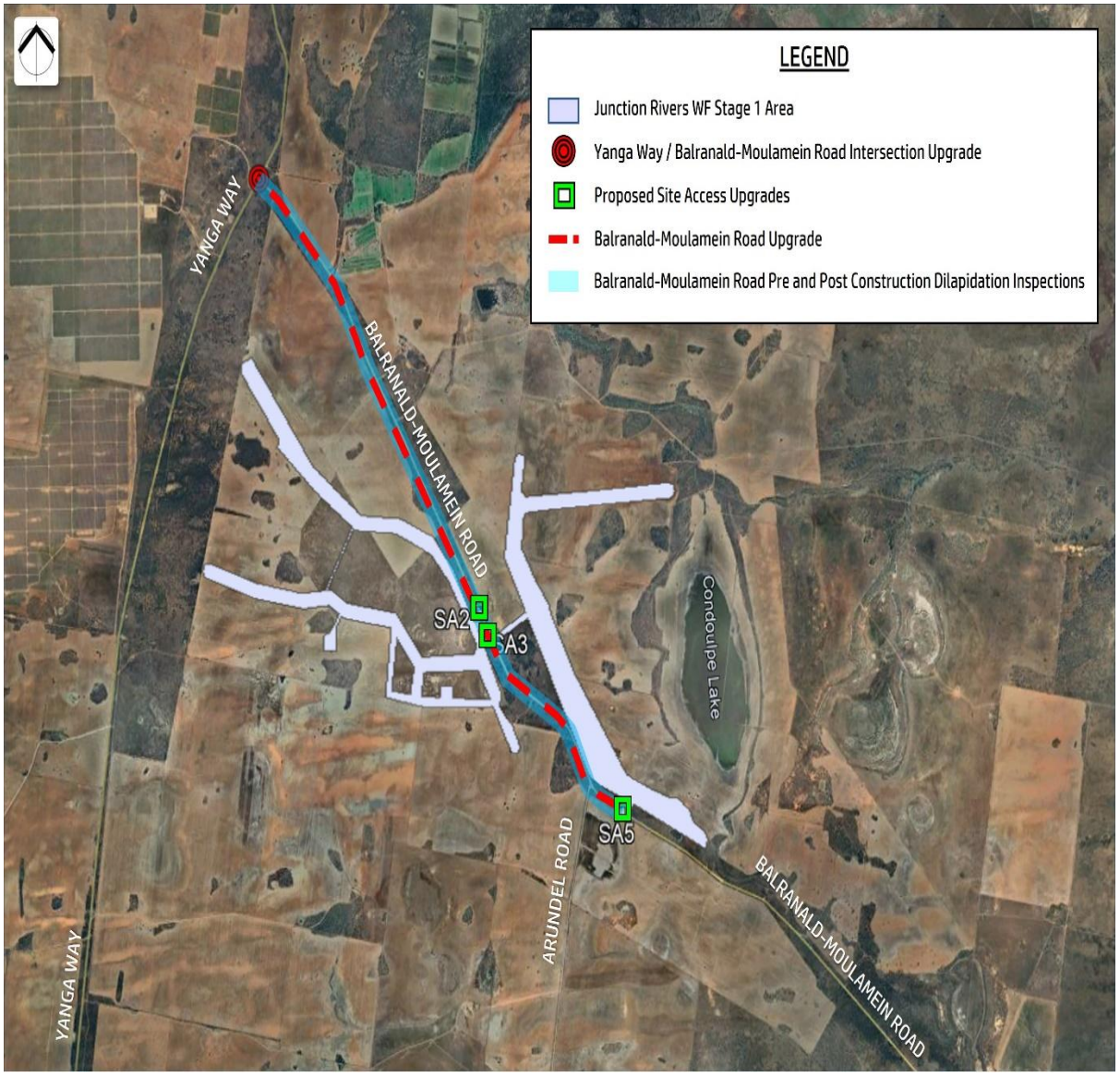


Figure 47 Stage 1 - External Road Network Upgrade Locations [Source: Windlab & Google Earth Pro]

6.1.2 Stage 2

- Completion of identified route upgrade works as identified in Rex Andrews route assessment, if previous route works have been remediated upon completion of Stage 1 OSOM haulage operations.
- Provision of upgrade works to the Balranald-Moulamein Road / Arundel Road intersection to provide basic right (BAR) and basic left (BAL) turn treatments, generally in accordance with Figure 8.2 of Part 4A (rural BAL) and Figure A6 of Part 4 (rural BAR) of Austroads *Guide to Road Design*.
- Provision of upgrade works to the section of Balranald-Moulamein Road between Site Access 5 (SA5 – approx. 11.095km) and Site Access 8 (SA8 – approx. 22.140km). These upgrade works are proposed to include road grading and resheeting works to provide a suitable unsealed (gravel) road surface up to 8m minimum in width.
- Provision of upgrade works to the section of Arundel Road between Balranald-Moulamein Road and Site Access 4 (SA8 – approx. 0.710km). These upgrade works are proposed to include road grading and resheeting works to provide a suitable unsealed (gravel) road surface up to minimum 7m width (on 9m formation).
- It is also noted that as part of Stage 2, pre and post construction phase dilapidation surveys will be required to be undertaken on the relevant sections of Balranald-Moulamein Road (Yanga Way to SA8) and Arundel Road (Balranald-Moulamein Road to SA4). The pre construction inspection is to be undertaken upon the completion of the proposed regrading / resheeting works and is to establish the pre-construction road condition, with the post construction dilapidation survey then used to identify rehabilitation works required to be completed by the Project to bring road conditions / standards on this section of Balranald-Moulamein Road back to the recorded pre construction condition.
- Provision of suitable site access configurations at Site Access 6,7 & 8 on Balranald-Moulamein Road, Site Access 4 on Arundel Road and Site Access 1 (Emergency Only) on Yanga Way, with provision for additional hardstand areas as required (SA4 / SA6 / SA7 & SA8) to accommodate OSOM heavy vehicle movements. It is proposed that these site access points are to be provided generally in accordance with the site access arrangement/configuration outlined in Figure 7.4 of Austroads Guide to Road Design Part 4: Intersections and Crossings – General.
- Installation of advisory "truck turning" signage be installed on the approaches to the Yanga Way / Balranald-Moulamein Road and Balranald-Moulamein Road / Arundel Road intersections, to highlight to motorists the potential for turning heavy vehicles to/from the side roads.
- Preparation of traffic management plan for Stage 2 of the Project outlining proposed management measures and processes to minimise the impact of Project traffic (including OSOM turbine component transport vehicles) on the external road network.

Table 47 Stage 2 - External Road Network Upgrades

Road / Intersection	Treatment	Timing
Yanga Way / Site Access SA1 Intersection (LHS – approx. Ch. 19.800km)	Provision of new site access to rural property access for articulated vehicles standard as per Figure 7.4 of Austroads Guide to Road Design Part 4: Intersections and Crossings – General.	Prior to the commencement of Stage 2 construction works.
Balranald-Moulamein Road (SA5 to SA8 – approx. Ch. 11.095km to 22.140km)	Road surface upgrade (regrading / resheeting works) to provide minimum 8m unsealed road surface	Prior to the commencement of Stage 2 construction works.

Balranald-Moulamein Road (Yanga Way to SA8 – approx. Ch. 0.000 to 22.140km)	Completion of pre construction dilapidation inspection, including documentation of pre construction condition.	Prior to the commencement of Stage 2 construction works.
	Completion of post construction dilapidation inspection, identification of defects and completion of suitable maintenance/rehabilitation works to reinstate road to documented pre construction condition.	Within 3 months of the completion of Stage 2 construction works.
Balranald-Moulamein Road / Arundel Road Intersection (RHS – approx. Ch. 10.402km)	Provision of new access intersection including BAL / BAR turn treatments in accordance with relevant Austroads standards.	Prior to the commencement of Stage 2 construction works.
	Additional hardstand areas at intersection to accommodate OSOM transport vehicle swept paths.	Prior to commencement of OSOM turbine component haulage operations.
Arundel Road (Balranald-Moulamein Road to SA4 – approx. Ch. 0.000 to 0.710km)	Road surface upgrade (widening / regrading / resheeting works) and associated drainage to provide minimum 7m unsealed pavement on 9m formation.	Prior to the commencement of Stage 2 construction works.
	Completion of pre construction dilapidation inspection, including documentation of pre construction condition.	Prior to the commencement of Stage 2 construction works (but post upgrade works).
	Completion of post construction dilapidation inspection, identification of defects and completion of suitable maintenance/rehabilitation works to reinstate road to documented pre construction condition.	Within 3 months of the completion of Stage 2 construction works.
Site Access 4 (LHS) Arundel Road (Approx. Ch. 0.710km)	Provision of new site access to rural property access for articulated vehicles standard as per Figure 7.4 of Austroads Guide to Road Design Part 4: Intersections and Crossings – General.	Prior to the commencement of Stage 2 construction works.
	Additional hardstand area at access to accommodate OSOM transport vehicle swept paths.	Prior to commencement of OSOM turbine component haulage operations.
Site Access 6 (RHS) Balranald-Moulamein Road (Approx. Ch. 17.340km)	Provision of new site access to rural property access for articulated vehicles standard as per Figure 7.4 of Austroads Guide to Road Design Part 4: Intersections and Crossings – General.	Prior to the commencement of Stage 2 construction works.
	Additional hardstand area at access to accommodate OSOM transport vehicle swept paths.	Prior to commencement of OSOM turbine component haulage operations.

Site Access 7 (LHS) Balranald-Moulamein Road (Approx. Ch. 18.995km)	Upgrade existing property access to rural property access for articulated vehicles standard as per Figure 7.4 of Austroads Guide to Road Design Part 4: Intersections and Crossings – General.	Prior to the commencement of Stage 2 construction works.
	Additional hardstand area at access to accommodate OSOM transport vehicle swept paths.	Prior to commencement of OSOM turbine component haulage operations.
Site Access 8 (RHS) Balranald-Moulamein Road (Approx. Ch. 22.140km)	Provision of new site access to rural property access for articulated vehicles standard as per Figure 7.4 of Austroads Guide to Road Design Part 4: Intersections and Crossings – General.	Prior to the commencement of Stage 2 construction works.
	Additional hardstand area at access to accommodate OSOM transport vehicle swept paths.	Prior to commencement of OSOM turbine component haulage operations.
Various locations on OSOM transport routes	Various infrastructure relocation and hardstand construction works to accommodate vehicle paths of OSOM turbine component transport movements	Prior to commencement of OSOM turbine component haulage operations.

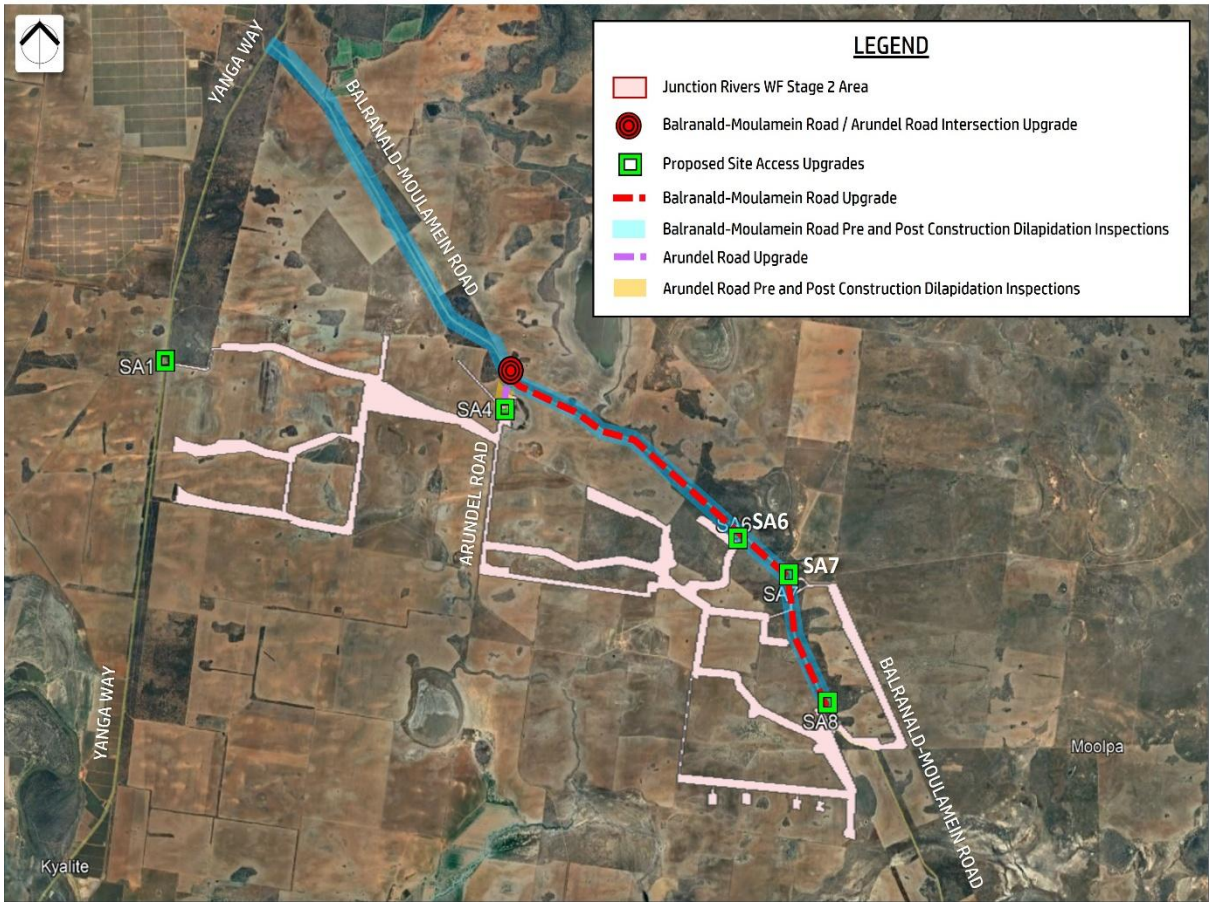


Figure 48 Stage 2 - External Road Network Upgrade Locations [Source: Windlab & Google Earth Pro]

6.2 Conclusion

Based on the information provided above, it can be seen that if the identified mitigation measures and works are provided as part of the Project, the potential impacts of the construction (Stage 1 & 2), operations and decommissioning phases of the Project will have been appropriately managed, with minimal traffic impacts anticipated on the relevant sections of the local government and state-controlled road networks.

As such it can be concluded that this report, in combination with the Preliminary Route Assessment demonstrates the compliance of the Project with Schedule 8 of the Environmental and Planning Regulation (2021), as outlined in the traffic and transport items of the SEARs provided.

Access Traffic Consulting therefore recommends that the Project be approved from a traffic engineering and traffic impact viewpoint.

Appendix A – Preliminary Transport Route Assessment

REX J ANDREWS
ENGINEERED TRANSPORTATION

ROUTE STUDY:

PROJECT: JUNCTION RIVERS WIND FARM

EX PORT ADELAIDE

BLADE SIZE: 100 METRE

24/03/2025 REV 03

Rev	Date	Change	Responsible	Checked
00	26/03/22	Route Assessed	W Andrews	✓
00	30/05/22	Report Compiled	W Andrews	✓
00	28/03/24	Report Completed	W Andrews	✓
01	11/03/25	Report Updated	W Andrews	✓
02	24/03/25	Report Updated	W Andrews	✓
03	14/04/25	Report Updated	W Andrews	✓

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1.0 Introduction

Windlab Developments Pty Ltd (Windlab) proposes to develop the Junction Rivers Wind Farm project (the Project) to provide a reliable and affordable source of energy for the people of New South Wales (NSW) and contribute to reducing greenhouse gas (GHG) emissions associated with energy generation.

The Project is located approximately 15 kilometres (km) south of Balranald, 140 km west of Hay and 20 km northeast of the NSW and Victorian border within the southern section of the Murray-Darling Basin.

The Project is within the Murray River Council Local Government Area (LGA) and immediately east of Balranald Shire LGA. The Project is located within the South-West Renewable Energy Zone (SW REZ), which the NSW Government has identified as a target area for renewable energy development in its Transmission Infrastructure Strategy and Electricity Infrastructure Roadmap.

This study is to understand the transport route constraints for the components listed in this report and assist in planning of the windfarm layout.

This document describes observations and previous experience on route and explains the Transport of Wind turbine equipment from Adelaide to Junction Rivers Windfarm.

This study is based on a 100 Metre blade with a hub height of up to 200 metres.

This Route survey took place on the 26/03/2022 and was revised on the 07/08/2023 and again on the 07/02/2025.

2.0 Project Data

Date of latest Route Assessment: 07/02/2025
Survey undertaken by: (Rex J Andrews P/L)
Project name: Junction Rivers Windfarm
Location: Port Adelaide (SA) to Burrawong (NSW)
Turbine types:
Up to 96 wind turbine generators with blades of up to 100 metres in length and a hub height of up to 200 metres. The overall tip height of the turbine is up to 300 metres.

3.0 Route Selection and Evaluation

Assessment of the proposed routes was conducted by Rex J Andrews Engineered Transportation based on onsite route surveys as well as previous experience on sections of the identified routes and transporting turbine equipment similar to the proposed turbine that is used on various other projects. The assessment was conducted utilising the knowledge, experience and intellectual property of Rex J Andrews Engineered Transportation on purpose-built equipment and is not intended for use by other parties.

The assessment considered the key constraints encountered on the routes and an estimation of the amount of work required to make the route viable based on previous experience. Table 1 shows the evaluation of each route and provides an overall ranking to give guidance on the most suitable route for the development from a transport perspective. The assessment was based on operational factors and equipment capability and does not consider external factors such as regulatory, landholder, environmental, cultural or any other external factors beyond the knowledge or control of Rex J Andrews Engineered Transportation.

1	No Cost
2	Some Work
3	Moderate Amount of Work
4	Large Amount of Work

		Harbour	Road Modification	Road Furnishings	Vegetation	Site Entrance	Bridge Calculations	Overhead utilities	Overall Work Required
Route 1	Blades Only	**3**	**4**	**4**	**3**	**4**	**2**	**2**	**3.5**
Route 2	Loads under 5.2m High	**1**	**3**	**3**	**3**	**4**	**4**	**4**	**3.0**
Route 3	High Load route up to 6.4m high	**1**	**3**	**3**	**3**	**4**	**3**	**4**	**3.0**
Route 4	High Load route up to 6.4m high	**1**	**3**	**3**	**3**	**4**	**3**	**4**	**3.0**

Table 1 - Route Evaluation

The Projects largest design vehicles are associated with transportation of WTG blades and towers to site. Our analysis identifies that the largest design vehicles will need to cross into the incorrect lane at select intersections and corners (as indicated by the swept paths). Limiting the largest design vehicles to the correct lane for these intersections and corners would result in unnecessary environmental impacts and encroachment onto private land to accommodate short term OSOM vehicle

movements. On this basis the Junction Rivers Wind Farm proposes to use the complete intersection where needed i.e. the largest design vehicles would cross onto the incorrect side of the road (as indicated by the swept paths) with local traffic controlled by Police and Pilots etc. Further, and as indicated by the swept paths, the largest design vehicles will remain well within the existing pavement and within existing intersection treatments (where applicable) at the majority of intersections and corners. However, new hardstands are proposed as documented in this Route Options Assessment. The largest design vehicles will remain well within the proposed pavement and intersection treatments (where applicable).

Note: Throughout this report, references to making roundabouts, kerbs, median strips or islands 'trafficable' means physically modifying these structures to allow the truck to drive over them. While the scope of work required in each location will be determined during detailed design, in consultation with the relevant road authority, this may include partial or total removal of these structures and reconstruction or replacement with painted lines.

3.1 Route Optionality

This study considers multiple routes to provide the Project contingencies for haulage of OSOM components from the Port of Adelaide. There is opportunity to consolidate route options with Route 2 and 3 utilising Route 1 from Cullulleraine to Robinvale, as shown in section 14.1. This consolidation will only be considered if an assessment of the Robinvale bridge determines the structure is adequate to accommodate the relevant loads.

4.0 Haulage Impact Mitigation Measures

The Project will be required to manage or mitigate impacts to other road users, including other OSOM transport. The Project should develop a traffic and transport management plan that will include key transport details and should be shared with key stakeholders along the haulage routes.

Suggested mitigation measures for the Project:

a. Avoid peak travel periods on road network with OSOM movements to minimise impact to other road users,
b. Movement of OSOM vehicles to be scheduled to reduce OSOM interactions with other vulnerable users; the Project's Traffic and Transport assessment includes analysis of vulnerable road users including local bus routes (EIS Appendix 14 Section 5.7)
c. Multiple route options considered for OSOM components (exc. blades) to assist in mitigating disruptions to other road users as required
d. Development of traffic / transport management plan with relevant details (including schedule and location/s of transport) to be shared with key stakeholder including other major road users and locals:
    i. A TMP will be prepared and include key safety initiatives:
        1. Driver Code of Conduct
        2. OSOM vehicle operating protocols (including use of UHF while transporting to notify road users ahead)
        3. Key information relating to road safety to be provided to all staff
        4. Consultation with road stakeholders and local authorities regarding delivery of OSOM
        5. Suitable signage provided to advise road users
    i. Communication of TMP, notably the transport schedule and locations, may include:
        1. Online via website
        2. Shared directly with transport companies, road stakeholders and emergency services
        3. Shared directly (and/or Face-to-Face consultation) with involved hosts, neighbours and local community
        4. Informing via media (newspaper and online), emails, letterbox drops/newsletters
        5. Provide contact details including out of hours contact information to key stakeholder (residents, schools, public activities and businesses)
e. OSOM traffic travelling in opposite directions will be managed via UHF communication and pilots/escorts, the OSOM convoys are able to communicate and identify opportunities to pass.
f. Vehicles travelling behind OSOM are managed with the use of pilot or police vehicles that will clear traffic at regular intervals (for example, every 15kms) to ensure traffic is able to pass safely

5.0 Port of Import

The wind turbine equipment will be imported from various countries and will arrive on ships into the Port of Adelaide. The client may alternately source local towers. The ideal berth for these shipments is the Berth 18-20 Inner Harbor. This facility has a hardstand storage area of roughly 20,000 s/q meters, adjacent to the berth.

Access from the storage to the public roads, is via Ocean Steamers drive. This route will require some upgrades to accommodate a 100m blade.

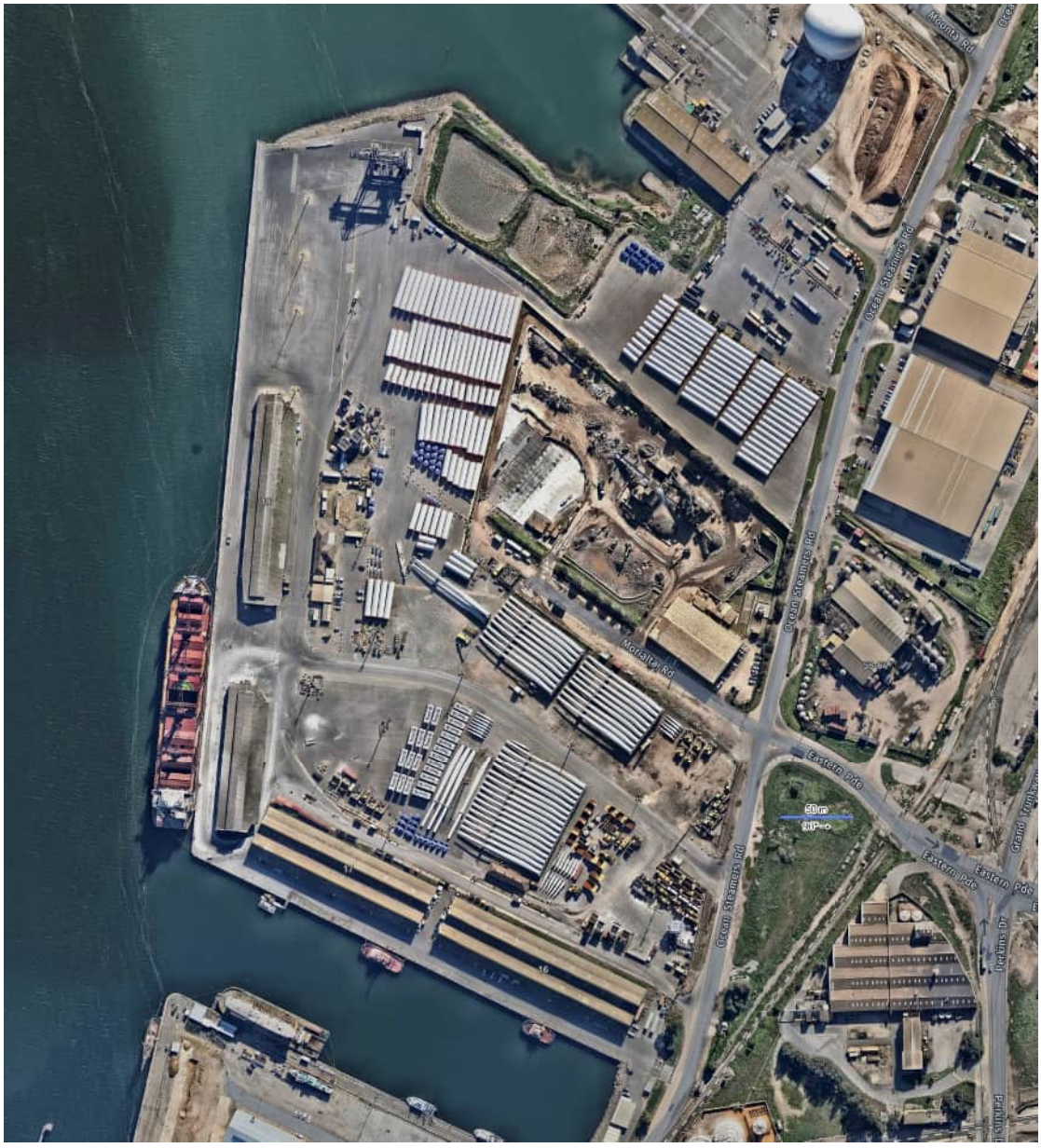


Figure 1 - Port of Adelaide and Storage Area

6.0 Junction Rivers Windfarm Site Location

This proposed Junction Rivers wind farm development is located approximately 15 kilometres (km) south of Balranald, in southwest New South Wales. Access is via Balranald Road. The Project Area is within the Murray Region of New South Wales (NSW)



Figure 2 – Junction Rivers Windfarm

7.0 Transport Summary

The study is based on the turbine components and imported towers entering Australia via Port Adelaide. The study details the likely routes for these components, and the constraints that they may encounter on the proposed routes.

The study has chosen 4 routes based on the type of turbine component that needs to be delivered from the port of import through to the windfarm. Route 1 is specifically for the blades. Route 2 is for the components up to 5.2 metres in height. Routes 3 & 4 are the 2 options for the high tower sections.

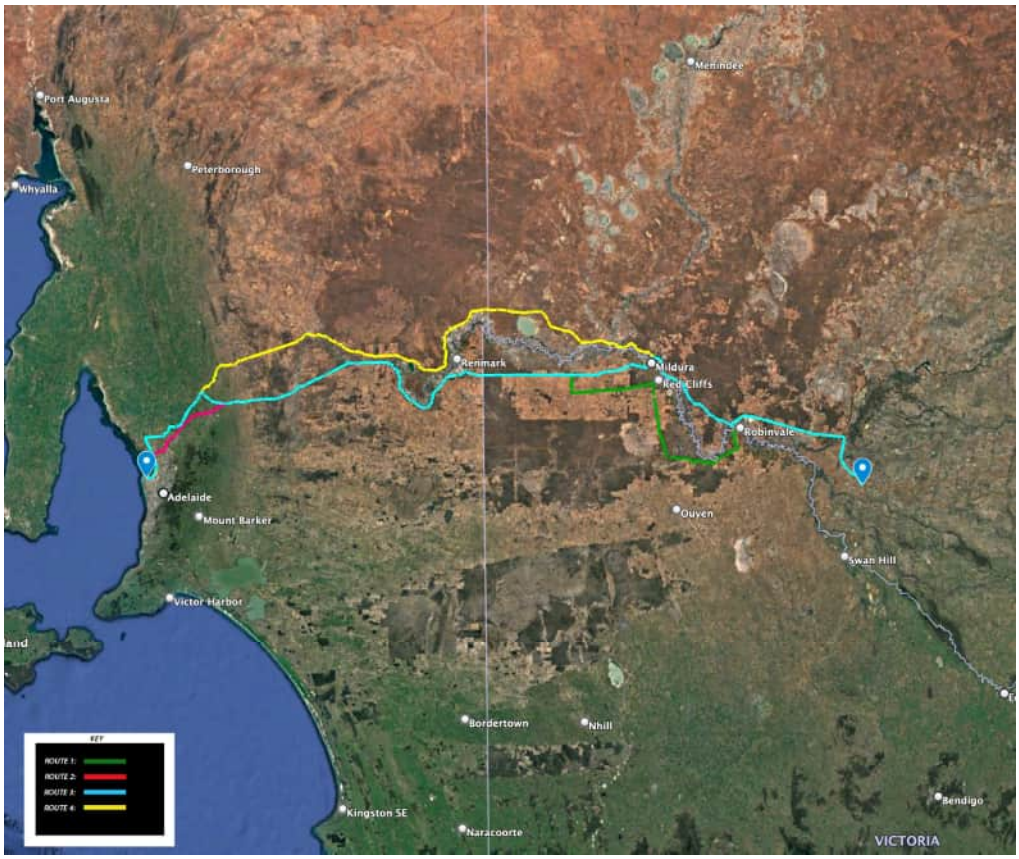


Figure 3: Routes from Pt Adelaide to Junction River WF

ROUTE 1: Port Adelaide SA to Junction Rivers Windfarm NSW via Robinvale.

COMPONENTS: Blades only

DISTANCE: 658 kilometres

GPS LINK: https://maps.app.goo.gl/f8y6PMEPu939C75w9

VIA: Ocean Steamers Rd, Eastern Parade, Port River Exy (A9), North South Motorway (M2), Northern Expy, Sturt Hwy (A20), Kingston Rd, Hwy (B55), Karoonda Hwy, Bookpurnong Rd, Stanitzki Rd, Sturt Hwy, Werrimull N Rd, Millewa Rd, Calder Hwy, Hattah Robinvale Rd, Robinvale-Sea lake Rd, Murray Valley Hwy, Sturt Hwy, Yanga Way, Balranald Road.

ROUTE 2: Port Adelaide SA to Junction Rivers Windfarm NSW via Mildura.

COMPONENTS: Components with a **Max loaded height 5.2 metres**

DISTANCE: 610 kilometres

GPS LINK: https://maps.app.goo.gl/DDCP2zgjjieWsGkE8

VIA: Ocean Steamers Rd, Eastern Parade, Port River Exy (A9), North South Motorway (M2), Northern Expy, Sturt Hwy (A20), Kingston Rd, Hwy (B55), Karoonda Hwy, Bookpurnong Rd, Stanitzki Rd, Sturt Hwy, Seventeenth St, Benetook Ave, Seventh St, Sturt Hwy, Yanga Way, Balranald Road.

ROUTE 3: Port Adelaide SA to Junction Rivers Windfarm NSW, High load option 1

COMPONENTS: Larger items with a **Max loaded height 6.4 metres**

DISTANCE: 641 kilometres

GPS LINK: https://maps.app.goo.gl/t9y1Q6n8RGWVi8s99

VIA: Via Ocean Steamers Road, Eastern Parade, Port River Expressway, Northern Connector, Port Wakefield Highway “A1”, Mallala Road, Old Port Wakefield Road, Gawler Rd, Two Wells Rd, Wilkinson Road, Hatcher Road, Oates Road, Redbanks Road, Mudla Wirra Road, College Road, Cliff Road, Gartrell Street, Roseworthy, Thiele Hwy, East Terrace, Truro Rd, Sturt Hwy, Heinrich Road, Drogemuller Road, Kingston Rd, Karoonda Hwy, Bookpurnong Rd, Stanitzki Rd, Sturt Hwy, Seventeenth St, Benetook Ave, Seventh St, Sturt Hwy, Kidman Way, Yanga Way, Balranald Road.

ROUTE 4: Port Adelaide SA to Junction Rivers Windfarm NSW, High load option 2

COMPONENTS: Larger items with a **Max loaded height 6.4 metres**

DISTANCE: 659 kilometres

GPS LINK: https://maps.app.goo.gl/n87wjSd8tn6y6pt18

VIA: Via Ocean Steamers Road, Eastern Parade, Port River Expressway, Northern Connector, Port Wakefield Highway “A1”, Mallala Road, Old Port Wakefield Road, Gawler Road, Two Wells Rd, Wilkinson Road, Hatcher Road, Oates Road, Redbanks Road, Mudla Wirra Road, College Road, Cliff Road, Gartrell Street, Roseworthy Road, Thiele Hwy, East Terrace, Thiele Hwy, Goyder Hwy, Sturt Hwy, Airport Rd, Government Rd, Ral Ral Ave, Wentworth-Renmark Rd, Renmark Rd, Silver City Hwy, Armstrong Ave, Silver City Hwy, Sturt Hwy, Yanga Way, Balranald Road.

8.0 Route 1 Study: Port Adelaide, SA to Junction Rivers Windfarm, NSW via Robinvale

COMPONENTS: Blades

DISTANCE: 658 kilometres

GPS LINK: https://maps.app.goo.gl/f8y6PMEPu939C75w9

VIA: Ocean Steamers Rd, Eastern Parade, Port River Exy (A9), North South Motorway (M2), Northern Expy, Sturt Hwy (A20), Kingston Rd, Hwy (B55), Karoonda Hwy, Bookpurnong Rd, Stanitzki Rd, Sturt Hwy, Werrimull N Rd, Millewa Rd, Calder Hwy, Hattah Robinvale Rd, Robinvale-Sea lake Rd, Murray Valley Hwy, Sturt Hwy, Yanga Way, Balranald Road.

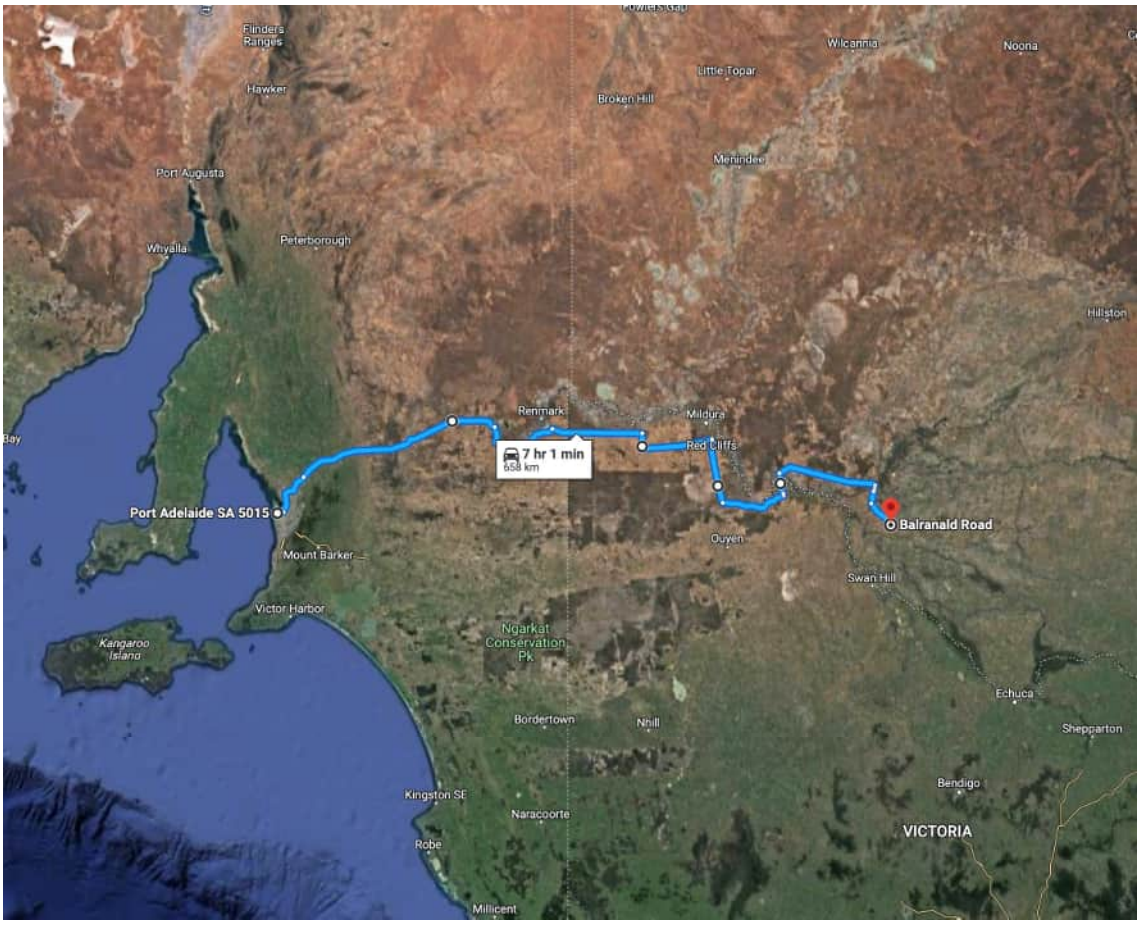


Figure 4 - Route 1 - Blades

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

REX J ANDREWS
ENGINEERED TRANSPORTATION

KEY	
PINCH POINT	
CAUTION	
EMERGENCY PARKING	

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
0.0	Port Adelaide, SA	Intersection of Ocean Steamers Rd and Eastern Pde GPS Link: https://goo.gl/maps/RMGe61BrvczTbEQR8	9.9 metres wide at gate	Silght right hand turn	The perimeter fence will need to be modified to allow transit. Sign to be made removable and overhead conductor clearances confirmed.
0.2	Port Adelaide	Eastern Parade over rail crossing GPS Link: https://goo.gl/maps/UfZfLvNDkKxRyTed9	Length: 80.0 metres Width: 7.0 metres Height: N/A	Travel directly ahead	Height of 3 signals to be checked for blade tip clearance. Approval required from Rail network provider before crossing this structure. Spotter to Guide load through this pinchpoint.
0.75	Port Adelaide, SA	Eastern Parade onto Port River Expressway GPS Link: https://goo.gl/maps/ora7XGzZov1zLN3v6	80 metres	Left Hand Merge	To enable the blade to make this corner 1 x light poles and 1x street sign need to be removed. An area of hardstand is also required on the outside of the corner on the Port River on ramp. The blade tip will hang over the drain on the outside of the corner and traffic light on centre island. Blade must be able to lift over traffic signals (4m) The area must be clear of obstacles.
5.65	Dry Creek, SA	Port River Expressway onto North-South Motorway GPS Link: https://goo.gl/maps/tnXSxEvy2zhyWHnLA	120 metres	Left Hand merge	Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
21.05	Burton, SA	North-South Mwy onto Northern Expy, Sturt Hwy GPS Link: https://goo.gl/maps/23zth7ZxmiDCFotY7	120 metres	Left hand bend	Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
21.05 to 42.6	Burton to Gawler, SA	Northern Expressway GPS Link: https://goo.gl/maps/GbEjYZ81FUAdJh4Q7	Bridge heights: 5.2 metres clearance	Travel directly ahead	Loads are not to exceed 5.2 metres in height on this section of road.
42.6	Gawler, SA	Northern Expressway onto Sturt Highway GPS Link: https://goo.gl/maps/cG4yPULRZKy4V73h9	120 metres	Travel directly ahead	No problems with this section of road.
45.0	Gawler, SA	Sturt Highway under Redbanks Road GPS Link: https://goo.gl/maps/n2aHh6MiwhyCeMRH9	Bridge height: 5.2 metres clearance	Travel directly ahead	Loads to slow for this bridge if over 5.0 metres in height. Loads exceeding 5.2 will need to stop and lower to 5.2 metres to travel under this structure.
45.0	Nuriootpa, SA	Sturt Highway under Sir Condor Laucke Way GPS Link: https://goo.gl/maps/J2DaymuDAmZK2PYs8	Bridge height: LHS: 6.15 Centre: 5.8m RHS: 5.6	Travel directly ahead	Loads to slow for this bridge if over 5.5 metres in height. Loads exceeding 6.0m will need to stop and lower to 6.0 metres to travel under this structure.

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

REX J ANDREWS
ENGINEERED TRANSPORTATION

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
85.2	Truro, SA	Sturt Highway GPS Link: https://maps.app.goo.gl/rJuEaaSMzPzzgeeW7	Length: 100.0 metres Width: 8.0 metres	Right hand bend	Spotter to assist load at this pinch point
132.05	Accommodation Hill, SA	Sturt Highway at Baldon road rest area GPS Link: https://maps.app.goo.gl/maTZasK4SVgsJav88	100.0 metres long 10.0 metres wide	Left hand merge	Emergency parking for the blades
208.75	Kingston on Murray, SA	Sturt Highway onto Kingston Road GPS Link: https://goo.gl/maps/cvafMBJpqWNRudqp8	110 metres	Right Hand Turn	Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
244.3	Loxton, SA	Kingston Road onto Karoonda Hwy GPS Link: https://goo.gl/maps/QVqcneMAha8ew7Gq9	120 metres	Travel directly ahead	No problems with this section of road.
246.45	Loxton, SA	Karoonda Hwy onto Bookpurnong Road GPS Link: https://goo.gl/maps/qZXFU8r5scZwGxqPA	80 metres	Second exit on Roundabout	Hardstand is required on the edge of the roundabout so the blade can cut straight across. 2x signs need to be made removable. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
256.35	Bookpurnong, SA	Bookpurnong Road onto Stanitzki Road GPS Link: https://goo.gl/maps/4D9S2wy8wpSkWqCG8	120 metres	Right Hand Turn	Vegetation on the outside of the corner will need to be checked before deliveries commence. Some trimming may be required. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
284.45	Pike River, SA	Stanitzki Road onto Sturt Hwy GPS Link: https://goo.gl/maps/QyNogMv3b9zg8MAUA	60 metres	Right Hand Turn	A large amount of hardstand is required on the inside of the corner. Existing shoulder on entry to be made trafficable. Vegetation on the outside of the corner to be trimmed or removed. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
287.40	Yamba, SA	Sturt Hwy GPS Link: https://goo.gl/maps/TAPWrNAcrsWGjXJJ7	150.0 metres long 8.0 metres wide	Left Hand Merge	Suitable parking for the blades.
321.80	Meringur, Vic	Sturt Hwy GPS Link: https://goo.gl/maps/Tm7PCDegxcSf6pt5A	100.0 metres long 6.0 metres wide	Left Hand Merge	Emergency parking for the blades
355.5	Cullulleraine, Vic	Sturt Hwy onto Werrimull N Rd GPS Link: https://goo.gl/maps/mEXbnEwPCDYMM4Fh8	60 metres	Right Hand Turn	Hardstand is required on the outside of the corner. Numerous trees will need to be removed to allow the tail swing to pass. 2x signs need to be made removable. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

REX J ANDREWS
ENGINEERED TRANSPORTATION

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
368.1	Werrimull, Vic	Werrimull N Rd onto Millewa Rd GPS Link: https://goo.gl/maps/ohs9s9RSbbfqj5uN9	80 metres	Left Hand Turn	Hardstand is required on the entry and inside of the corner. 1x sign needs to be made removable. Vegetation to be removed or trimmed. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
422.6	Red Cliffs, Vic	Bend on Millewa Rd GPS Link: https://goo.gl/maps/4VoMQiQQvY3arG786	50 metres	Right Hand Turn	Hardstand to be installed on inside and outside of corner. Signs removed and vegetation trimmed as required. Overhead conductor clearance to be confirmed.
422.7	Red Cliffs, Vic	Millewa Rd onto Calder Hwy GPS Link: https://goo.gl/maps/Rm6ZZEukQW5Nmbkc8	50 metres	Right Hand Turn	The sharp right hand turn on to the Calder highway will need a significant amount of work, including a new bypass road and a new rail crossing. Signs and obstacles to be removed. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
474.2	Hattah, Vic	Calder Hwy GPS Link: https://goo.gl/maps/R26CpzXrFJYpJ6TB9	100.0 metres long 10.0 metres wide	Left Hand Merge	Emergency parking for the blades
474.5	Hattah, Vic	Calder Hwy onto Hattah-Robinvale Rd GPS Link: https://goo.gl/maps/Z6zEDLCg71fpPZU27	50 metres	Left Hand Turn Via new bypass road	New bypass road to be installed, vegetation removed and trimmed as required. Overhead conductor clearance to be confirmed. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
527.7	Bannerton, Vic	Hattah-Robinvale Rd onto Robinvale-Sea Lake Rd GPS Link: https://goo.gl/maps/4FwG4Lh1Qn95TX1t9	80 metre	Left Hand Turn	Hardstand is required on the centre island and 6x signs will need to be made removable. Delineators made removable, Vegetation trimmed as required. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
527.8	Bannerton, Vic	Robinvale-Sea Lake Rd GPS Link: https://maps.app.goo.gl/M4GQrt2NGNGqshNY6	120.0 metres long 10.0 metres wide	Right Hand Merge	Suitable parking for the blades.
540.9	Robinvale, Vic	Robinvale-Sea Lake Rd turns into Murray Valley Hwy GPS Link: https://goo.gl/maps/55pknuwKNHsoA1ydA	120 metres	Continue Straight	No issues with this section
543.6	Robinvale, Vic	Murray Valley Highway over the Euston-Robinvale Bridge https://goo.gl/maps/uKnaiBJZG5yVVWJQ9	Width: 8.0 metres	Continue straight	TfNSW have advised that the structure is suitable for OSOM loads. However, a bridge assessment will be required to cross this structure.

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

REX J ANDREWS
ENGINEERED TRANSPORTATION

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
546.0	Euston, NSW	Murray Valley Hwy onto Sturt Hwy GPS Link: https://goo.gl/maps/rnhvnjnN6VkAWX3eA	50 metres	Right Hand Turn	This is a very tight corner that cuts back on itself. A large amount of hardstand is required. The new alignment will need a lot of fil to bring it level with the highway. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
561.0	Meilman East area, NSW	Sturt Highway GPS Link: https://maps.app.goo.gl/sKYv5MQsEdXDrQGw9	280.0 metres long 8.0 metres wide	Merge right	Suitable parking for the blades on the incorrect side of the road.
623.7	Balranald, NSW	Sturt Hwy (market st) onto Sturt Hwy GPS Link: https://goo.gl/maps/xve4ZgbuRkqqPvVr7	50 metres	Right Hand Turn	This section is very tight. A large area of hardstand will be required along with the removal of trees, light poles and numerous signs. Median strip to be made trafficable. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
626.7	Balranald, NSW	Sturt Highway GPS Link: https://maps.app.goo.gl/qoK5mgXJGFK2tqNk9	100.0 metres long 8.0 metres wide	Merge left	Emergency parking for the blades
636.8	Yanga, NSW	Sturt Hwy (market st) onto Sturt Hwy GPS Link: https://goo.gl/maps/LvawNfJ77rM3pQdAA	70 metres	Left Hand Turn	An area of hardstand is required on the inside of the corner. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warm all traffic.
645.8	Kyalite, NSW	Balranald Rd onto Arundel Rd GPS Link: https://goo.gl/maps/bwFVKmM2PLJrJLoJ8		Site Entrances	Some vegetation may need to be trimmed/removed on the inside and outside of this corner. The first site entrances are proposed in this location. The land is very flat with limited vegetation. Client to provide adequate swept path for the blade to enter site.
659.0	Moolpa, NSW	Balranald Rd into western site entrances GPS Link: https://goo.gl/maps/H89zRQMFgqkXDHvE9		Site Entrances	The western site entrances are proposed in this location. As with the eastern entrances the land is very flat with limited vegetation. Client to provide adequate swept path for the blade to enter site.

0.0 Km's: Exiting the Port Storage Area onto Eastern Parade, SA.

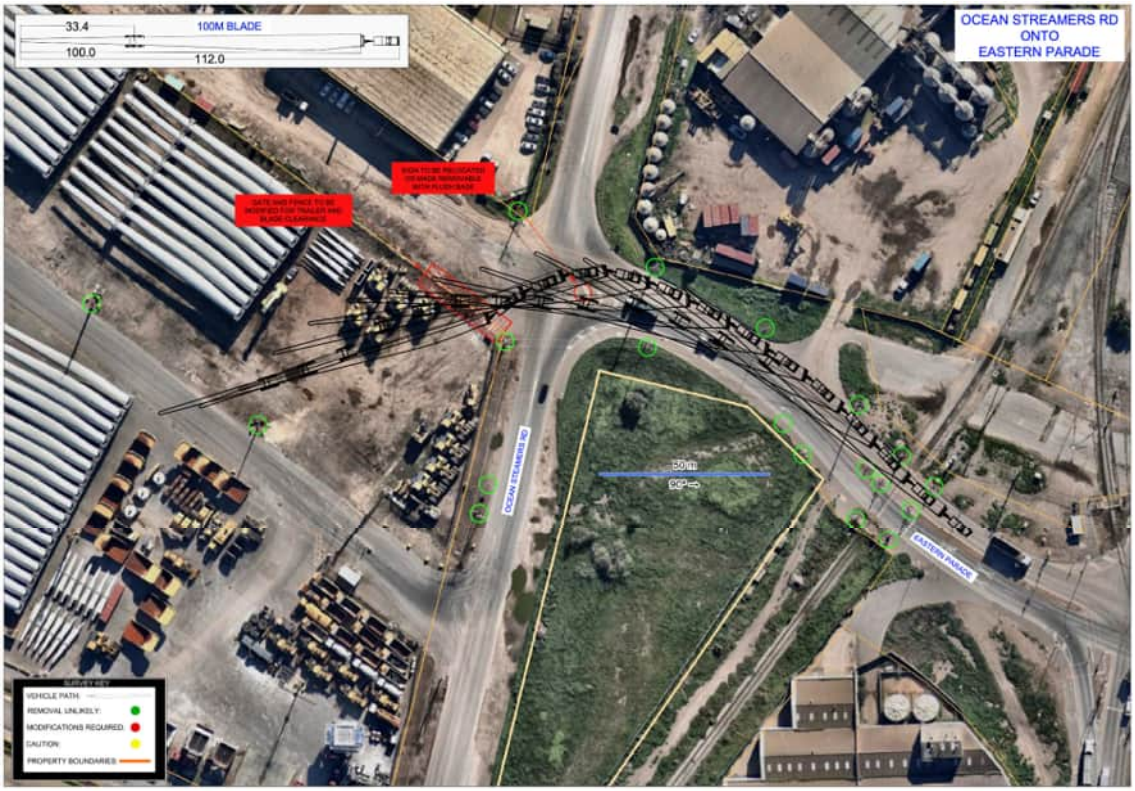


Figure 5 - Exiting the Port Storage Area onto Eastern Parade, SA.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/RMGe61BrvczTbEQR8

PROCEDURE: Slight right hand turn.

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes, the perimeter fence will need to be modified to allow transit. Sign to be made removable and overhead conductor clearances confirmed.

0.20 Km's: Eastern Parade over rail crossings in Port Adelaide

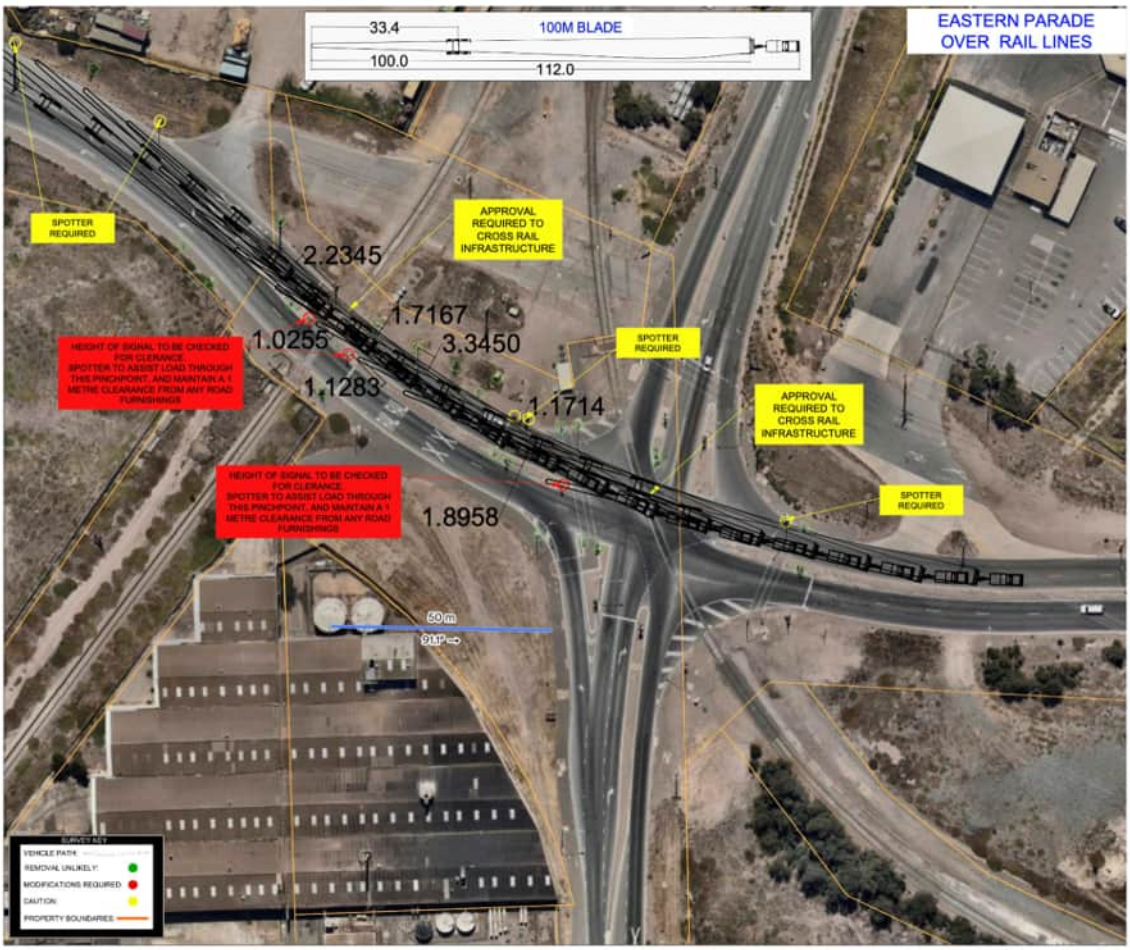


Figure 6 - Eastern Parade over rail crossings

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/UfZfLvNDkKxRyTed9

PROCEDURE: Travel directly ahead over 2 rail crossings.

COMMENTS: The height of 3 signals needs to be checked for the blade tip height clearance.

Rail protection officer to be present for each blade movement. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warm all traffic.

ROAD MODIFICATIONS: Yes, a moderate amount of work is likely.

0.75 Km's: Eastern Parade onto Port River Expressway, SA.

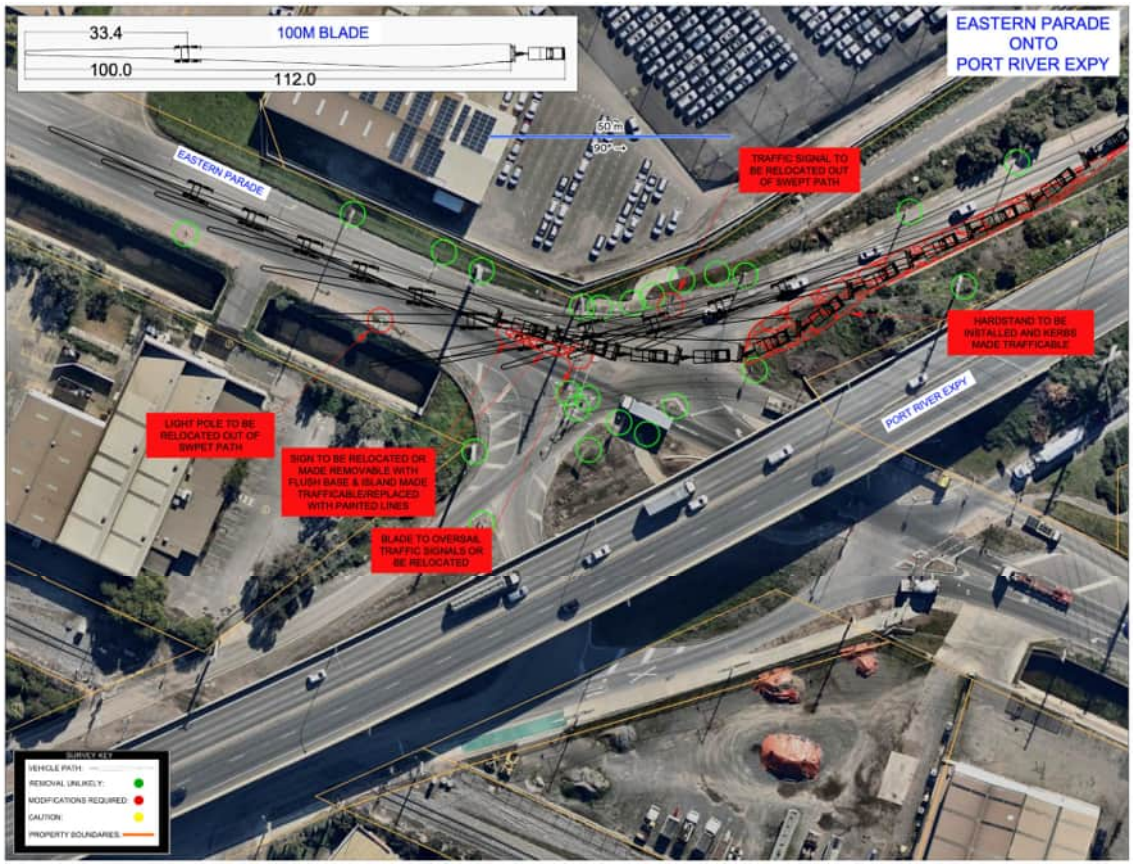


Figure 7 - Eastern Parade onto Port River Expressway, SA.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/ora7XGzZgv1zLN3v6

PROCEDURE: Left hand merge onto Port River Expressway.

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. To enable the blade to make this corner 1 x light poles and 1x street sign need to be removed. An area of hardstand is also required on the outside of the corner on the Port River on ramp. The blade tip will hang over the drain on the outside of the corner and traffic light on centre island. Blade must be able to lift over traffic signals (4m) The area must be clear of obstacles.

85.2 Km's: Sturt Highway at Truro



Figure 8 – Sturt Highway at Truro

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/rJuEaaSMzPzzgeeW7

PROCEDURE: Right hand bend.

COMMENTS: Spotter to guide the load throughout this pinchpoint. Police to control traffic, pilots to warm all traffic.

ROAD MODIFICATIONS: Nil.

208.75 Km's: Sturt Highway onto Kingston Road at Kingston on Murray, SA.

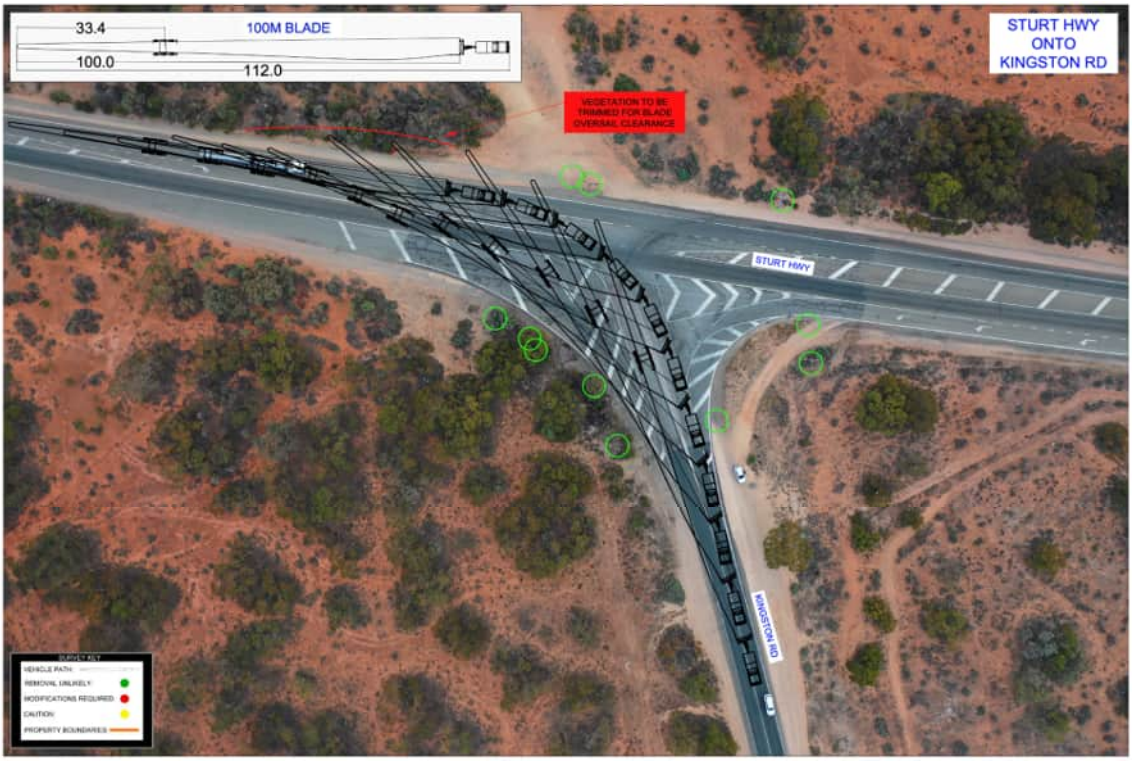


Figure 9 - Sturt Highway onto Kingston Road at Kingston, SA.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/cvafMBJpqWNRudqp8

PROCEDURE: Right hand turn

COMMENTS: No issues with this corner.

Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: No work is required.

246.45 Km's: Karoonda Hwy Roundabout in Loxton, SA.



Figure 10 - Karoonda Hwy Roundabout in Loxton, SA.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/gZXFU8r5scZwGxqPA

PROCEDURE: Travel straight ahead using the hardstand installed on the roundabout and continue on Karoonda Hwy

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. Hardstand is required on the edge of the roundabout so the blade can cut straight across. 2x signs need to be made removable.

256.35 Km's: Bookpurnong Road onto Stanitzki Road at Loxton North, SA.

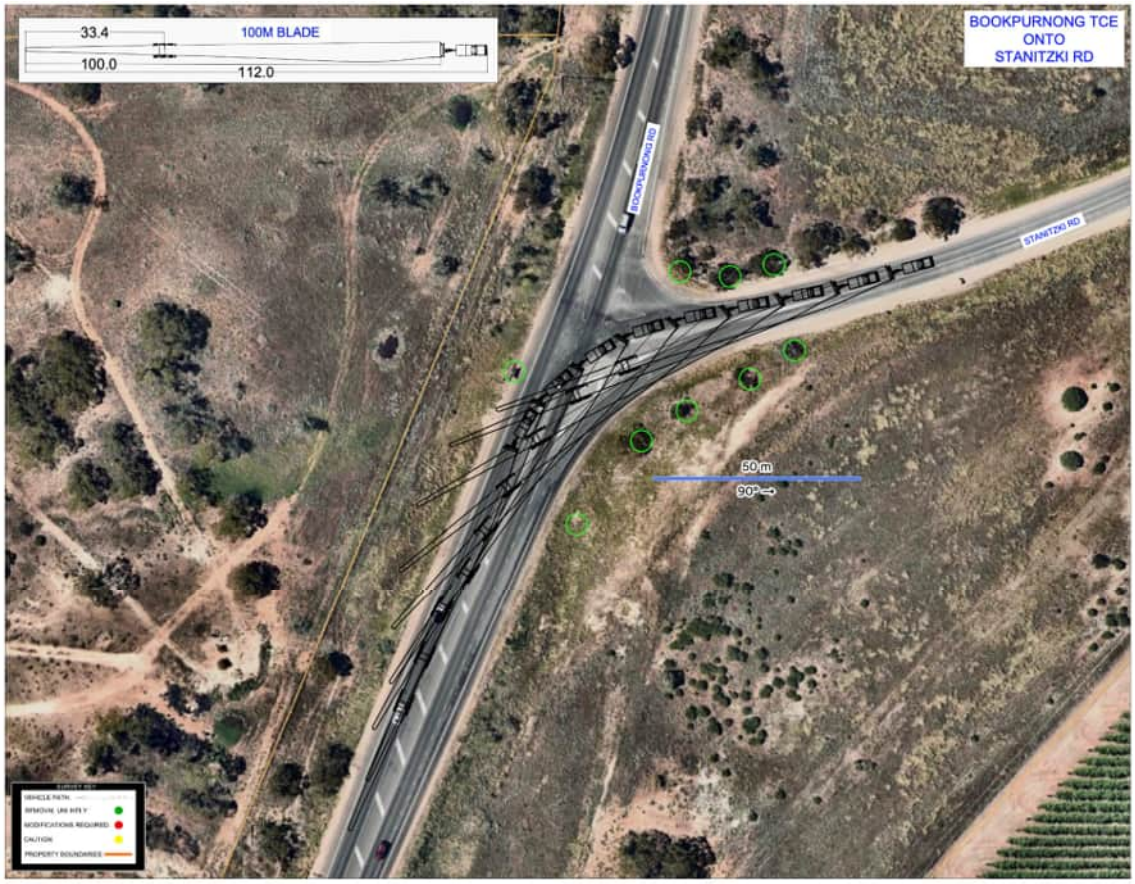


Figure 11 - Bookpurnong Road onto Stanitzki Road, SA.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/4D9S2wy8wpSkWqCG8

PROCEDURE: Right hand turn

COMMENTS: Vegetation on the outside of the corner will need to be checked before deliveries commence. Some trimming may be required.

Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: No work is required.

284.45 Km's: Stanitzki Road onto Sturt Highway at Pike River, SA.

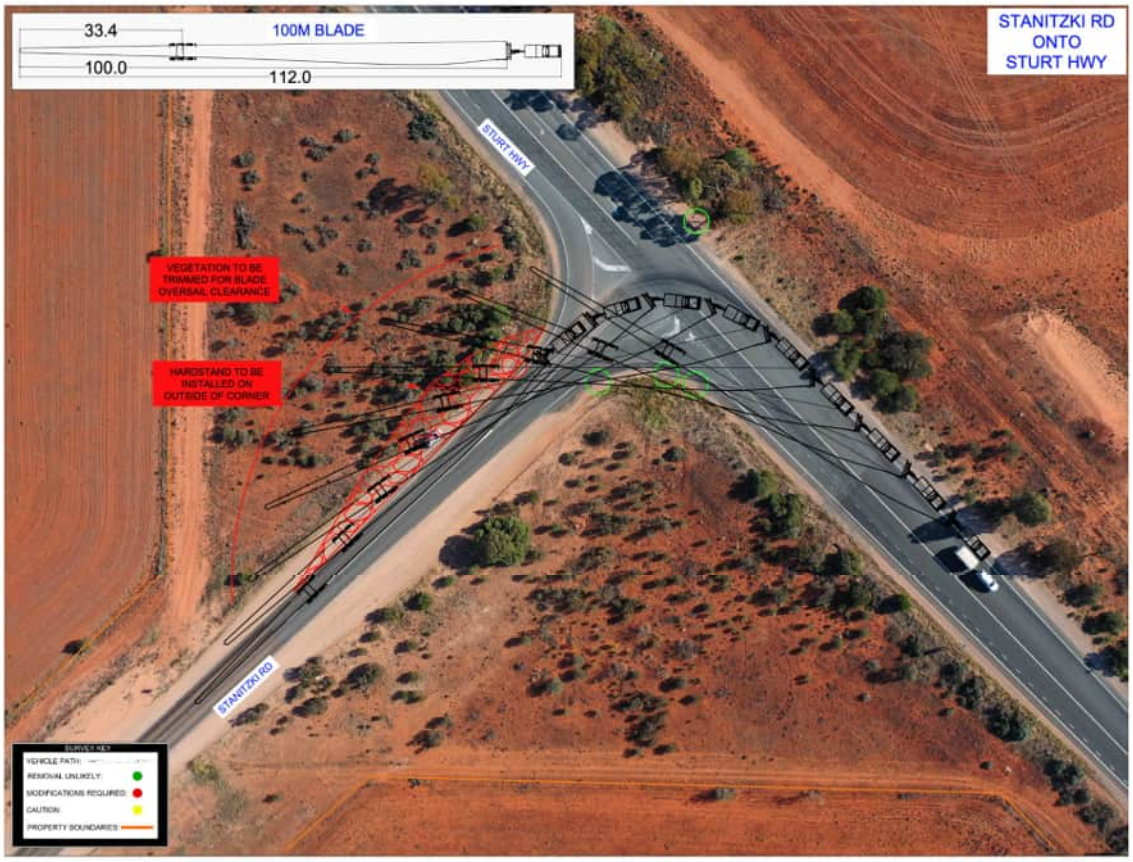


Figure 12 - Stanitzki Road onto Sturt Highway, SA.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/QyNogMy3b9zg8MAUA

PROCEDURE: Right hand turn

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. A large amount of hardstand is required on the inside of the corner. Existing shoulder on entry to be made trafficable. Vegetation on the outside of the corner to be trimmed or removed.

355.50 Km's: Sturt Highway onto Werrimull N Road at Cullulleraine, Vic.

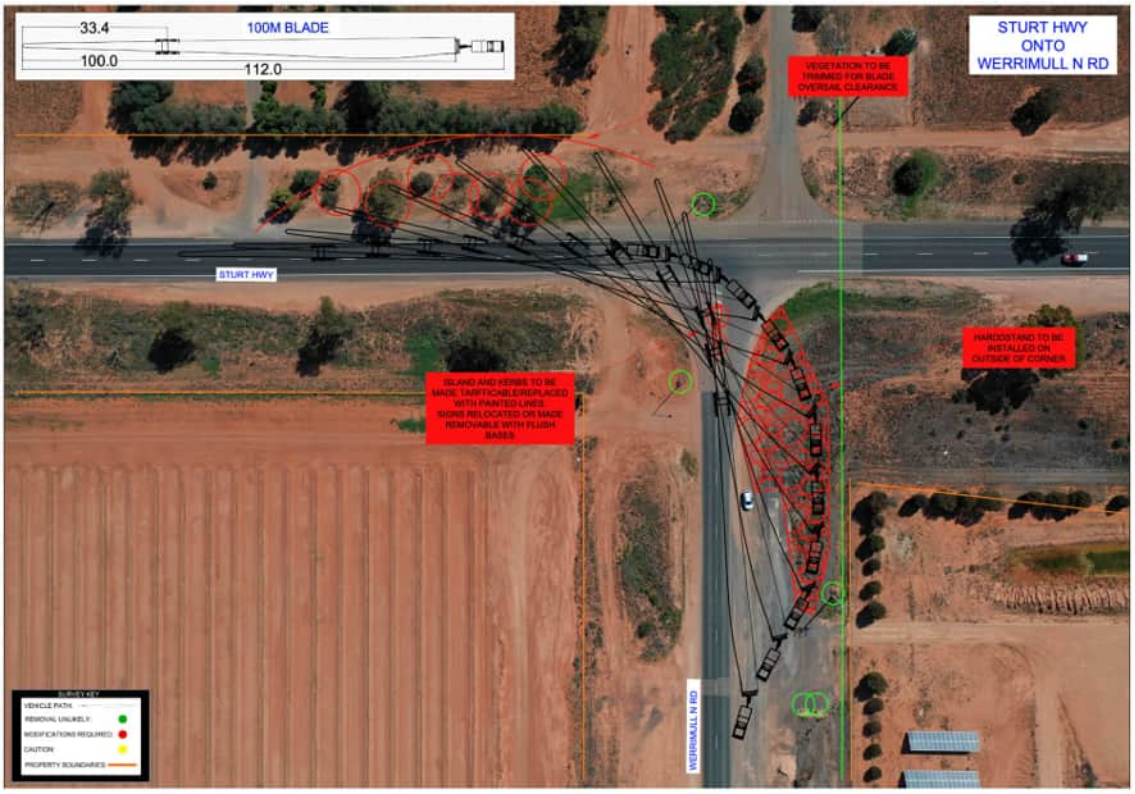


Figure 13 - Sturt Highway onto Werrimull N Road, Vic.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/mEXbnEwPCDYMM4Fh8

PROCEDURE: Right hand turn

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. Hardstand is required on the outside of the corner. Numerous trees will need to be removed to allow the tail swing to pass. 2 x signs need to be made removable.

368.10 Km's: Werrimull N Road onto Millewa Road at Werrimull, Vic.

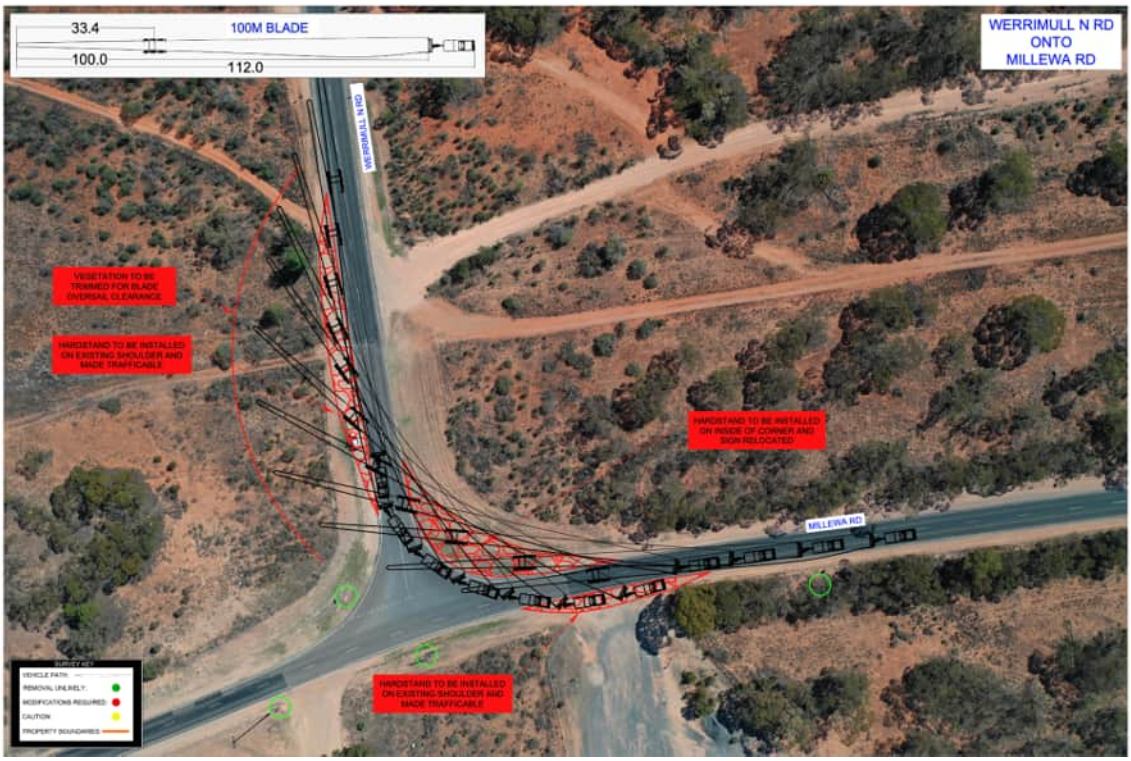


Figure 14 - Werrimull N Road onto Millewa Road, Vic.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/ohs9s9RSbbfqi5uN9

PROCEDURE: Left hand turn

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. Hardstand is required on the entry and inside of the corner. 1x sign needs to be made removable. Vegetation to be removed or trimmed.

422.60 Km's: Right hand bend on Millewa Road before rail crossing, Vic.

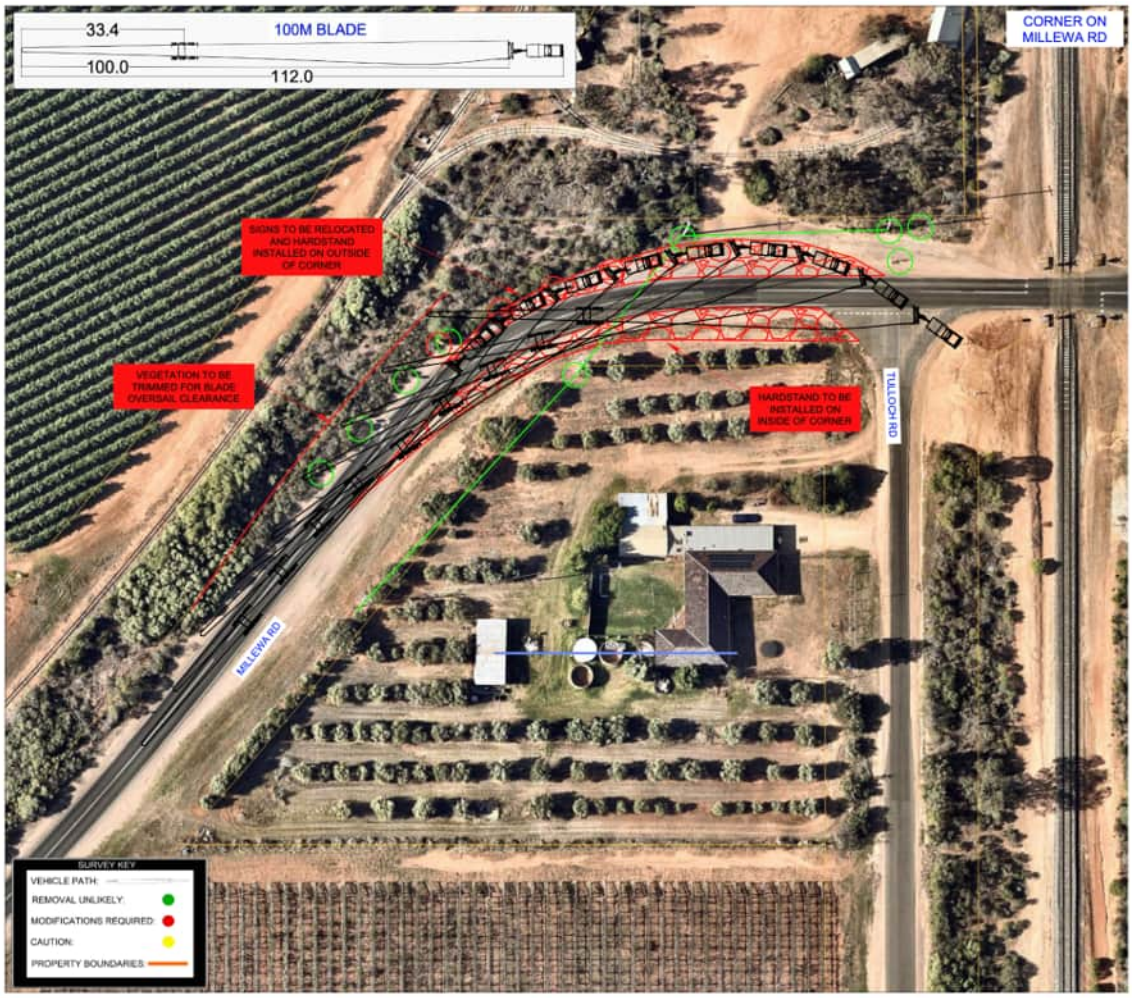


Figure 15 - Right hand bend on Millewa Road, Vic.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/4VgMQjQQvY3arG786

PROCEDURE: Right hand bend then sharp right hand turn over the rail crossing.

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. Hardstand to be installed on inside and outside of corner. Signs removed and vegetation trimmed as required. Overhead conductor clearance to be confirmed.

422.70 Km's: Millewa Road onto Calder Hwy, Vic.

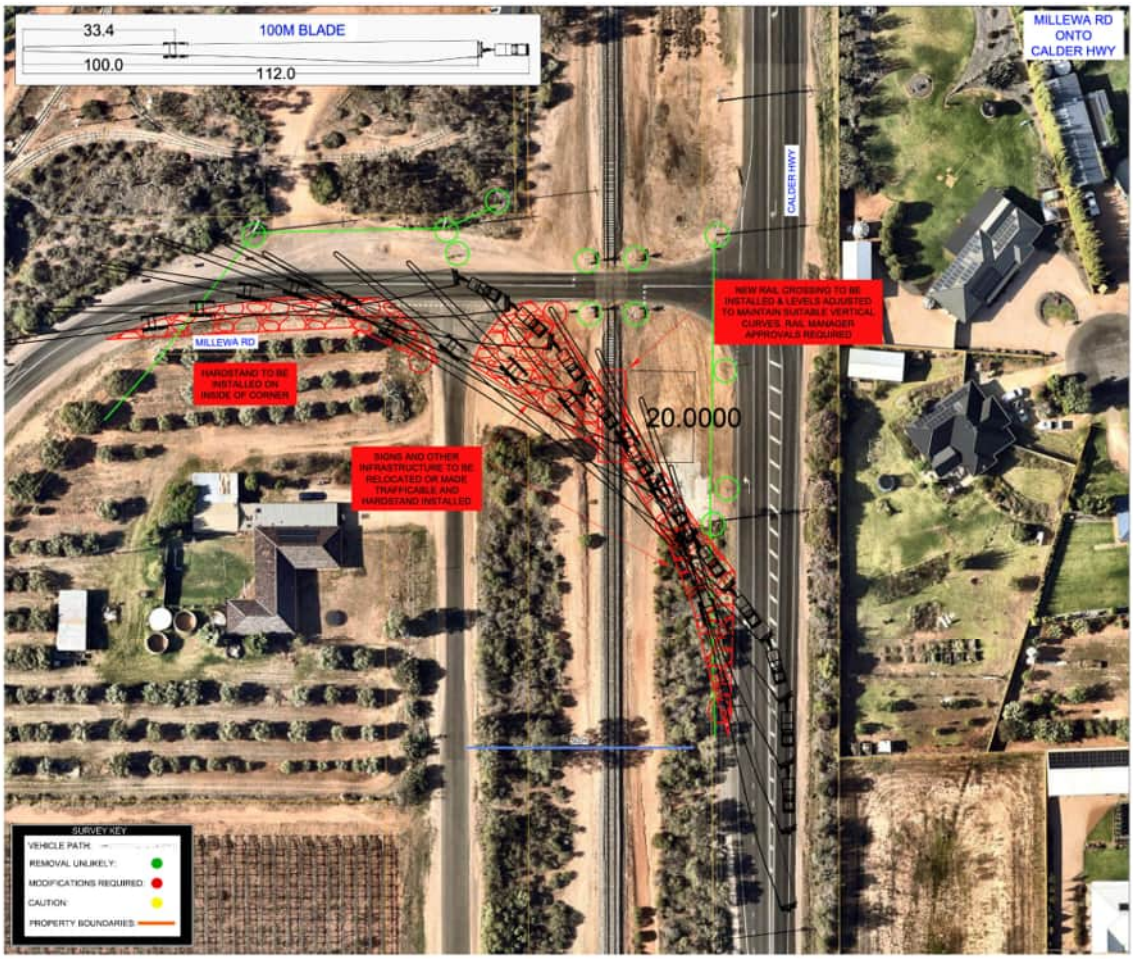


Figure 16 - Millewa Road onto Calder Hwy, Vic.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/Rm6ZZEukQW5Nmbkc8

PROCEDURE: Right hand bend then sharp right hand turn over new rail crossing.

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. The sharp right hand turn on to the Calder highway will need a significant amount of work, including a new bypass road and a new rail crossing. Signs and obstacles to be removed.

474.5 Km's: Calder Highway onto Hattah-Robinvale Road at Hattah, Vic.

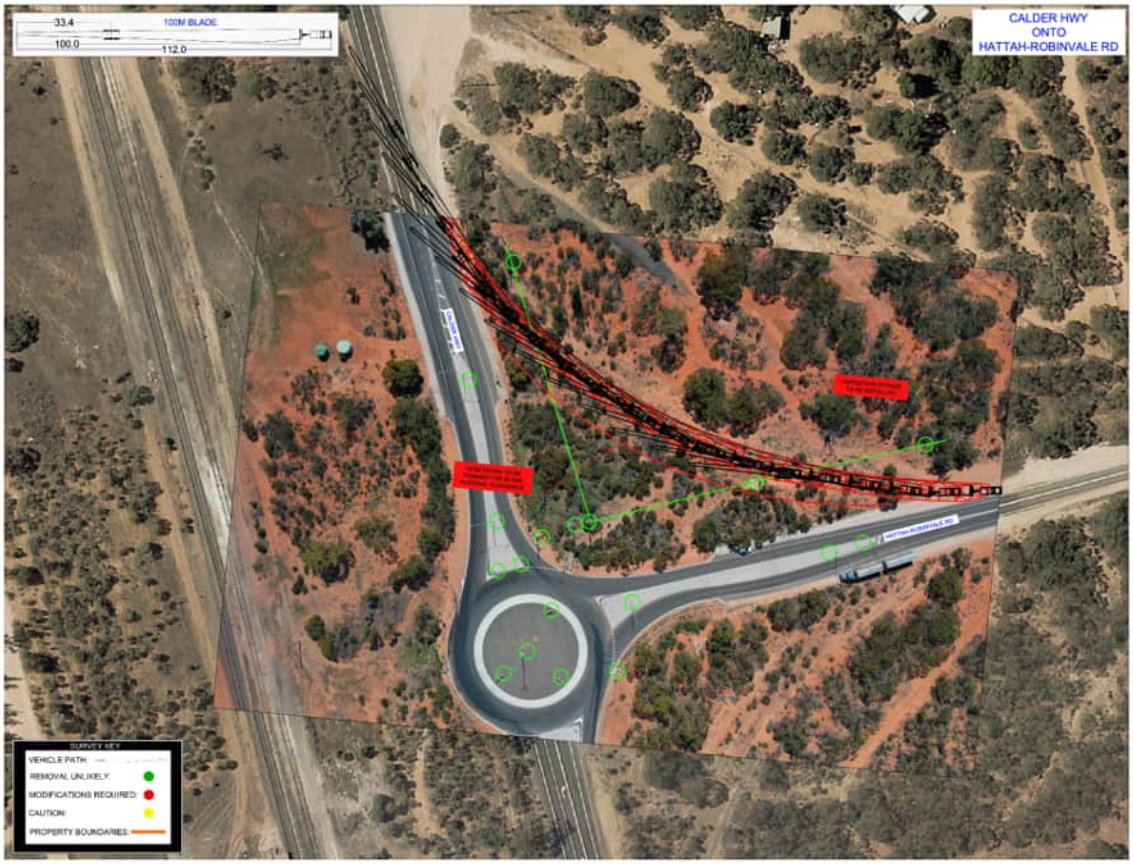


Figure 17 - Calder Highway onto Hattah-Robinvale Road, Vic.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/Z6zEDLCq71fpPZU27

PROCEDURE: Left hand turn at the roundabout

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. New bypass road to be installed, vegetation removed and trimmed as required. Overhead conductor clearance to be confirmed.

527.7 Km's: Hattah-Robinvale Road onto Robinvale-Sea Lake Road at Bannerton, Vic.

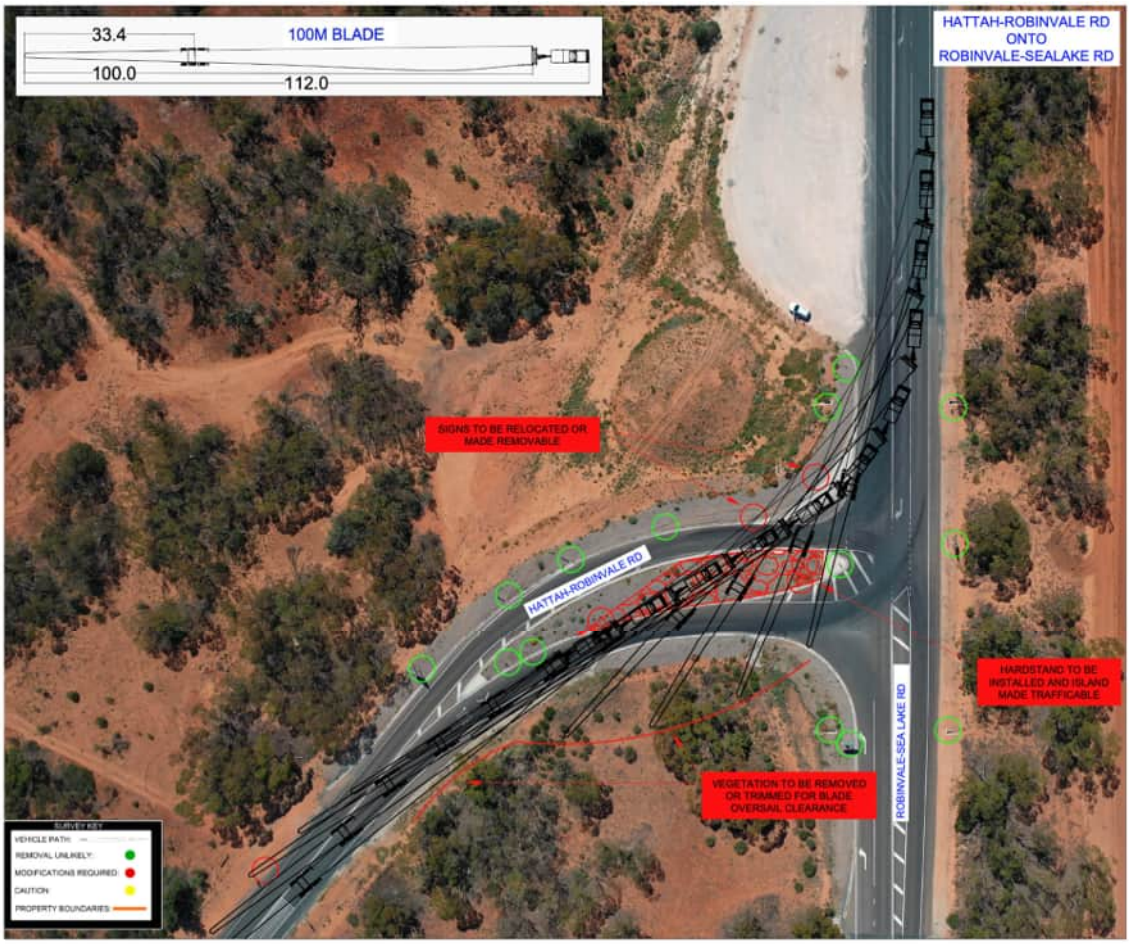


Figure 18 - Hattah-Robinvale Road onto Robinvale-Sea Lake Road, Vic.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/4FwG4Lh1Qr95TX1t9

PROCEDURE: Left hand turn

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. Hardstand is required on the centre island and 6x signs will need to be made removable. Delineators made removable, Vegetation trimmed as required.

546.00 Km's: Murray Valley Highway onto Sturt Highway at Euston, NSW.

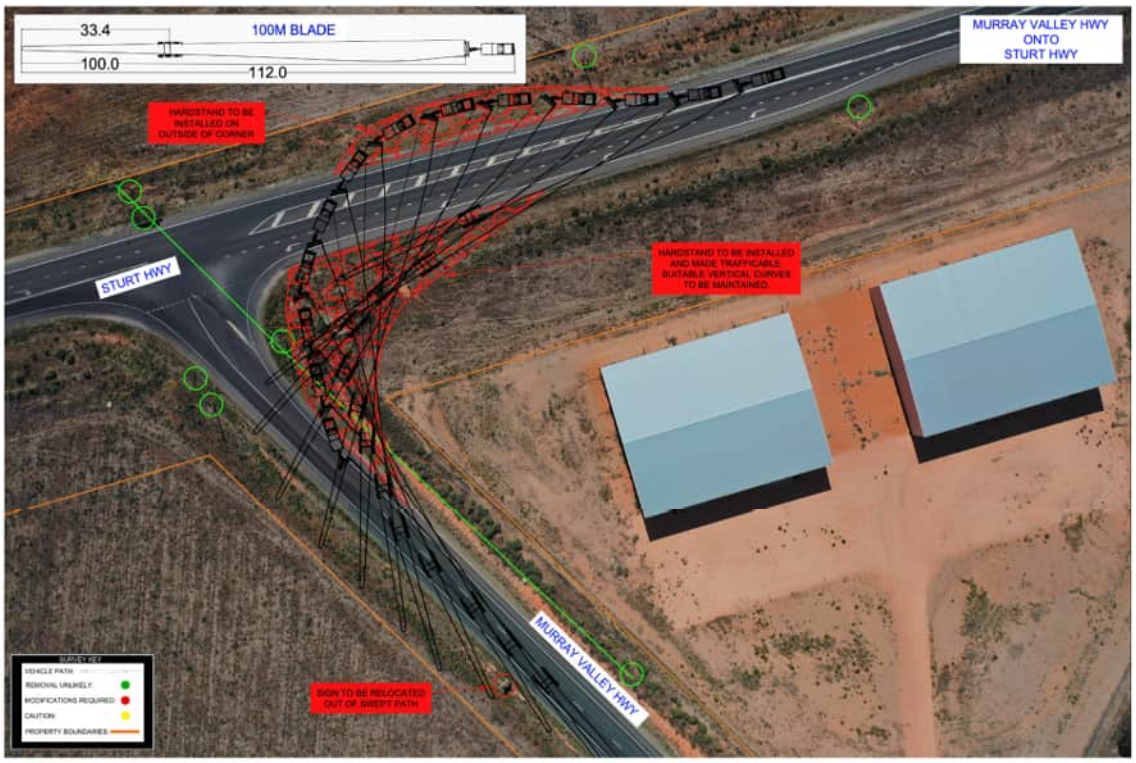


Figure 19 - Murray Valley Highway onto Sturt Highway, NSW.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/rnhvnjnN6VkAWX3eA

PROCEDURE: Right hand turn

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. This is a very tight corner that cuts back on itself. A large amount of hardstand is required. The new alignment will need a lot of fill to bring it level with the highway.

623.70 Km's: Right hand bend on Sturt Highway at Balranald, NSW.

Option 1:



Figure 20 –Sturt Highway at Balranald, NSW.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/xve4ZgbuRkqqPvVr7

PROCEDURE: Right hand turn

COMMENTS: This path requires landholder permission and significant work to be undertaken. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS:

A large area of hardstand will be required on inside of corner. Light poles, trees and signs to be removed from swept path. Median strips to be removed and replaced with painted lines and made trafficable.

Option 2:



Figure 21 –Sturt Highway at Balranald, NSW.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/xve4ZgbuRkqqPvVr7

PROCEDURE: Right hand turn

COMMENTS: This path requires landholder permission and significant work to be undertaken. Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS:

Roadway/hardstand to be installed on outside of corner. Light poles, trees and signs to be removed from swept path. Median strips to be removed and replaced with painted lines and made trafficable.

625.00 Km's: Sturt Highway onto Mallee Highway at Balranald, NSW.

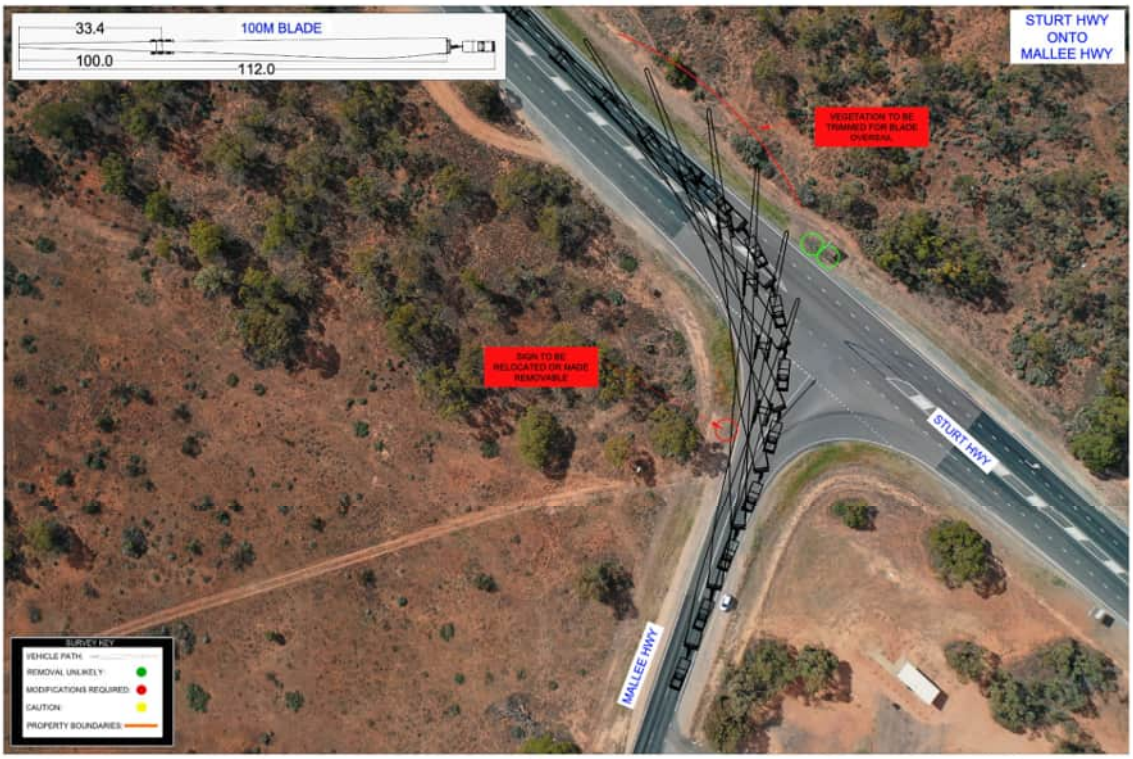


Figure 22 - Sturt Highway onto Mallee Highway at Balranald, NSW.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/sUqgHV9PKpztyi5g9

PROCEDURE: Right hand turn onto the Mallee Highway

COMMENTS: 1x sign will need to be made removable. No issues with this corner otherwise.

Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warm all traffic.

ROAD MODIFICATIONS: Yes, a minor amount of work is required.

636.80 Km's: Mallee Highway onto Balranald Road at Yanga, NSW.

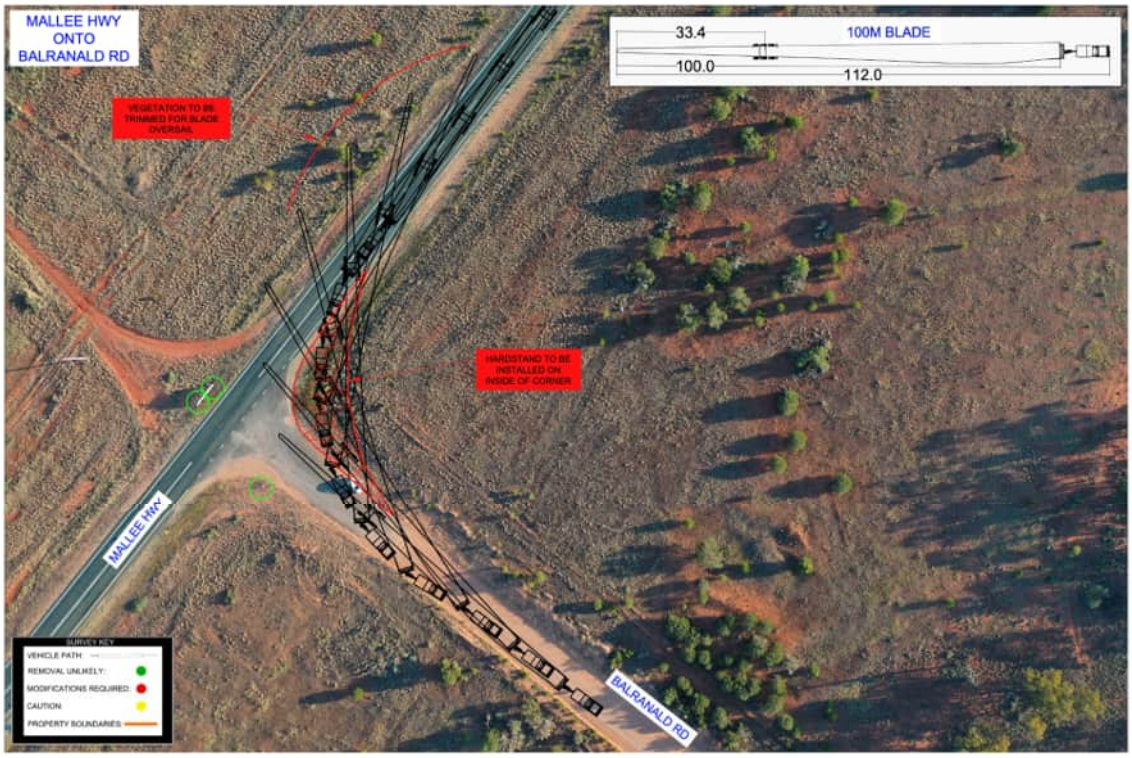


Figure 23 - Mallee Highway onto Balranald Road at Yanga, NSW.



Figure 24 - Low Angle Shot, Mallee Highway onto Balranald Road at Yanga, NSW.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/LvawNfJ77rM3pQdAA

PROCEDURE: Left hand turn

COMMENTS: An area of hardstand is required on the inside of the corner.

Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warm all traffic.

ROAD MODIFICATIONS: Yes, a moderate amount of work is required.

645.80 Km's: Balranald Road onto Arundel Road and eastern site entrances at Kayalite, NSW.



Figure 25 - Balranald Road onto Arundel Road and eastern site entrances at Kayalite, NSW.



Figure 26 - Low Angle Shot, Balranald Road onto Arundel Road and eastern site entrances at Kayalite, NSW.



Figure 27 - Aerial shot of surrounding landscape, NSW.



Figure 28 - Typical section of road along Balranald Road, NSW.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/bwFVKmM2PLJrJLoJ8

PROCEDURE: Right hand turn

COMMENTS: Some vegetation may need to be trimmed/removed on the inside and outside of this corner. The eastern site entrances are proposed in this location. The land is very flat with limited vegetation. Client to provide adequate swept path for the blade to enter site.

Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warm all traffic.

ROAD MODIFICATIONS: Yes, a minor amount of work is required.

659.00 Km's: Balranald Road into western site entrances at Moolpa, NSW.



Figure 29 - Proposed Western Site Entrance, NSW.



Figure 30 - Proposed Western Site Entrance, NSW.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/H89zRQMFgqkXDHvE9

PROCEDURE: Left hand bend to continue on the Newell Highway

COMMENTS: The western site entrances are proposed in this location. As with the eastern entrances the land is very flat with limited vegetation. Client to provide adequate swept path for the blade to enter site.

ROAD MODIFICATIONS: Yes, a minor amount of work is required.

9.0 Route 1: Rail crossing conflicts

01 Eastern parade, Port Adelaide
GPS: https://maps.app.goo.gl/GS6qo8BNQJDNASDn6

Type: Level crossing
Asset Owner: ARTC
Line: Dry Creek-Port Flat
LXM ID: 1887
Operational: Yes
Maximum width clearance: 8.5 Metres
Conflict: Non



Figure 31: Eastern Parade rail crossing

02 Millewa Road, Red Cliffs
GPS: https://maps.app.goo.gl/TWyVPzxqUdxbLpwx8

Type: Level crossing
Asset Owner: V-Line
Line: TBC
LXM ID: TBC
Operational: Yes
Maximum width clearance: 9.8 Metres
Conflict: Yes. New corridor for the blades will be required.



Figure 32: Millewa Road rail crossing

10.0 Route 1 Conclusion

After studying all options and undertaking a route survey, this route in its current condition will require a major number of upgrades before it could be deemed suitable for transporting the proposed components.

The following are the key points that need to be taken into consideration, if the project moves forward with this route.

SWEPT PATH:

- There are numerous sections along the route that need major work to allow a blade of this size through.
- The corners that we consider will need significant work and should be investigated early in the planning stages to avoid delays or rejections are:
  - The right hand turn from Millewa Road onto the Calder Highway at Red Cliffs
  - The right hand turn from Murray Valley Highway onto the Sturt Highway at Euston
  - The right-hand bend on the Sturt Highway at Balranald.
  - Initial consultation with relevant road and rail authorities within SA, VIC and NSW have commenced as apart of the EIS process

OVERHEAD STRUCTURES: (5.2 metres maximum loaded height)

- The lowest structures are the overpasses along the Northern Expressway. The lowest of these has a clearance of 5.2 metres.
- Loads higher than 5.2 metres cannot use this route and will need to travel along route 3 (high load route)

OVERHEAD UTILITIES:

- This route will need to be checked by an authorised scoping company. It is likely that a route of at least 5.6 metres is required for this project.

BRIDGES:

- Majority of the bridges have been used previously for similar loads so it is expected they will be ok. A bridge assessment will still be required.

RAIL ASSETS:

- There are a number of rail overbridges and crossings on route that will require approval from authorities before loads can access the routes.
- The corner onto the Calder Highway at Red Cliffs requires a new level rail crossing for the blade trailer. This will need to be discussed with the authorities to determine if it’s achievable.

VEGETATION:

- The route requires a moderate amount of vegetation clearing at various locations.

PAVEMENT:

- The Pavement on all roads have adequate highway pavement up until Balranald Road.
- Balranald Road is a gravel road of varying quality. The road will need to be graded before deliveries commence and regular grading will be required over the project delivery period. The road may become unusable in wet conditions which will impact delivery schedules. The average width is 8m so not a concern.

ROADWORKS:

- The project will need to start discussions with government authorities at least 18 months prior to turbine transport to understand if the project would conflict with any upcoming roadworks. Once a Transport Management Plan “TMP” has been approved for the transport of the turbines, then the exact movement dates need to be communicated with all relevant authorities to make all road stakeholders are aware of the scheduled movements for each day.
- The project will need to regularly check on any new upgrades not listed in the report. If upgrades have taken place on a section of route after this report has been completed, then a swept path study would need to be undertaken on that section of road to confirm that it can still be used.

COMPONENTS THAT WOULD USE ROUTE 1:

- Blades.

11.0 Route 2 Study: Port Adelaide SA to Junction Rivers Windfarm NSW Via Mildura

COMPONENTS: Smaller components with a **Max loaded height 5.2 metres**

DISTANCE: 610 kilometres

GPS LINK: https://maps.app.goo.gl/DDCP2zgjjieWsGkE8

VIA: Ocean Steamers Rd, Eastern Parade, Port River Exy (A9), North South Motorway (M2), Northern Expy, Sturt Hwy (A20), Kingston Rd, Hwy (B55), Karoonda Hwy, Bookpurnong Rd, Stanitzki Rd, Sturt Hwy, Seventeenth St, Benetook Ave, Seventh St, Sturt Hwy, Yanga Way, Balranald Road.

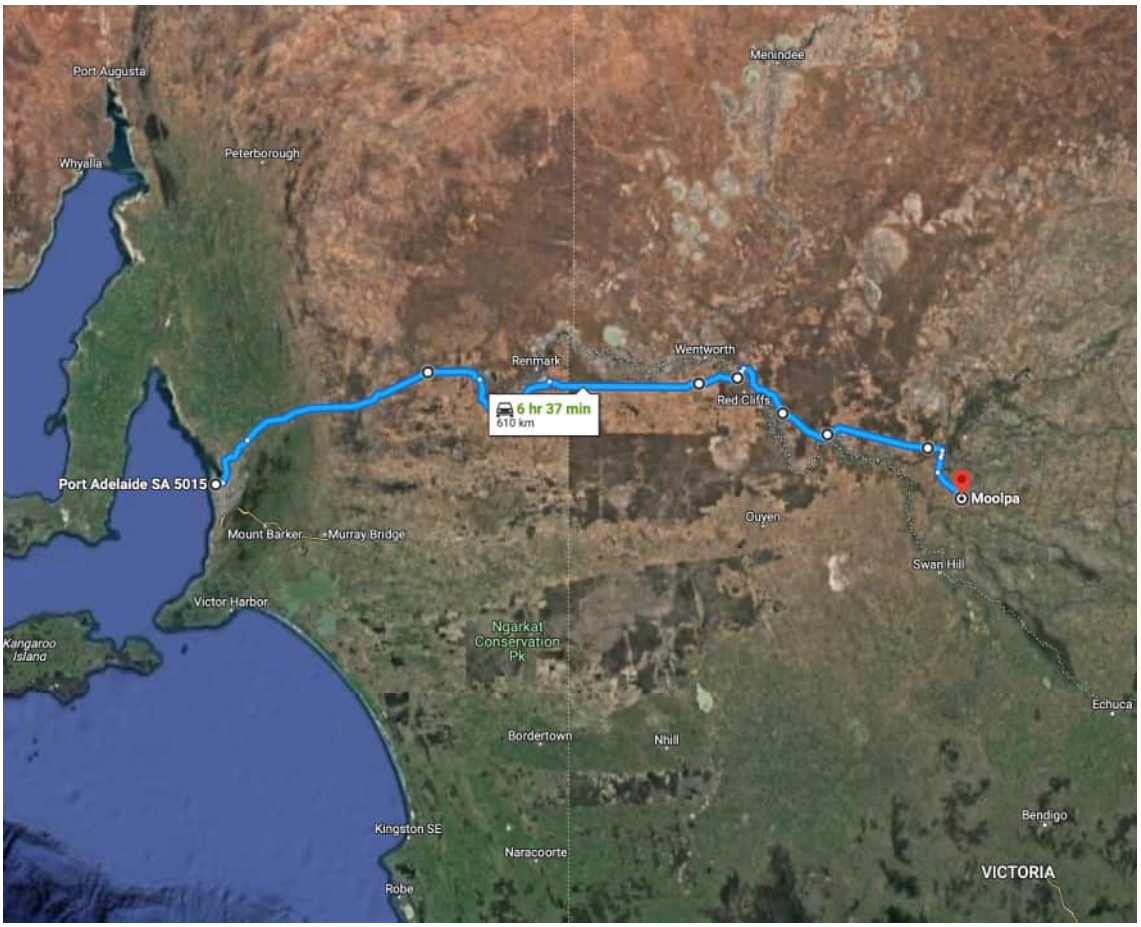


Figure 33 - Route 2

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

REX J ANDREWS
ENGINEERED TRANSPORTATION

KEY	
PINCH POINT	
CAUTION	
EMERGENCY PARKING	

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
0.0	Port Adelaide SA	Intersection of Ocean Steamers Rd and Eastern Pde GPS Link: https://goo.gl/maps/RMGe61BrvczTbEQR8	9.9 metres wide at gate	Slight right hand turn	No problems with this section of road.
0.2	Port Adelaide, SA	Eastern Parade over rail crossing GPS Link: https://goo.gl/maps/UfZfLvNDkKxRyTed9	Length: 80.0 metres Width: 7.0 metres Height: N/A	Travel directly ahead	Approval required from Rail network provider before crossing this structure. Spotter to Guide load through this pinchpoint.
0.75	Port Adelaide SA	Eastern Parade onto Port River Expressway GPS Link: https://goo.gl/maps/ora7XGzZgv1zLN3v6	80 metres	Left Hand Merge	No problems with this section of road.
5.65	Dry Creek SA	Port River Expressway onto North-South Motorway GPS Link: https://goo.gl/maps/tnXSxEvy2zhyWHnLA	120 metres	Left Hand merge	No problems with this section of road.
21.05	Burton SA	North-South Mwy onto Northern Expy, Sturt Hwy GPS Link: https://goo.gl/maps/23zth7ZxmiDCFotY7	120 metres	Left hand bend	No problems with this section of road.
21.05 to 42.6	Burton to Gawler SA	Northern Expressway GPS Link: https://goo.gl/maps/GbEjYZ81FUAdJh4Q7	Bridge heights: 5.2 metres clearance	Travel directly ahead	Loads are **not to exceed 5.2** metres in height on this section of road. NOTE: Vehicles that exceed a loaded height of 5.2 metres are to detour via Two Wells as per the following link. See route survey 3 for details. https://goo.gl/maps/mS6AuxPmuEHyHzca9
42.6	Gawler SA	Northern Expressway onto Sturt Highway GPS Link: https://goo.gl/maps/cG4yPULRZKy4V73h9	120 metres	Travel directly ahead	No problems with this section of road.
45.0	Gawler SA	Sturt Highway under Redbanks Road GPS Link: https://goo.gl/maps/n2aHh6MiwhyCeMRH9	Bridge height: 5.2 metres clearance	Travel directly ahead	Loads are **not to exceed 5.2** metres in height on this section of road. NOTE: Vehicles that exceed a loaded height of 5.2 metres are to detour via Two Wells as per the following link. See route survey 3 for details. https://goo.gl/maps/mS6AuxPmuEHyHzca9

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

REX J ANDREWS
ENGINEERED TRANSPORTATION

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
45.0	Nuriootpa SA	Sturt Highway under Sir Condor Laucke Way GPS Link: https://goo.gl/maps/J2DaymuDAmZK2PYs8	Bridge height: LHS: 6.15 Centre: 5.8m RHS: 5.6	Travel directly ahead	Loads over 5.6m must stay as far left as possible under this structure. Loads exceeding 6.0m will need to stop and lower to 6.0 metres to travel under this structure. This is the lowest structure on the route without a bypass option.
132.05	Blanchetown SA	Sturt Highway GPS Link: https://goo.gl/maps/fQvt31Kceoq	100 metres long 10.0 metres wide	Left hand merge	Overnight parking at BP service centre
208.75	Kingston on Murray SA	Sturt Highway onto Kingston Road GPS Link: https://goo.gl/maps/cvafMBJpqWNRudqp8	110 metres	Right Hand Turn	No problems with this section of road.
244.3	Loxton SA	Kingston Road onto Karoonda Hwy GPS Link: https://goo.gl/maps/QVqcneMAha8ew7Gq9	120 metres	Travel directly ahead	No problems with this section of road.
246.45	Loxton SA	Karoonda Hwy onto Bookpurnong Road GPS Link: https://goo.gl/maps/qZXFU8r5scZwGxqPA	80 metres	Second exit on Roundabout	No problems with this section of road.
251.25	Loxton North SA	Bookpurnong Road GPS Link: https://goo.gl/maps/whYj2TCsTw7U5cDH9	100.0 metres long 10.0 metres wide	Left hand merge	Fatigue parking
256.35	Bookpurnong SA	Bookpurnong Road onto Stanitzki Road GPS Link: https://goo.gl/maps/4D9S2wy8wpSkWqCG8	120 metres	Right Hand Turn	No problems with this section of road.
284.45	Pike River SA	Stanitzki Road onto Sturt Hwy GPS Link: https://goo.gl/maps/QyNogMy3b9zq8MAUA	60 metres	Right Hand Turn	No problems with this section of road.
287.40	Yamba SA	Sturt Hwy GPS Link: https://goo.gl/maps/TAPWrNAcrsWGjXJJ7	150.0 metres long 10.0 metres wide	Left Hand Merge	Possible parking on correct side of the road. Fuel on incorrect side of Road- Ampol
287.50	Yamba SA	Sturt Hwy under the Big Dunlop Tyre GPS Link: https://goo.gl/maps/YLKNB6KuDyZezoQS6	Structure height: LHS: 8.5 Centre: 10.0 RHS: 8.5	Travel under the Big Dunlop Tyre	Loads move to the centre of the road under this structure.
321.80	Meringur VIC	Sturt Hwy GPS Link: https://goo.gl/maps/Tm7PCDeqxcSf6pt5A	100.0 metres long 10.0 metres wide	Left Hand Merge	Possible parking on correct side of the road.
373	Wargan VIC	Sturt Hwy GPS Link: https://goo.gl/maps/pvNeBreE9nzEY47E8	6 metres wide	Travel Directly Ahead	Road curves to the left, stay on Sturt Hwy No Issues with this section
387.10	Merrinee VIC	Sturt Hwy GPS Link: https://goo.gl/maps/2dtXF7FjyE8VTwd66	90.0 metres long 10.0 metres wide	Left Hand Merge	Possible parking on correct side of the road.
405.9	Mildura VIC	Sturt Hwy onto Seventeenth St GPS Link: https://goo.gl/maps/RLd39iU6czs9mWjZA	6 metres wide	Right Hand Turn	No problems with this section of road.
407.9	Mildura VIC	Seventeenth St onto Benetook Ave GPS Link: https://goo.gl/maps/zQWVB95NUiss9sdJ8	6 metres wide	First Exit on Round-about	Left turn at Round-about

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

REX J ANDREWS
ENGINEERED TRANSPORTATION

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
409.3	Mildura VIC	Benetook Ave GPS Link: https://goo.gl/maps/mCqLEb19oYNkdqrX6	6 metres wide	Second Exit on Round-about	Travel Straight through round-about
410.6	Mildura VIC	Benetook Ave GPS Link: https://goo.gl/maps/FazFiKo4eUykUqDf9	6 metres wide	Second Exit on Round-about	Travel Straight through round-about
411.9	Mildura VIC	Benetook Ave GPS Link: https://goo.gl/maps/GskD21Q6SSqZM6y99	6 metres wide	Second Exit on Round-about	Travel Straight through round-about
413.3	Mildura VIC	Benetook Ave GPS Link: https://goo.gl/maps/QXvR9ZDk57M9zeba8	6 metres wide	Second Exit on Round-about	Travel Straight through round-about. If loads exceed 26 metres in overall length or 4.5 metres in width, Rail clearance will be required.
414.2	Mildura VIC	Benetook Ave onto Seventh St E GPS Link: https://goo.gl/maps/BnvS1sBNeMyLJFTz7	6 metres wide	Left Hand Turn	Left Hand Sweeping Bend
415.5	Mildura VIC	Seventh st E onto Sturt Hwy GPS Link: https://goo.gl/maps/DCWU9cDTpnWQFpudA	6 metres wide	Third Exit on Round-about	Right Hand Turn at round-about
417.7	Buronga NSW	Sturt Hwy GPS Link: https://goo.gl/maps/eSH3JMoHGAk221YVA	6 metres wide	Second Exit on Round-about	Travel right at round-about
441.4	Paringi NSW	Sturt Hwy GPS Link: https://goo.gl/maps/aF7DrHsfBEBnzMBZ8	90.0 metres long 10.0 metres wide	Left Hand Merge	Possible parking on correct side of the road.
493.6	Euston NSW	Sturt Hwy GPS Link: https://goo.gl/maps/4WoDVv7TwnbDad6z5	6 metres wide	First Exit on Round-about	Travel left at round-about
561.0	Meilman East area, NSW	Sturt Highway GPS Link: https://maps.app.goo.gl/sKYv5MQsEdXDrQGw9	280.0 metres long 8.0 metres wide	Merge right	Suitable parking for the blades on the incorrect side of the road.
573.9	Balranald NSW	Sturt Hwy (market st) onto Sturt Hwy GPS Link: https://goo.gl/maps/xve4ZgbuRkqqPvVr7	6 metres wide	Right Hand Turn	No problems with this section of road.
575.2	Balranald NSW	Sturt Hwy onto Mallee Hwy (Yanga Way) GPS Link: https://goo.gl/maps/sUqqHV9PKpztyi5g9	8 metres wide	Right Hand Turn	No problems with this section of road.
587.0	Yanga NSW	Yanga Way onto Balranald Rd GPS Link: https://goo.gl/maps/LvawNfJ77rM3pQdAA	8 metres wide	Left Hand Turn	No problems with this section of road.
596.0	Kyalite NSW	Balranald Rd onto Arundel Rd GPS Link: https://goo.gl/maps/bwFVKmM2PLJrJLoJ8	8 metres wide	Site Entrances	Client to provide adequate swept path for the blade to enter site.
610.0	Moolpa NSW	Balranald Rd into western site entrances GPS Link: https://goo.gl/maps/H89zRQMFqqkXDHvE9	8 metres wide	Site Entrances	Client to provide adequate swept path for the blade to enter site.

12.0 Route 2: Rail crossing conflicts

01 Eastern parade, Port Adelaide
GPS: https://maps.app.goo.gl/GS6qo8BNQJDNASDn6

Type: Level crossing
Asset Owner: ARTC
Line: Dry Creek-Port Flat
LXM ID: 1887
Operational: Yes
Maximum width clearance: 8.5 Metres
Conflict: Non



Figure 34: Rail crossing on Eastern Parade at Port Adelaide

02 Benetook Avenue, Mildura
https://maps.app.goo.gl/x8MGw2pv4MxFe96s9

Type: Level crossing
Asset Owner: V-Line
Line: TBC
LXM ID: TBC
Operational: Yes
Maximum width clearance: 7.5 Metres
Conflict: Non



Figure 35: Rail crossing on Benetook Avenue at Mildura

13.0 Route 2 Conclusion

After studying all options and undertaking a route survey, this route is suitable in its current condition for transporting the proposed components.

The following are the key points that need to be taken into consideration, if the project moves forward with this route.

SWEPT PATH:

- The longest combination that can travel along this route without upgrades is **40 metres overall length.**
- There are numerous roundabouts in Mildura that will be tight but achievable for a load of this length.

OVERHEAD STRUCTURES: (5.2 metres maximum loaded height)

- The lowest structures are the overpasses along the Northern Expressway. The lowest of these has a clearance of 5.2 metres.
- Loads higher than 5.2 metres cannot use this route and will need to travel along route 3 (high load route)

OVERHEAD UTILITIES:

- This route will need to be checked by an authorised scoping company. It is likely that a route of at least 6.5 metres is required for this project.

BRIDGES:

- Majority of the bridges have been used previously for similar loads so it is expected they will be ok. A bridge assessment will still be required.

RAIL ASSETS:

- There are a number of rail overbridges and crossings on route that will require approval from authorities before loads can access the routes.
- The corner onto the Calder Highway at Red Cliffs requires a new level rail crossing for the blade trailer. This will need to be discussed with the authorities to determine if it's achievable.

PAVEMENT:

- The Pavement on all roads have adequate highway pavement up until Balranald Road.
- Balranald Road is a gravel road of varying quality. The road will need to be graded before deliveries commence and regular grading will be required over the project delivery period. The road may become unusable in wet conditions which will impact delivery schedules. The average width is 8m so not a concern.

COMPONENTS THAT WOULD USE ROUTE 2:

- Loads under 5.2 metres in height which are usually the Hubs, Nacelles, Generators.
- Transformers and switchrooms if they don't exceed 5.2 metres in height. Bridge capacity would still need to be checked for the weight of the transformers.
- Standard loads and containers

14.0 Route 3 Study: Port Adelaide SA to Junction Rivers Windfarm NSW, High Load Route - Option 1

COMPONENTS: Larger items with a **Max loaded height 6.4 metres**

DISTANCE: 641 kilometres

GPS LINK: https://maps.app.goo.gl/t9y1Q6n8RGWVi8s99

VIA: Via Ocean Steamers Road, Eastern Parade, Port River Expressway, Northern Connector, Port Wakefield Highway "A1", Mallala Road, Old Port Wakefield Road, Gawler Rd, Two Wells Rd, Wilkinson Road, Hatcher Road, Oates Road, Redbanks Road, Mudla Wirra Road, College Road, Cliff Road, Gartrell Street, Roseworthy, Thiele Hwy, East Terrace, Truro Rd, Sturt Hwy, Heinrich Road, Drogemuller Road, Kingston Rd, Karoonda Hwy, Bookpurnong Rd, Stanitzki Rd, Sturt Hwy, Seventeenth St, Benetook Ave, Seventh St, Sturt Hwy, Kidman Way, Yanga Way, Balranald Road.

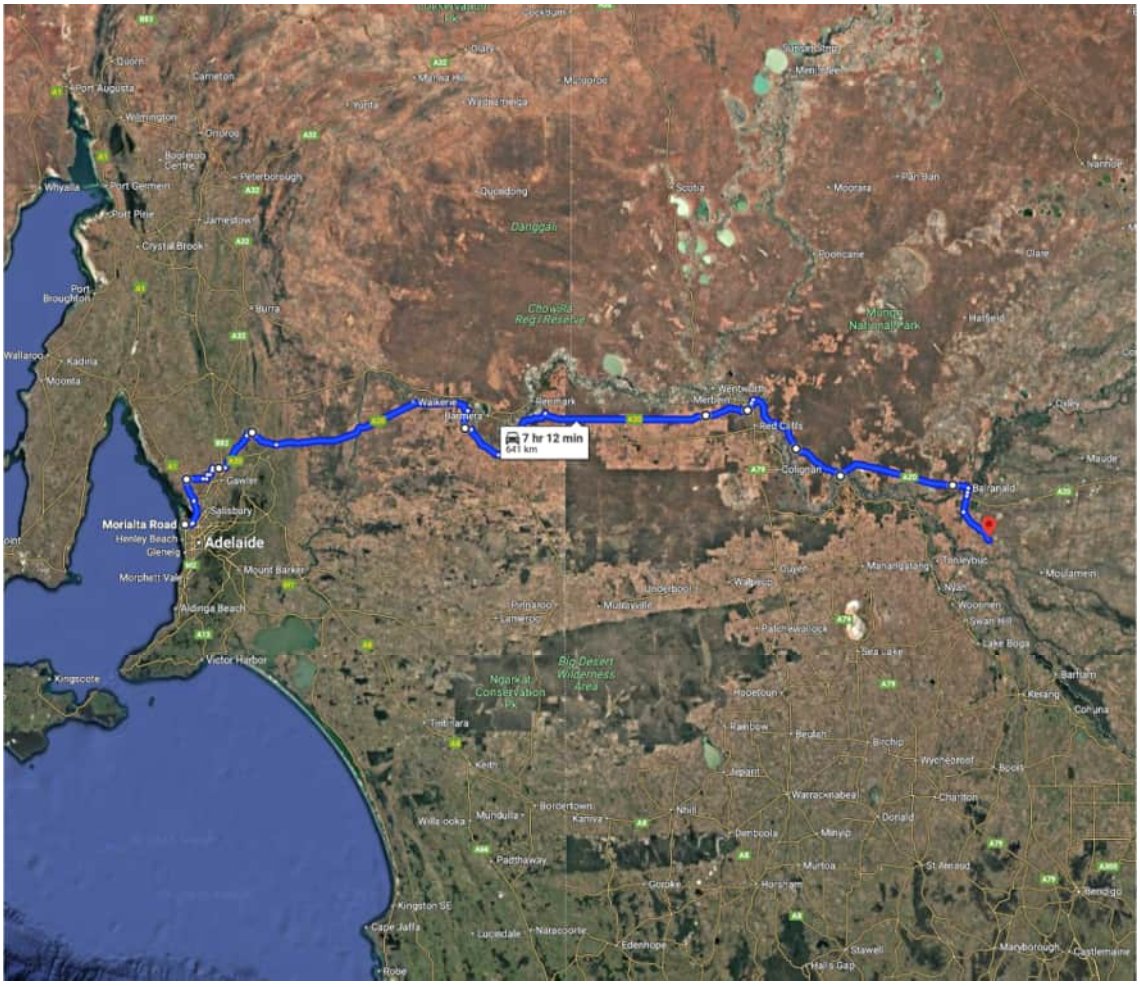


Figure 36 - Route 3

ROUTE INDEX

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

REX J ANDREWS
ENGINEERED TRANSPORTATION

KEY	
ROAD MODIFICATION	
CAUTION	
EMERGENCY PARKING	

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
0.0	Port Adelaide, SA	Port storage area across Ocean Steamers Rd and onto eastern Parade GPS Link: https://goo.gl/maps/tK6JqG1AjdMDqqSs5	Length: 75.0 metres Width: 8.0 metres Height: N/A	Drive out of storage area and cross to the incorrect side of Eastern Parade	No problems with this section of road.
0.2	Port Adelaide SA	Eastern Parade over rail crossing GPS Link: https://goo.gl/maps/UfZfLvNDkKxRyTed9	Length: 80 metres Width: 10.0 metres Height: N/A	Travel directly ahead	Approval required from Rail network provider before crossing this infrastructure. Spotter to Guide load through this pinchpoint.
0.9	Gilman SA	The Eastern Parade onto the Port River Expressway GPS Link: https://goo.gl/maps/mPFZDKYzewGxvm8S8	Length: 70.0 metres Width: 10.9 metres Height: N/A	Left hand turn	No problems with this section of road.
0.9 to 4.3	Gilman to Wingfield SA	Port River Expressway GPS Link: https://goo.gl/maps/rpFDwXM41ACYr2Vv6	Length: 100.0 metres Width: 10.0 metres Height: 6.2 metres	Travel directly ahead.	Loads over 6.2 metres will need to travel over the top of Hansen Road.
4.3	Wingfield SA	Port River Expressway onto Northern Connector GPS Link: https://goo.gl/maps/BtCb3VPGq3yqpCt57	Length: 100.0 metres Width: 8.0 metres Height: 6.5 metres	Left hand bend	No problems with this section of road.
4.3 To 19.2 Km's	Wingfield to Waterloo Corner SA	Northern Connector GPS Link: https://goo.gl/maps/onzFMbVb3PpaJq52A	Length: 100.0 metres Width: 10.5 metres Height: 6.5 metres	Travel directly ahead	No problems with this section of road.
19.8	Waterloo Corner SA	Northern Connector onto Port Wakefield Highway "A1" GPS Link: https://goo.gl/maps/ycLGFDqzQ8idciv47	Length: 100.0 metres Width: 8.0 metres Height: N/A	Right hand merge onto A1	No problems with this section of road.
33.4	Two wells SA	Port Wakefield Highway "A1" onto Mallala Road GPS Link: https://goo.gl/maps/U78MZSBL43D2	Length: 50 metres Width: 8.0 metres Height N/A	Right hand turn	No problems with this section of road
33.7	Two wells SA	Mallala Road onto Old Port Wakefield Road GPS Link: https://goo.gl/maps/CzpYPwc9cBM2	Length: 50 metres Width: 8.0 metres Height N/A	Right hand turn	Centre island to be made trafficable.
33.9	Two wells SA	Old Port Wakefield Road onto Gawler Road GPS Link: https://goo.gl/maps/TfEJNdGpFP12	Length: 50 metres Width: 8.0 metres Height N/A	Left hand turn	No problems with this section of road

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

REX J ANDREWS
ENGINEERED TRANSPORTATION

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
34.4	Two wells SA	Gawler Road over rail crossing GPS Link: https://maps.app.goo.gl/QUe9rFL1eXjhiNEb8	Length: N/A Width: 10.0 metres Height: N/A	Travel directly ahead	Approval required from Rail network provider before crossing this infrastructure.
44.6	Gawler River SA	Gawler Road onto Two Wells Road GPS Link: https://goo.gl/maps/ijQJCjKW6uH2	8.0 metres wide	Travel directly ahead	No problems with this section of road
46.8	Gawler River SA	Two Wells Road onto Wilkinson Road GPS Link: https://goo.gl/maps/6DeWPk5rKF32	Length: 35 metres Width: 8.0 metres Height N/A	Left hand turn	Hardstand to be added prior and after the corner.
49.3	Kangaroo Flat SA	Wilkinson Road onto Hatcher Road GPS Link: https://goo.gl/maps/XQ8cNtqzQUG2	Length: 35 metres Width: 8.0 metres Height N/A	Left hand turn	No problems with this section of road
51.3	Kangaroo Flat SA	Hatcher Road onto Oates Road GPS Link: https://goo.gl/maps/qXcjdwDzNxCDwL8AA	Length: 60 metres Width: 8.0 metres Height N/A	Left hand bend	No problems with this section of road
54.5	Kangaroo Flat SA	Oates Road onto Redbanks Road GPS Link: https://goo.gl/maps/tVCv2BFmnZ72	Length: 40 metres Width: 8.0 metres Height N/A	Right hand turn	Hardstand to be added to the outside of the corner.
55.1	Kangaroo Flat SA	Redbanks Road onto Mudla Wirra Road GPS Link: https://goo.gl/maps/2yC31AASRxM2	Length: 35 metres Width: 8.0 metres Height N/A	Left hand turn	No problems with this section of road
56.5	Roseworthy SA	Mudla Wirra Road onto College Road GPS Link: https://goo.gl/maps/bu28YmqsfDP2	Length: 40 metres Width: 8.0 metres Height N/A	Right hand turn	Vegetation to be trimmed.
60.8	Roseworthy SA	College Road onto Cliff Road GPS Link: https://goo.gl/maps/n6BLSsACqHT2	Length: 40 metres Width: 8.0 metres Height N/A	Left hand turn	If loads exceed an overall length of 40 metres, there will need to be some hardstand added to this intersection.
61.4	Roseworthy SA	Cliff Road onto Gartrell Street GPS Link: https://goo.gl/maps/UGN6vnZ8DDG2	9.0 Metres into 9.0 metres	Right hand turn	No problems with this section of road
62.5	Roseworthy SA	Gartrell Street onto Roseworthy Road GPS Link: https://goo.gl/maps/Py6YuP9aWyH2	Length: 80 metres Width: 9.0 metres Height N/A	Left hand bend	No problems with this section of road
64.8	Kingsford SA	Roseworthy Road onto Thiele Hwy GPS Link: https://goo.gl/maps/GpH6AaL4yS4exER47	Length: 80 metres Width: 9.0 metres Height N/A	Left hand turn	No problems with this section of road
88.3	Kapunda SA	Thiele Hwy onto East Terrace GPS Link: https://goo.gl/maps/vqgkXWMZMhhpCgAK9	Width: 6.5 metres	Right hand turn	No problems with this section of road

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

REX J ANDREWS
ENGINEERED TRANSPORTATION

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
88.3 to 91.8	Kapunda SA	East Terrace GPS Link: https://maps.app.goo.gl/XEWTBkqA7q6i7FLx9	Width: 6.5 metres	Travel directly ahead on a gravel road	This section of road may need to be maintained during deliveries.
91.8	Kapunda SA	East Terrace onto Thiele Hwy GPS Link: https://goo.gl/maps/wVeWZTnSnDTAaxEs6	Length: 60 metres Width: 6.0 metres	Right hand turn	No problems with this section of road
92.0	Kapunda SA	Thiele Hwy onto Truro Rd GPS Link: https://goo.gl/maps/rupYTUbWTiDqQbLq9	Length: 55 metres Width: 6.0 metres	Right hand turn	No problems with this section of road
111.0	Truro SA	Truro Rd onto Sturt Hwy GPS Link: https://goo.gl/maps/VsQYKAe4MpcqjyYd7	Length: 55 metres Width: 10.0 metres	Left hand turn	No problems with this section of road
235.0	Kingston on Murray SA	Sturt Hwy onto Heinrich Rd GPS Link: https://maps.app.goo.gl/wMM1iMNMgJzi9d29A	Length: 60 metres Width: 10.0 metres	Right hand turn	No problems with this section of road
246.0	Yinkanie SA	Heinrich Rd onto Drogemuller Road GPS Link: https://maps.app.goo.gl/BYU3Z7yFNFk7drXR9	Length: 40 metres Width: 6.0 metres	Left hand turn	Hardstand will need to be added to this intersection.
249.0	Moorook South SA	Drogemuller Road onto Kingston Road GPS Link: https://maps.app.goo.gl/upG5FHzDxSbiy4uXD7	Length: 60 metres Width: 10.0 metres	Right hand turn	Hardstand will need to be added to this intersection.
272.0	Loxton SA	Kingston Rd onto Karoonda Hwy GPS Link: https://goo.gl/maps/pFS9uJqw6ivxmETP8	Length: 100 metres Width: 6.5 metres	Travel directly ahead	No problems with this section of road.
275.0	Loxton SA	Karoonda Hwy onto Bookpurnong Road GPS Link: https://goo.gl/maps/gZXFU8r5scZwGxqPA	Length: 80 metres Width: 7.0 metres	Second exit on Roundabout	No problems with this section of road
285.0	Bookpurnong SA	Bookpurnong Road onto Stanitzki Rd GPS Link: https://goo.gl/maps/qPjvFcCbL8mXfecF6	Length: 80 metres Width: 8.0 metres	Right Hand Turn	No problems with this section of road
313.0	Pike River SA	Stanitzki Rd onto Sturt Hwy GPS Link: https://goo.gl/maps/Kwv9FkoF8hAPpoBh7	Length: 55 metres Width: 8.0 metres	Right Hand Turn	No problems with this section of road
316.0	Yamba SA	Sturt Hwy GPS Link: https://goo.gl/maps/TAPWrNAcrsWGjXJJ7	100.0 metres long 10.0 metres wide	Left Hand Merge	Possible parking on correct side of the road. Fuel on incorrect side of Road- Ampol
316.0	Yamba SA	Sturt Hwy under the Big Dunlop Tyre GPS Link: https://goo.gl/maps/YLKNB6KuDyZezoQS6	Structure height: LHS: 8.5 Centre: 10.0 RHS: 8.5	Travel under the Big Dunlop Tyre	Loads move to the centre of the road under this structure.
350.0	Meringur VIC	Sturt Hwy GPS Link: https://goo.gl/maps/Tm7PCDeqxcSf6pt5A	100.0 metres long 10.0 metres wide	Left Hand Merge	Possible parking on correct side of the road.

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

REX J ANDREWS
ENGINEERED TRANSPORTATION

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
401.0	Wargan VIC	Sturt Hwy GPS Link: https://goo.gl/maps/pvNeBreE9nzEY47E8	6 metres wide	Travel Directly Ahead	Road curves to the left, stay on Sturt Hwy No Issues with this section
415.0	Merrinee VIC	Sturt Hwy GPS Link: https://goo.gl/maps/2dtXF7FjyE8VTwd66	90.0 metres long 10.0 metres wide	Left Hand Merge	Possible parking on correct side of the road.
434.0	Mildura VIC	Sturt Hwy onto Seventeenth St GPS Link: https://goo.gl/maps/RLd39jU6czs9mWjZA	6 metres wide	Right Hand Turn	Loads to cross to the incorrect side. Median strips will need to be made trafficable and signs relocated or made removable.
436.0	Mildura VIC	Seventeenth St onto Benetook Ave GPS Link: https://goo.gl/maps/zQWVB95NUiss9sdJ8	6 metres wide	Left hand turn	No problems with this section of road
436.0 to 442.0	Mildura VIC	Benetook Ave GPS Link: https://maps.app.goo.gl/fcBJCvQAbtr3WnCUA	5.5 metres wide and 5.5 metres in height	Travel directly ahead through 4 roundabouts and over a rail crossing.	A roundabout will need the centre filled with hardstand and temporary Bollards installed. Vegetation will need to be trimmed on sections of this road.
437.0	Mildura VIC	Benetook Ave at Sixteenth Ave GPS Link: https://goo.gl/maps/mCqLEb19oYNkdgrX6	6 metres wide	Travel directly ahead	No problems with this section of road
439.0	Mildura VIC	Benetook Ave at the Calder Highway GPS Link: https://goo.gl/maps/FazFiKo4eUykUgDf9	6 metres wide	Travel directly ahead	No problems with this section of road
440.0	Mildura VIC	Benetook Ave at Fourteenth Ave GPS Link: https://goo.gl/maps/GskD21Q6SSqZM6y99	6 metres wide	Travel directly ahead	No problems with this section of road
442.0	Mildura VIC	Benetook Ave at Eleventh Street GPS Link: https://goo.gl/maps/QXvR9ZDk57M9zeba8	5.5 metres wide	Travel directly ahead through the centre of the roundabout.	A temporary hardstand will need to be added to the centre of the roundabout. This will allow the loads a direct path across the railway crossing. Temporary bollards would need to be installed over this hardstand. If loads exceed 26 metres in overall length or 4.5 metres in width, Rail clearance will be required.
443.0	Mildura VIC	Benetook Ave onto Seventh St E GPS Link: https://goo.gl/maps/BnvS1sBNeMyLJFTz7	6 metres wide	Left Hand Turn	Left Hand Sweeping Bend
444.0	Mildura VIC	Seventh St E onto Sturt Hwy GPS Link: https://goo.gl/maps/DCWU9cDTpnWQEpudA	6 metres wide	Right hand turn	Load to cross the incorrect side of the roundabout. 2 Median strips will need to be made trafficable, and signs made removable.
446.0	Buronga NSW	Sturt Hwy roundabout at Silver City Hwy GPS Link: https://goo.gl/maps/eSH3JMoHGAk221YVA	6 metres wide	Right hand turn	Load to cross the incorrect side of the roundabout. Pilots and police assist with traffic control.

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

REX J ANDREWS
ENGINEERED TRANSPORTATION

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
467.0	Paringi NSW	Sturt Hwy GPS Link: https://goo.gl/maps/aF7DrHsfBEBnzMBZ8	90.0 metres long 10.0 metres wide	Left Hand Merge	Possible parking on correct side of the road.
522.0	Euston NSW	Sturt Hwy GPS Link: https://goo.gl/maps/4WoDVv7TwnbDad6z5	6 metres wide	Left Hand Turn	Travel left at round-about. Median strips will need to be made trafficable, and signs made removable.
535.0	Meilman East area	Sturt Highway GPS Link: https://maps.app.goo.gl/sKYv5MQsEdXDrQGw9	280.0 metres long 8.0 metres wide	Merge right	Suitable parking for the blades on the incorrect side of the road.
602.0	Balranald NSW	Sturt Hwy (Market st) onto Sturt Hwy GPS Link: https://goo.gl/maps/xve4ZgbuRkqqPvVr7	6 metres wide	Right Hand Turn	Load to cross the incorrect side of the corner. Median strips will need to be made trafficable, and signs made removable.
603.0	Balranald NSW	Sturt Hwy onto Mallee Hwy (Yanga Way) GPS Link: https://goo.gl/maps/sUqqHV9PKpztyi5g9	8 metres wide	Right Hand Turn	No problems with this section of road.
615.0	Yanga NSW	Yanga Way onto Balranald Rd GPS Link: https://goo.gl/maps/LvawNfJ77rM3pQdAA	8 metres wide	Left Hand Turn	No problems with this section of road.
626.0	Kyalite NSW	Balranald Rd onto Arundel Rd GPS Link: https://goo.gl/maps/bwFVKmM2PLJrJLoJ8	8 metres wide	Site Entrances	Client to provide adequate swept path for the blade to enter site.
641.0	Moolpa NSW	Balranald Rd into western site entrances GPS Link: https://goo.gl/maps/H89zRQMFqqkXDHvE9	8 metres wide	Site Entrances	Client to provide adequate swept path for the blade to enter site.

0.0 **Km's:** Exiting Adelaide Port



Figure 37 - Exiting Adelaide Port

PROCEDURE: Travel directly ahead from the port access gate and across Ocean Steamers Road with a slight right merge onto Eastern Parade.

GPS LINK: https://goo.gl/maps/tK6JqG1AjdMDgqSs5

COMMENTS: Spotter to guide the load through the intersection. Approval required to cross rail infrastructure.

ROAD MODIFICATIONS: No works required.

0.9 Km's: Eastern Parade onto the Port River Expressway



Figure 38 - Eastern Parade onto the Port River Expressway

PROCEDURE: Left hand turn from Eastern Parade onto the Port River Expressway.

GPS LINK: https://goo.gl/maps/mPFZDKYzewGxvm8S8

COMMENTS: The loads will travel from the correct side of Eastern Parade onto the Port River Expressway.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

33.4 Km's: A1 onto Mallala Road at Two Wells.

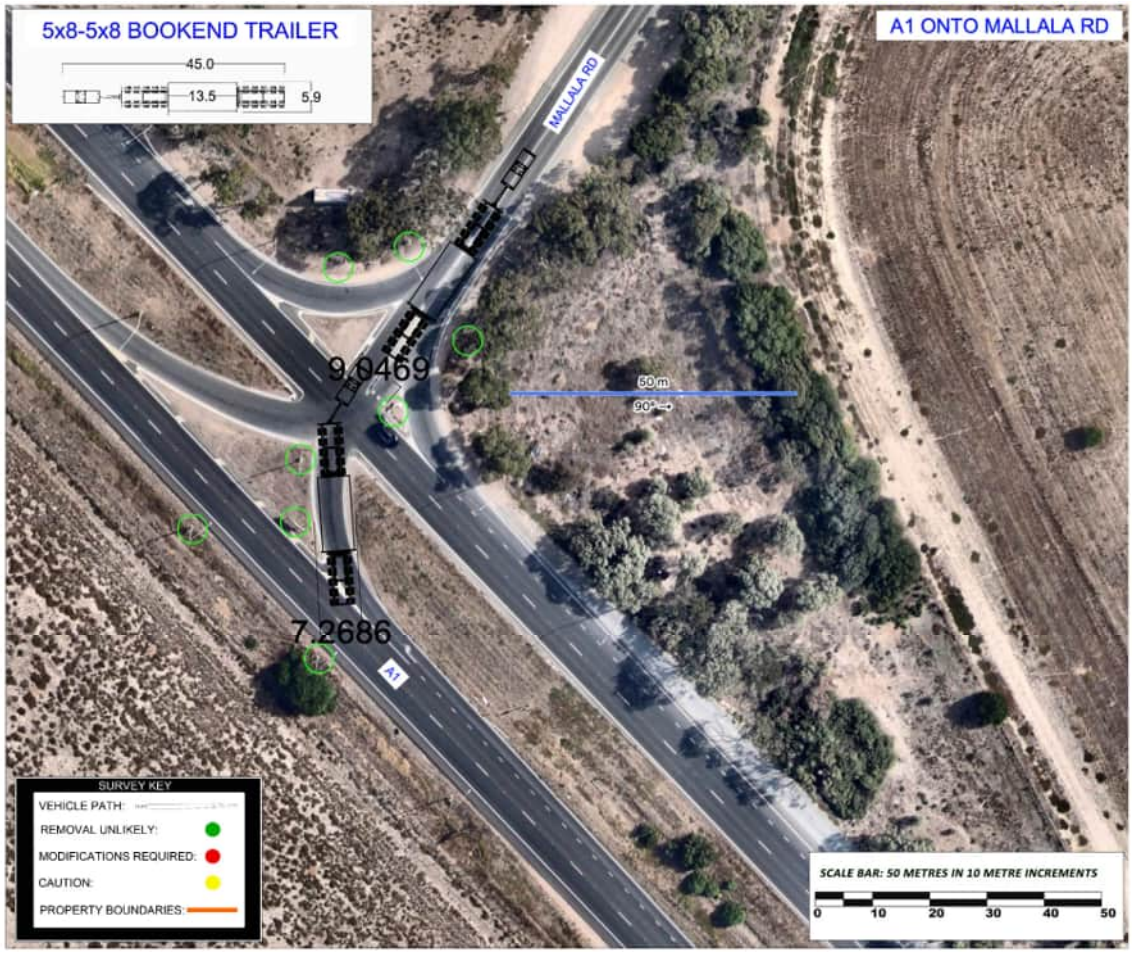


Figure 39 – A1 onto Mallala Road

PROCEDURE: Right hand turn from the A1 onto Mallala Road.
GPS LINK: https://goo.gl/maps/U78MZSBL43D2
COMMENTS: The loads will travel around the corner on the correct side of the road. Spotter to assist with this procedure.
ROAD MODIFICATIONS: No works required.

33.7 Km's: Mallala Road onto Old Port Wakefield Road at Two Wells.

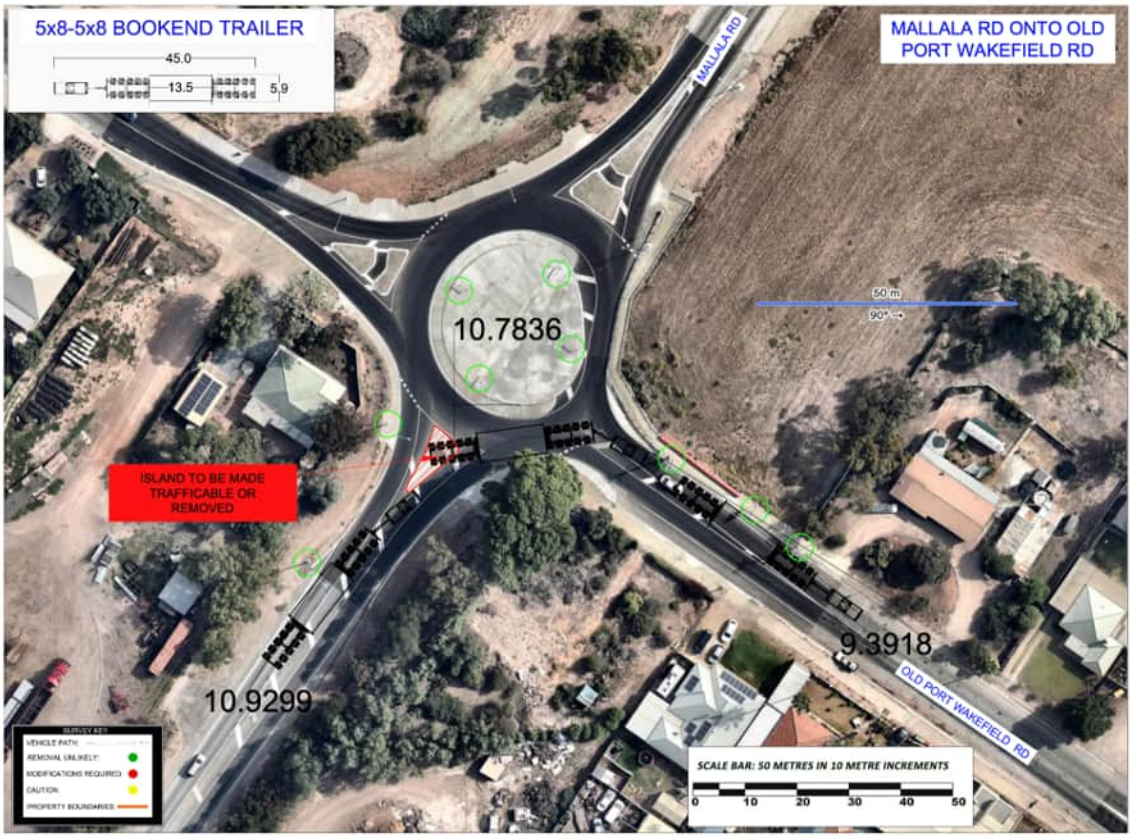


Figure 40 – Mallala Road onto Old Port Wakefield Road

PROCEDURE: Right hand turn from Mallala Road onto Old Port Wakefield Road.
GPS LINK: https://goo.gl/maps/CzpYPwc9cBM2
COMMENTS: The loads will travel around the corner on the correct side of the road. Spotter to assist with this procedure.
ROAD MODIFICATIONS: Centre island to be removed or made trafficable.

33.9 Km's: Old Port Wakefield Road onto Gawler Road at Two Wells.

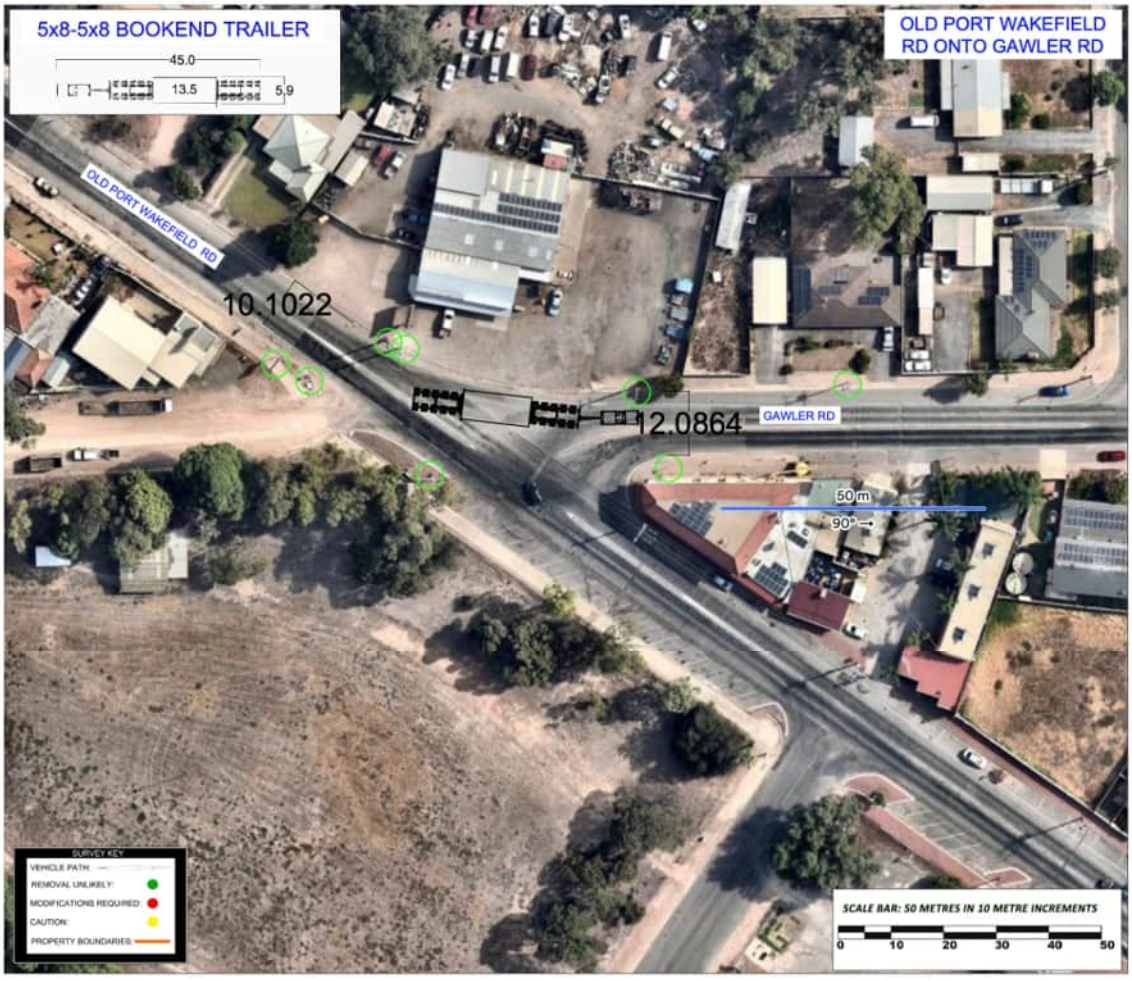


Figure 41 –Old Port Wakefield Road onto Gawler Road

PROCEDURE: Left hand turn from Old Port Wakefield Road onto Gawler Road.
GPS LINK: https://goo.gl/maps/TfEJNdGpFP12
COMMENTS: The loads will travel around the corner on the correct side of the road. Spotter to assist with this procedure.
ROAD MODIFICATIONS: No works required.

46.8 Km's: Two Wells Road onto Wilkinson Road at Gawler River.

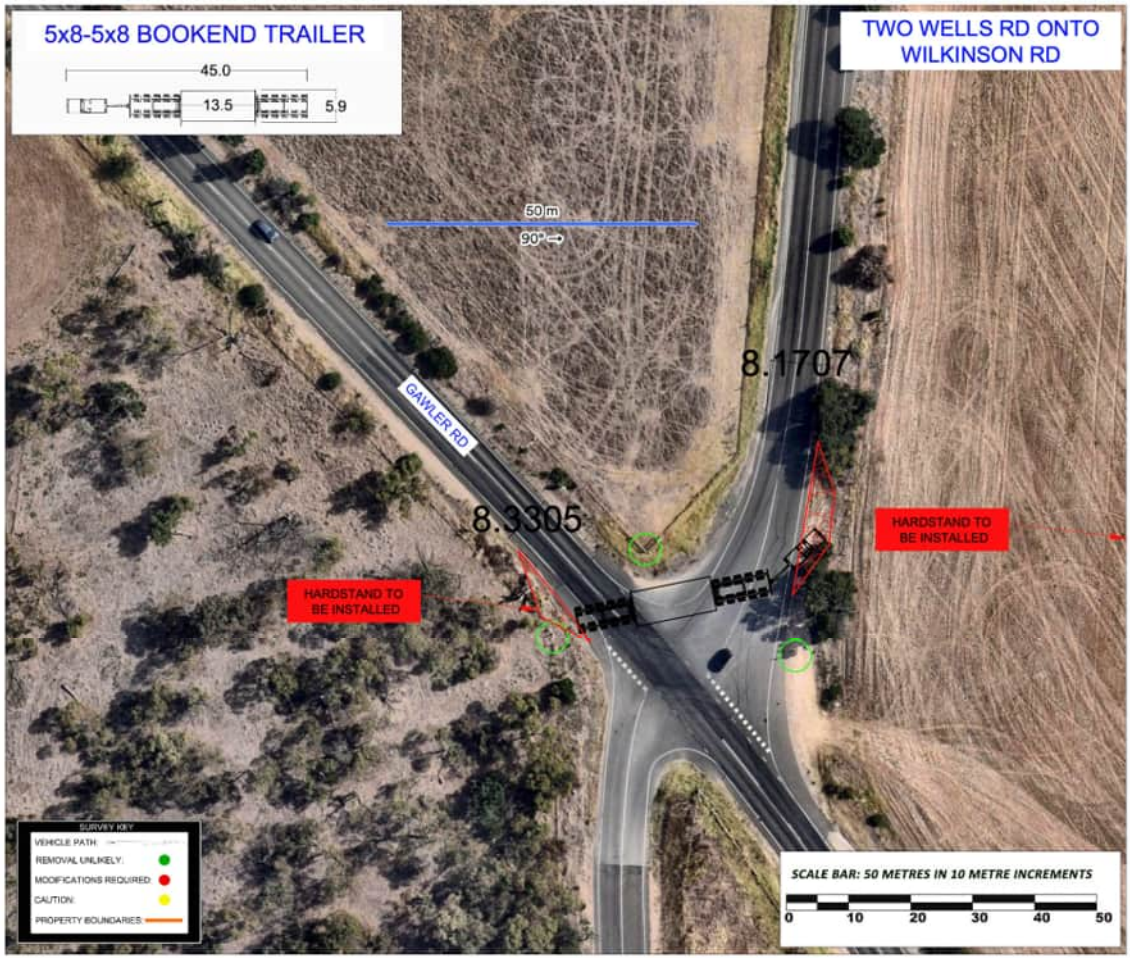


Figure 42 –Two Wells Road onto Wilkinson Road

PROCEDURE: Left hand turn from Two Wells Road onto Wilkinson Road.

GPS LINK: https://goo.gl/maps/6DeWPk5rKF32

COMMENTS: The loads will travel around the corner from the incorrect side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: Hardstand is required on the entrance and exit of the corner.

49.3 Km's: Wilkinson Road onto Hatcher Road at Kangaroo Flat.

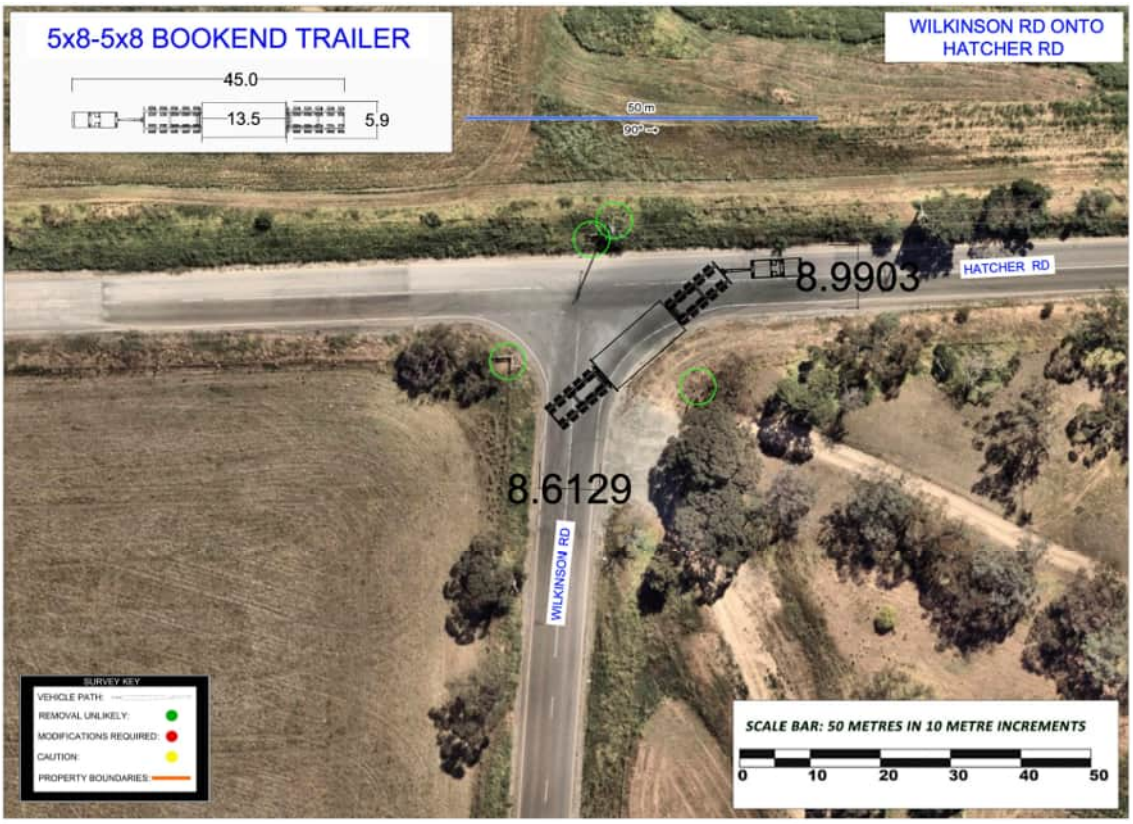


Figure 43 –Wilkinson Road onto Hatcher Road

PROCEDURE: Right hand turn from Wilkinson Road onto Hatcher Road.

GPS LINK: https://goo.gl/maps/XQ8cNtgzQUG2

COMMENTS: The loads will travel around the corner from the correct side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

54.5 Km's: Oates Road onto Redbanks Road at Kangaroo Flat.

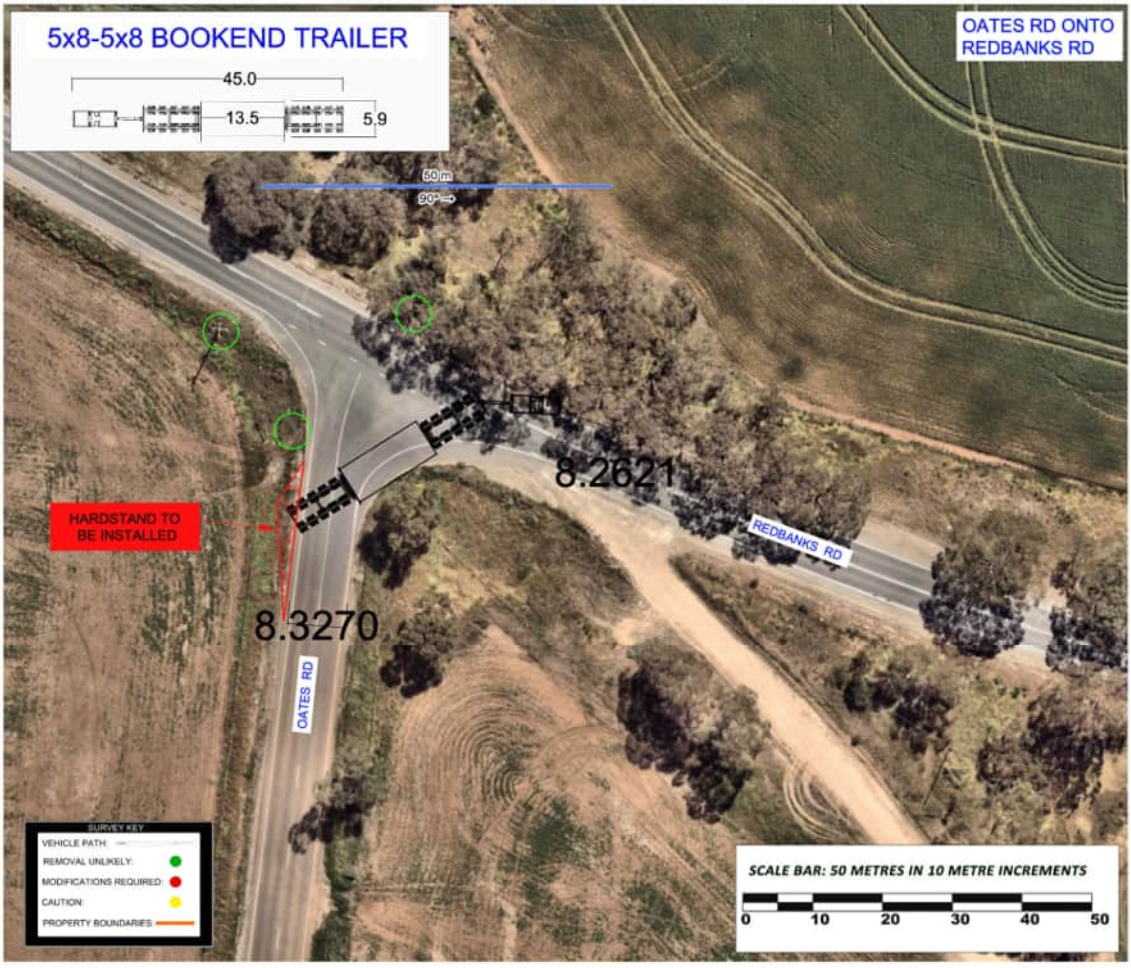


Figure 44 –Oates Road onto Redbanks Road

PROCEDURE: Right hand turn from Oates Road onto Redbanks Road.

GPS LINK: https://goo.gl/maps/tVCv2BFmnZ72

COMMENTS: The loads will travel around the corner from the correct side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: Hardstand is required on the left-hand side while entering the corner.

55.1 Km's: Redbanks Road onto Mudla Wirra Road at Kangaroo Flat.



Figure 45 –Redbanks Road onto Mudla Wirra Rd

PROCEDURE: Left hand turn from Redbanks Road onto Mudla Wirra Road.

GPS LINK: https://goo.gl/maps/2yC31AASRxM2

COMMENTS: The loads will travel around the corner from the incorrect side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

56.5 Km's: Mudla Wirra Road onto College Road at Roseworthy.

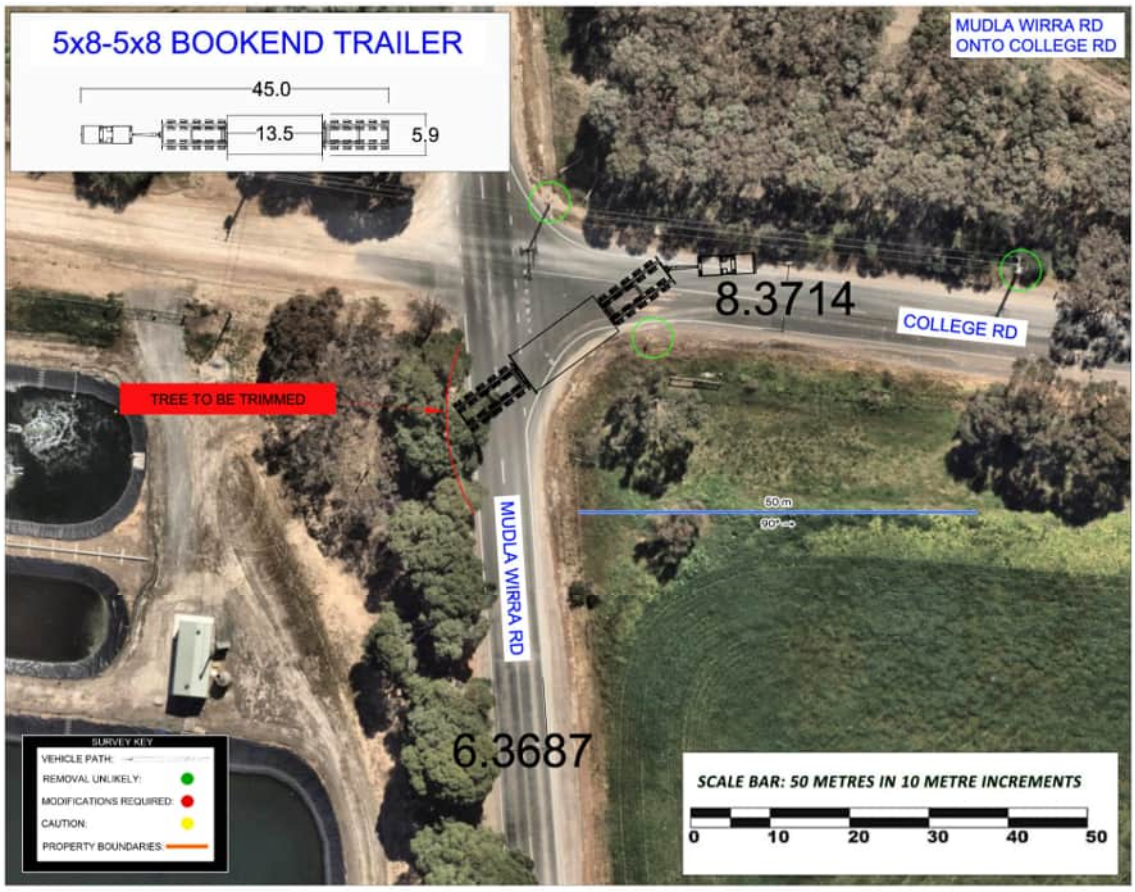


Figure 46 –Mudla Wirra Rd onto College Road

PROCEDURE: Right hand turn from Mudla Wirra Road onto College Road.

GPS LINK: https://goo.gl/maps/bu28YmqsfDP2

COMMENTS: The loads will travel around the corner from the correct side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: Some vegetation needs to be trimmed on this corner.

60.8 Km's: College Road onto Cliff Road at Roseworthy.

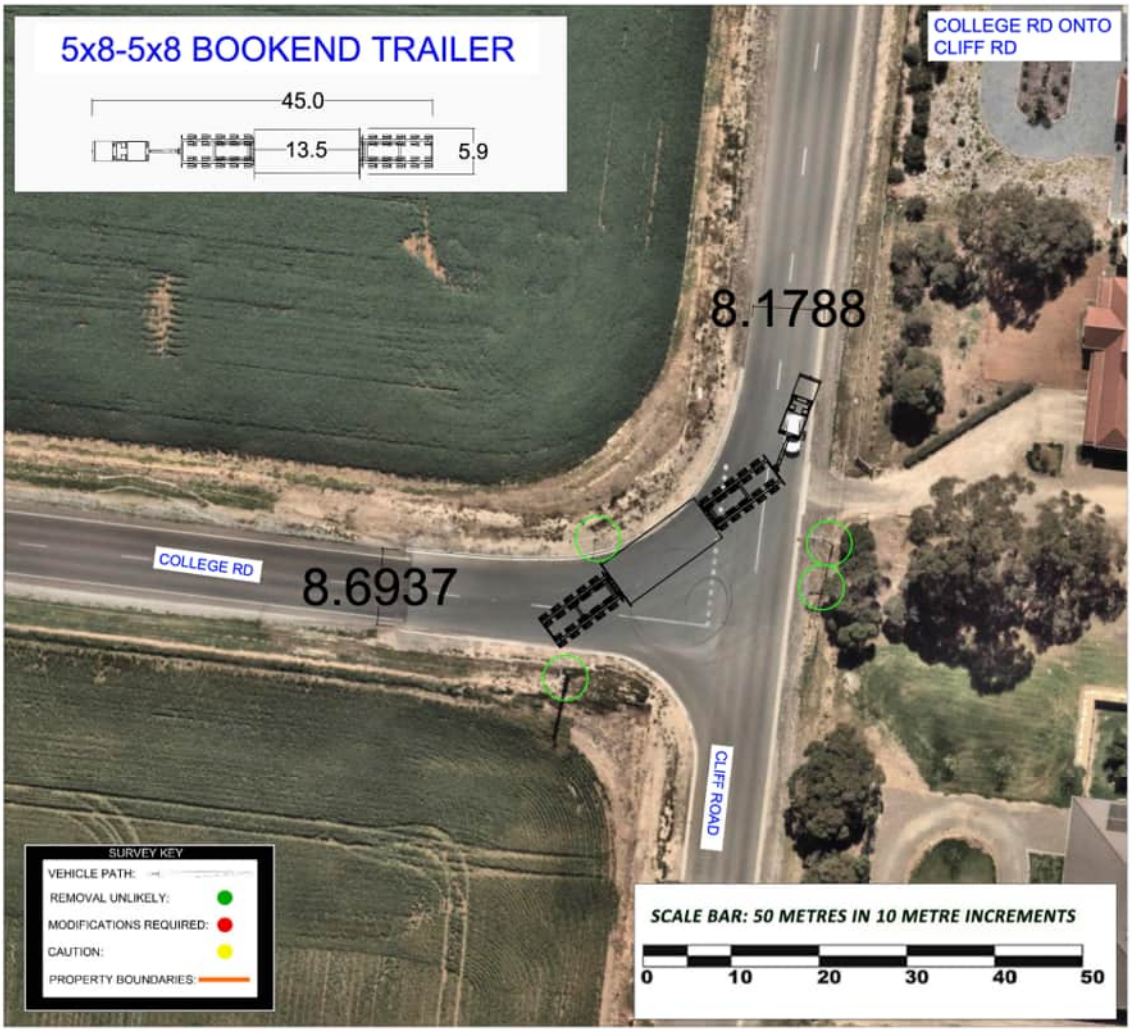


Figure 47 –College Road onto Cliff Road

PROCEDURE: Left hand turn from College Road onto Cliff Road.

GPS LINK: https://goo.gl/maps/n6BLSsACgHT2

COMMENTS: The loads will travel around the corner from the incorrect side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

61.4 Km's: Cliff Road onto Gartrell Street at Roseworthy.



Figure 48 –Cliff Road onto Gartrell Street

PROCEDURE: Right hand turn from Cliff Road onto Gartrell Street.

GPS LINK: https://goo.gl/maps/UGN6vnZ8DDG2

COMMENTS: The loads will travel around the corner from the correct side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

64.8 Km's: Roseworthy Road onto the Thiele Hwy at Kingsford.

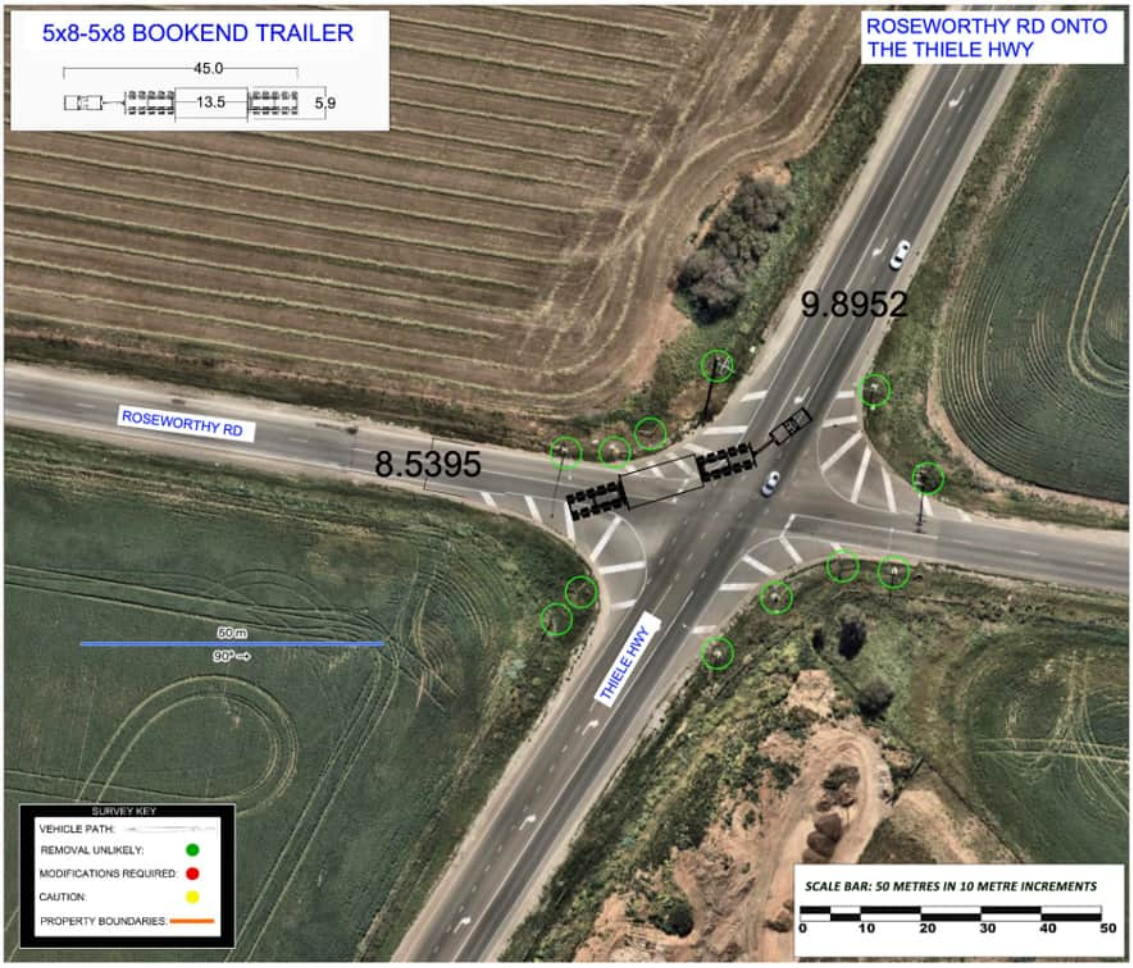


Figure 49 –Roseworthy Road onto the Thiele Highway

PROCEDURE: Left hand turn from Roseworthy Road onto the Thiele Highway.

GPS LINK: https://goo.gl/maps/GpH6AaL4yS4exER47

COMMENTS: The loads will travel around the corner from the correct side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

88.3 Km's: Thiele Hwy onto East Terrace at Kapunda.

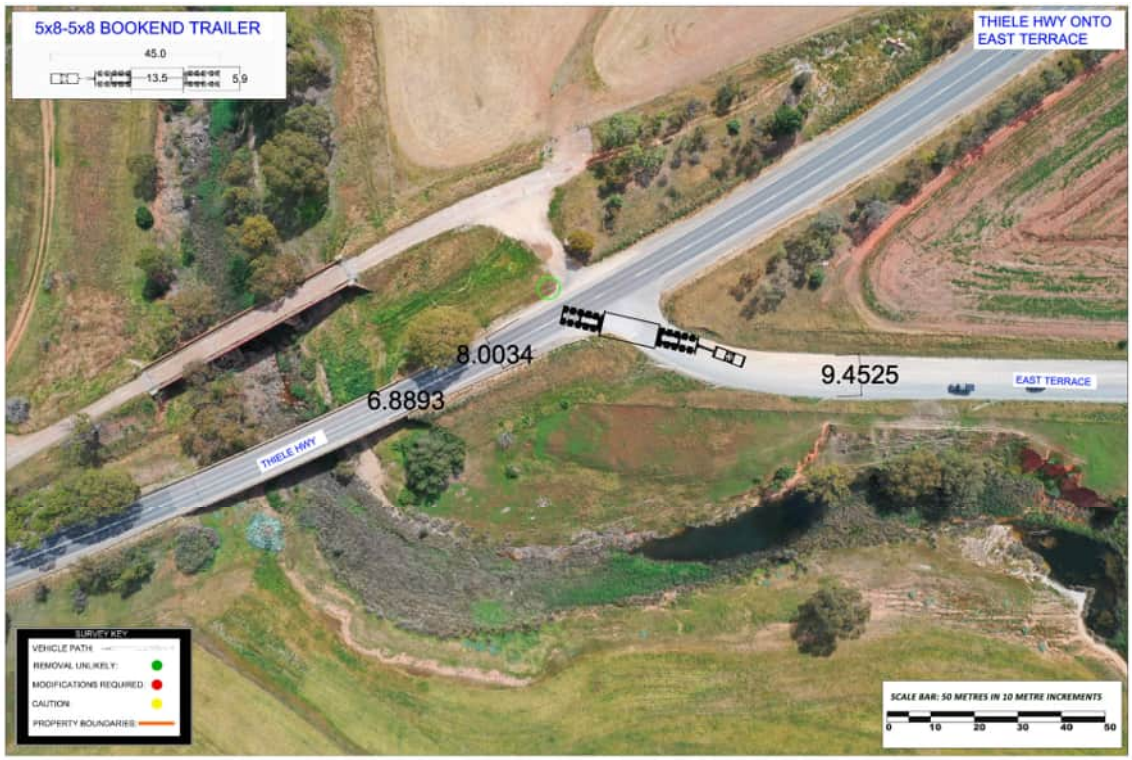


Figure 50 –Thiele Highway onto East Terrace

PROCEDURE: Right hand turn from the Thiele Highway onto East Terrace.

GPS LINK: https://goo.gl/maps/vqgkXWMZMhhpCgAK9

COMMENTS: The loads will travel around the corner from the correct side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

91.8 Km's: East Terrace onto the Thiele Hwy at Kapunda.

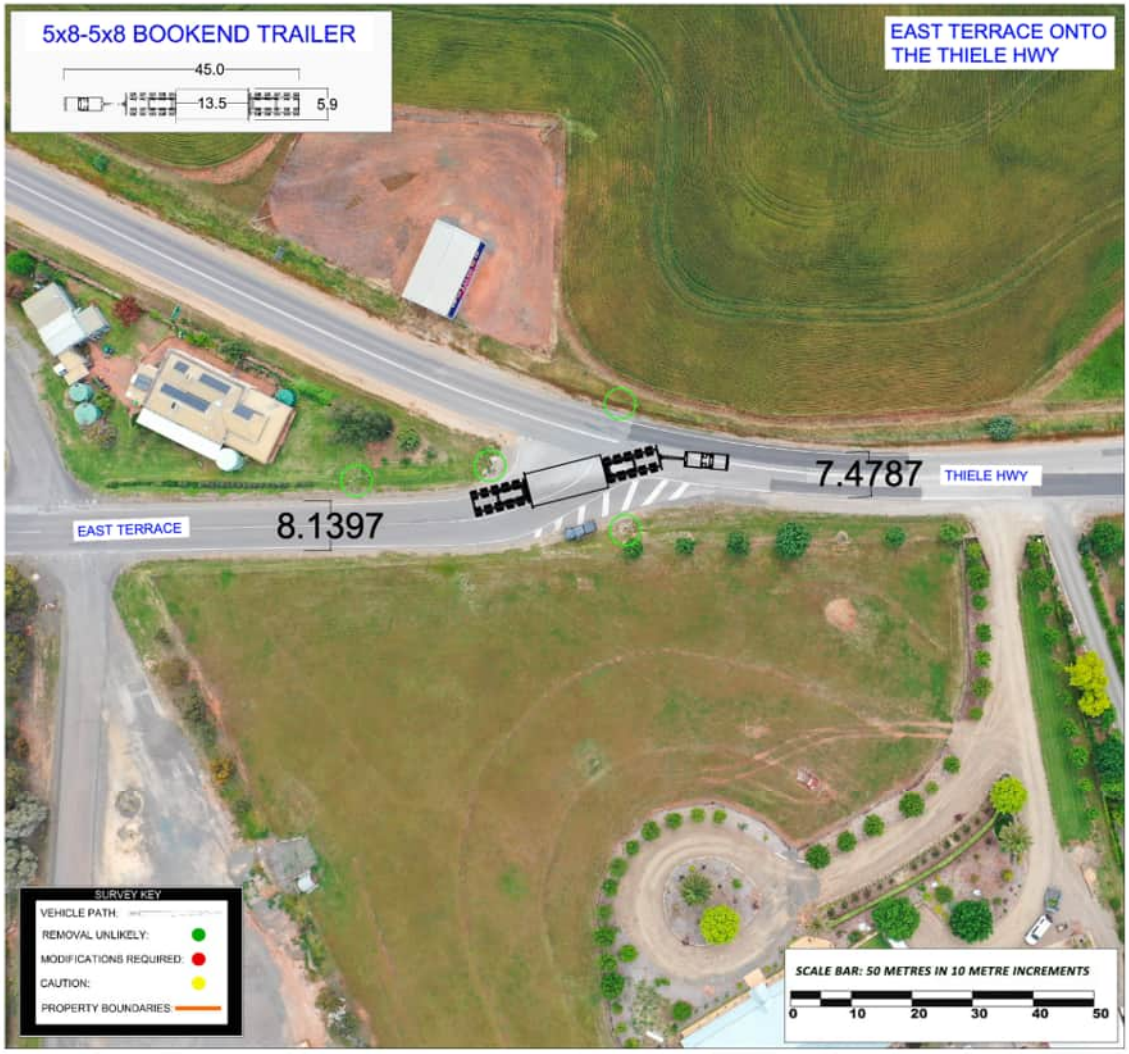


Figure 51 –East Terrace onto the Thiele Highway

PROCEDURE: Right hand turn from East Terrace onto the Thiele Highway.

GPS LINK: https://goo.gl/maps/wVeWZTnSnDTAaxEs6

COMMENTS: The loads will travel around the corner from the correct side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

92.0 Km's: Thiele Hwy onto Truro Road at Kapunda.

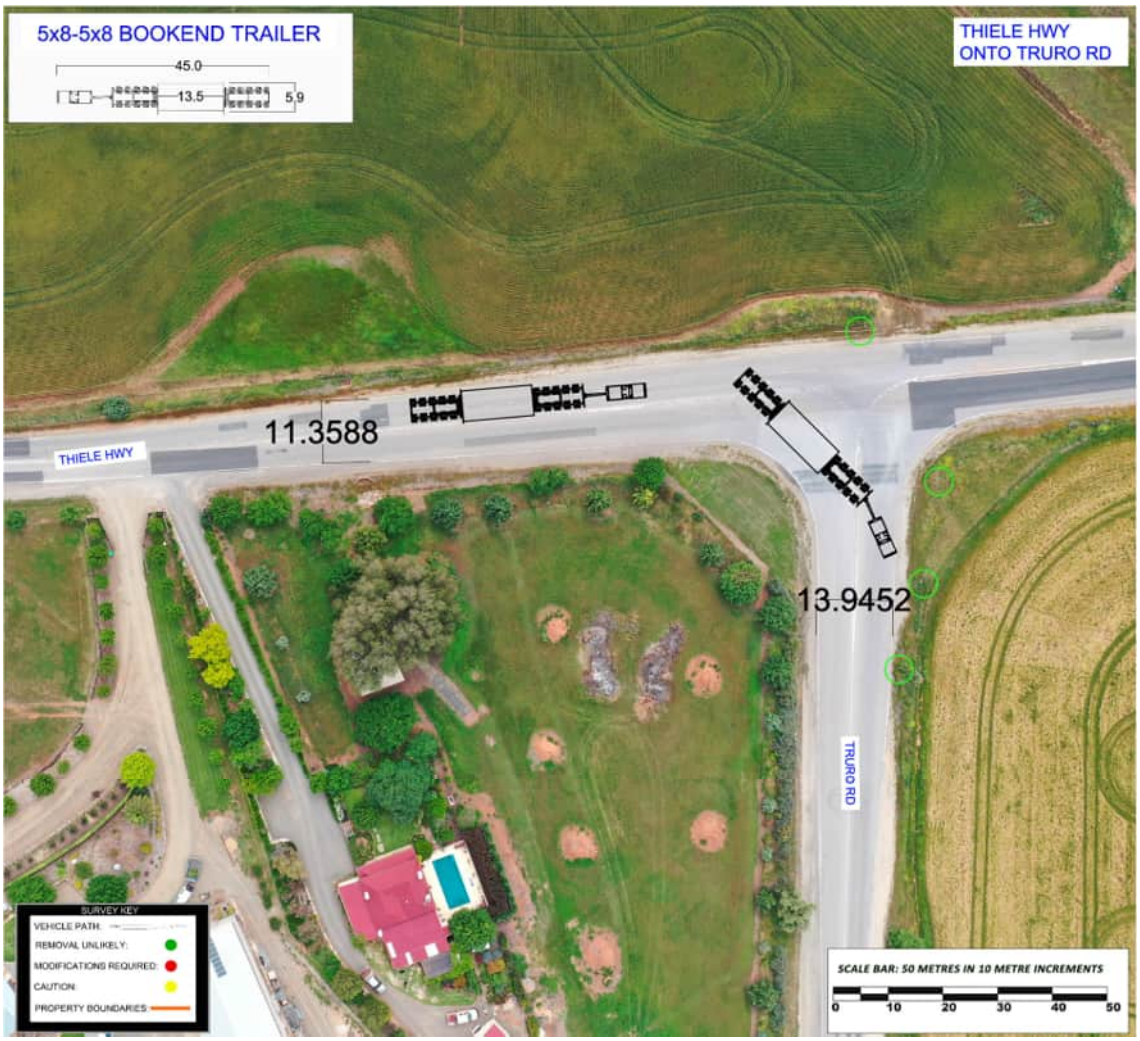


Figure 52 –Thiele Highway onto Truro Road

PROCEDURE: Right hand turn from the Thiele Highway onto Truro Road.

GPS LINK: https://goo.gl/maps/rupYTUbWTiDqQbLq9

COMMENTS: The loads will travel around the corner from the correct side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

111.0 Km's: Truro Road onto the Sturt Highway at Truro.

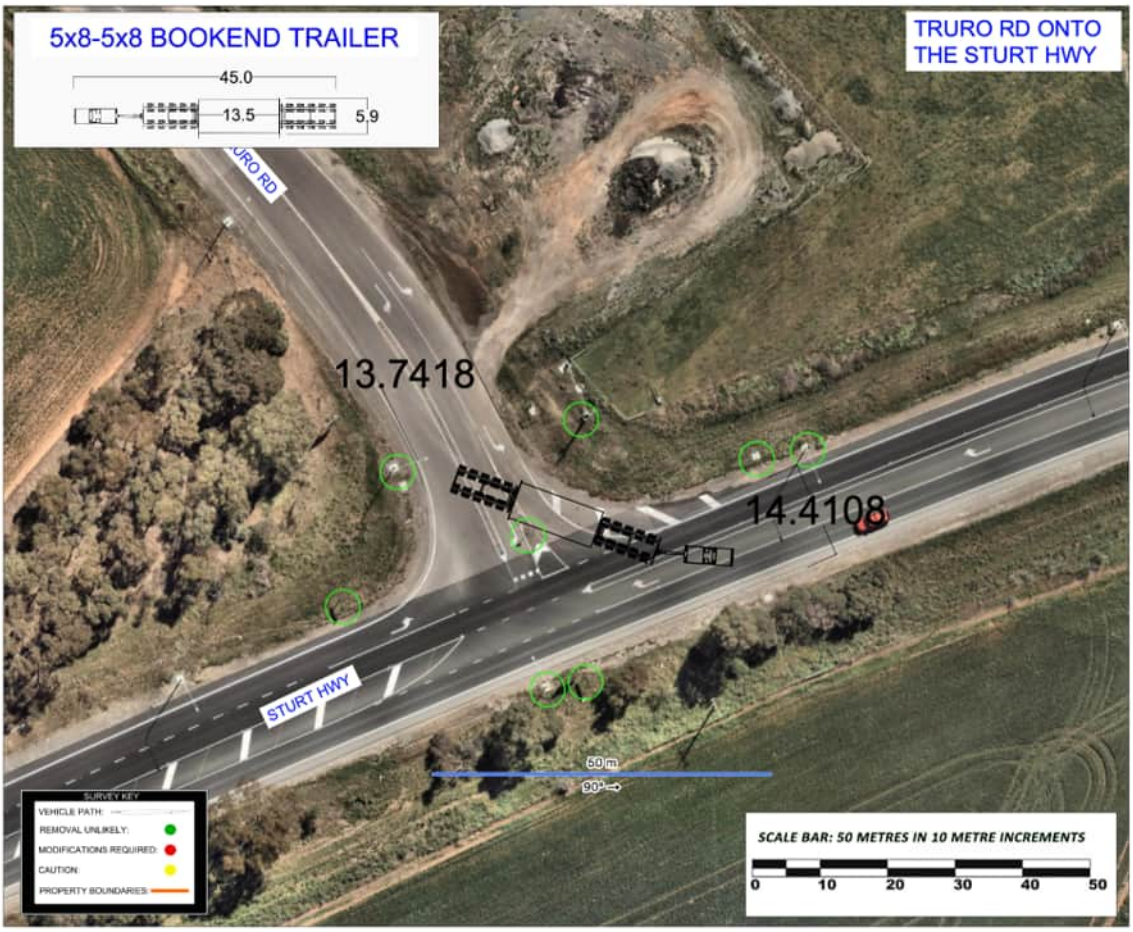


Figure 53 –Truro Road onto the Sturt Highway

PROCEDURE: Left hand turn from Truro Road onto the Sturt Highway.

GPS LINK: https://goo.gl/maps/VsQYKAe4MpcgjyYd7

COMMENTS: The loads will travel around the corner from the incorrect side of the road.

Spotter to assist with this procedure.

ROAD MODIFICATIONS: No works required.

275.0 Km's: Karoonda Hwy Roundabout in Loxton

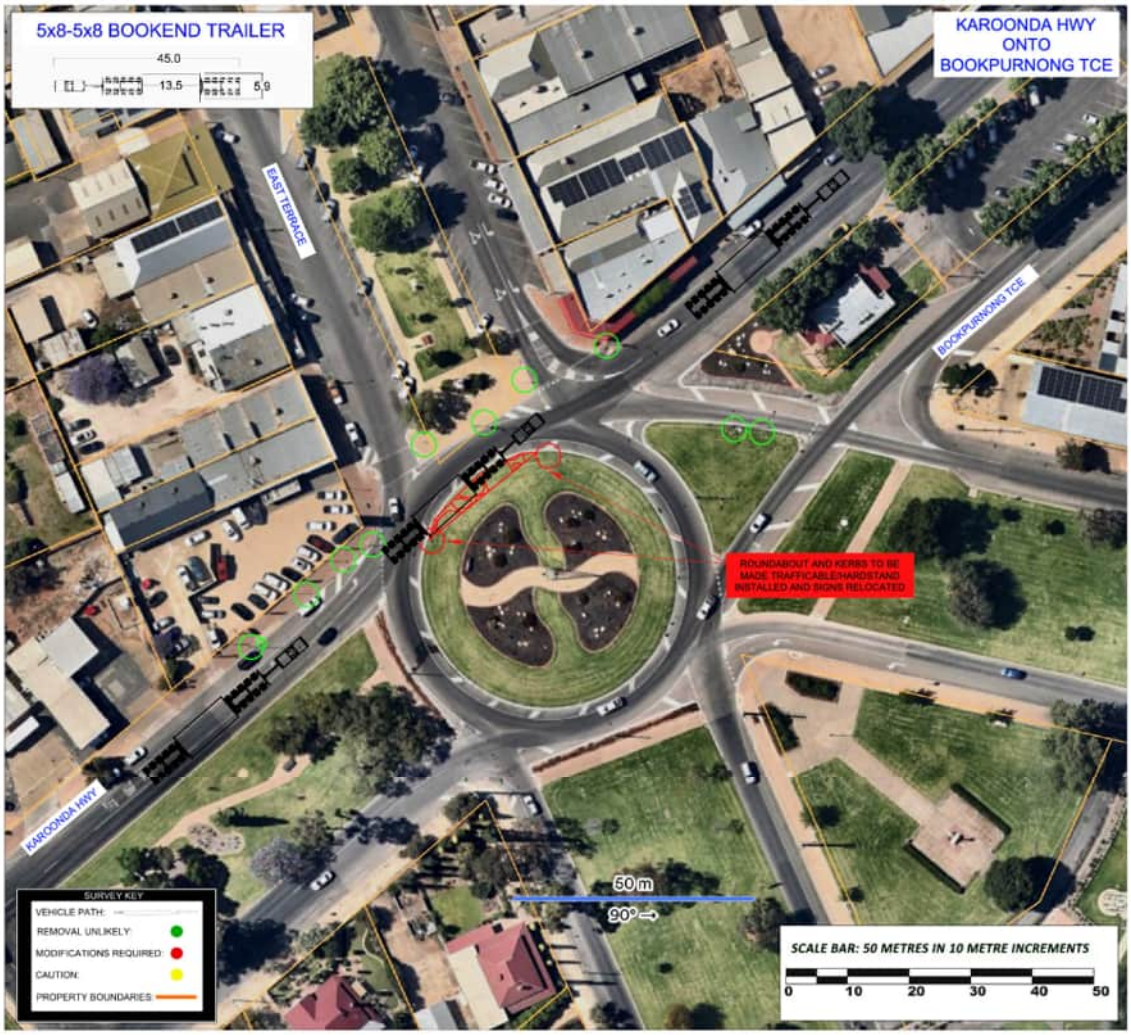


Figure 54 - Karoonda Hwy Roundabout in Loxton.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/gZXFU8r5scZwGxqPA

PROCEDURE: Travel straight ahead using the hardstand installed on the roundabout and continue onto Bookpurnong Terrace.

ROAD MODIFICATIONS: Tower to use Route 1 modification at this location.

285.0 Km's: Bookpurnong Road onto Stanitzki Road at Loxton North



Figure 55 - Bookpurnong Road onto Stanitzki Road

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/4D9S2wy8wpSkWqCG8
PROCEDURE: Right hand turn
ROAD MODIFICATIONS: No works required.

313.0 Km's: Stanitzki Road onto Sturt Highway at Pike River

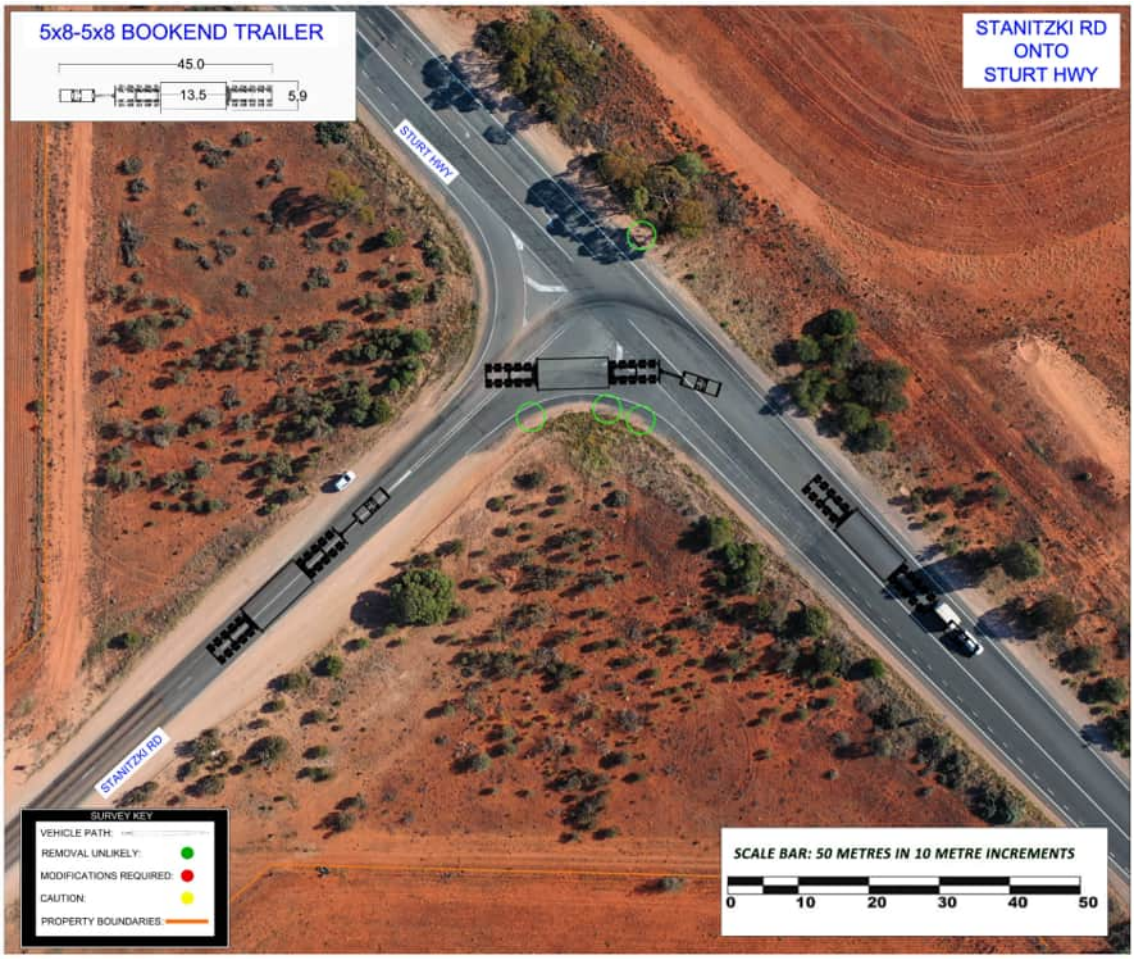


Figure 56 - Stanitzki Road onto Sturt Highway

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/QyNogMy3b9zg8MAUA
PROCEDURE: Right hand turn.
ROAD MODIFICATIONS: No works required.

316.0 Km's: Sturt Hwy under the Big Dunlop Tyre at Yamba



Figure 57: Sturt Highway under the big tyre at Yamba

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/YLKNB6KuDyZezoQS6
PROCEDURE: Continue on the Sturt Highway
COMMENTS: Loads move to the centre of the road under this structure.

522.0 Km's: Sturt Highway at roundabout in Euston.



Figure 58 - Sturt Highway roundabout at Euston, NSW

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/4WoDVv7TwnbDad6z5
PROCEDURE: Left hand turn
COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
ROAD MODIFICATIONS: Yes. Some signs need to be made removable, some sections of the island will need to be made trafficable, and some hardstand will need to be added to the side verge.

602.0 Km's: Right hand bend on Sturt Highway at Balranald



Figure 59 - Sturt Highway at Balranald option 1

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/xve4ZgbuRkqqPvVr7
PROCEDURE: Right hand turn
ROAD MODIFICATIONS: Tower to use Route 1 modification at this location.

14.1 High Loads Utilisation of Route 1

Cullulleraine to Euston via Robinvale - Optionality Assessment

The use of this route for heavy loads would require an assessment of the Robinvale bridge.

381.0 Km's: Sturt Highway onto Werrimull N Road

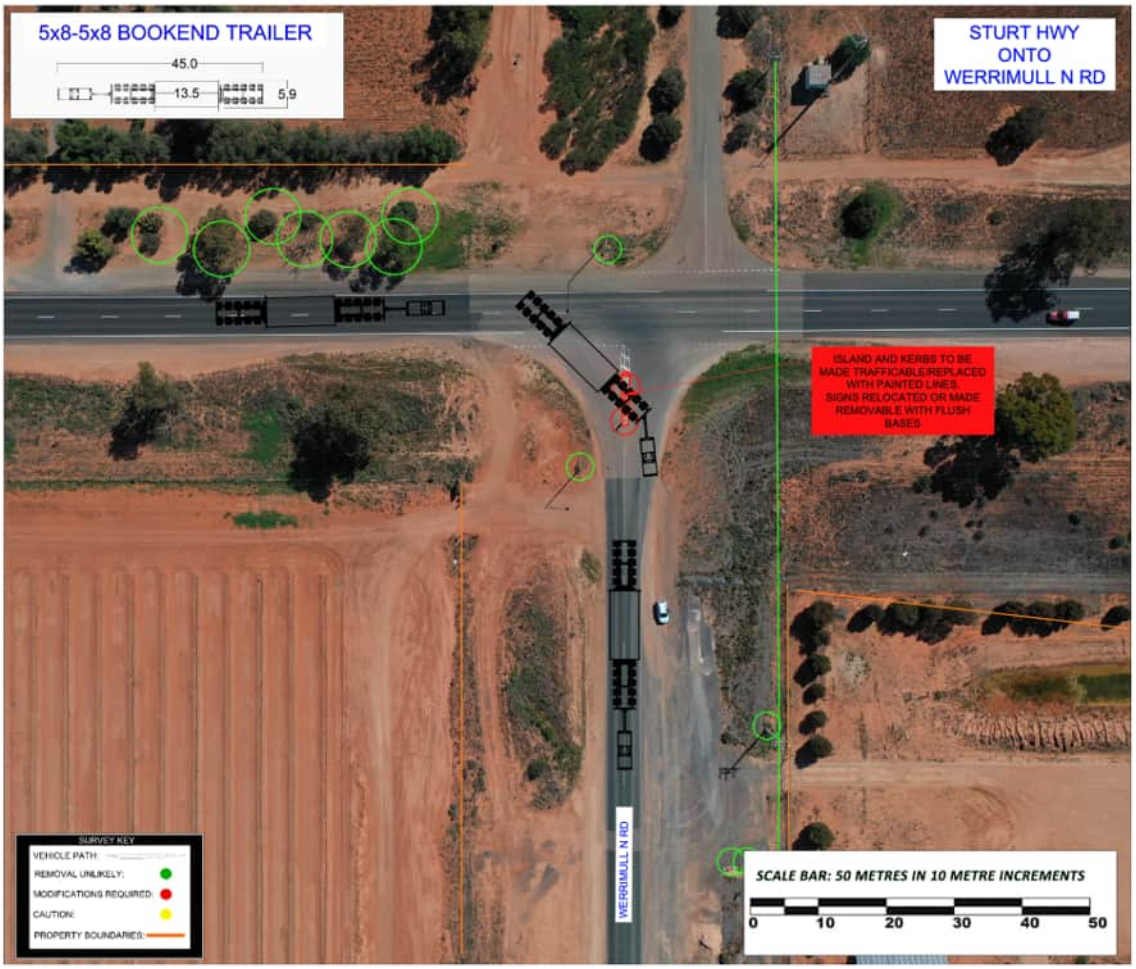


Figure 60 - Sturt Highway onto Werrimull N Road

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/mEXbnEwPCDYMM4Fh8
PROCEDURE: Right hand turn
ROAD MODIFICATIONS: Tower to use Route 1 modification at this location.

393.0 Km's: Werrimull N Road onto Millewa Road

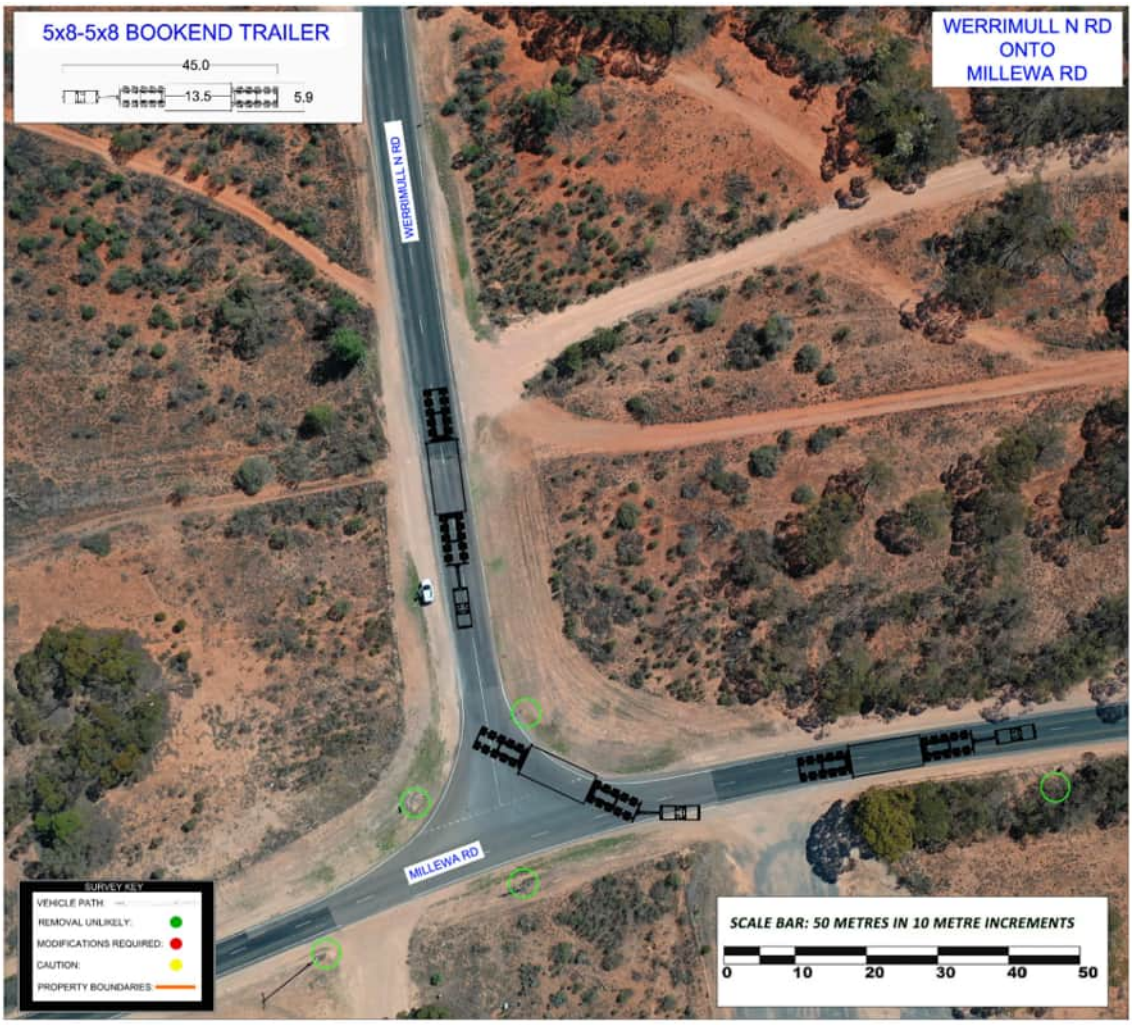


Figure 61 - Werrimull N Road onto Millewa Road

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/ohs9s9RSbbfqi5uN9
PROCEDURE: Left hand turn
ROAD MODIFICATIONS: No works required.

447.8 Km's: Right hand bend on Millewa Road before rail crossing

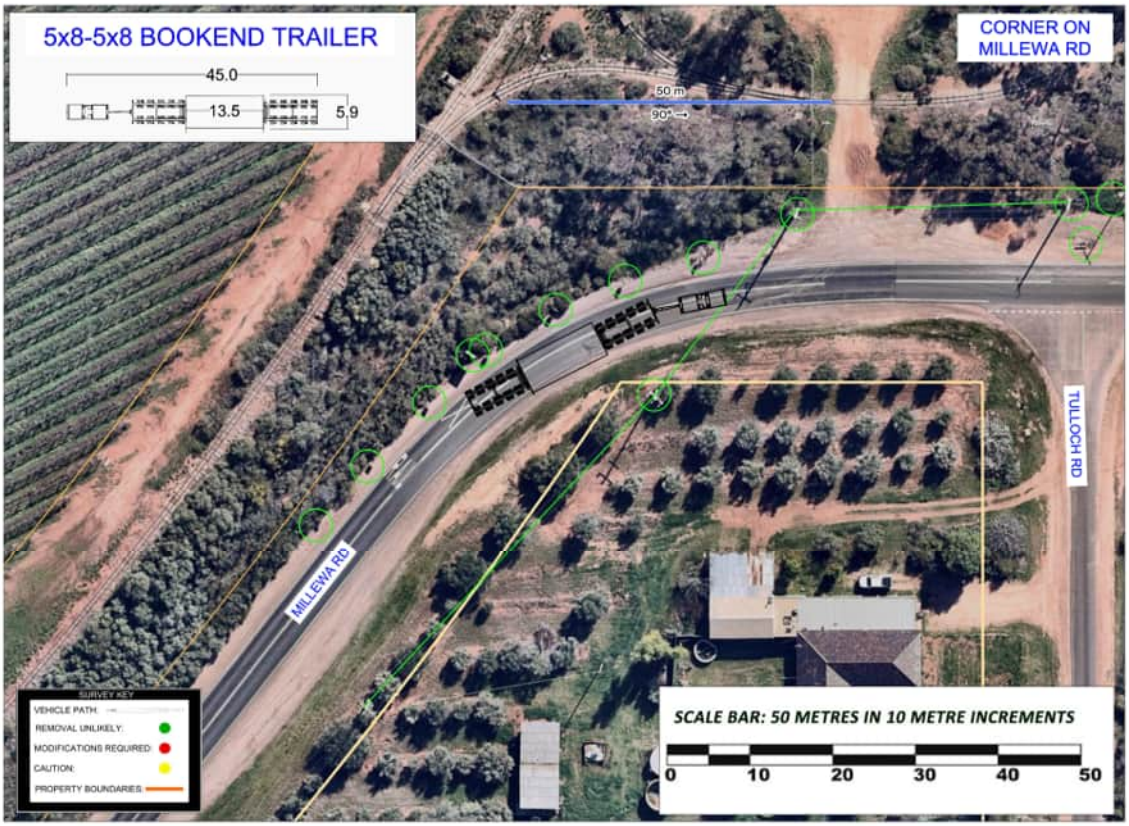


Figure 62 - Right hand bend on Millewa Road

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/4VgMQjQQvY3arG786
PROCEDURE: Right hand bend then sharp right hand turn over the rail crossing.
ROAD MODIFICATIONS: No works required.

448.0 Km's: Millewa Road onto Calder Hwy

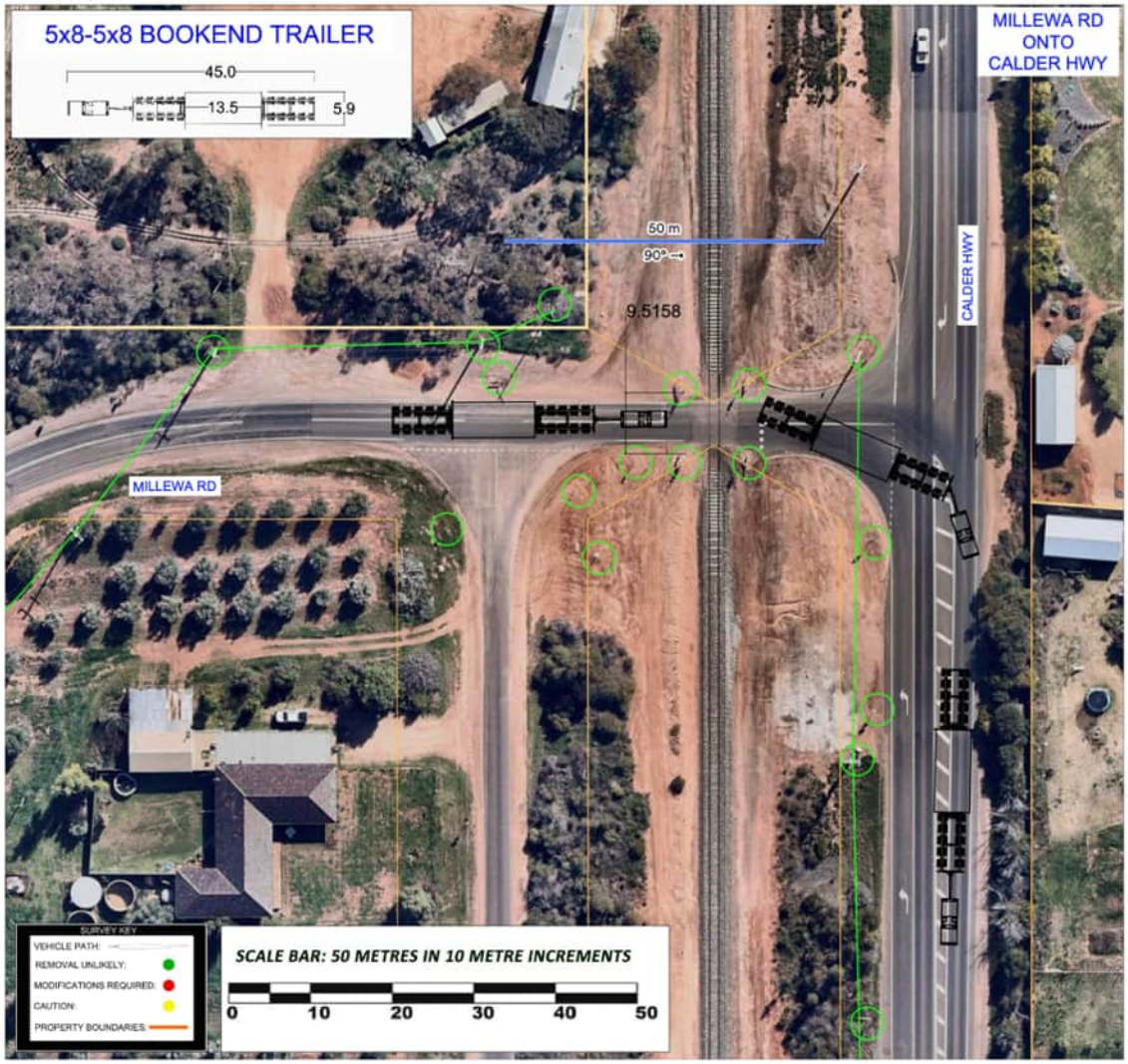


Figure 63 - Millewa Road onto Calder Hwy

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/Rm6ZZEukQW5Nmbkc8
PROCEDURE: Right hand bend then sharp right hand turn over new rail crossing.
ROAD MODIFICATIONS: No works required.

498.0 Km's: Calder Highway onto Hattah-Robinvale Road

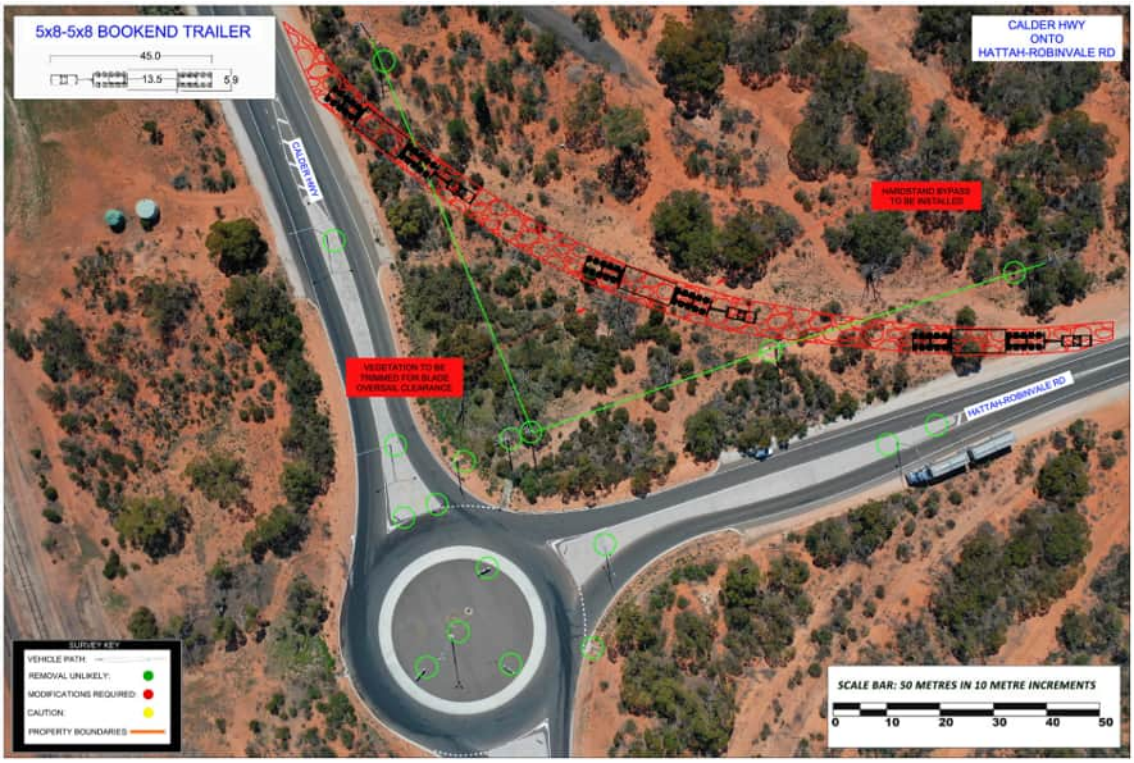


Figure 64 - Calder Highway onto Hattah-Robinvale Road

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/Z6zEDLCq71fpPZU27
PROCEDURE: Left hand turn at the roundabout
ROAD MODIFICATIONS: Tower to use Route 1 modification at this location.

551.0 Km's: Hattah-Robinvale Road onto Robinvale-Sea Lake Road at Bannerton

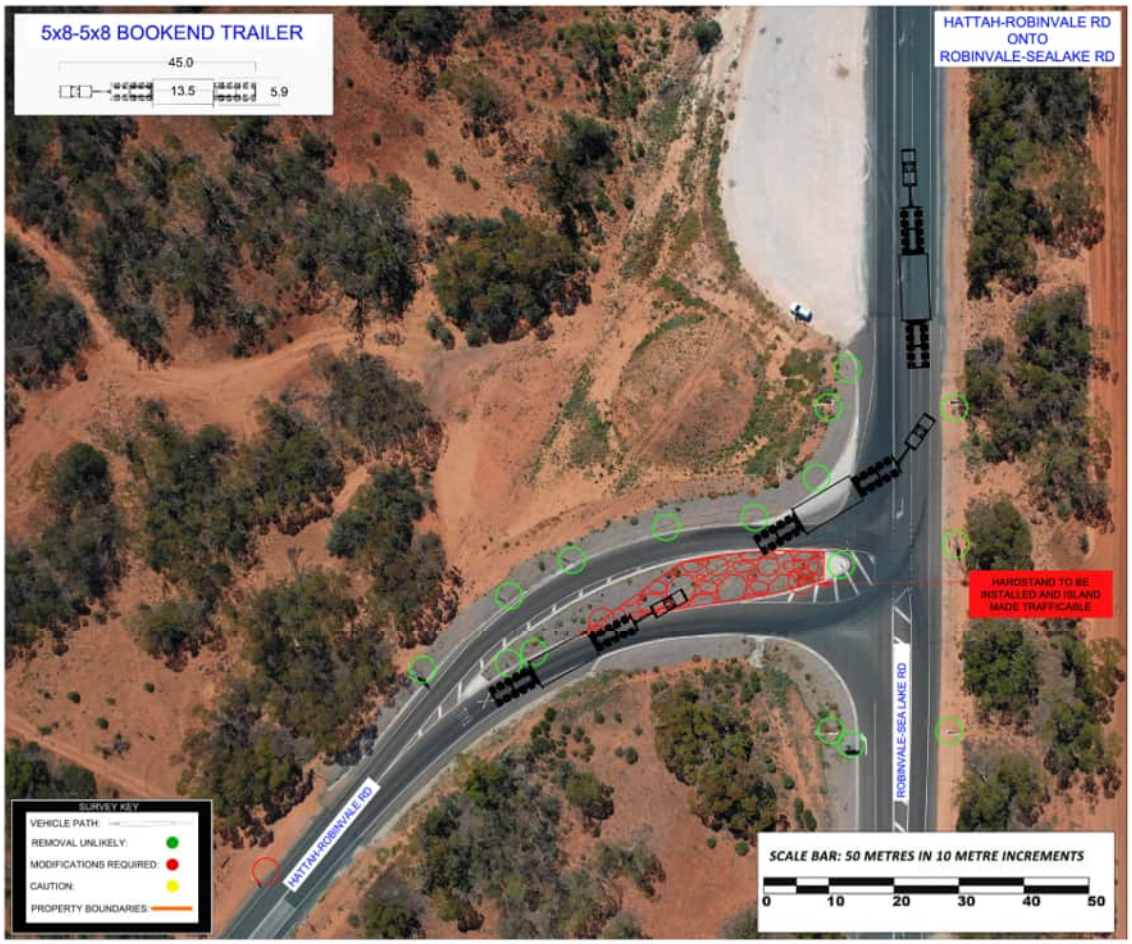


Figure 65 - Hattah-Robinvale Road onto Robinvale-Sea Lake Road

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/4FwG4Lh1Qr95TX1t9
PROCEDURE: Left hand turn
ROAD MODIFICATIONS: Tower to use Route 1 modification at this location.

569.0 Km's: Murray Valley Highway onto Sturt Highway



Figure 66 - Murray Valley Highway onto Sturt Highway

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/rnhvnjnN6VkAWX3eA
PROCEDURE: Right hand turn
ROAD MODIFICATIONS: No works required.

602.0 Km's: Right hand bend on Sturt Highway at Balranald



Figure 67 - Sturt Highway at Balranald option 1

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/xve4ZgbuRkqqPvVr7
PROCEDURE: Right hand turn
ROAD MODIFICATIONS: Tower to use Route 1 modification at this location.

14.2 Route 3 Detour: Kingston on Murray to Loxton SA

Loaded heights >5.2m High Loads detour

Following feedback from SA Power, an approx. 53km detour from Kingston on Murray to Loxton should be considered to significantly reduce the amount of overhead infrastructure augmentation required for high loads with loaded heights greater than 5.2m. The detour aims to reduce interruption to overhead services, and greatly enhance operational efficiency and safety.
Note this is relevant to loaded heights of more than 5.2m, maximum loaded height maintained at 6.4m.

The swept path on this route is adequate for the vehicles listed in this report.

COMPONENTS: Larger items with a **loaded height >5.2m up to 6.4 metres**

DISTANCE: detour 53km, total route 626 kilometres

GPS LINK: https://maps.app.goo.gl/N6JQGFwLDUpLEHXGA

VIA: Via Ocean Steamers Road, Eastern Parade, Port River Expressway, Northern Connector, Port Wakefield Highway “A1”, Mallala Road, Old Port Wakefield Road, Gawler Rd, Two Wells Rd, Wilkinson Road, Hatcher Road, Oates Road, Redbanks Road, Mudla Wirra Road, College Road, Cliff Road, Gartrell Street, Roseworthy, Thiele Hwy, East Terrace, Truro Rd, Sturt Hwy, Heinrich Road, Stott Highway, Kingston Rd, Karoonda Hwy, Bookpurnong Rd, Stanitzki Rd, Sturt Hwy, Seventeenth St, Benetook Ave, Seventh St, Sturt Hwy, Kidman Way, Yanga Way, Balranald Road.



Figure 68 - Route 3 detour from Kingston on Murray to Loxton

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

REX J ANDREWS
ENGINEERED TRANSPORTATION

KEY	
ROAD MODIFICATION	
CAUTION	
EMERGENCY PARKING	

132.05	Blanchetown SA	Sturt Highway GPS Link: https://goo.gl/maps/fQvt31Kceoq	10.0 metres wide	Left hand merge	Overnight parking at BP service centre
235.0	Kingston on Murray SA	Sturt Hwy onto Heinrich Rd GPS Link: https://maps.app.goo.gl/wMM1iMNMgJzi9d29A	Length: 60 metres Width: 10.0 metres	Right hand turn	No problems with this section of road
265.0	Wunkar SA	Heinrich Road onto Stott Highway GPS Link: https://maps.app.goo.gl/iw3NjLFWVCnYD8Rb7	Length: 60 metres Width: 10.0 metres	Left Hand Turn	No problems with this section of road.
282.0	Pyap SA	Stott Highway onto Kingston Road GPS Link: https://maps.app.goo.gl/megnH5aUETzMAY7s8	Length: 60 metres Width: 10.0 metres	Right Hand Turn	No problems with this section of road.
288.0	Loxton SA	Kingston Road onto Karoonda Hwy GPS Link: https://goo.gl/maps/QVqcneMAha8ew7Gq9	120 metres	Travel directly ahead	No problems with this section of road.

15.0 Route 3: Rail crossing conflicts

01 Eastern parade, Port Adelaide
GPS: https://maps.app.goo.gl/GS6qo8BNQJDNASDn6

Type: Level crossing
Asset Owner: ARTC
Line: Dry Creek-Port Flat
LXM ID: 1887
Operational: Yes
Maximum width clearance: 8.5 Metres
Conflict: Non



Figure 69: Eastern Parade rail crossing

02 Gawler Road, Two Wells
GPS: https://maps.app.goo.gl/bprikfGH1CZggQVdA

Type: Level crossing
Asset Owner: ARTC
Line: Adelaide-Crystalbrook
LXM ID: 1726
Operational: Yes
Maximum width clearance: 7.5 Metres
Conflict: Non



Figure 70: Gawler Road rail crossing

03 Benetook Avenue, Mildura
https://maps.app.goo.gl/x8MGw2pv4MxFe96s9

Type: Level crossing
Asset Owner: V-Line
Line: TBC
LXM ID: TBC
Operational: Yes
Maximum width clearance: 7.5 Metres
Conflict: Non



Figure 71: Rail crossing on Benetook Avenue at Mildura

16.0 Route 3 Conclusion

After studying all options and undertaking a route survey, this route is suitable in its current condition for transporting the proposed components.

The following are the key points that need to be taken into consideration if the project moves forward with this route.

SWEPT PATH:

- The longest combination that can travel along this route without upgrades is **35 metres overall length.**
- If loads exceed 35 metres in overall length, then several corners will need to have hardstand added. They are listed in the index.

OVERHEAD STRUCTURES: (6.5 metres maximum loaded height)

BRIDGES:

- Majority of the bridges have been used previously for similar loads; however, every load will need to be checked/assessed for capacity to be sure that they could transit this route.

OVERHEAD UTILITIES:

- This route will need to be checked by an authorised scoping company. It is likely that a route of at least 6.5 metres is required for this project.

VEGETATION:

- The route requires a moderate amount of vegetation clearing at various locations.

PAVEMENT:

- The Pavement on all roads have adequate highway pavement up until midway along Balranald Road.
- Balranald Road becomes gravel and would need to be maintained throughout the delivery of the turbines.

RAIL ASSETS:

- There are a number of rail overbridges and crossings on route that will require approval from authorities before loads can access the routes.

COMPONENTS THAT WOULD USE ROUTE 3:

- Loads over 5.2 metres in height which are usually the towers.
- Transformers and switchrooms if they exceed 5.2 metres in height. Bridge capacity would still need to be checked for the weight of the transformers.

COMPONENTS THAT WOULD USE ROUTE 3 DETOUR:

- All loads proposed for Route 3 (inc. tower sections and transformers) should utilise the detour as this would significantly reduce overhead infrastructure augmentation.

COMPONENTS THAT COULD UTILISE FOLLOW ROUTE 1 FROM CULLULLERAINE:

- All loads proposed for Route 3 (inc. tower sections and transformers) pending load assessment of the Robinvale bridge.

17.0 Route 4 Study: Port Adelaide SA to Junction Rivers windfarm NSW, High Load Route, Option 2

COMPONENTS: Larger items with a **Max loaded height 6.4 metres**

DISTANCE: 659 kilometres

GPS LINK: https://maps.app.goo.gl/n87wjSd8tn6y6pt18

VIA: Via Ocean Steamers Road, Eastern Parade, Port River Expressway, Northern Connector, Port Wakefield Highway "A1", Mallala Road, Old Port Wakefield Road, Gawler Road, Two Wells Rd, Wilkinson Road, Hatcher Road, Oates Road, Redbanks Road, Mudla Wirra Road, College Road, Cliff Road, Gartrell Street, Roseworthy Road, Thiele Hwy, East Terrace, Thiele Hwy, Goyder Hwy, Sturt Hwy, Airport Rd, Government Rd, Ral Ral Ave, Wentworth-Renmark Rd, Renmark Rd, Silver City Hwy, Armstrong Ave, Silver City Hwy, Sturt Hwy, Yanga Way, Balranald Road.

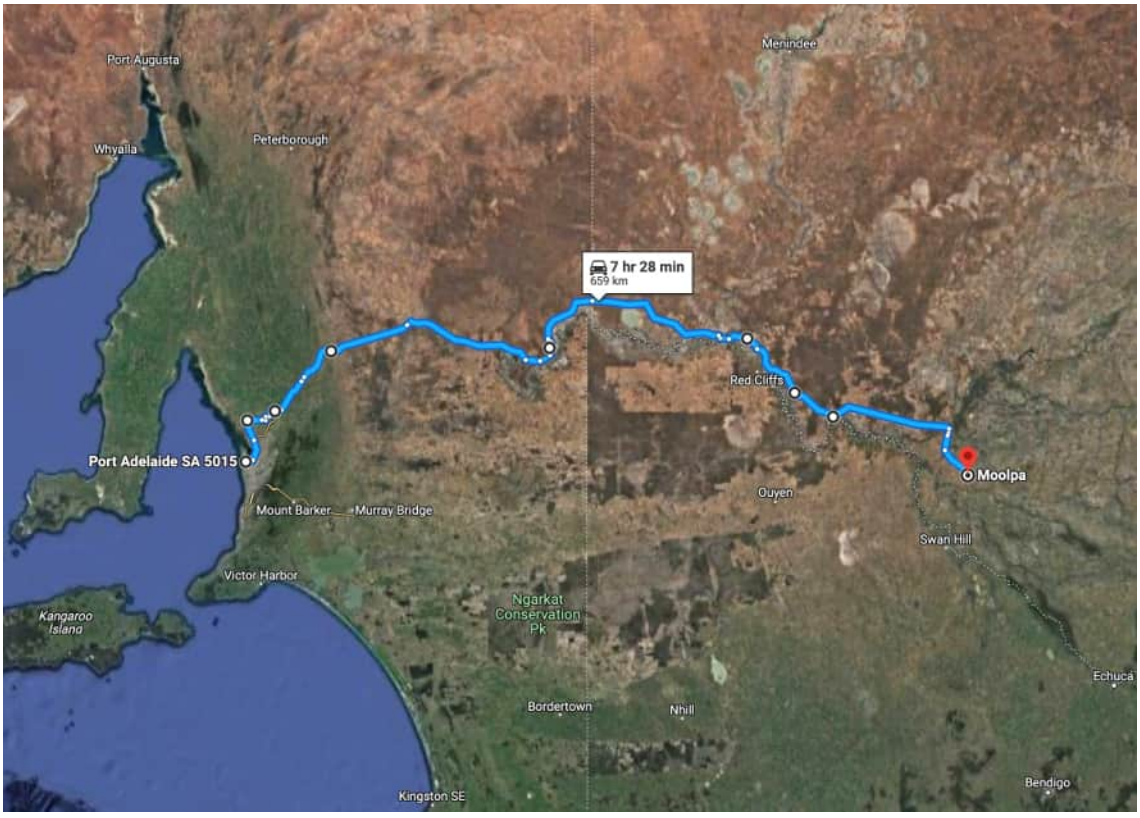


Figure 72 - Route 4

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

REX J ANDREWS
ENGINEERED TRANSPORTATION

KEY	
ROAD MODIFICATION	
CAUTION	
EMERGENCY PARKING	

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
0.0	Port Adelaide SA	Port storage area across Ocean Steamers Rd and onto eastern Parade GPS Link: https://goo.gl/maps/tK6JqG1AjdMDqqSs5	Length: 75.0 metres Width: 8.0 metres Height: N/A	Drive out of storage area and cross to the incorrect side of Eastern Parade	No problems with this section of road.to be modified.
0.2	Port Adelaide SA	Eastern Parade over rail crossing GPS Link: https://goo.gl/maps/UfZfLvNDkKxRyTed9	Length: 80.5 metres Width: 10.0 metres Height: N/A	Travel directly ahead	Approval required from Rail network provider before crossing this structure. Spotter to Guide load through this pinchpoint.
0.9	Gilman SA	The Eastern Parade onto the Port River Expressway GPS Link: https://goo.gl/maps/mPFZDKYzewGxvm8S8	Length: 70.0 metres Width: 10.9 metres Height: N/A	Left hand turn	No problems with this section of road.
0.9 to 4.3	Gilman to Wingfield SA	Port River Expressway GPS Link: https://goo.gl/maps/rpFDwXM41ACYr2Vv6	Length: 100.0 metres Width: 10.0 metres Height: 6.2 metres	Travel directly ahead.	Loads over 6.2 metres will need to travel over the top of Hansen Road.
4.3	Wingfield SA	Port River Expressway onto Northern Connector GPS Link: https://goo.gl/maps/BtCb3VPGq3yqpCt57	Length: 100.0 metres Width: 8.0 metres Height: 6.5 metres	Left hand bend	No problems with this section of road.
4.3 To 19.2 Km's	Wingfield to Waterloo Corner SA	Northern Connector GPS Link: https://goo.gl/maps/onzFMbVb3PpaJq52A	Length: 100.0 metres Width: 10.5 metres Height: 6.5 metres	Travel directly ahead	No problems with this section of road.
19.8	Waterloo Corner SA	Northern Connector onto Port Wakefield Highway "A1" GPS Link: https://goo.gl/maps/ycLGFDgzQ8idciv47	Length: 100.0 metres Width: 8.0 metres Height: N/A	Right hand merge onto A1	No problems with this section of road.
33.4	Two Wells SA	Port Wakefield Highway "A1" onto Mallala Road GPS Link: https://goo.gl/maps/U78MZSBL43D2	Length: 50 metres Width: 8.0 metres Height N/A	Right hand turn	No problems with this section of road
33.7	Two Wells SA	Mallala Road onto Old Port Wakefield Road GPS Link: https://goo.gl/maps/CzpYPwc9cBM2	Length: 50 metres Width: 8.0 metres Height N/A	Right hand turn	No problems with this section of road
33.9	Two Wells SA	Old Port Wakefield Road onto Gawler Road GPS Link: https://goo.gl/maps/TfEJNdGpFP12	Length: 50 metres Width: 8.0 metres Height N/A	Left hand turn	No problems with this section of road
44.6	Gawler River SA	Gawler Road onto Two Wells Road GPS Link: https://goo.gl/maps/ijQJCjKW6uH2	8.0 metres wide	Travel directly ahead	No problems with this section of road

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KM index	Location	Section of road	Critical Measurement	Procedure	Notes
46.8	Gawler River SA	Two Wells Road onto Wilkinson Road GPS Link: https://goo.gl/maps/6DeWPk5rKF32	Length: 35 metres Width: 8.0 metres Height N/A	Left hand turn	If loads exceed an overall length of 35 metres, there will need to be some hardstand added to this intersection.
49.3	Kangaroo Flat SA	Wilkinson Road onto Hatcher Road GPS Link: https://goo.gl/maps/XQ8cNtqzQUG2	Length: 35 metres Width: 8.0 metres Height N/A	Left hand turn	If loads exceed an overall length of 35 metres, there will need to be some hardstand added to this intersection.
51.3	Kangaroo Flat SA	Hatcher Road onto Oates Road GPS Link: https://goo.gl/maps/qXcjdwDzNxCDwL8AA	Length: 60 metres Width: 8.0 metres Height N/A	Left hand bend	No problems with this section of road
54.5	Kangaroo Flat SA	Oates Road onto Redbanks Road GPS Link: https://goo.gl/maps/tVCv2BFmnZ72	Length: 40 metres Width: 8.0 metres Height N/A	Right hand turn	If loads exceed an overall length of 40 metres, there will need to be some hardstand added to this intersection.
55.1	Kangaroo Flat SA	Redbanks Road onto Mudla Wirra Road GPS Link: https://goo.gl/maps/2yC31AASRxM2	Length: 35 metres Width: 8.0 metres Height N/A	Left hand turn	If loads exceed an overall length of 35 metres, there will need to be some hardstand added to this intersection.
56.5	Roseworthy SA	Mudla Wirra Road onto College Road GPS Link: https://goo.gl/maps/bu28YmqsfDP2	Length: 40 metres Width: 8.0 metres Height N/A	Right hand turn	If loads exceed an overall length of 40 metres, there will need to be some hardstand added to this intersection.
60.8	Roseworthy SA	College Road onto Cliff Road GPS Link: https://goo.gl/maps/n6BLSsACgHT2	Length: 40 metres Width: 8.0 metres Height N/A	Left hand turn	If loads exceed an overall length of 40 metres, there will need to be some hardstand added to this intersection.
61.4	Roseworthy SA	Cliff Road onto Gartrell Street GPS Link: https://goo.gl/maps/UGN6vnZ8DDG2	9.0 Metres into 9.0 metres	Right hand turn	No problems with this section of road
62.5	Roseworthy SA	Gartrell Street onto Roseworthy Road GPS Link: https://goo.gl/maps/Py6YuP9aWyH2	Length: 80 metres Width: 9.0 metres Height N/A	Left hand bend	No problems with this section of road
64.8	Kingsford SA	Roseworthy Road onto Thiele Hwy GPS Link: https://goo.gl/maps/GpH6AaL4yS4exER47	Length: 80 metres Width: 9.0 metres Height N/A	Left hand turn	No problems with this section of road
88.3	Kapunda SA	Thiele Hwy onto East Terrace GPS Link: https://goo.gl/maps/vqqkXWMZMhhpCgAK9	Width: 6.5 metres	Right hand turn	Sign to be made removable
91.8	Kapunda SA	East Terrace onto Thiele Hwy GPS Link: https://goo.gl/maps/wVeWZTnSnDTAaxEs6	Length: 60 metres Width: 6.0 metres	Right hand turn	Overhead conductor clearance to be confirmed
174.0	Morgan SA	Thiele Hwy corner at Morgan GPS Link: https://goo.gl/maps/i8dyAS2ding9jx6U6	Length: 45 metres Width: 6.0 metres	Left hand turn	Overhead conductor and streetlight clearance to be confirmed

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Port Adelaide to
Junction Rivers Windfarm

REX J ANDREWS
ENGINEERED TRANSPORTATION

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
175.0	Morgan SA	Thiele Hwy onto Goyder Hwy GPS Link: https://goo.gl/maps/itxK3tVH3dQw1FqcA	Width: 7.0 metres	Travel directly ahead	No problems with this section of road
176.0	Morgan SA	Goydey Hwy GPS Link: https://maps.app.goo.gl/B7tDfHCbwd64bKLLA	100.0 metres long 9.0 metres wide	Merge to the left	Suitable parking on the correct side of the road.
264.0	Monash SA	Goyder Hwy onto Sturt Hwy GPS Link: https://goo.gl/maps/WiNggF14DYrwsHGh8	Length: 75 metres Width: 9.0 metres	Left hand turn	No problems with this section of road
273.0	Monash SA	Sturt Hwy Roundabout GPS Link: https://goo.gl/maps/ri4hoYgDyaATRDtU9	Width: 6.0 metres	Left hand turn	Use slip lane to continue on Sturt Hwy
277.0	Monash SA	Sturt Hwy GPS Link: https://maps.app.goo.gl/H5GqSMnYNDd6nMJq8	150.0 metres long 10.0 metres wide	Merge to the left	Suitable parking on correct side of the road.
281.0	Renmark South SA	Sturt Hwy onto Airport Rd GPS Link: https://goo.gl/maps/Mxs4f678Vpz62Jyw7	Width: 7.5 metres Length: 50 metres	Left hand turn	Delineators to be made removable
281.4	Renmark South SA	Airport Rd onto Government Rd GPS Link: https://goo.gl/maps/WATqw6Qeh8owiVvP6	Width: 7.0 metres Length: 45 metres	Right hand turn	Hardstand to be installed on outside of corner. Overhead conductor clearance to be confirmed.
291.0	Renmark North SA	Government Rd onto Ral Ral Ave GPS Link: https://goo.gl/maps/BwhFYX9pHpitfAMw7	Width: 6.5 metres Length: 40 metres	Left hand turn	No problems with this section of road
293.0	Cooltong SA	Ral Ral Ave onto Wentworth-Renmark Rd GPS Link: https://goo.gl/maps/TA1wuHwQG7ArPdFy8	Width: 7.0 metres Length: 60 metres	Right hand turn	No problems with this section of road
293.5	Cooltong SA	Wentworth-Renmark Rd GPS Link: https://maps.app.goo.gl/ydM66JyHLQGpdBqN8	80.0 metres long 12.0 metres wide	Merge to the left	Suitable parking on correct side of the road.
298.0-431.0	Cooltong SA/NSW	Wentworth-Renmark Rd GPS Link: https://maps.app.goo.gl/bmrVkuTTozAtaxVm6	Width: 4.5 metres	Travel directly ahead	Gravel road with multiple stock crossings. Road to be graded prior to commencement and maintained for project duration. May become unusable in wet conditions.
338.0	Donggall NSW	Wentworth-Renmark Rd becomes Renmark Rd GPS Link: https://goo.gl/maps/ZuFAU4EdRT1KAf6m9	Width: 4.5 metres	Travel directly ahead	SA-NSW border
432.0	Wentworth NSW	Renmark Rd onto Silver City Hwy GPS Link: https://goo.gl/maps/Wv3auw9tcb4ahhDy6	Width: 6.0 metres Length: 60 metres	Right hand turn	No problems with this section of road
434.0	Wentworth NSW	Silver City Hwy onto Armstrong Ave GPS Link: https://goo.gl/maps/nDWFRzcNzq8Lc1Gc7	Width: 9.0 metres Length: 50 metres	Left hand turn	Signs to be made removable as required and island made trafficable
434.5	Wentworth NSW	Armstrong Ave onto Silver City Hwy GPS Link: https://goo.gl/maps/TCQ4L3c37NcUCRJa6	Width: 5.0 metres Length: 50 metres	Right hand turn	Load to use slip lane on incorrect side of road.

ROUTE STUDY
Port Adelaide to
Junction Rivers Windfarm

REX J ANDREWS
ENGINEERED TRANSPORTATION

KM index	Location	Section of road	Critical Measurement	Procedure	Notes
435.0	Wentworth NSW	Silver City Highway GPS Link: https://maps.app.goo.gl/xLrMSbrhfvzq2eHD9	70.0 metres long 9.0 metres wide	Merge to the left	Possible parking on correct side of the road.
441.0	Curlwaa NSW	Corner on Silver City Hwy at Calder Hwy GPS Link: https://goo.gl/maps/L8FS9yEtsSVVduJUA	Width: 10.0 metres Length: 45 metres	Left hand turn	No problems with this section of road
464.0	Buronga NSW	Silver City Hwy onto Sturt Hwy GPS Link: https://goo.gl/maps/vcoENVHNs8NSNUT96	Width: 6.0 metres Length: 50 metres	Left hand turn first exit on roundabout	No problems with this section of road
488.0	Paringi NSW	Sturt Hwy GPS Link: https://goo.gl/maps/aF7DrHsfBEBnzMBZ8	90.0 metres long 10.0 metres wide	Left Hand Merge	Possible parking on correct side of the road.
540.0	Euston NSW	Sturt Hwy roundabout at Carey St GPS Link: https://goo.gl/maps/4WoDVv7TwnbDad6z5	6 metres wide	Left hand turn first exit on roundabout	Signs on entry and exit island to be relocated or made removable and islands made trafficable and hardstand to be added to side of road.
556.0	Meilman East, NSW	Sturt Highway, Meilman East Rest Area	280 metres long 7 metres wide	Right Hand Turn	Suitable parking on the incorrect side of the road.
620.0	Balranald NSW	Sturt Hwy (market st) onto Sturt Hwy GPS Link: https://goo.gl/maps/xve4ZqbuRkqqPvVr7	6 metres wide	Right Hand Turn	Load to cross the incorrect side of the roundabout. Median strips will need to be made trafficable, and signs made removable.
621.0	Balranald NSW	Sturt Hwy onto Mallee Hwy (Yanga Way) GPS Link: https://goo.gl/maps/sUqqHV9PKpztyi5g9	8 metres wide	Right Hand Turn	No problems with this section of road.
633.0	Yanga NSW	Yanga Way onto Balranald Rd GPS Link: https://goo.gl/maps/LvawNfJ77rM3pQdAA	8 metres wide	Left Hand Turn	No problems with this section of road.
644.0	Kyalite NSW	Balranald Rd onto Arundel Rd GPS Link: https://goo.gl/maps/bwFVKmM2PLJrJLoJ8	8 metres wide	Site Entrances	Client to provide adequate swept path for the blade to enter site.
659.0	Moolpa NSW	Balranald Rd into western site entrances GPS Link: https://goo.gl/maps/H8SzRQMFqgkXDHvE9	8 metres wide	Site Entrances	Client to provide adequate swept path for the blade to enter site.

434.0 Km's: Silver City Highway at Wentworth.



Figure 73 – Silver City Highway at Wentworth, NSW.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/nDWFRzcNzg8Lc1Gc7

PROCEDURE: Left hand turn

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. Centre island will need to be made trafficable, and a sign will need to be made removable.

540.0 Km's: Sturt Highway at roundabout in Euston.

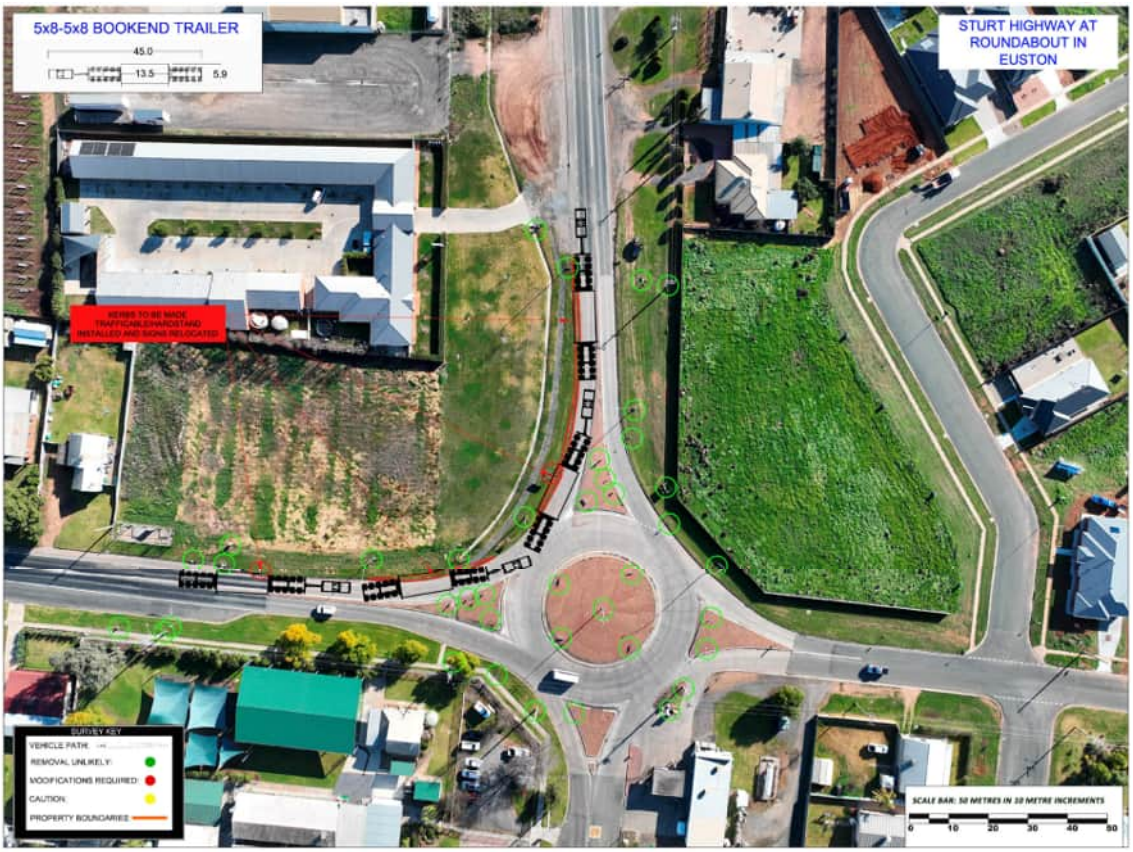


Figure 74 – Sturt Highway roundabout at Euston, NSW.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/4WoDVv7TwnbDad6z5

PROCEDURE: Left hand turn

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes. Some signs need to be made removable, some sections of the island will need to be made trafficable, and some hardstand will need to be added to the side verge.

620.0 Km's: Right hand turn on the Sturt Highway at Balranald, NSW.



Figure 75 –Sturt Highway at Balranald, NSW.

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/xve4ZgbuRkqqPvVr7

PROCEDURE: Right hand turn

COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Yes, signs to be made removable and median strips to be removed and replaced with painted lines and made trafficable.

18.0 Route 4: Rail crossing conflicts

01 Eastern parade, Port Adelaide
GPS: https://maps.app.goo.gl/GS6qo8BNQJDNASDn6

Type: Level crossing
Asset Owner: ARTC
Line: Dry Creek-Port Flat
LXM ID: 1887
Operational: Yes
Maximum width clearance: 8.5 Metres
Conflict: Non



Figure 76: Eastern Parade rail crossing

02 Gawler Road, Two Wells
GPS: https://maps.app.goo.gl/bprikfGH1CZggQVdA

Type: Level crossing
Asset Owner: ARTC
Line: Adelaide-Crystalbrook
LXM ID: 1726
Operational: Yes
Maximum width clearance: 7.5 Metres
Conflict: Non



Figure 77: Gawler Road rail crossing

19.0 Route 4 Conclusion

After studying all options and undertaking a route survey, this route can be made suitable for transporting the proposed components provided the modifications outlined in the report are completed as a minimum.

The following are the key points that need to be taken into consideration if the project moves forward with this route.

LENGTH

- The longest combination that can travel along this route without upgrades is **35 metres overall length**
- If loads exceed 35 metres in overall length, then several corners will need to have hardstand added. They are listed in the index.

OVERHEAD STRUCTURES: (6.5 metres maximum loaded height)

BRIDGES:

- This route will need to have all bridge structures checked for capacity before the route could be deemed suitable for use.

OVERHEAD UTILITIES:

- This route will need to be checked by an authorised scoping company. It is likely that a route of at least 6.5 metres is required for this project.

VEGETATION:

- The route requires a moderate amount of vegetation clearing at various locations.

PAVEMENT:

- The Pavement on the majority of the roads have adequate highway pavement.
- Wentworth-Renmark Road is gravel and will require grading prior to commencement and to be maintained for the duration of the project. The road may become unusable in wet conditions which will impact delivery schedules.
- Balranald Road becomes gravel and would need to be maintained throughout the delivery of the turbines.

RAIL ASSETS:

- There are a number of rail overbridges and crossings on route that will require approval from authorities before loads can access the routes.

COMPONENTS THAT WOULD USE ROUTE 4:

- Loads over 5.2 metres in height which are usually the towers.
- Transformers and switchrooms if they exceed 5.2 metres in height. Bridge capacity would still need to be checked for the weight of the transformers.

20.0 Route 3 & Route 4 Comparison

We have given 2 different options for the large diameter towers which will allow the project some flexibility if either Route 3 or 4 becomes a problem. Below are the pros and cons of each of the routes.

ROUTE 3:

Pros

- Route is currently used for similar weight loads.
- Sealed for the entirety.
- Shorter out of the 2 routes.

Cons

- Travels through 3 states.
- Travels through a major town centre of Mildura.
- Far larger number of overhead services would need to be relocated.
- Busier route that would likely affect more motorists.

ROUTE 4:

Pros

- Travels through 2 states only.
- Route is remote for long distances and wouldn't affect as many motorists.
- Fewer overhead services to relocate.

Cons

- Route would need to be assessed for capacity.
- Route has 133 km's of unsealed road.
- Slightly longer route.

CONCLUSION:

Both routes should be kept as options for the project. This takes away some risk to the project in case one of the routes becomes unusable for any reason.

While route 3 is likely the easiest option and the least complicated, route 4 does have merit. If the SW REZ had support from the states if all projects are looked at, as a whole.

Route 4 could be upgraded along the gravel section to accommodate all of the towers, which would take a significant volume of large OSOM loads off the busiest section of the Sturt Highway for over 300 kilometres.

Additionally, there are likely to be far fewer overhead assets to relocate on route 4.

21.0 Rest Areas Summary

The assessed haulage routes predominantly utilise State Highways which provide regular HV parking opportunities for rest breaks. These also provide passing opportunities for other road users allowing the OSOM vehicles to utilise the full width of the road.

The below table summarises suitable rest areas for OSOM vehicles along each route.

Routes	Location	Critical Dimensions	State	Link
1,2,3	Sturt Highway, Blanchetown SA	100 m long 10 m wide	SA	link
1, 2	Bookpurnong Road, Loxton North SA	100 m long 10 m wide	SA	link
1,2,3	Sturt Highway, Yamba SA	150 m long 8 m wide	SA	link
1,2,3	Sturt Highway, Meringur VIC	100 m long 6 m wide	VIC	link
3	Sturt Highway, Merrinee VIC	90m long 10m wide	VIC	link
1	Calder Highway, Hattah VIC	100 m long 10 m wide	VIC	link
1	Robinvale-Sea Lake Road, Bannerton VIC	120 m long 10 m wide	VIC	link
4	Goyder Highway, Morgan SA	90m long 10m wide	SA	link
4	Sturt Highway, Monash SA	150m long 10m wide	SA	link
4	Wentworth-Renmark Road, Cooltong SA	80m long 12m wide	SA	link
4	Silver City Highway, Wentworth NSW	70m long 9m wide	NSW	link
1,2,3,4	Sturt Highway, Meilman East Rest Area, NSW	280m long 8m wide	NSW	link
2,3,4	Sturt Highway, Paringi NSW	90m long 10m wide	NSW	link

21.1 Rest Areas NSW

KEY	
EMERGENCY PARKING	
SUITABLE PARKING	

Location	Section of road	Rest area dimensions	Procedure	Comments
561.0	Meilman East area Sturt Highway GPS Link: https://maps.app.goo.gl/sKYv5MQsEdXDrQGw9	Length: 280.0m Width: 8.0m	Merge right	Emergency parking for the blades A sign needs to be modified.
626.7	Balranald Sturt Highway GPS Link: https://maps.app.goo.gl/qoK5mgXJGFK2tqNk9	Length: 100.0m Width: 8.0m	Merge left	Emergency parking for the blades



Figure 78 – Euston parking area

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/2FK9LSVFtVd1JUMLA

PROCEDURE: Merge to right into the Meilman East rest area.

COMMENTS: Can be used for overnight parking or fatigue breaks. Police and pilots to control all traffic.

SUITABILTY: This parking bay is asphalt and could accommodate a blade as well as multiple other vehicles.

ROAD MODIFICATIONS: Yes. A sign will need to be relocated or made removable.



Figure 79 – Balranald parking area

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/YWhKDDuG8iWCezRRA

PROCEDURE: Merge to left

PAVEMENT TYPE: Dirt

SHARED USE: No other vehicles could use this parking bay while a turbine was parked in this bay.

COMMENTS: Can be used for overnight parking or fatigue breaks. Police and pilots to control all traffic.

ROAD MODIFICATIONS: Nil.

22.0 References

Rex J Andrews P/L
Rex J Andrews P/L Route survey # 348 REV04
Windlab Developments Pty Ltd
Google Earth/Maps
Nearmaps
NHVR (OSOM)
Australian Load Restraint Guide

Disclaimer: This route study is provided on the basis of information only purposes and is to be used strictly as a guide only; Government approvals would be required before these routes could be deemed suitable for transporting the components over the listed routes.

Any, and all parties using information contained this submission do so at own risk.

RJA accept no responsibility for the use of all information contained within this report.

Actual approved routes may differ from those surveyed.

Proposed routes may change subject to approvals from authorities.

The blade listed in this report is a prototype only. More information on this blade is required before confirmation that the route can accommodate this size load.

This study was undertaken using data supplied by Rex J Andrews P/L. Equipment and swept paths might vary if using transport methodology other than the data supplied by Rex J Andrews.

23.0 Appendix 1 - Transport Combinations (Examples)

TURBINE EXAMPLES:

Blades (100.0 x 4.5w x 4.0h x 30.0T)
Configuration. Prime mover with 2x4 dolly 3x4 Jinker
Overall dimensions: 110.0l x 4.5w x 4.9h x 227.0T

Nacelles (15.1l x 4.2w x 4.2h x 130T)
Configuration. Prime mover with 12x8 Platform trailer + Backup truck.
Overall dimensions: 46.0l x 4.3w x 5.2h x 204.5T + Backup truck.

Drive train/Power train/Generator (8.0l x 5.5w x 4.0h x 110T)
Configuration. Prime mover with 10x8 Platform trailer + Backup truck.
Overall dimensions: 39.9l x 5.5w x 5.0h x 199.5T + Backup truck.

Hubs (5.5l x 5.0w x 4.2h x 70.0T)
Configuration. Prime mover with 2x8 dolly and 5x8 Low loader.
Overall dimensions: 26.0l x 5.0w x 5.2h x 106.5T.

149 METRE TOWER EXAMPLE:

Base Towers (10.1l x 6.0 x 5.5 x 91T)
Configuration. Prime mover with 5x8-5x8 Bookend.
Overall dimension: 42.0l x 5.85w x 6.1h x 164.5T (+ Push truck)

Section 2 Towers (14.1l x 5.5 x 5.5 x 89T)
Configuration. Prime mover with 5x8-5x8 Bookend.
Overall dimension: 44.0l x 5.5w x 5.7h x 164.5T (+ Push truck)

Section 3 Towers (16.5l x 5.5 x 4.95 x 89T)
Configuration. Prime mover with 5x8-5x8 Bookend.
Overall dimension: 46.0l x 5.5w x 5.7h x 164.5T (+ Push truck)

Section 4 Towers (17.2l x 4.95 x 4.65 x 86T)
Configuration. Prime mover with 8x8 low platform.
Overall dimension: 35.0l x 5.0w x 5.9h x 154.5T (+ Push truck)

Section 5 Towers (20.5l x 4.65 x 4.65 x 84T)
Configuration. Prime mover with 10x8 platform trailer.
Overall dimension: 38.0l x 4.7w x 5.7h x 164.5T (+ Push truck)

Section 6 Towers (29.9l x 4.65w x 4.65 x 87T)
Configuration. Prime mover with 5x8-5x8 Extending platform trailer.
Overall dimension: 45.0l x 4.7w x 5.7h x 164.5T (+ Push truck)

Top Towers (35.5l x 4.65w x 3.97h x 74T)
Configuration. Prime mover with 4x8-4x8 Extending platform trailer.
Overall dimension: 54.0l x 5.1w x 5.7h x 152.5T (+ Push truck)

ERECTION CRANES:

LG1750 carrier (19.2l x 3.0 x 4.0 x 96T)
Configuration. Prime mover with 10x8 Platform trailer + Backup truck
Overall dimensions: 36.0l x 4.2w x 5.2h x 174.5T + Backup truck

LTM1500 carrier (21.0l x 3.0 x 4.0 x 96T)
Configuration. Prime mover with 10x8 Platform trailer + Backup truck
Overall dimensions: 36.0l x 5.0w x 5.2h x 174.5T + Backup truck

TRANSFORMER:

Possible Transformer size (9.2l x 4.0 x 4.35 x 167T)
Configuration. Prime mover with 10x8-10x8 Beamset + 4 x Backup trucks
Overall dimensions: 45.0l x 4.3w x 5.4h x 324.5T + 4 x Backup trucks
Or
Configuration. Prime mover with 16x8 Platform trailer + 3 x Backup trucks
Overall dimensions: 45.0l x 4.3w x 5.4h x 256.5T + 3 x Backup trucks

SWITCHROOM:

The largest switch room size that is recommended for this site would be as follows.
Switch room dimensions: 30.0l x 6.0w x 4.4h x 90.0T

24.0 Appendix 2 - Transport Drawings (Possible Combinations)

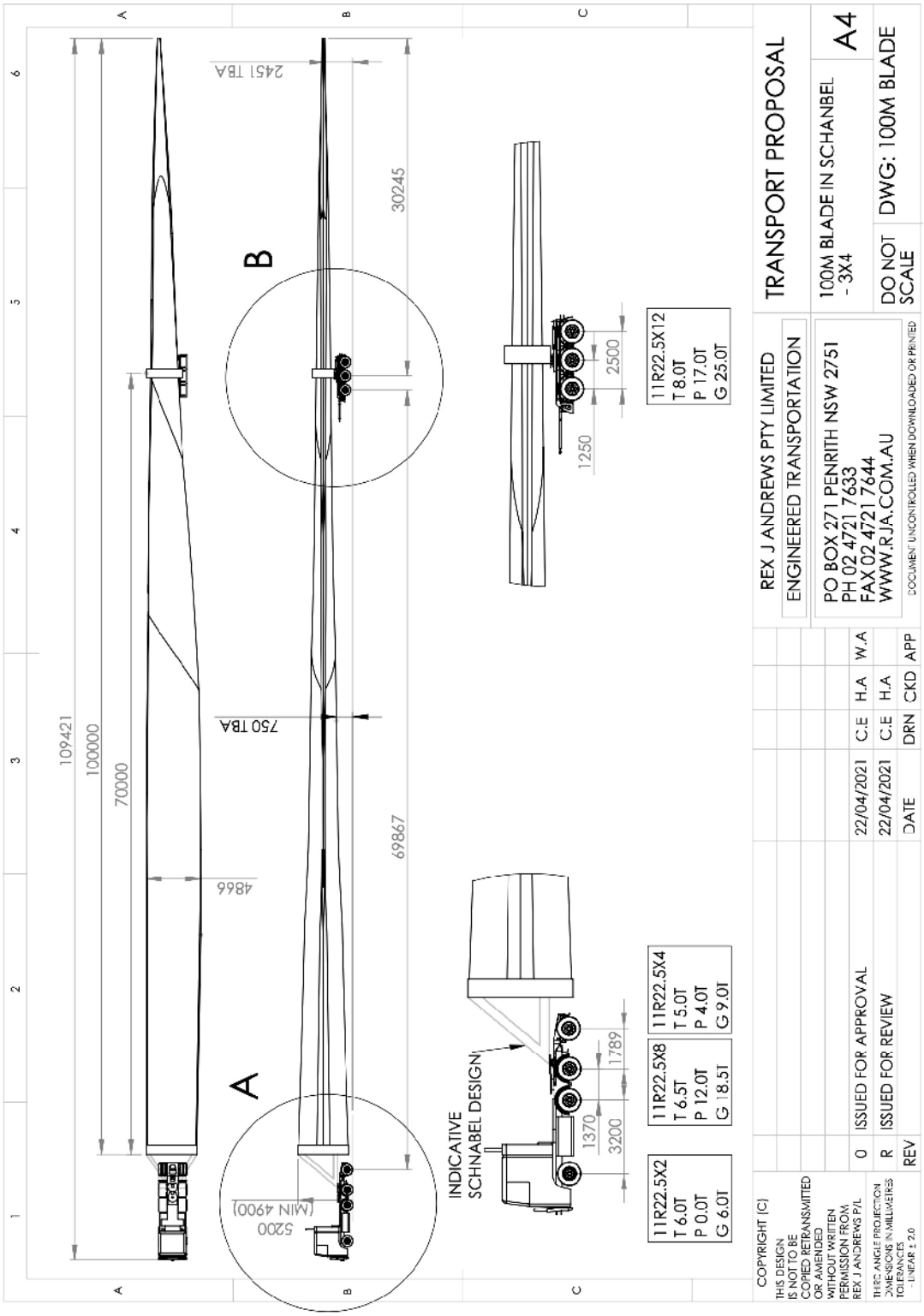


Figure 80 - Blade Diagram (100 Metre blade case study).

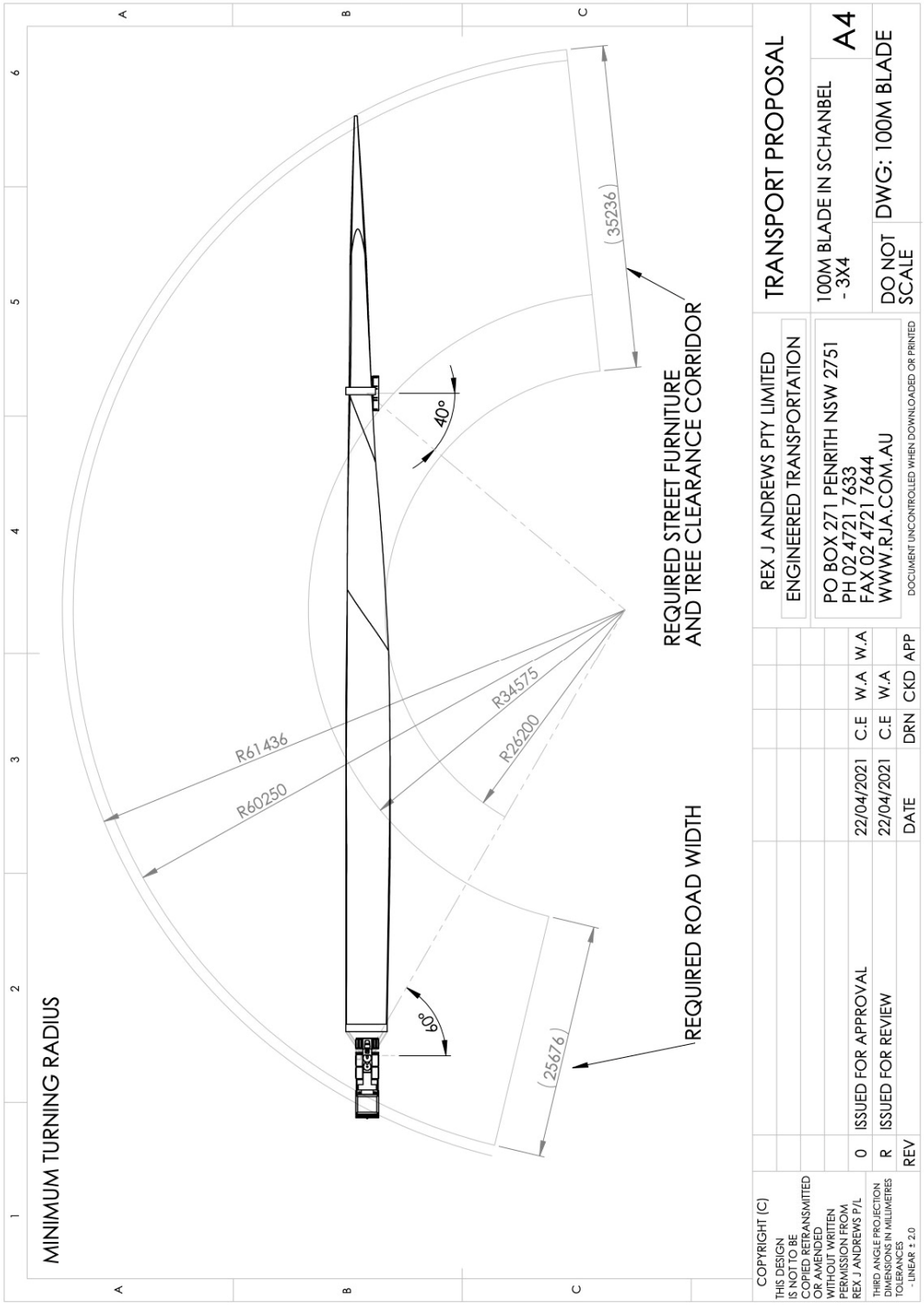


Figure 81 - Blade Diagram Swept Path (100 Metre blade case study)

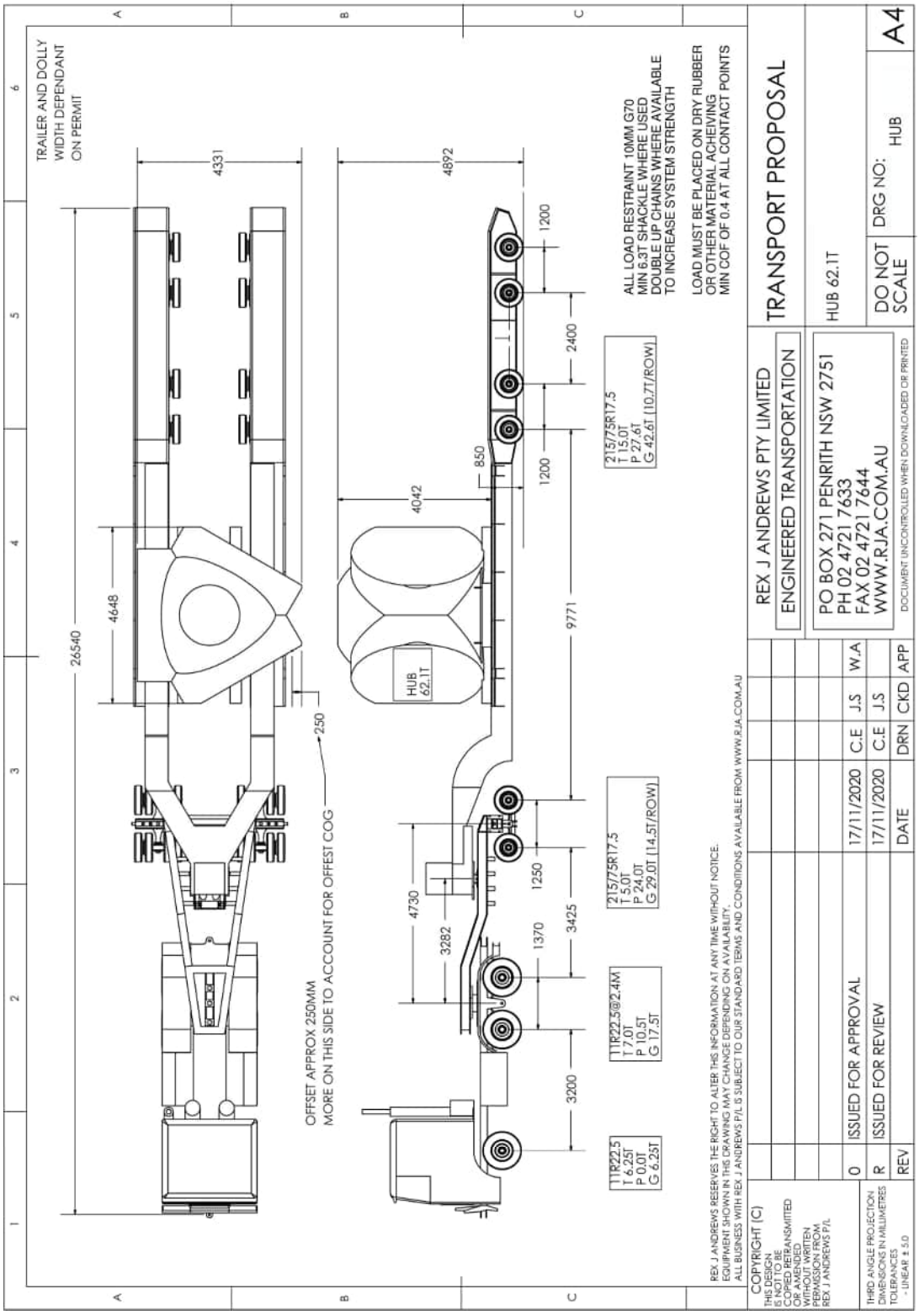


Figure 82 - Hub Combination Example

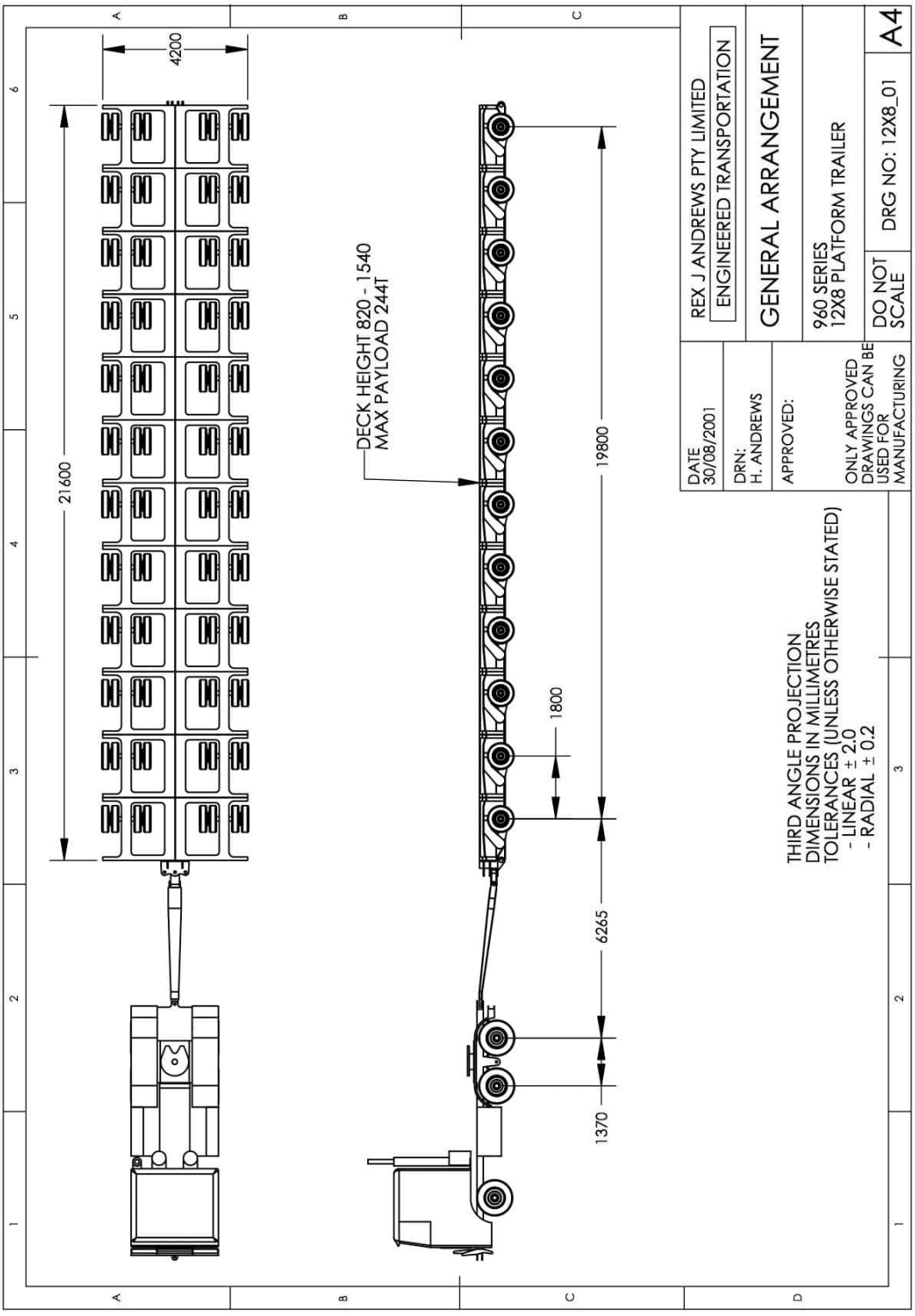


Figure 83 - Nacelle Combination Example

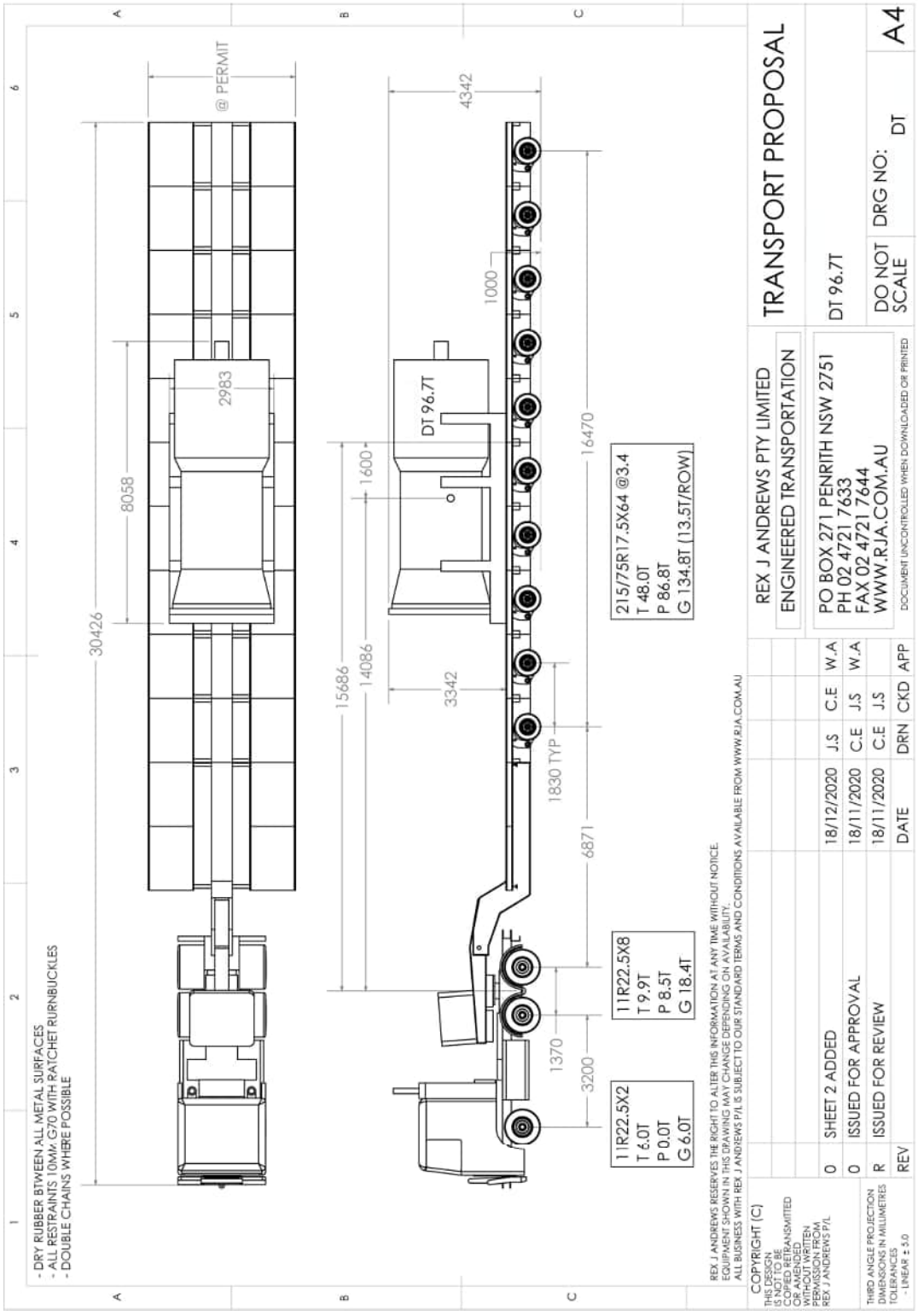


Figure 84 - Drivetrain Combination Example

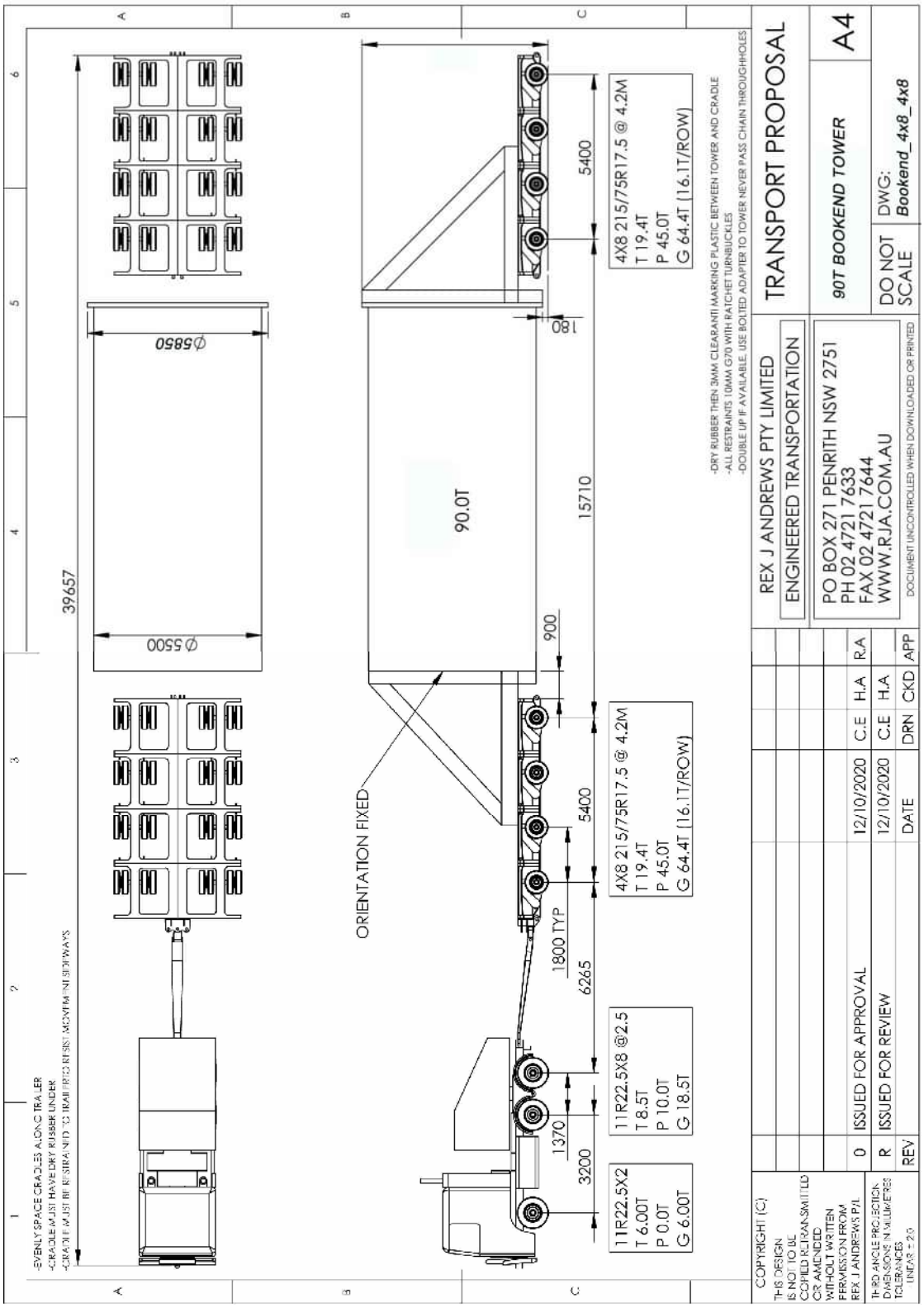


Figure 85 - Tower Trailer Bookend

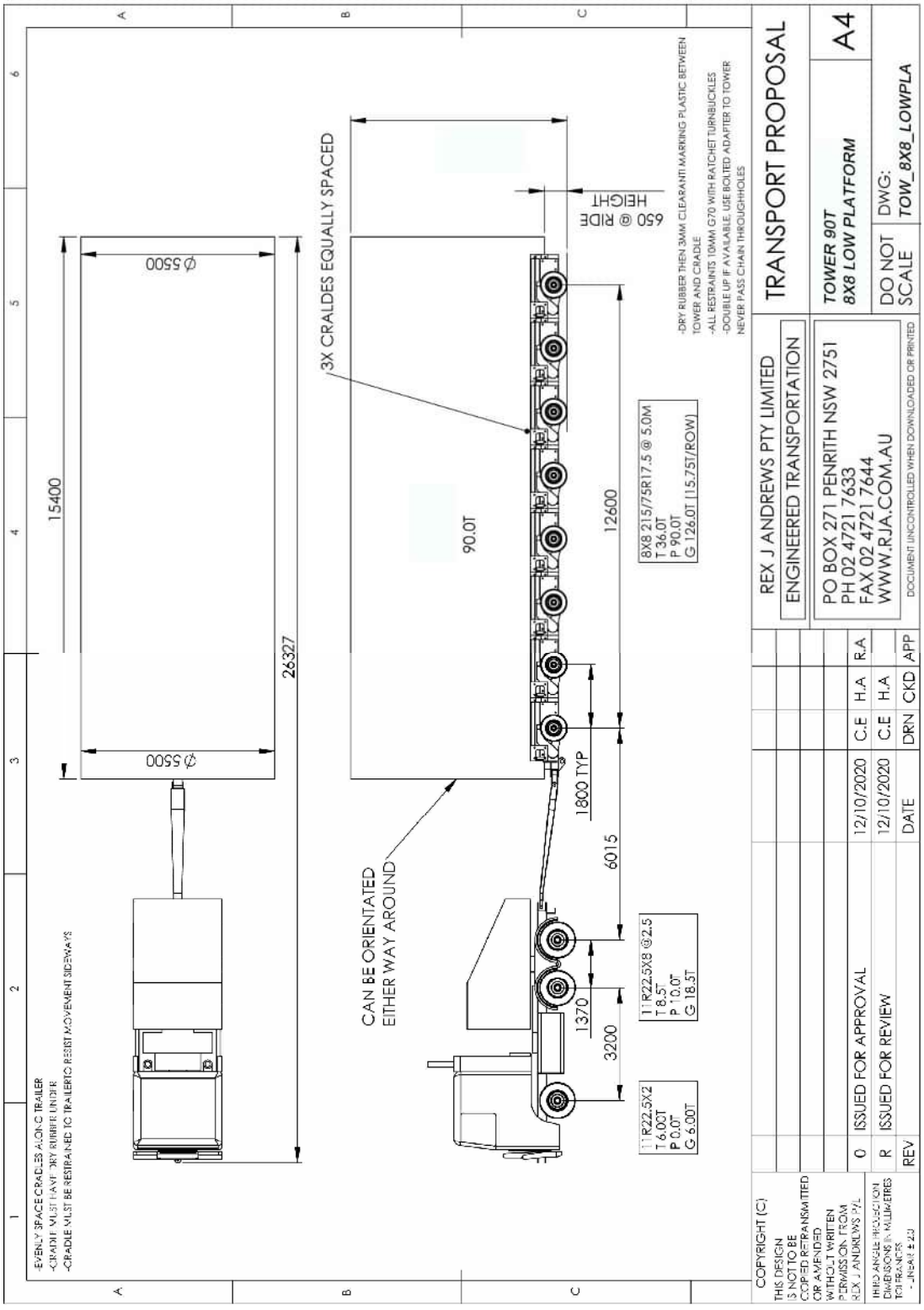


Figure 86 - Tower Trailer 8x8

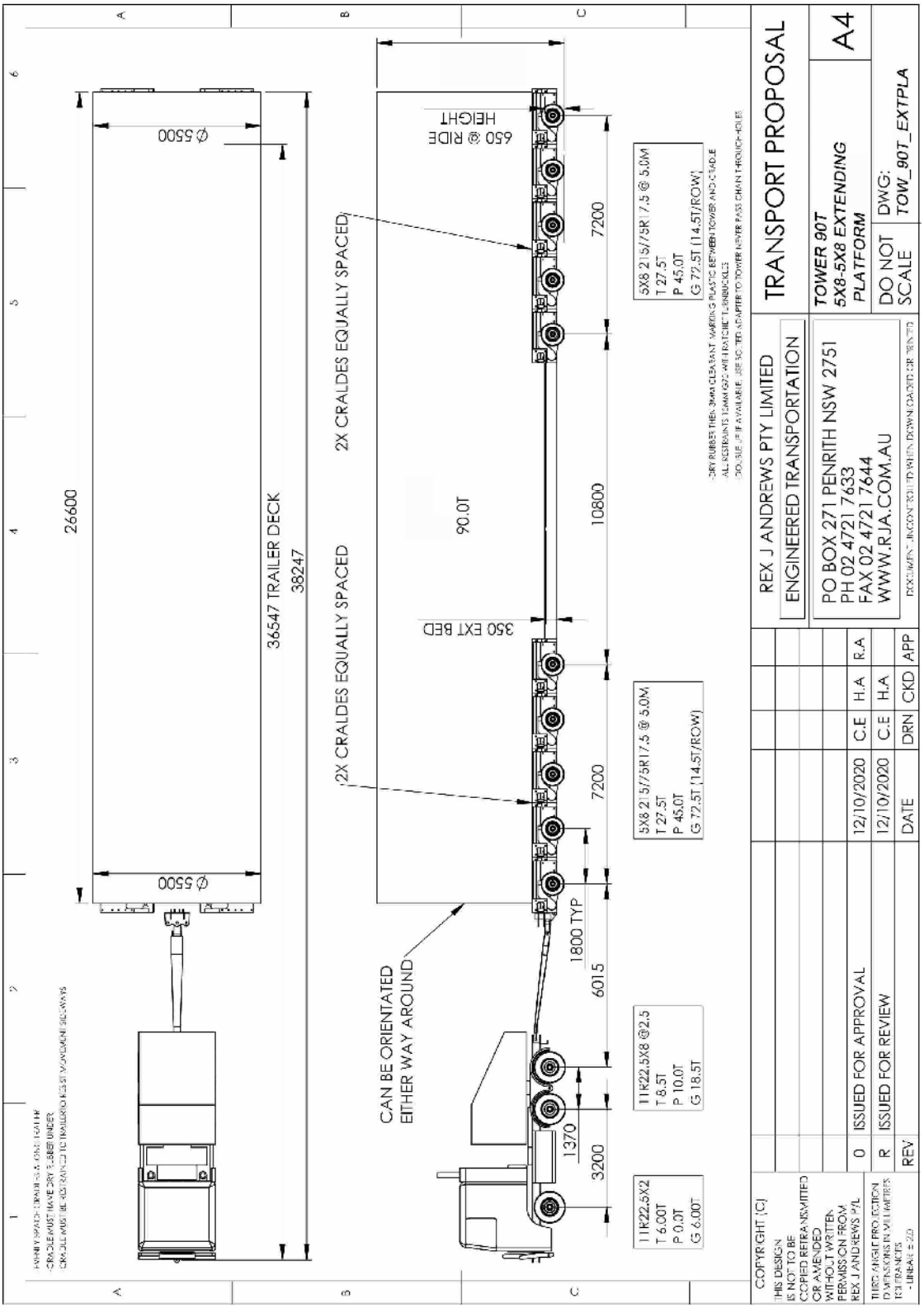


Figure 87 - Tower Trailer Extending 5x8_5x8

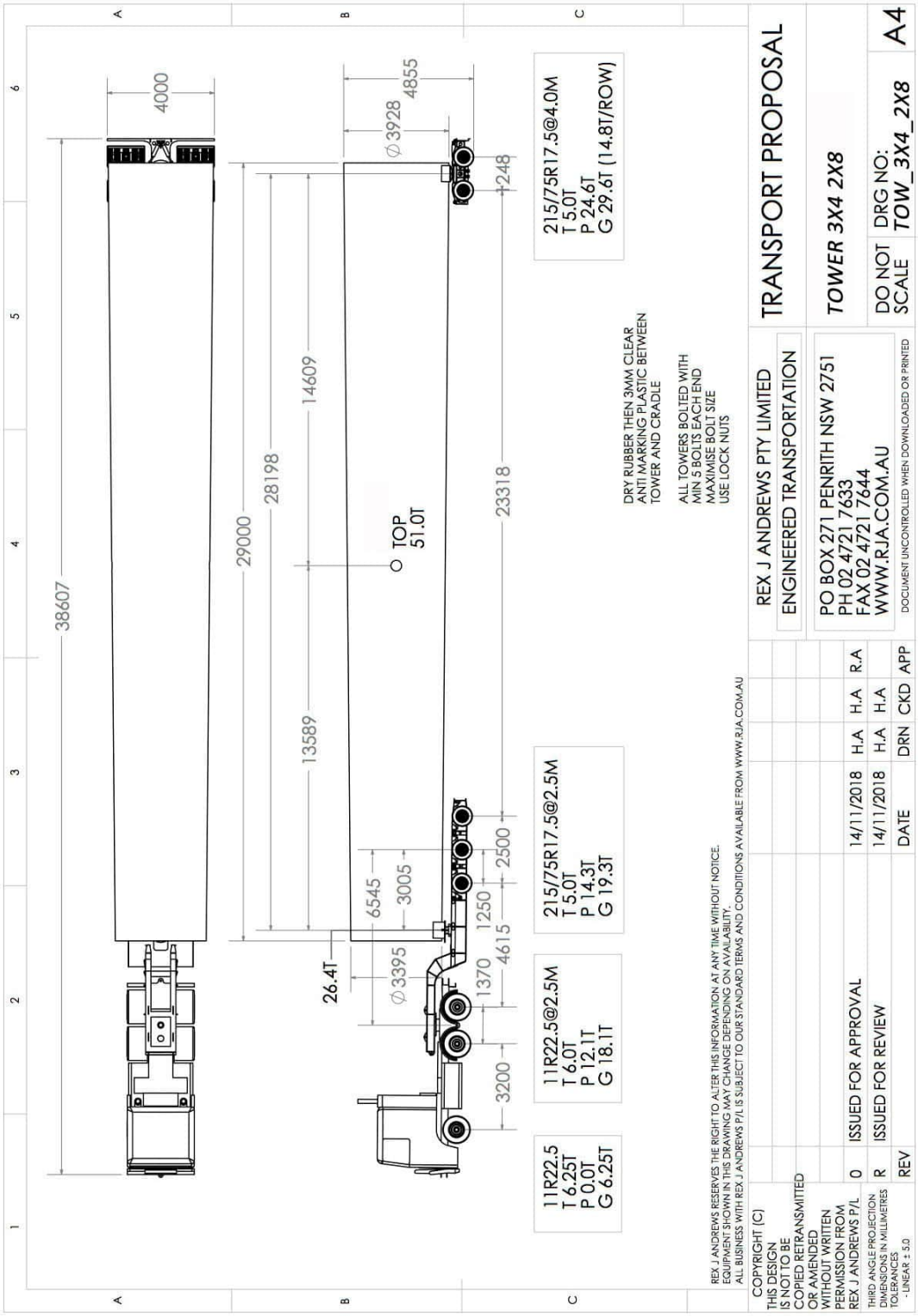


Figure 88 - Tower Trailer Dolly and Jinker

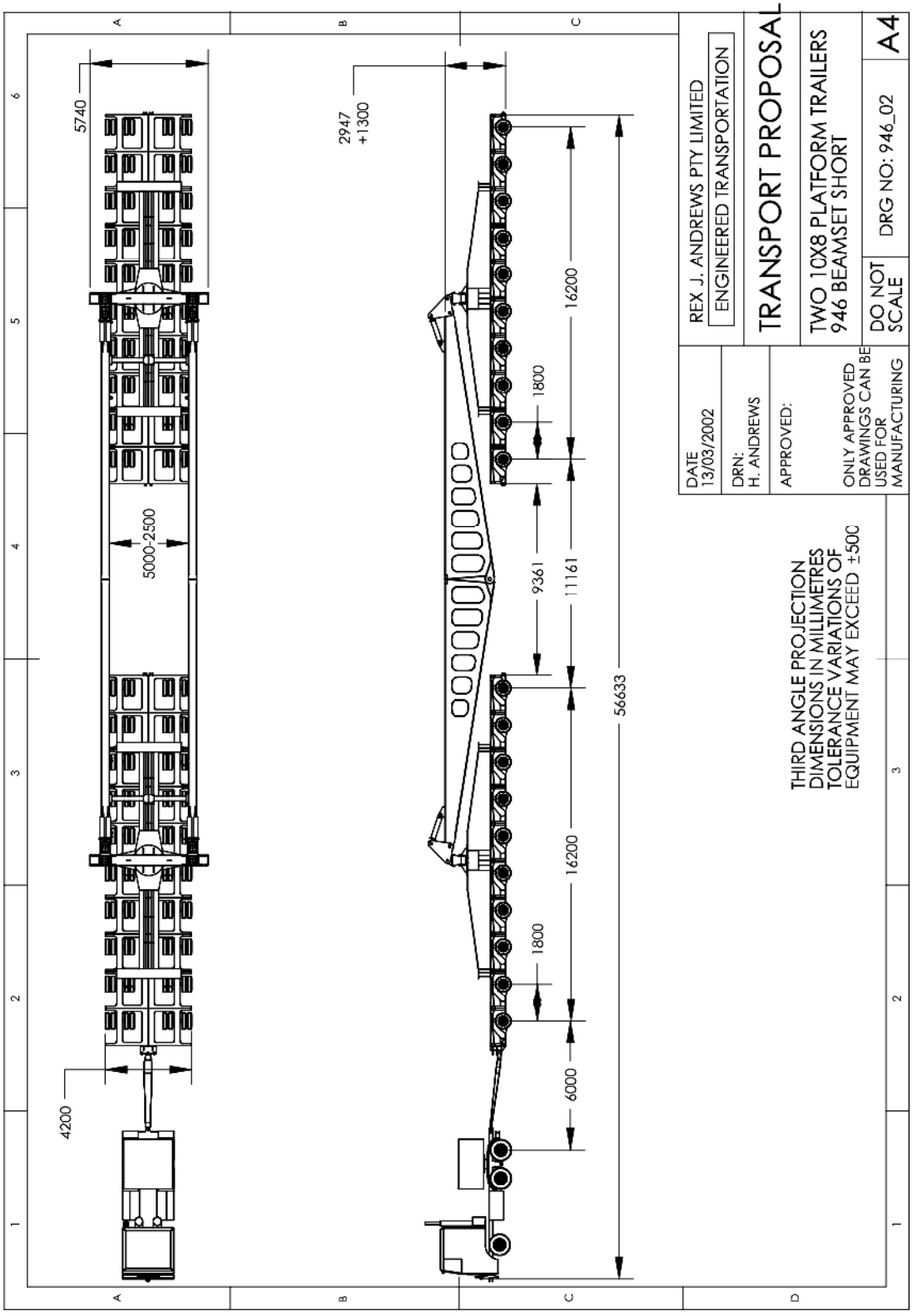


Figure 89 – 300MVA Transformer Trailer 10x8-10x8 Beamset

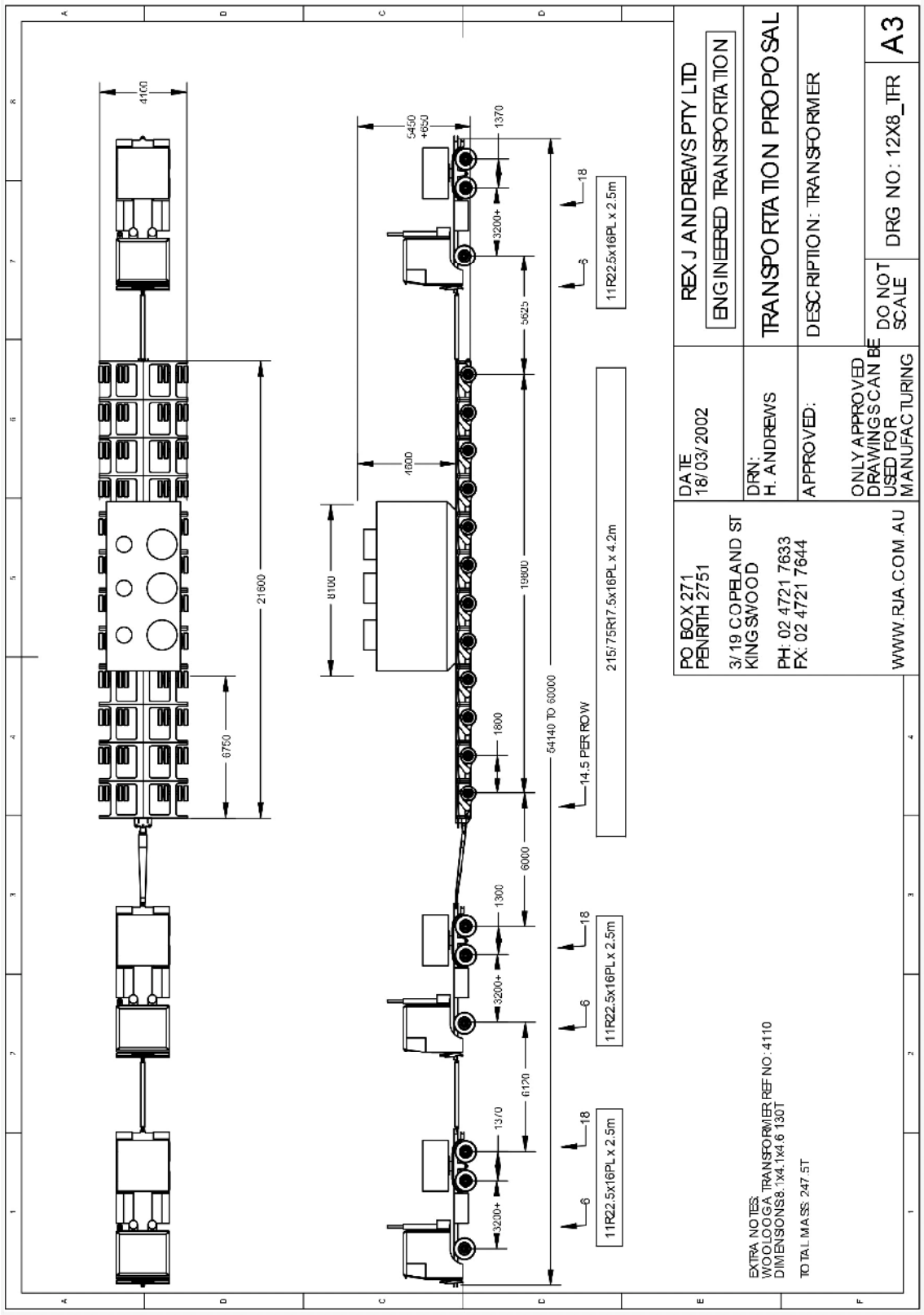


Figure 90 – 150MVA Transformer Trailer 12x8 Platform

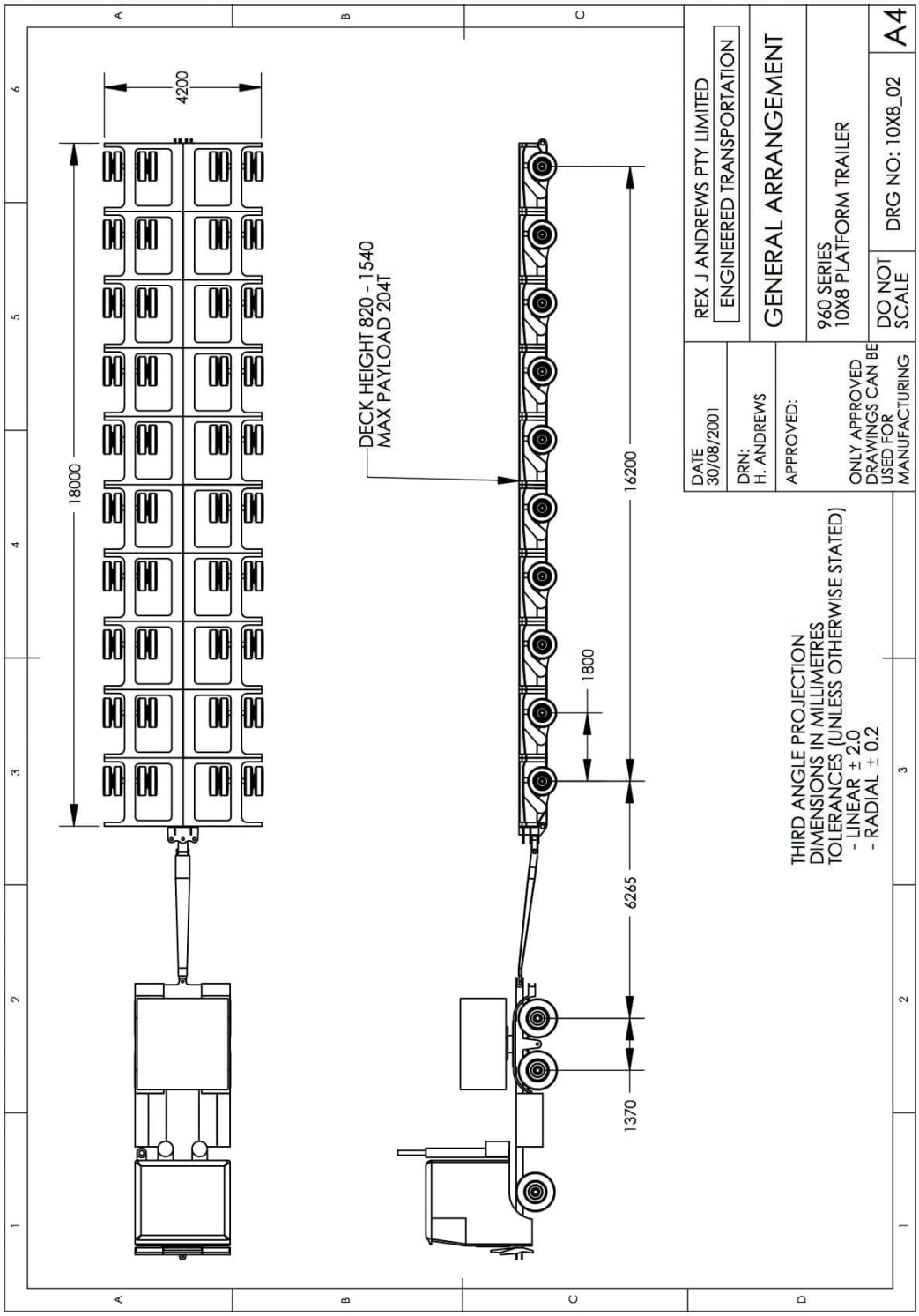


Figure 91 - Crane Trailer 10x8 Platform

Appendix B – Intersection Count Data

ACCESS TRAFFIC CONSULTING

Summary of Turning Movement Counts - from Traffic Count on iOS

Study Name Sturt Highway / Yanga Way (Mallee Highway)

Date 6/12/2022

Observer Andrew Barrie

Streets NB Yanga Way SB Nil EB Sturt Highway WB Sturt Highway

Cars

Start Time	End Time	Northbound					Southbound					Eastbound					Westbound					
		Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
6:00am	6:15am	0	0	1	0	1	0	0	0	0	0	0	4	3	0	7	2	5	0	0	7	15
6:15am	6:30am	1	0	0	0	1	0	0	0	0	0	0	3	4	0	7	3	4	0	0	7	15
6:30am	6:45am	3	0	3	0	6	0	0	0	0	0	0	7	5	0	12	0	3	0	0	3	21
6:45am	7:00am	4	0	1	0	5	0	0	0	0	0	0	6	2	0	8	0	2	0	0	2	15
Total		8	0	5	0	13	0	0	0	0	0	0	20	14	0	34	5	14	0	0	19	66

Bicycles

Start Time	End Time	Northbound					Southbound					Eastbound					Westbound					
		Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
6:00am	6:15am	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15am	6:30am	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30am	6:45am	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45am	7:00am	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Heavy Vehicles

Start Time	End Time	Northbound					Southbound					Eastbound					Westbound					
		Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
6:00am	6:15am	0	0	0	0	0	0	0	0	0	0	0	4	1	0	5	0	6	0	0	6	0
6:15am	6:30am	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3	0	2	0	0	2	2
6:30am	6:45am	1	0	0	0	1	0	0	0	0	0	0	1	3	0	4	2	6	0	0	8	4
6:45am	7:00am	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	1	3	0	0	4	3
Total		1	0	0	0	1	0	0	0	0	0	0	9	6	0	15	3	17	0	0	20	9

ACCESS TRAFFIC CONSULTING

Summary of Turning Movement Counts - from Traffic Count on iOS

Study Name Sturt Highway / Yanga Way (Mallee Highway)
Date 6/12/2022
Observer Andrew Barrie

Streets NB Yanga Way SB Nil EB Sturt Highway WB Sturt Highway

Cars

Start Time	End Time	Northbound					Southbound					Eastbound					Westbound					
		Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
5:00pm	5:15pm	7	0	0	0	7	0	0	0	0	0	0	5	5	0	10	2	7	0	0	9	26
5:15pm	5:30pm	2	0	1	0	3	0	0	0	0	0	0	5	2	0	7	1	2	0	0	3	13
5:30pm	5:45pm	3	0	3	0	6	0	0	0	0	0	0	2	7	0	9	1	6	0	0	7	22
5:45pm	6:00pm	2	0	1	0	3	0	0	0	0	0	0	5	2	0	7	0	6	0	0	6	16
Total		14	0	5	0	19	0	0	0	0	0	0	17	16	0	33	4	21	0	0	25	77

Bicycles

Start Time	End Time	Northbound					Southbound					Eastbound					Westbound					
		Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
5:00pm	5:15pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15pm	5:30pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30pm	5:45pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45pm	6:00pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Heavy Vehicles

Start Time	End Time	Northbound					Southbound					Eastbound					Westbound					
		Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
5:00pm	5:15pm	0	0	0	0	0	0	0	0	0	0	0	7	1	0	8	0	7	0	0	7	0
5:15pm	5:30pm	0	0	0	0	0	0	0	0	0	0	0	5	1	0	6	0	5	0	0	5	2
5:30pm	5:45pm	1	0	1	0	2	0	0	0	0	0	0	5	0	0	5	0	4	0	0	4	4
5:45pm	6:00pm	2	0	1	0	3	0	0	0	0	0	0	9	1	0	10	0	4	0	0	4	3
Total		3	0	2	0	5	0	0	0	0	0	0	26	3	0	29	0	20	0	0	20	9

Summary of Turning Movement Counts - from Traffic Count on iOS

Study Name Yanga Way (Mallee Highway) / Balranald Rd
Date 7/12/2022
Observer Andrew Barrie

Streets NB Yanga Way SB Yanga Way EB Nil WB Balranald Rd

Cars

Start Time	End Time	Northbound					Southbound					Eastbound					Westbound					
		Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
6:00am	6:15am	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	4
6:15am	6:30am	0	1	1	0	2	0	8	0	0	8	0	0	0	0	0	0	0	1	0	1	11
6:30am	6:45am	0	4	0	0	4	0	3	0	0	3	0	0	0	0	0	1	0	0	0	1	8
6:45am	7:00am	0	7	0	0	7	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	10
Total		0	14	1	0	15	1	15	0	0	16	0	0	0	0	0	1	0	1	0	2	33

Bicycles

Start Time	End Time	Northbound					Southbound					Eastbound					Westbound					
		Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
6:00am	6:15am	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15am	6:30am	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30am	6:45am	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45am	7:00am	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Heavy Vehicles

Start Time	End Time	Northbound					Southbound					Eastbound					Westbound					
		Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
6:00am	6:15am	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15am	6:30am	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	2
6:30am	6:45am	0	2	0	0	2	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	4
6:45am	7:00am	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Total		0	7	0	0	7	1	3	0	0	4	0	0	0	0	0	0	0	1	0	1	9

Summary of Turning Movement Counts - from Traffic Count on iOS

Study Name Yanga Way (Mallee Highway) / Balranald Rd
Date 7/12/2022
Observer Andrew Barrie

Streets NB Yanga Way SB Yanga Way EB Nil WB Balranald Rd

Cars

Start Time	End Time	Northbound					Southbound					Eastbound					Westbound					
		Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
5:00pm	5:15pm	0	3	0	0	3	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	5
5:15pm	5:30pm	0	7	0	0	7	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	15
5:30pm	5:45pm	0	2	0	0	2	1	7	0	0	8	0	0	0	0	0	0	0	1	0	1	11
5:45pm	6:00pm	0	5	0	0	5	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	9
Total		0	17	0	0	17	1	21	0	0	22	0	0	0	0	0	0	0	1	0	1	40

Bicycles

Start Time	End Time	Northbound					Southbound					Eastbound					Westbound					
		Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
5:00pm	5:15pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15pm	5:30pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30pm	5:45pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45pm	6:00pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Heavy Vehicles

Start Time	End Time	Northbound					Southbound					Eastbound					Westbound					
		Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
5:00pm	5:15pm	0	1	1	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
5:15pm	5:30pm	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
5:30pm	5:45pm	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	4
5:45pm	6:00pm	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	3
Total		0	3	1	0	4	0	3	0	0	3	0	0	0	0	0	2	0	0	0	2	9

Appendix C – SIDRA Results Sturt Highway / Yanga Way

MOVEMENT SUMMARY

Site: 1 [EXIST 2025 AM Peak (Site Folder: Sturt Highway / Yanga Way)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Sturt Highway / Yanga Way
Existing Intersection Configuration
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Sturt Highway															
21	L2	All MCs	8	37.5	8	37.5	0.012	6.0	LOS A	0.0	0.0	0.00	0.28	0.00	53.1
5	T1	All MCs	35	54.5	35	54.5	0.018	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	59.2
Approach			43	51.2	43	51.2	0.018	1.2	NA	0.0	0.0	0.00	0.11	0.00	57.9
NorthWest: Sturt Highway															
11	T1	All MCs	33	32.3	33	32.3	0.019	0.0	LOS A	0.1	0.7	0.01	0.02	0.01	59.7
29	R2	All MCs	22	28.6	22	28.6	0.019	6.1	LOS A	0.1	0.7	0.15	0.50	0.15	51.6
Approach			55	30.8	55	30.8	0.019	2.5	NA	0.1	0.7	0.06	0.21	0.06	56.1
SouthWest: Yanga Way															
30	L2	All MCs	9	11.1	9	11.1	0.013	5.8	LOS A	0.0	0.4	0.07	0.54	0.07	52.2
32	R2	All MCs	5	0.0	5	0.0	0.013	6.1	LOS A	0.0	0.4	0.07	0.54	0.07	52.7
Approach			15	7.1	15	7.1	0.013	5.9	LOS A	0.0	0.4	0.07	0.54	0.07	52.4
All Vehicles			113	35.5	113	35.5	0.019	2.4	NA	0.1	0.7	0.04	0.22	0.04	56.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [EXIST 2025 PM Peak (Site Folder: Sturt Highway / Yanga Way)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Sturt Highway / Yanga Way
Existing Intersection Configuration
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Sturt Highway															
21	L2	All MCs	4	0.0	4	0.0	0.013	5.5	LOS A	0.0	0.0	0.00	0.12	0.00	55.8
5	T1	All MCs	45	48.8	45	48.8	0.020	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.3
Approach			49	44.7	49	44.7	0.020	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.0
NorthWest: Sturt Highway															
11	T1	All MCs	48	60.9	48	60.9	0.025	0.1	LOS A	0.1	0.9	0.04	0.10	0.04	58.7
29	R2	All MCs	21	15.0	21	15.0	0.025	6.0	LOS A	0.1	0.9	0.15	0.35	0.15	52.8
Approach			69	47.0	69	47.0	0.025	1.9	NA	0.1	0.9	0.07	0.17	0.07	56.8
SouthWest: Yanga Way															
30	L2	All MCs	19	16.7	19	16.7	0.025	5.9	LOS A	0.1	0.8	0.10	0.54	0.10	51.9
32	R2	All MCs	7	28.6	7	28.6	0.025	7.1	LOS A	0.1	0.8	0.10	0.54	0.10	51.5
Approach			26	20.0	26	20.0	0.025	6.2	LOS A	0.1	0.8	0.10	0.54	0.10	51.8
All Vehicles			145	41.3	145	41.3	0.025	2.2	NA	0.1	0.9	0.05	0.20	0.05	56.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [STG1 PRELIM CONS 2026 AM Peak (Site Folder: Sturt Highway / Yanga Way)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Sturt Highway / Yanga Way
Updated CHRs/AUL Intersection Configuration
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Sturt Highway															
21	L2	All MCs	8	37.5	8	37.5	0.012	6.0	LOS A	0.0	0.0	0.00	0.28	0.00	53.1
5	T1	All MCs	35	54.5	35	54.5	0.018	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	59.2
Approach			43	51.2	43	51.2	0.018	1.2	NA	0.0	0.0	0.00	0.11	0.00	57.9
NorthWest: Sturt Highway															
11	T1	All MCs	34	31.3	34	31.3	0.045	0.1	LOS A	0.2	1.6	0.08	0.22	0.08	57.5
29	R2	All MCs	42	20.0	42	20.0	0.045	6.0	LOS A	0.2	1.6	0.15	0.39	0.15	52.8
Approach			76	25.0	76	25.0	0.045	3.4	NA	0.2	1.6	0.12	0.31	0.12	54.8
SouthWest: Yanga Way															
30	L2	All MCs	13	25.0	13	25.0	0.016	5.9	LOS A	0.1	0.5	0.07	0.54	0.07	51.6
32	R2	All MCs	5	0.0	5	0.0	0.016	6.2	LOS A	0.1	0.5	0.07	0.54	0.07	52.9
Approach			18	17.6	18	17.6	0.016	6.0	LOS A	0.1	0.5	0.07	0.54	0.07	52.0
All Vehicles			137	32.3	137	32.3	0.045	3.0	NA	0.2	1.6	0.08	0.28	0.08	55.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [STG1 PRELIM CONS 2026 PM Peak (Site Folder: Sturt Highway / Yanga Way)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Sturt Highway / Yanga Way
Updated CHRs/AUL Intersection Configuration
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Sturt Highway															
21	L2	All MCs	4	0.0	4	0.0	0.013	5.5	LOS A	0.0	0.0	0.00	0.12	0.00	55.9
5	T1	All MCs	47	48.9	47	48.9	0.020	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.4
Approach			52	44.9	52	44.9	0.020	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.1
NorthWest: Sturt Highway															
11	T1	All MCs	48	60.9	48	60.9	0.043	0.1	LOS A	0.1	1.4	0.09	0.18	0.09	57.4
29	R2	All MCs	23	22.7	23	22.7	0.043	6.1	LOS A	0.1	1.4	0.12	0.24	0.12	53.5
Approach			72	48.5	72	48.5	0.043	2.1	NA	0.1	1.4	0.10	0.20	0.10	56.1
SouthWest: Yanga Way															
30	L2	All MCs	39	13.5	39	13.5	0.041	5.9	LOS A	0.2	1.2	0.09	0.54	0.09	52.1
32	R2	All MCs	7	28.6	7	28.6	0.041	7.2	LOS A	0.2	1.2	0.09	0.54	0.09	51.7
Approach			46	15.9	46	15.9	0.041	6.1	LOS A	0.2	1.2	0.09	0.54	0.09	52.0
All Vehicles			169	38.5	169	38.5	0.043	2.7	NA	0.2	1.4	0.07	0.25	0.07	55.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [STG1 PRELIM CONS CUMUL 2026 AM Peak (Site Folder: Sturt Highway / Yanga Way)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Sturt Highway / Yanga Way
Updated CHRs/AUL Intersection Configuration
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Sturt Highway															
21	L2	All MCs	8	37.5	8	37.5	0.014	6.0	LOS A	0.0	0.0	0.00	0.25	0.00	53.2
5	T1	All MCs	41	61.5	41	61.5	0.021	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	59.2
Approach			49	57.4	49	57.4	0.021	1.0	NA	0.0	0.0	0.00	0.10	0.00	58.1
NorthWest: Sturt Highway															
11	T1	All MCs	158	10.0	158	10.0	0.112	0.1	LOS A	0.4	3.3	0.09	0.15	0.09	58.6
29	R2	All MCs	52	34.7	52	34.7	0.112	6.3	LOS A	0.4	3.3	0.13	0.20	0.13	54.3
Approach			209	16.1	209	16.1	0.112	1.7	NA	0.4	3.3	0.10	0.16	0.10	57.5
SouthWest: Yanga Way															
30	L2	All MCs	22	57.1	22	57.1	0.029	6.4	LOS A	0.1	1.0	0.09	0.54	0.09	50.3
32	R2	All MCs	5	0.0	5	0.0	0.029	7.6	LOS A	0.1	1.0	0.09	0.54	0.09	52.8
Approach			27	46.2	27	46.2	0.029	6.6	LOS A	0.1	1.0	0.09	0.54	0.09	50.7
All Vehicles			286	26.1	286	26.1	0.112	2.0	NA	0.4	3.3	0.08	0.19	0.08	56.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [STG1 PRELIM CONS CUMUL 2026 PM Peak (Site Folder: Sturt Highway / Yanga Way)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Sturt Highway / Yanga Way
Updated CHRs/AUL Intersection Configuration
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Sturt Highway															
21	L2	All MCs	4	0.0	4	0.0	0.039	5.5	LOS A	0.0	0.0	0.00	0.04	0.00	57.1
5	T1	All MCs	172	16.6	172	16.6	0.060	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
Approach			176	16.2	176	16.2	0.060	0.2	NA	0.0	0.0	0.00	0.01	0.00	59.8
NorthWest: Sturt Highway															
11	T1	All MCs	55	65.4	55	65.4	0.062	0.6	LOS A	0.3	2.6	0.20	0.24	0.20	57.1
29	R2	All MCs	33	45.2	33	45.2	0.062	7.3	LOS A	0.3	2.6	0.29	0.35	0.29	52.0
Approach			87	57.8	87	57.8	0.062	3.1	NA	0.3	2.6	0.23	0.28	0.23	55.1
SouthWest: Yanga Way															
30	L2	All MCs	48	30.4	48	30.4	0.057	6.5	LOS A	0.2	1.8	0.20	0.54	0.20	51.1
32	R2	All MCs	7	28.6	7	28.6	0.057	8.9	LOS A	0.2	1.8	0.20	0.54	0.20	51.4
Approach			56	30.2	56	30.2	0.057	6.8	LOS A	0.2	1.8	0.20	0.54	0.20	51.1
All Vehicles			319	30.0	319	30.0	0.062	2.2	NA	0.3	2.6	0.10	0.18	0.10	56.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [STG1 PEAK CONS 2027 AM Peak (Site Folder: Sturt Highway / Yanga Way)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Sturt Highway / Yanga Way
Updated CHRs/AUL Intersection Configuration
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Sturt Highway															
21	L2	All MCs	9	33.3	9	33.3	0.012	5.9	LOS A	0.0	0.0	0.00	0.30	0.00	53.1
5	T1	All MCs	36	55.9	36	55.9	0.019	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	59.2
Approach			45	51.2	45	51.2	0.019	1.3	NA	0.0	0.0	0.00	0.12	0.00	57.8
NorthWest: Sturt Highway															
11	T1	All MCs	34	31.3	34	31.3	0.064	0.1	LOS A	0.3	2.2	0.06	0.17	0.06	58.0
29	R2	All MCs	73	14.5	73	14.5	0.064	6.0	LOS A	0.3	2.2	0.15	0.47	0.15	52.4
Approach			106	19.8	106	19.8	0.064	4.1	NA	0.3	2.2	0.12	0.37	0.12	54.1
SouthWest: Yanga Way															
30	L2	All MCs	14	30.8	14	30.8	0.019	6.0	LOS A	0.1	0.6	0.07	0.54	0.07	51.4
32	R2	All MCs	6	0.0	6	0.0	0.019	6.5	LOS A	0.1	0.6	0.07	0.54	0.07	52.8
Approach			20	21.1	20	21.1	0.019	6.2	LOS A	0.1	0.6	0.07	0.54	0.07	51.8
All Vehicles			172	28.2	172	28.2	0.064	3.6	NA	0.3	2.2	0.09	0.33	0.09	54.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [STG1 PEAK CONS 2027 PM Peak (Site Folder: Sturt Highway / Yanga Way)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Sturt Highway / Yanga Way
Updated CHRs/AUL Intersection Configuration
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Sturt Highway															
21	L2	All MCs	4	0.0	4	0.0	0.013	5.5	LOS A	0.0	0.0	0.00	0.12	0.00	55.9
5	T1	All MCs	47	48.9	47	48.9	0.020	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.4
Approach			52	44.9	52	44.9	0.020	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.1
NorthWest: Sturt Highway															
11	T1	All MCs	51	60.4	51	60.4	0.046	0.1	LOS A	0.2	1.5	0.09	0.18	0.09	57.4
29	R2	All MCs	25	25.0	25	25.0	0.046	6.1	LOS A	0.2	1.5	0.13	0.25	0.13	53.4
Approach			76	48.6	76	48.6	0.046	2.1	NA	0.2	1.5	0.11	0.20	0.11	56.0
SouthWest: Yanga Way															
30	L2	All MCs	68	9.2	68	9.2	0.066	5.8	LOS A	0.2	1.9	0.09	0.54	0.09	52.2
32	R2	All MCs	8	25.0	8	25.0	0.066	7.2	LOS A	0.2	1.9	0.09	0.54	0.09	51.8
Approach			77	11.0	77	11.0	0.066	6.0	LOS A	0.2	1.9	0.09	0.54	0.09	52.2
All Vehicles			204	33.5	204	33.5	0.066	3.2	NA	0.2	1.9	0.07	0.29	0.07	55.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [STG1 PEAK CONS CUMUL 2027 AM Peak (Site Folder: Sturt Highway / Yanga Way)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Sturt Highway / Yanga Way
Updated CHRs/AUL Intersection Configuration
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Sturt Highway															
21	L2	All MCs	9	33.3	9	33.3	0.014	5.9	LOS A	0.0	0.0	0.00	0.27	0.00	53.2
5	T1	All MCs	41	61.5	41	61.5	0.021	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	59.1
Approach			51	56.3	51	56.3	0.021	1.1	NA	0.0	0.0	0.00	0.11	0.00	57.9
NorthWest: Sturt Highway															
11	T1	All MCs	158	10.0	158	10.0	0.130	0.2	LOS A	0.6	4.4	0.11	0.19	0.11	58.1
29	R2	All MCs	81	23.4	81	23.4	0.130	6.2	LOS A	0.6	4.4	0.15	0.27	0.15	54.1
Approach			239	14.5	239	14.5	0.130	2.2	NA	0.6	4.4	0.12	0.21	0.12	56.7
SouthWest: Yanga Way															
30	L2	All MCs	23	59.1	23	59.1	0.032	6.4	LOS A	0.1	1.1	0.09	0.54	0.09	50.2
32	R2	All MCs	6	0.0	6	0.0	0.032	7.8	LOS A	0.1	1.1	0.09	0.54	0.09	52.7
Approach			29	46.4	29	46.4	0.032	6.7	LOS A	0.1	1.1	0.09	0.54	0.09	50.7
All Vehicles			319	24.1	319	24.1	0.130	2.4	NA	0.6	4.4	0.10	0.23	0.10	56.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [STG1 PEAK CONS CUMUL 2027 PM Peak (Site Folder: Sturt Highway / Yanga Way)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Sturt Highway / Yanga Way
Updated CHRs/AUL Intersection Configuration
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Sturt Highway															
21	L2	All MCs	4	0.0	4	0.0	0.039	5.5	LOS A	0.0	0.0	0.00	0.04	0.00	57.1
5	T1	All MCs	172	16.6	172	16.6	0.060	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
Approach			176	16.2	176	16.2	0.060	0.2	NA	0.0	0.0	0.00	0.01	0.00	59.8
NorthWest: Sturt Highway															
11	T1	All MCs	56	64.2	56	64.2	0.064	0.6	LOS A	0.3	2.7	0.20	0.25	0.20	57.1
29	R2	All MCs	35	45.5	35	45.5	0.064	7.3	LOS A	0.3	2.7	0.29	0.36	0.29	51.9
Approach			91	57.0	91	57.0	0.064	3.2	NA	0.3	2.7	0.23	0.29	0.23	55.0
SouthWest: Yanga Way															
30	L2	All MCs	78	20.3	78	20.3	0.083	6.4	LOS A	0.3	2.6	0.19	0.54	0.19	51.5
32	R2	All MCs	8	25.0	8	25.0	0.083	8.9	LOS A	0.3	2.6	0.19	0.54	0.19	51.5
Approach			86	20.7	86	20.7	0.083	6.6	LOS A	0.3	2.6	0.19	0.54	0.19	51.5
All Vehicles			353	27.8	353	27.8	0.083	2.5	NA	0.3	2.7	0.11	0.21	0.11	56.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [STG2 PEAK CONS 2028 AM Peak (Site Folder: Sturt Highway / Yanga Way)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Sturt Highway / Yanga Way
Updated CHRs/AUL Intersection Configuration
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Sturt Highway															
21	L2	All MCs	9	33.3	9	33.3	0.012	5.9	LOS A	0.0	0.0	0.00	0.30	0.00	53.2
5	T1	All MCs	37	54.3	37	54.3	0.019	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	59.2
Approach			46	50.0	46	50.0	0.019	1.2	NA	0.0	0.0	0.00	0.12	0.00	57.8
NorthWest: Sturt Highway															
11	T1	All MCs	35	30.3	35	30.3	0.102	0.0	LOS A	0.4	3.2	0.01	0.02	0.01	59.8
29	R2	All MCs	134	7.1	134	7.1	0.102	5.9	LOS A	0.4	3.2	0.16	0.53	0.16	52.2
Approach			168	11.9	168	11.9	0.102	4.7	NA	0.4	3.2	0.13	0.43	0.13	53.6
SouthWest: Yanga Way															
30	L2	All MCs	13	25.0	13	25.0	0.018	6.0	LOS A	0.1	0.5	0.08	0.54	0.08	51.5
32	R2	All MCs	6	0.0	6	0.0	0.018	7.0	LOS A	0.1	0.5	0.08	0.54	0.08	52.7
Approach			19	16.7	19	16.7	0.018	6.3	LOS A	0.1	0.5	0.08	0.54	0.08	51.9
All Vehicles			234	19.8	234	19.8	0.102	4.1	NA	0.4	3.2	0.10	0.37	0.10	54.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [STG2 PEAK CONS 2028 PM Peak (Site Folder: Sturt Highway / Yanga Way)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Sturt Highway / Yanga Way
Updated CHRs/AUL Intersection Configuration
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Sturt Highway															
21	L2	All MCs	5	0.0	5	0.0	0.014	5.5	LOS A	0.0	0.0	0.00	0.14	0.00	55.7
5	T1	All MCs	49	48.9	49	48.9	0.022	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	59.3
Approach			55	44.2	55	44.2	0.022	0.6	NA	0.0	0.0	0.00	0.06	0.00	58.9
NorthWest: Sturt Highway															
11	T1	All MCs	51	60.4	51	60.4	0.045	0.1	LOS A	0.1	1.4	0.09	0.18	0.09	57.4
29	R2	All MCs	24	21.7	24	21.7	0.045	6.1	LOS A	0.1	1.4	0.13	0.24	0.13	53.5
Approach			75	47.9	75	47.9	0.045	2.1	NA	0.1	1.4	0.11	0.20	0.11	56.1
SouthWest: Yanga Way															
30	L2	All MCs	129	4.1	129	4.1	0.112	5.7	LOS A	0.4	3.2	0.09	0.55	0.09	52.5
32	R2	All MCs	8	25.0	8	25.0	0.112	7.3	LOS A	0.4	3.2	0.09	0.55	0.09	51.9
Approach			138	5.3	138	5.3	0.112	5.8	LOS A	0.4	3.2	0.09	0.55	0.09	52.4
All Vehicles			267	25.2	267	25.2	0.112	3.7	NA	0.4	3.2	0.07	0.35	0.07	54.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [STG2 PEAK CONS CUMUL 2028 AM Peak (Site Folder: Sturt Highway / Yanga Way)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Sturt Highway / Yanga Way
Updated CHRs/AUL Intersection Configuration
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Sturt Highway															
21	L2	All MCs	9	33.3	9	33.3	0.015	5.9	LOS A	0.0	0.0	0.00	0.26	0.00	53.3
5	T1	All MCs	43	61.0	43	61.0	0.022	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	59.1
Approach			53	56.0	53	56.0	0.022	1.1	NA	0.0	0.0	0.00	0.10	0.00	58.0
NorthWest: Sturt Highway															
11	T1	All MCs	160	10.5	160	10.5	0.167	0.2	LOS A	0.8	6.1	0.11	0.22	0.11	57.7
29	R2	All MCs	142	12.6	142	12.6	0.167	6.0	LOS A	0.8	6.1	0.18	0.35	0.18	53.6
Approach			302	11.5	302	11.5	0.167	2.9	NA	0.8	6.1	0.14	0.28	0.14	55.7
SouthWest: Yanga Way															
30	L2	All MCs	22	57.1	22	57.1	0.031	6.4	LOS A	0.1	1.1	0.09	0.53	0.09	50.1
32	R2	All MCs	6	0.0	6	0.0	0.031	8.5	LOS A	0.1	1.1	0.09	0.53	0.09	52.6
Approach			28	44.4	28	44.4	0.031	6.9	LOS A	0.1	1.1	0.09	0.53	0.09	50.6
All Vehicles			383	20.1	383	20.1	0.167	3.0	NA	0.8	6.1	0.12	0.27	0.12	55.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [STG2 PEAK CONS CUMUL 2028 PM Peak (Site Folder: Sturt Highway / Yanga Way)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Sturt Highway / Yanga Way
Updated CHRs/AUL Intersection Configuration
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Sturt Highway															
21	L2	All MCs	5	0.0	5	0.0	0.040	5.6	LOS A	0.0	0.0	0.00	0.04	0.00	57.0
5	T1	All MCs	174	17.0	174	17.0	0.061	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach			179	16.5	179	16.5	0.061	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.7
NorthWest: Sturt Highway															
11	T1	All MCs	57	64.8	57	64.8	0.064	0.6	LOS A	0.3	2.7	0.20	0.24	0.20	57.1
29	R2	All MCs	34	43.8	34	43.8	0.064	7.3	LOS A	0.3	2.7	0.29	0.35	0.29	52.0
Approach			91	57.0	91	57.0	0.064	3.1	NA	0.3	2.7	0.23	0.29	0.23	55.1
SouthWest: Yanga Way															
30	L2	All MCs	139	10.6	139	10.6	0.131	6.2	LOS A	0.5	3.9	0.19	0.55	0.19	51.9
32	R2	All MCs	8	25.0	8	25.0	0.131	9.2	LOS A	0.5	3.9	0.19	0.55	0.19	51.6
Approach			147	11.4	147	11.4	0.131	6.4	LOS A	0.5	3.9	0.19	0.55	0.19	51.9
All Vehicles			417	23.5	417	23.5	0.131	3.0	NA	0.5	3.9	0.12	0.26	0.12	55.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [OPERATIONS 2040 AM Peak (Site Folder: Sturt Highway / Yanga Way)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Sturt Highway / Yanga Way
Updated CHRs/AUL Intersection Configuration
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Sturt Highway															
21	L2	All MCs	12	36.4	12	36.4	0.016	6.0	LOS A	0.0	0.0	0.00	0.29	0.00	53.1
5	T1	All MCs	46	54.5	46	54.5	0.024	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	59.2
Approach			58	50.9	58	50.9	0.024	1.2	NA	0.0	0.0	0.00	0.12	0.00	57.9
NorthWest: Sturt Highway															
11	T1	All MCs	44	31.0	44	31.0	0.066	0.2	LOS A	0.3	2.4	0.09	0.21	0.09	57.6
29	R2	All MCs	64	18.0	64	18.0	0.066	6.1	LOS A	0.3	2.4	0.18	0.42	0.18	52.6
Approach			108	23.3	108	23.3	0.066	3.7	NA	0.3	2.4	0.14	0.33	0.14	54.5
SouthWest: Yanga Way															
30	L2	All MCs	15	21.4	15	21.4	0.021	5.9	LOS A	0.1	0.6	0.09	0.54	0.09	51.7
32	R2	All MCs	7	0.0	7	0.0	0.021	6.8	LOS A	0.1	0.6	0.09	0.54	0.09	52.8
Approach			22	14.3	22	14.3	0.021	6.2	LOS A	0.1	0.6	0.09	0.54	0.09	52.0
All Vehicles			188	30.7	188	30.7	0.066	3.2	NA	0.3	2.4	0.09	0.29	0.09	55.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [OPERATIONS 2040 PM Peak (Site Folder: Sturt Highway / Yanga Way)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Sturt Highway / Yanga Way
Updated CHRs/AUL Intersection Configuration
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Sturt Highway															
21	L2	All MCs	6	0.0	6	0.0	0.018	5.5	LOS A	0.0	0.0	0.00	0.14	0.00	55.7
5	T1	All MCs	62	49.2	62	49.2	0.027	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	59.3
Approach			68	44.6	68	44.6	0.027	0.5	NA	0.0	0.0	0.00	0.05	0.00	58.9
NorthWest: Sturt Highway															
11	T1	All MCs	64	60.7	64	60.7	0.058	0.2	LOS A	0.2	1.9	0.11	0.19	0.11	57.4
29	R2	All MCs	31	20.7	31	20.7	0.058	6.2	LOS A	0.2	1.9	0.15	0.25	0.15	53.5
Approach			95	47.8	95	47.8	0.058	2.1	NA	0.2	1.9	0.12	0.21	0.12	56.1
SouthWest: Yanga Way															
30	L2	All MCs	59	10.7	59	10.7	0.063	5.9	LOS A	0.2	1.8	0.11	0.54	0.11	52.1
32	R2	All MCs	11	30.0	11	30.0	0.063	7.8	LOS A	0.2	1.8	0.11	0.54	0.11	51.6
Approach			69	13.6	69	13.6	0.063	6.2	LOS A	0.2	1.8	0.11	0.54	0.11	52.0
All Vehicles			233	36.7	233	36.7	0.063	2.9	NA	0.2	1.9	0.08	0.26	0.08	55.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [DECOM 2060 AM Peak (Site Folder: Sturt Highway / Yanga Way)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Sturt Highway / Yanga Way
Updated CHRs/AUL Intersection Configuration
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Sturt Highway															
21	L2	All MCs	18	35.3	18	35.3	0.024	6.0	LOS A	0.0	0.0	0.00	0.30	0.00	53.1
5	T1	All MCs	69	54.5	69	54.5	0.036	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	59.2
Approach			87	50.6	87	50.6	0.036	1.3	NA	0.0	0.0	0.00	0.12	0.00	57.8
NorthWest: Sturt Highway															
11	T1	All MCs	64	31.1	64	31.1	0.109	0.2	LOS A	0.5	3.9	0.10	0.20	0.10	57.6
29	R2	All MCs	112	14.2	112	14.2	0.109	6.2	LOS A	0.5	3.9	0.23	0.46	0.23	52.4
Approach			176	20.4	176	20.4	0.109	4.0	NA	0.5	3.9	0.19	0.37	0.19	54.2
SouthWest: Yanga Way															
30	L2	All MCs	22	19.0	22	19.0	0.034	6.0	LOS A	0.1	1.0	0.12	0.53	0.12	51.6
32	R2	All MCs	12	0.0	12	0.0	0.034	7.6	LOS A	0.1	1.0	0.12	0.53	0.12	52.5
Approach			34	12.5	34	12.5	0.034	6.6	LOS A	0.1	1.0	0.12	0.53	0.12	51.9
All Vehicles			297	28.4	297	28.4	0.109	3.5	NA	0.5	3.9	0.12	0.31	0.12	54.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [DECOM 2060 PM Peak (Site Folder: Sturt Highway / Yanga Way)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Sturt Highway / Yanga Way
Updated CHRs/AUL Intersection Configuration
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Sturt Highway															
21	L2	All MCs	8	0.0	8	0.0	0.026	5.5	LOS A	0.0	0.0	0.00	0.12	0.00	55.8
5	T1	All MCs	92	48.3	92	48.3	0.040	0.1	LOS A	0.0	0.0	0.00	0.04	0.00	59.3
Approach			100	44.2	100	44.2	0.040	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.0
NorthWest: Sturt Highway															
11	T1	All MCs	96	60.4	96	60.4	0.086	0.2	LOS A	0.3	2.9	0.14	0.20	0.14	57.3
29	R2	All MCs	44	19.0	44	19.0	0.086	6.4	LOS A	0.3	2.9	0.18	0.27	0.18	53.5
Approach			140	47.4	140	47.4	0.086	2.2	NA	0.3	2.9	0.15	0.22	0.15	56.0
SouthWest: Yanga Way															
30	L2	All MCs	104	8.1	104	8.1	0.110	6.0	LOS A	0.4	3.2	0.14	0.54	0.14	52.1
32	R2	All MCs	16	26.7	16	26.7	0.110	9.0	LOS A	0.4	3.2	0.14	0.54	0.14	51.6
Approach			120	10.5	120	10.5	0.110	6.4	LOS A	0.4	3.2	0.14	0.54	0.14	52.1
All Vehicles			360	34.2	360	34.2	0.110	3.1	NA	0.4	3.2	0.11	0.28	0.11	55.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Appendix D – SIDRA Results Yanga Way / Balranald-Moulamein Road

MOVEMENT SUMMARY

Site: 101 [EXIST 2025 AM Peak (Site Folder: Yanga Way / Balranald Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Yanga Way / Balranald Road
Existing Intersection Configuration

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Balranald Road															
4	L2	All MCs	1	0.0	1	0.0	0.003	5.6	LOS A	0.0	0.1	0.10	0.55	0.10	52.6
6	R2	All MCs	2	50.0	2	50.0	0.003	6.3	LOS A	0.0	0.1	0.10	0.55	0.10	50.3
Approach			3	33.3	3	33.3	0.003	6.1	LOS A	0.0	0.1	0.10	0.55	0.10	51.1
NorthEast: Yanga Way															
7	L2	All MCs	2	50.0	2	50.0	0.013	6.1	LOS A	0.0	0.0	0.00	0.06	0.00	54.8
8	T1	All MCs	20	15.8	20	15.8	0.013	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	59.7
Approach			22	19.0	22	19.0	0.013	0.6	NA	0.0	0.0	0.00	0.06	0.00	59.2
SouthWest: Yanga Way															
2	T1	All MCs	23	31.8	23	31.8	0.015	0.0	LOS A	0.0	0.1	0.01	0.03	0.01	59.6
3	R2	All MCs	1	0.0	1	0.0	0.015	5.5	LOS A	0.0	0.1	0.01	0.03	0.01	56.9
Approach			24	30.4	24	30.4	0.015	0.2	NA	0.0	0.1	0.01	0.03	0.01	59.5
All Vehicles			49	25.5	49	25.5	0.015	0.8	NA	0.0	0.1	0.01	0.07	0.01	58.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [EXIST 2025 PM Peak (Site Folder: Yanga Way / Balranald Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Yanga Way / Balranald Road
Existing Intersection Configuration

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Balranald Road															
4	L2	All MCs	2	100.0	2	100.0	0.003	6.9	LOS A	0.0	0.1	0.11	0.53	0.11	48.2
6	R2	All MCs	1	0.0	1	0.0	0.003	5.6	LOS A	0.0	0.1	0.11	0.53	0.11	51.8
Approach			3	66.7	3	66.7	0.003	6.4	LOS A	0.0	0.1	0.11	0.53	0.11	49.3
NorthEast: Yanga Way															
7	L2	All MCs	1	0.0	1	0.0	0.015	5.5	LOS A	0.0	0.0	0.00	0.02	0.00	57.3
8	T1	All MCs	26	12.0	26	12.0	0.015	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach			27	11.5	27	11.5	0.015	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
SouthWest: Yanga Way															
2	T1	All MCs	22	14.3	22	14.3	0.014	0.0	LOS A	0.0	0.1	0.02	0.03	0.02	59.6
3	R2	All MCs	1	100.0	1	100.0	0.014	6.7	LOS A	0.0	0.1	0.02	0.03	0.02	52.2
Approach			23	18.2	23	18.2	0.014	0.3	NA	0.0	0.1	0.02	0.03	0.02	59.2
All Vehicles			54	17.6	54	17.6	0.015	0.6	NA	0.0	0.1	0.01	0.06	0.01	58.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [STG1 PRELIM CONS 2026 AM Peak (Site Folder: Yanga Way / Balranald Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Yanga Way / Balranald Road
Existing Intersection Configuration

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Balranald Road															
4	L2	All MCs	3	66.7	3	66.7	0.008	6.4	LOS A	0.0	0.3	0.12	0.55	0.12	49.9
6	R2	All MCs	4	75.0	4	75.0	0.008	6.8	LOS A	0.0	0.3	0.12	0.55	0.12	49.3
Approach			7	71.4	7	71.4	0.008	6.6	LOS A	0.0	0.3	0.12	0.55	0.12	49.6
NorthEast: Yanga Way															
7	L2	All MCs	22	14.3	22	14.3	0.024	5.7	LOS A	0.0	0.0	0.00	0.31	0.00	54.3
8	T1	All MCs	20	15.8	20	15.8	0.024	0.0	LOS A	0.0	0.0	0.00	0.31	0.00	57.2
Approach			42	15.0	42	15.0	0.024	3.0	NA	0.0	0.0	0.00	0.31	0.00	55.7
SouthWest: Yanga Way															
2	T1	All MCs	24	34.8	24	34.8	0.022	0.1	LOS A	0.1	0.5	0.08	0.19	0.08	57.9
3	R2	All MCs	11	20.0	11	20.0	0.022	5.9	LOS A	0.1	0.5	0.08	0.19	0.08	54.4
Approach			35	30.3	35	30.3	0.022	1.8	NA	0.1	0.5	0.08	0.19	0.08	56.8
All Vehicles			84	26.3	84	26.3	0.024	2.8	NA	0.1	0.5	0.04	0.28	0.04	55.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [STG1 PRELIM CONS 2026 PM Peak (Site Folder: Yanga Way / Balranald Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Yanga Way / Balranald Road
Existing Intersection Configuration

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Balranald Road															
4	L2	All MCs	12	36.4	12	36.4	0.027	6.1	LOS A	0.1	0.7	0.11	0.55	0.11	51.1
6	R2	All MCs	21	10.0	21	10.0	0.027	5.8	LOS A	0.1	0.7	0.11	0.55	0.11	52.0
Approach			33	19.4	33	19.4	0.027	5.9	LOS A	0.1	0.7	0.11	0.55	0.11	51.7
NorthEast: Yanga Way															
7	L2	All MCs	3	66.7	3	66.7	0.017	6.3	LOS A	0.0	0.0	0.00	0.06	0.00	54.2
8	T1	All MCs	27	11.5	27	11.5	0.017	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	59.8
Approach			31	17.2	31	17.2	0.017	0.7	NA	0.0	0.0	0.00	0.06	0.00	59.1
SouthWest: Yanga Way															
2	T1	All MCs	22	14.3	22	14.3	0.016	0.0	LOS A	0.0	0.3	0.05	0.08	0.05	58.9
3	R2	All MCs	3	100.0	3	100.0	0.016	6.8	LOS A	0.0	0.3	0.05	0.08	0.05	51.6
Approach			25	25.0	25	25.0	0.016	0.9	NA	0.0	0.3	0.05	0.08	0.05	57.9
All Vehicles			88	20.2	88	20.2	0.027	2.7	NA	0.1	0.7	0.06	0.25	0.06	55.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [STG1 PRELIM CONS CUMUL 2026 AM Peak (Site Folder: Yanga Way / Balranald Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Yanga Way / Balranald Road
Existing Intersection Configuration

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Balranald Road															
4	L2	All MCs	3	66.7	3	66.7	0.008	6.5	LOS A	0.0	0.3	0.15	0.54	0.15	49.8
6	R2	All MCs	4	75.0	4	75.0	0.008	7.0	LOS A	0.0	0.3	0.15	0.54	0.15	49.2
Approach			7	71.4	7	71.4	0.008	6.8	LOS A	0.0	0.3	0.15	0.54	0.15	49.5
NorthEast: Yanga Way															
7	L2	All MCs	22	14.3	22	14.3	0.032	5.7	LOS A	0.0	0.0	0.00	0.25	0.00	54.3
8	T1	All MCs	29	42.9	29	42.9	0.032	0.0	LOS A	0.0	0.0	0.00	0.25	0.00	57.2
Approach			52	30.6	52	30.6	0.032	2.5	NA	0.0	0.0	0.00	0.25	0.00	55.9
SouthWest: Yanga Way															
2	T1	All MCs	34	53.1	34	53.1	0.029	0.1	LOS A	0.1	0.6	0.07	0.16	0.07	57.9
3	R2	All MCs	11	20.0	11	20.0	0.029	5.9	LOS A	0.1	0.6	0.07	0.16	0.07	54.4
Approach			44	45.2	44	45.2	0.029	1.5	NA	0.1	0.6	0.07	0.16	0.07	57.0
All Vehicles			103	39.8	103	39.8	0.032	2.3	NA	0.1	0.6	0.04	0.23	0.04	55.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [STG1 PRELIM CONS CUMUL 2026 PM Peak (Site Folder: Yanga Way / Balranald Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Yanga Way / Balranald Road
Existing Intersection Configuration

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Balranald Road															
4	L2	All MCs	12	36.4	12	36.4	0.027	6.1	LOS A	0.1	0.8	0.14	0.55	0.14	51.0
6	R2	All MCs	21	10.0	21	10.0	0.027	5.9	LOS A	0.1	0.8	0.14	0.55	0.14	51.9
Approach			33	19.4	33	19.4	0.027	6.0	LOS A	0.1	0.8	0.14	0.55	0.14	51.6
NorthEast: Yanga Way															
7	L2	All MCs	3	66.7	3	66.7	0.025	6.3	LOS A	0.0	0.0	0.00	0.05	0.00	54.2
8	T1	All MCs	37	34.3	37	34.3	0.025	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	59.8
Approach			40	36.8	40	36.8	0.025	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.3
SouthWest: Yanga Way															
2	T1	All MCs	32	40.0	32	40.0	0.024	0.0	LOS A	0.0	0.3	0.04	0.06	0.04	58.9
3	R2	All MCs	3	100.0	3	100.0	0.024	6.9	LOS A	0.0	0.3	0.04	0.06	0.04	51.7
Approach			35	45.5	35	45.5	0.024	0.6	NA	0.0	0.3	0.04	0.06	0.04	58.2
All Vehicles			107	34.3	107	34.3	0.027	2.2	NA	0.1	0.8	0.06	0.20	0.06	56.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [STG1 PEAK CONS 2027 AM Peak (Site Folder: Yanga Way / Balranald Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Yanga Way / Balranald Road
Existing Intersection Configuration

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Balranald Road															
4	L2	All MCs	11	90.0	11	90.0	0.016	6.7	LOS A	0.1	0.7	0.11	0.54	0.11	49.1
6	R2	All MCs	5	80.0	5	80.0	0.016	7.1	LOS A	0.1	0.7	0.11	0.54	0.11	49.1
Approach			16	86.7	16	86.7	0.016	6.8	LOS A	0.1	0.7	0.11	0.54	0.11	49.1
NorthEast: Yanga Way															
7	L2	All MCs	52	8.2	52	8.2	0.041	5.6	LOS A	0.0	0.0	0.00	0.41	0.00	53.7
8	T1	All MCs	21	15.0	21	15.0	0.041	0.0	LOS A	0.0	0.0	0.00	0.41	0.00	56.3
Approach			73	10.1	73	10.1	0.041	4.0	NA	0.0	0.0	0.00	0.41	0.00	54.4
SouthWest: Yanga Way															
2	T1	All MCs	24	34.8	24	34.8	0.035	0.2	LOS A	0.1	1.3	0.17	0.32	0.17	56.6
3	R2	All MCs	27	34.6	27	34.6	0.035	6.2	LOS A	0.1	1.3	0.17	0.32	0.17	52.6
Approach			52	34.7	52	34.7	0.035	3.4	NA	0.1	1.3	0.17	0.32	0.17	54.4
All Vehicles			140	27.8	140	27.8	0.041	4.1	NA	0.1	1.3	0.07	0.40	0.07	53.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [STG1 PEAK CONS 2027 PM Peak (Site Folder: Yanga Way / Balranald Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Yanga Way / Balranald Road
Existing Intersection Configuration

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Balranald Road															
4	L2	All MCs	28	40.7	28	40.7	0.065	6.1	LOS A	0.2	1.9	0.12	0.55	0.12	50.9
6	R2	All MCs	51	6.3	51	6.3	0.065	5.8	LOS A	0.2	1.9	0.12	0.55	0.12	52.1
Approach			79	18.7	79	18.7	0.065	5.9	LOS A	0.2	1.9	0.12	0.55	0.12	51.7
NorthEast: Yanga Way															
7	L2	All MCs	4	75.0	4	75.0	0.018	6.4	LOS A	0.0	0.0	0.00	0.08	0.00	53.8
8	T1	All MCs	27	11.5	27	11.5	0.018	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	59.8
Approach			32	20.0	32	20.0	0.018	0.9	NA	0.0	0.0	0.00	0.08	0.00	58.9
SouthWest: Yanga Way															
2	T1	All MCs	23	13.6	23	13.6	0.025	0.1	LOS A	0.1	0.9	0.10	0.19	0.10	57.4
3	R2	All MCs	11	100.0	11	100.0	0.025	6.9	LOS A	0.1	0.9	0.10	0.19	0.10	50.5
Approach			34	40.6	34	40.6	0.025	2.2	NA	0.1	0.9	0.10	0.19	0.10	55.0
All Vehicles			144	24.1	144	24.1	0.065	4.0	NA	0.2	1.9	0.09	0.37	0.09	53.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [STG1 PEAK CONS CUMUL 2027 AM Peak (Site Folder: Yanga Way / Balranald Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Yanga Way / Balranald Road
Existing Intersection Configuration

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Balranald Road															
4	L2	All MCs	11	90.0	11	90.0	0.017	6.8	LOS A	0.1	0.7	0.15	0.54	0.15	49.0
6	R2	All MCs	5	80.0	5	80.0	0.017	7.3	LOS A	0.1	0.7	0.15	0.54	0.15	49.0
Approach			16	86.7	16	86.7	0.017	7.0	LOS A	0.1	0.7	0.15	0.54	0.15	49.0
NorthEast: Yanga Way															
7	L2	All MCs	52	8.2	52	8.2	0.049	5.6	LOS A	0.0	0.0	0.00	0.37	0.00	53.7
8	T1	All MCs	31	41.4	31	41.4	0.049	0.0	LOS A	0.0	0.0	0.00	0.37	0.00	56.3
Approach			82	20.5	82	20.5	0.049	3.6	NA	0.0	0.0	0.00	0.37	0.00	54.6
SouthWest: Yanga Way															
2	T1	All MCs	34	53.1	34	53.1	0.042	0.2	LOS A	0.2	1.5	0.17	0.29	0.17	56.7
3	R2	All MCs	27	34.6	27	34.6	0.042	6.3	LOS A	0.2	1.5	0.17	0.29	0.17	52.6
Approach			61	44.8	61	44.8	0.042	2.9	NA	0.2	1.5	0.17	0.29	0.17	54.8
All Vehicles			159	36.4	159	36.4	0.049	3.7	NA	0.2	1.5	0.08	0.35	0.08	54.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [STG1 PEAK CONS CUMUL 2027 PM Peak (Site Folder: Yanga Way / Balranald Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Yanga Way / Balranald Road
Existing Intersection Configuration

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Balranald Road															
4	L2	All MCs	28	40.7	28	40.7	0.066	6.2	LOS A	0.2	1.9	0.15	0.55	0.15	50.8
6	R2	All MCs	51	6.3	51	6.3	0.066	5.9	LOS A	0.2	1.9	0.15	0.55	0.15	52.0
Approach			79	18.7	79	18.7	0.066	6.0	LOS A	0.2	1.9	0.15	0.55	0.15	51.6
NorthEast: Yanga Way															
7	L2	All MCs	4	75.0	4	75.0	0.026	6.4	LOS A	0.0	0.0	0.00	0.06	0.00	53.8
8	T1	All MCs	37	34.3	37	34.3	0.026	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	59.8
Approach			41	38.5	41	38.5	0.026	0.7	NA	0.0	0.0	0.00	0.06	0.00	59.1
SouthWest: Yanga Way															
2	T1	All MCs	33	38.7	33	38.7	0.032	0.1	LOS A	0.1	1.0	0.10	0.16	0.10	57.4
3	R2	All MCs	11	100.0	11	100.0	0.032	7.0	LOS A	0.1	1.0	0.10	0.16	0.10	50.5
Approach			43	53.7	43	53.7	0.032	1.8	NA	0.1	1.0	0.10	0.16	0.10	55.6
All Vehicles			163	32.9	163	32.9	0.066	3.6	NA	0.2	1.9	0.10	0.33	0.10	54.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [STG2 PEAK CONS 2028 AM Peak (Site Folder: Yanga Way / Balranald Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Yanga Way / Balranald Road
Existing Intersection Configuration

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Balranald Road															
4	L2	All MCs	11	90.0	11	90.0	0.015	6.7	LOS A	0.1	0.7	0.11	0.54	0.11	49.1
6	R2	All MCs	4	75.0	4	75.0	0.015	7.4	LOS A	0.1	0.7	0.11	0.54	0.11	49.3
Approach			15	85.7	15	85.7	0.015	6.9	LOS A	0.1	0.7	0.11	0.54	0.11	49.1
NorthEast: Yanga Way															
7	L2	All MCs	112	2.8	112	2.8	0.072	5.6	LOS A	0.0	0.0	0.00	0.49	0.00	53.4
8	T1	All MCs	21	15.0	21	15.0	0.072	0.0	LOS A	0.0	0.0	0.00	0.49	0.00	55.6
Approach			133	4.8	133	4.8	0.072	4.7	NA	0.0	0.0	0.00	0.49	0.00	53.7
SouthWest: Yanga Way															
2	T1	All MCs	25	33.3	25	33.3	0.047	0.4	LOS A	0.2	1.8	0.25	0.40	0.25	55.7
3	R2	All MCs	44	21.4	44	21.4	0.047	6.2	LOS A	0.2	1.8	0.25	0.40	0.25	52.4
Approach			69	25.8	69	25.8	0.047	4.1	NA	0.2	1.8	0.25	0.40	0.25	53.6
All Vehicles			217	17.0	217	17.0	0.072	4.7	NA	0.2	1.8	0.09	0.46	0.09	53.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [STG2 PEAK CONS 2028 PM Peak (Site Folder: Yanga Way / Balranald Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Yanga Way / Balranald Road
Existing Intersection Configuration

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Balranald Road															
4	L2	All MCs	45	25.6	45	25.6	0.124	6.0	LOS A	0.5	3.5	0.13	0.56	0.13	51.5
6	R2	All MCs	111	1.9	111	1.9	0.124	5.8	LOS A	0.5	3.5	0.13	0.56	0.13	52.3
Approach			156	8.8	156	8.8	0.124	5.8	LOS A	0.5	3.5	0.13	0.56	0.13	52.0
NorthEast: Yanga Way															
7	L2	All MCs	3	66.7	3	66.7	0.018	6.3	LOS A	0.0	0.0	0.00	0.06	0.00	54.2
8	T1	All MCs	28	11.1	28	11.1	0.018	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	59.8
Approach			32	16.7	32	16.7	0.018	0.6	NA	0.0	0.0	0.00	0.06	0.00	59.2
SouthWest: Yanga Way															
2	T1	All MCs	23	13.6	23	13.6	0.025	0.1	LOS A	0.1	0.9	0.10	0.19	0.10	57.4
3	R2	All MCs	11	100.0	11	100.0	0.025	6.9	LOS A	0.1	0.9	0.10	0.19	0.10	50.5
Approach			34	40.6	34	40.6	0.025	2.2	NA	0.1	0.9	0.10	0.19	0.10	55.1
All Vehicles			221	14.8	221	14.8	0.124	4.5	NA	0.5	3.5	0.11	0.43	0.11	53.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [STG2 PEAK CONS CUMUL 2028 AM Peak (Site Folder: Yanga Way / Balranald Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Yanga Way / Balranald Road
Existing Intersection Configuration

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Balranald Road															
4	L2	All MCs	11	90.0	11	90.0	0.015	6.8	LOS A	0.1	0.7	0.15	0.53	0.15	49.0
6	R2	All MCs	4	75.0	4	75.0	0.015	7.6	LOS A	0.1	0.7	0.15	0.53	0.15	49.2
Approach			15	85.7	15	85.7	0.015	7.0	LOS A	0.1	0.7	0.15	0.53	0.15	49.1
NorthEast: Yanga Way															
7	L2	All MCs	112	2.8	112	2.8	0.080	5.6	LOS A	0.0	0.0	0.00	0.46	0.00	53.4
8	T1	All MCs	31	41.4	31	41.4	0.080	0.0	LOS A	0.0	0.0	0.00	0.46	0.00	55.6
Approach			142	11.1	142	11.1	0.080	4.4	NA	0.0	0.0	0.00	0.46	0.00	53.8
SouthWest: Yanga Way															
2	T1	All MCs	35	51.5	35	51.5	0.054	0.5	LOS A	0.2	2.1	0.25	0.37	0.25	55.7
3	R2	All MCs	44	21.4	44	21.4	0.054	6.3	LOS A	0.2	2.1	0.25	0.37	0.25	52.4
Approach			79	34.7	79	34.7	0.054	3.7	NA	0.2	2.1	0.25	0.37	0.25	53.8
All Vehicles			236	23.7	236	23.7	0.080	4.3	NA	0.2	2.1	0.09	0.43	0.09	53.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [STG2 PEAK CONS CUMUL 2028 PM Peak (Site Folder: Yanga Way / Balranald Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Yanga Way / Balranald Road
Existing Intersection Configuration

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Balranald Road															
4	L2	All MCs	45	25.6	45	25.6	0.127	6.0	LOS A	0.5	3.5	0.17	0.56	0.17	51.4
6	R2	All MCs	111	1.9	111	1.9	0.127	5.9	LOS A	0.5	3.5	0.17	0.56	0.17	52.2
Approach			156	8.8	156	8.8	0.127	5.9	LOS A	0.5	3.5	0.17	0.56	0.17	51.9
NorthEast: Yanga Way															
7	L2	All MCs	3	66.7	3	66.7	0.026	6.3	LOS A	0.0	0.0	0.00	0.04	0.00	54.2
8	T1	All MCs	38	33.3	38	33.3	0.026	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.8
Approach			41	35.9	41	35.9	0.026	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.3
SouthWest: Yanga Way															
2	T1	All MCs	33	38.7	33	38.7	0.032	0.1	LOS A	0.1	1.0	0.09	0.16	0.09	57.4
3	R2	All MCs	11	100.0	11	100.0	0.032	7.0	LOS A	0.1	1.0	0.09	0.16	0.09	50.5
Approach			43	53.7	43	53.7	0.032	1.8	NA	0.1	1.0	0.09	0.16	0.09	55.6
All Vehicles			240	21.5	240	21.5	0.127	4.3	NA	0.5	3.5	0.12	0.40	0.12	53.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [OPERATIONS 2040 AM Peak (Site Folder: Yanga Way / Balranald Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Yanga Way / Balranald Road
Existing Intersection Configuration

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Balranald Road															
4	L2	All MCs	1	0.0	1	0.0	0.006	5.6	LOS A	0.0	0.2	0.15	0.55	0.15	52.5
6	R2	All MCs	4	75.0	4	75.0	0.006	6.9	LOS A	0.0	0.2	0.15	0.55	0.15	49.2
Approach			5	60.0	5	60.0	0.006	6.6	LOS A	0.0	0.2	0.15	0.55	0.15	49.8
NorthEast: Yanga Way															
7	L2	All MCs	36	8.8	36	8.8	0.035	5.7	LOS A	0.0	0.0	0.00	0.34	0.00	54.3
8	T1	All MCs	26	16.0	26	16.0	0.035	0.0	LOS A	0.0	0.0	0.00	0.34	0.00	56.9
Approach			62	11.9	62	11.9	0.035	3.3	NA	0.0	0.0	0.00	0.34	0.00	55.3
SouthWest: Yanga Way															
2	T1	All MCs	32	33.3	32	33.3	0.020	0.0	LOS A	0.0	0.1	0.01	0.02	0.01	59.7
3	R2	All MCs	1	0.0	1	0.0	0.020	5.5	LOS A	0.0	0.1	0.01	0.02	0.01	57.0
Approach			33	32.3	33	32.3	0.020	0.2	NA	0.0	0.1	0.01	0.02	0.01	59.6
All Vehicles			100	21.1	100	21.1	0.035	2.4	NA	0.0	0.2	0.01	0.25	0.01	56.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [OPERATIONS 2040 PM Peak (Site Folder: Yanga Way / Balranald Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Yanga Way / Balranald Road
Existing Intersection Configuration

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Balranald Road															
4	L2	All MCs	3	100.0	3	100.0	0.033	6.9	LOS A	0.1	0.8	0.14	0.56	0.14	48.6
6	R2	All MCs	35	6.1	35	6.1	0.033	5.8	LOS A	0.1	0.8	0.14	0.56	0.14	52.0
Approach			38	13.9	38	13.9	0.033	5.9	LOS A	0.1	0.8	0.14	0.56	0.14	51.7
NorthEast: Yanga Way															
7	L2	All MCs	3	66.7	3	66.7	0.022	6.3	LOS A	0.0	0.0	0.00	0.05	0.00	54.2
8	T1	All MCs	36	11.8	36	11.8	0.022	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	59.8
Approach			39	16.2	39	16.2	0.022	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.3
SouthWest: Yanga Way															
2	T1	All MCs	29	14.3	29	14.3	0.018	0.0	LOS A	0.0	0.1	0.02	0.02	0.02	59.7
3	R2	All MCs	1	100.0	1	100.0	0.018	6.7	LOS A	0.0	0.1	0.02	0.02	0.02	52.2
Approach			31	17.2	31	17.2	0.018	0.2	NA	0.0	0.1	0.02	0.02	0.02	59.4
All Vehicles			107	15.7	107	15.7	0.033	2.3	NA	0.1	0.8	0.06	0.22	0.06	56.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [DECOM 2060 AM Peak (Site Folder: Yanga Way / Balranald Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Yanga Way / Balranald Road
Existing Intersection Configuration

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Balranald Road															
4	L2	All MCs	9	77.8	9	77.8	0.016	6.7	LOS A	0.1	0.7	0.17	0.54	0.17	49.4
6	R2	All MCs	6	66.7	6	66.7	0.016	7.3	LOS A	0.1	0.7	0.17	0.54	0.17	49.5
Approach			16	73.3	16	73.3	0.016	6.9	LOS A	0.1	0.7	0.17	0.54	0.17	49.4
NorthEast: Yanga Way															
7	L2	All MCs	71	6.0	71	6.0	0.062	5.6	LOS A	0.0	0.0	0.00	0.37	0.00	54.1
8	T1	All MCs	40	15.8	40	15.8	0.062	0.0	LOS A	0.0	0.0	0.00	0.37	0.00	56.6
Approach			111	9.5	111	9.5	0.062	3.6	NA	0.0	0.0	0.00	0.37	0.00	54.9
SouthWest: Yanga Way															
2	T1	All MCs	47	33.3	47	33.3	0.053	0.3	LOS A	0.2	1.7	0.18	0.28	0.18	57.0
3	R2	All MCs	34	21.9	34	21.9	0.053	6.2	LOS A	0.2	1.7	0.18	0.28	0.18	53.5
Approach			81	28.6	81	28.6	0.053	2.7	NA	0.2	1.7	0.18	0.28	0.18	55.5
All Vehicles			207	21.8	207	21.8	0.062	3.5	NA	0.2	1.7	0.08	0.35	0.08	54.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [DECOM 2060 PM Peak (Site Folder: Yanga Way / Balranald Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Yanga Way / Balranald Road
Existing Intersection Configuration

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Balranald Road															
4	L2	All MCs	35	33.3	35	33.3	0.086	6.2	LOS A	0.3	2.4	0.18	0.56	0.18	51.1
6	R2	All MCs	68	3.1	68	3.1	0.086	6.0	LOS A	0.3	2.4	0.18	0.56	0.18	52.1
Approach			103	13.3	103	13.3	0.086	6.0	LOS A	0.3	2.4	0.18	0.56	0.18	51.7
NorthEast: Yanga Way															
7	L2	All MCs	4	50.0	4	50.0	0.032	6.1	LOS A	0.0	0.0	0.00	0.04	0.00	54.9
8	T1	All MCs	54	11.8	54	11.8	0.032	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.8
Approach			58	14.5	58	14.5	0.032	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.4
SouthWest: Yanga Way															
2	T1	All MCs	44	14.3	44	14.3	0.036	0.1	LOS A	0.1	0.8	0.09	0.13	0.09	58.3
3	R2	All MCs	9	100.0	9	100.0	0.036	7.1	LOS A	0.1	0.8	0.09	0.13	0.09	51.2
Approach			54	29.4	54	29.4	0.036	1.3	NA	0.1	0.8	0.09	0.13	0.09	56.9
All Vehicles			215	17.6	215	17.6	0.086	3.4	NA	0.3	2.4	0.11	0.31	0.11	54.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Appendix E – Plan of Development

C:\Users\Chelsea.Dawson\UMWELT (AUSTRALIA) PTY. LTD\31370 - 03 S&V\02_Projects\31370_R01_SubmissionsReport_v3.aprx - 31370_R01_0301_RefinedProjectLayout

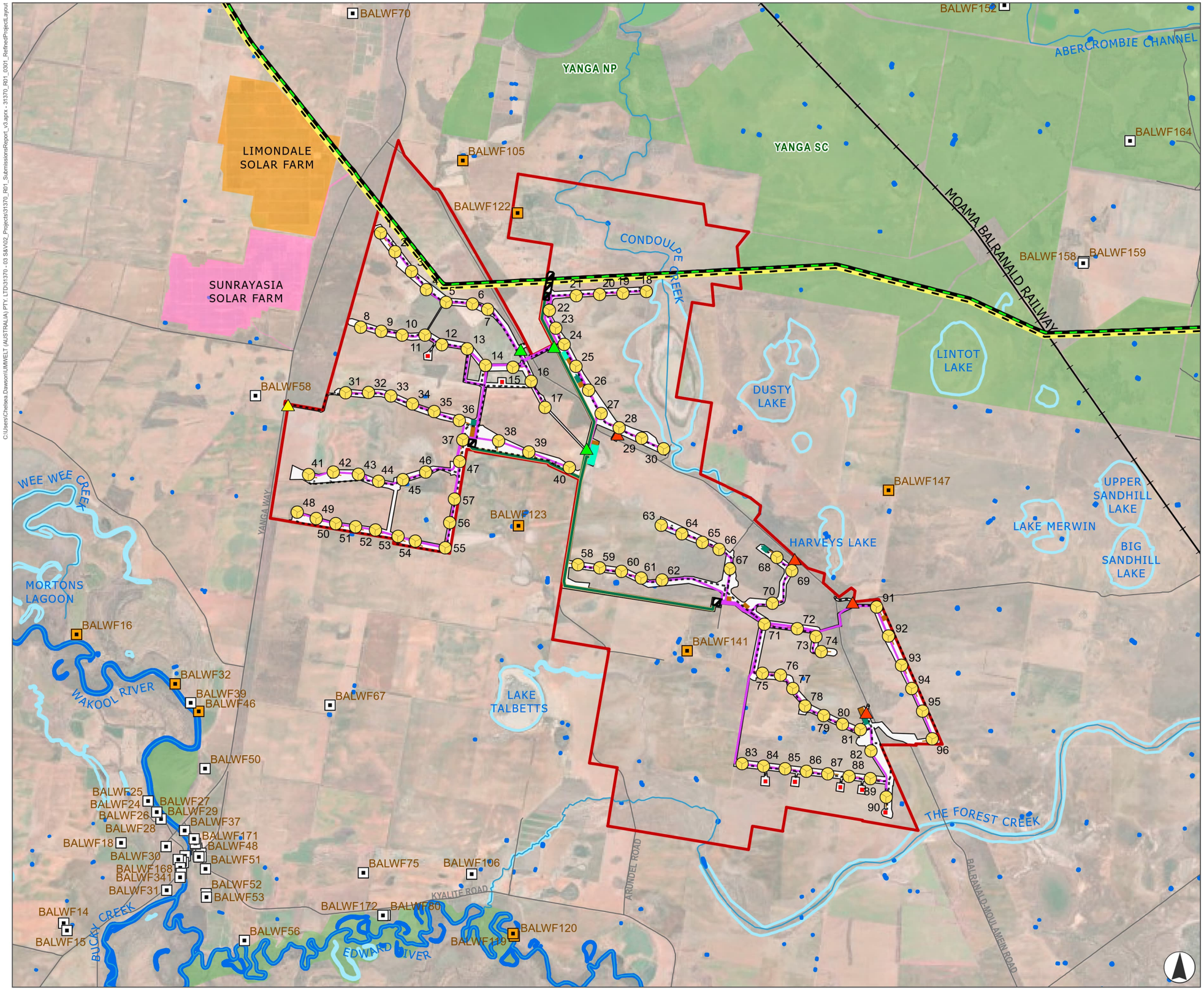


FIGURE 3.1

Refined Project Layout

Legend

- Project Area
- Development Corridor
- Wind Turbine Generator
- Emergency Only Access Point
- Primary Access Point
- Secondary Access Point
- Associated Dwelling
- Non-Associated Dwelling
- Permanent Power Performance Mast (Potential Location)
- Access Tracks
- 33 kV Internal Reticulation (underground)
- 220 kV/330 kV Internal Reticulation (overhead)
- 220 kV TransGrid Transmission Line
- Project Energy Connect Transmission Line
- Operations and Maintenance Compound
- Concrete Batching Plant
- Temporary Construction Facilities
- BESS/STATcom/Substation/Switching Station
- Limondale Solar Farm
- Sunrayasia Solar Farm
- NPWS Reserve
- Mainly Dry/Non-Perennial Waterbody
- Perennial Waterbody
- Road
- Railway
- Watercourse

0 2.5 5

Kilometres

Scale 1:150,000 at A4
GDA 1994 MGA Zone 54

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Image Source: ESRI Basemap (2024) | **Data Source:** NSW DFSI (2024)

Appendix F – Project Traffic Calculations – Stage 1

UMW0122-006 | Junction Rivers Wind Farm

Stage 1 Site Properties

Site Components

Element	Qty	Unit
Number of Turbines (via SA2)	17	ea
Number of Turbines (via SA3)	10	ea
Number of Turbines (via SA5)	3	ea
Number of PPM (via SA2)	2	ea
Number of PPM (via SA3)	0	ea
Number of PPM (via SA5)	0	ea
Length of Internal Access Tracks - HV (via SA2)	15,600	m
Length of Internal Access Tracks - HV (via SA3)	10,928	m
Length of Internal Access Tracks - HV (via SA5)	2,820	m
Length of Internal Access Tracks - LV (via SA2)	518	m
Length of Internal Access Tracks - LV (via SA3)	0	m
Length of Internal Access Tracks - LV (via SA5)	0	m
Length of Balranald Road Upgrade - Stage 1 (Yanga Way to SA5)	11,095	m
Average Width of Existing Balranald Road	8	m
Number of Substations / Switching Stations (via SA2)	0	ea
Number of Battery Energy Storage System (BESS) Areas (via SA2)	0	ea
Number of Turbine Hardstands / Crane Assembly Areas (via SA2)	17	ea
Number of Batch Plants (via SA2)	0	ea
Number of Site Construction Compound Areas (via SA2)	0	ea
Number of Operations & Maintenance Facilities (via SA2)	0	ea
Number of Site Laydown Areas (via SA2)	0	ea
Number of Substations / Switching Stations (via SA3)	1	ea
Number of Battery Energy Storage System (BESS) Areas (via SA3)	1	ea
Number of Turbine Hardstands / Crane Assembly Areas (via SA3)	10	ea
Number of Batch Plants (via SA3)	1	ea
Number of Construction Compound Areas (via SA3)	1	ea
Number of Operations & Maintenance Facilities (via SA3)	1	ea
Number of Site Laydown Areas (via SA3)	1	ea
Number of Substations / Switching Stations (via SA5)	0	ea
Number of Battery Energy Storage System (BESS) Areas (via SA5)	0	ea
Number of Turbine Hardstands / Crane Assembly Areas (via SA5)	3	ea
Number of Batch Plants (via SA5)	0	ea
Number of Construction Compound Areas (via SA5)	0	ea
Number of Operations & Maintenance Facilities (via SA5)	0	ea
Number of Site Laydown Areas (via SA5)	0	ea
Length of Underground Powerline Cable (via SA2)	17,451	m
Length of Underground Powerline Cable (via SA3)	19,686	m
Length of Underground Powerline Cable (via SA5)	14,033	m
Length of Overhead Powerline Cable (via SA3)	5,292	m
Site Water (via SA2)	76.5	ML
Site Water (via SA3)	45.0	ML
Site Water (via SA5)	13.5	ML
% of Gravel Materials Sourced Onsite	0%	%
% of Gravel Materials Imported	100%	%
% of Aggregate Materials Sourced Onsite	0%	%
% of Aggregate Materials Imported	100%	%
% of Water Sourced Onsite	0%	%
% of Water Imported	100%	%
% of Bedding Sand (Electrical) Sourced Onsite	0%	%
% of Bedding Sand (Electrical) Imported	100%	%

Site Areas

Element	Number	Hardstand Area	Unit	% Concrete	Concrete Area	Unit	Gravel Area	Unit
Turbine Hardstand / Crane Assembly Area (via SA2)	17	17,500	m2	0%	0	m2	297,500	m2
Substation / Switching Station Area (via SA3)	1	105,500	m2	10%	10,550	m2	94,950	m2
Battery Energy Storage System (BESS) Area (via SA3)	1	29,500	m2	20%	5,900	m2	23,600	m2
Turbine Hardstand / Crane Assembly Area (via SA3)	10	17,500	m2	0%	0	m2	175,000	m2
Batch Plant Area (via SA3)	1	33,200	m2	10%	3,320	m2	29,880	m2
Construction Compound Area (via SA3)	1	22,500	m2	10%	2,250	m2	20,250	m2
Operations & Maintenance Facility Area (via SA3)	1	25,000	m2	10%	2,500	m2	25,000	m2
Site Laydown Area (via SA3)	1	22,500	m2	0%	0	m2	22,500	m2
Turbine Hardstand / Crane Assembly Area (via SA5)	3	17,500	m2	0%	0	m2	52,500	m2

Concrete Composition

Element	Composition	Unit
Aggregates & Sand	75%	%
Cement	15%	%
Steel	5%	%
Water	5%	%
Total	100%	%

Material Assumptions

Element	Qty	Unit
Internal Access Track HV Width	7.5	m
Internal Access Track HV Pavement Depth	0.4	m
Internal Access Track LV Width	5.5	m
Internal Access Track LV Pavement Depth	0.25	m
Balranald Road Stage 1 Upgrade Width	8	m
Balranald Road Stage 1 Upgrade Depth	0.15	m
Balranald Road Stage 1 Upgrade Depth (Widening)	0.4	m
Substation / Switching Station Area Slab Concrete Depth	0.25	m
BESS Area Slab Concrete Depth	0.25	m
Batch Plant Area Slab Concrete Depth	0.2	m
Construction Compound Area Slab Concrete Depth	0.2	m
Operations and Maintenance Facility Slab Concrete Depth	0.2	m
Substation / Switching Station Area Gravel Depth	0.2	m
BESS Area Gravel Depth	0.2	m
Turbine Hardstand / Crane Assembly Area Gravel Depth	0.25	m
Batch Plant Area Gravel Depth	0.2	m
Construction Compound Area Gravel Depth	0.2	m
Operations and Maintenance Facility Gravel Depth	0.2	m
Site Laydown Area Gravel Depth	0.2	m
Concrete Sand/Aggregates Mass	1.8	t/m3
Concrete Cement Mass	1.51	t/m3
Concrete Steel Mass	7.8	t/m3
Concrete Water Mass	1	t/m3
Wet Concrete Mass	2.5	t/m3
Power Line Length per Roll / Drum	250	m
Power Line Mass per Roll / Drum	2.925	tonnes
Underground Powerline Trench Width	0.4	m
Underground Powerline Bedding Sand Depth	0.3	m
Spacing Overhead Line Power Poles	100.0	m

Movements

Components & Equipment

Element	Task	Qty per Turbine	Unit	Stage 1 Qty	Stg 1 Transp. Qty	Vehicle Type	Vehicle Capacity	Movements
Concrete volume in turbine footings	1D	800	m3	24,000				
Concrete aggregates for turbine footings	1D	600	m3	18,000	18,000	Truck Trailer	20	900
Reinforcing steel for turbine footings	1D	40	m3	1,200	1,200	Semi	3.4	353
Other concrete supplies for turbine footings	1D	120	m3	3,600	3,600	Semi	17.5	205
Water for turbine footings concrete	1D	40	m3	1,200	1,200	Semi Water Truck	30.0	40
Wet concrete for turbine footings	1D	1,920	tonnes	57,600	57,600	Concrete Truck	14.4	4,000
Turbine Blades	3A	3	each	90	90	Special	1	90
Turbine Nacelles	3A	1	each	30	30	Special	1	30
Turbine Drive Trains	3A	1	each	30	30	Special	1	30
Turbine Hub & Nose Cone	3A	1	each	30	30	Special	1	30
Tower Sections	3A	7	each	210	210	Special	1	210
Tower Base Rings	3A	0.35	each	11	11	Semi	1	11
Tower Assembly Components	3A	1	each	30	30	Semi	1	30
Escorting LV	3A	26	each	780	780	LV	1	780
Transformer (via SA3)	2B	-	each	1	1	Special	1	1
Switchroom (via SA3)	2B	-	each	1	1	Special	1	1
Site Crane (Turbines)	3B	-	each	2	2	Special / Crane	1	2
Secondary Crane	3B	-	each	1	1	Crane / Semi	1	1
Performance Monitoring Masts (via SA2)	3A	-	each	2	2	Semi	0.4	5
Electrical Components (via SA3 - Substation & BESS)	2B	-	each	200	200	Semi	1	200
							Total	**6,919**

Mobilisation / Site Establishment

Element	Task	Qty per Area	Unit	Site Qty	Site Transport Qty	Vehicle Type	Vehicle Capacity	Movements
Construction Mobilisation - Ancilliary Equipment (via SA2)	1A	25	each	25	25	Semi / Low Loader	1	25
Construction Mobilisation - Ancilliary Equipment (via SA3)	1A	25	each	25	25	Semi / Low Loader	1	25
Construction Mobilisation - Ancilliary Equipment (via SA5)	1A	25	each	25	25	Semi / Low Loader	1	25
Construction Mobilisation - EW Plant (via SA2)	1A	20	each	20	20	Semi / Low Loader	1	20
Construction Mobilisation - EW Plant (via SA3)	1A	20	each	20	20	Semi / Low Loader	1	20
Construction Mobilisation - EW Plant (via SA5)	1A	20	each	20	20	Semi / Low Loader	1	20
Construction Compound Establishment & Buildings (via SA3)	1A	25	each	25	25	Semi / Low Loader	1	25
Batch Plant Area Establishment (via SA3)	1A	25	each	25	25	Semi / Low Loader	1	25
Substation / Switching Station Area Establishment & Buildings (via SA3)	2B	40	each	40	40	Semi	1	40
Battery Storage Establishment (via SA3)	2B	40	each	40	40	Semi	1	40
Operational and Maintenance Facility Establishment (via SA3)	2B	25	each	25	25	Semi	1	25
							Total	**290**

Demobilisation / Commissioning

Element	Task	Qty per Area	Unit	Site Qty	Site Transport Qty	Vehicle Type	Vehicle Capacity	Movements
Construction Demobilisation - Ancilliary Equipment (via SA2)	4	25	each	25	25	Semi / Low Loader	1	25
Construction Demobilisation - Ancilliary Equipment (via SA3)	4	25	each	25	25	Semi / Low Loader	1	25
Construction Demobilisation - Ancilliary Equipment (via SA5)	4	25	each	25	25	Semi / Low Loader	1	25
Construction Demobilisation - EW Plant (via SA2)	4	20	each	20	20	Semi / Low Loader	1	20
Construction Demobilisation - EW Plant (via SA3)	4	20	each	20	20	Semi / Low Loader	1	20
Construction Demobilisation - EW Plant (via SA5)	4	20	each	20	20	Semi / Low Loader	1	20
Construction Compound Decommissioning (via SA3)	4	25	each	25	25	Semi / Low Loader	1	25
Batch Plant Area Decommissioning (via SA3)	4	25	each	25	25	Semi / Low Loader	1	25
							Total	**185**

Construction Materials

Element	Task	Qty per Unit	Unit	Volume (m3)	Site Qty (tonnes)	Site Trasnport Qty (tonnes)	Vehicle Type	Vehicle Capacity (tonnes)	Movements
Substation (SA3) Slab Wet Concrete	1C	2.5	t/m3	2,638	6,594	6,594	Concrete Truck	14.4	458
Substation (SA3) Slab Concrete Sand/Aggregates	1C	1.8	t/m3	1,978	3,561	3,561	Truck Trailer	36	99
Substation (SA3) Slab Cement	1C	1.51	t/m3	396	597	597	Semi	26.5	23
Substation (SA3) Slab Reinforcing Steel	1C	7.8	t/m3	132	1,029	1,029	Semi	26.5	39
Substation (SA3) Slab Water	1C	1	t/m3	132	132	132	Semi Water Truck	30	5
BESS (SA3) Slab Wet Concrete	1C	2.5	t/m3	1,475	3,688	3,688	Concrete Truck	14.4	257
BESS (SA3) Slab Concrete Sand/Aggregates	1C	1.8	t/m3	1,106	1,991	1,991	Truck Trailer	36	56
BESS (SA3) Slab Cement	1C	1.51	t/m3	221	334	334	Semi	26.5	13
BESS (SA3) Slab Reinforcing Steel	1C	7.8	t/m3	74	575	575	Semi	26.5	22
BESS (SA3) Slab Water	1C	1	t/m3	74	74	74	Semi Water Truck	30	3
Batch Plant (SA3) Slab Wet Concrete	1C	2.5	t/m3	664	1,660	1,660	Concrete Truck	14.4	116
Batch Plant (SA3) Slab Concrete Sand/Aggregates	1C	1.8	t/m3	498	896	896	Truck Trailer	36	25
Batch Plant (SA3) Slab Cement	1C	1.51	t/m3	100	150	150	Semi	26.5	6
Batch Plant (SA3) Slab Reinforcing Steel	1C	7.8	t/m3	33	259	259	Semi	26.5	10
Batch Plant (SA3) Slab Water	1C	1	t/m3	33	33	33	Semi Water Truck	30	2
Construction Compound (SA3) Slab Wet Concrete	1C	2.5	t/m3	450	1,125	1,125	Concrete Truck	14.4	79
Construction Compound (SA3) Slab Concrete Sand/Aggregates	1C	1.8	t/m3	338	608	608	Truck Trailer	36	17
Construction Compound (SA3) Slab Cement	1C	1.51	t/m3	68	102	102	Semi	26.5	4
Construction Compound (SA3) Slab Reinforcing Steel	1C	7.8	t/m3	23	176	176	Semi	26.5	7
Construction Compound (SA3) Slab Water	1C	1	t/m3	23	23	23	Semi Water Truck	30	1
Operational and Maintenance Facility (SA3) Slab Wet Concrete	1C	2.5	t/m3	500	1,250	1,250	Concrete Truck	14.4	87
Operational and Maintenance Facility (SA3) Slab Concrete Sand/Aggregates	1C	1.8	t/m3	375	675	675	Truck Trailer	36	19
Operational and Maintenance Facility (SA3) Slab Cement	1C	1.51	t/m3	75	113	113	Semi	26.5	5
Operational and Maintenance Facility (SA3) Slab Reinforcing Steel	1C	7.8	t/m3	25	195	195	Semi	26.5	8
Operational and Maintenance Facility (SA3) Slab Water	1C	1	t/m3	25	25	25	Semi Water Truck	30	1
Internal Access Track (HV) Gravel Pavement Materials (via SA2)	1B	1.8	t/m3	46,800	84,240	84,240	Truck Trailer	36	2,340
Internal Access Track (HV) Gravel Pavement Materials (via SA3)	1B	1.8	t/m3	32,784	59,011	59,011	Truck Trailer	36	1,640
Internal Access Track (HV) Gravel Pavement Materials (via SA5)	1B	1.8	t/m3	8,460	15,228	15,228	Truck Trailer	36	423
Internal Access Track (LV) Gravel Pavement Materials (via SA2)	1B	1.8	t/m3	712	1,282	1,282	Truck Trailer	36	36
External Access Intersection Upgrade Pavement Materials (Stage 1)	1B	1.8	t/m3	750	1,350	1,350	Truck Trailer	36	38
Site Access SA2 Upgrade Pavement Materials (Stage 1)	1B	1.8	t/m3	500	900	900	Truck Trailer	36	25
Site Access SA3 Upgrade Pavement Materials (Stage 1)	1B	1.8	t/m3	500	900	900	Truck Trailer	36	25
Site Access SA5 Upgrade Pavement Materials (Stage 1)	1B	1.8	t/m3	500	900	900	Truck Trailer	36	25
Balranald Road Upgrade Gravel Pavement (Stage 1)	1B	1.8	t/m3	13,313	23,964	23,964	Truck Trailer	36	666
Turbine Hardstand Area Gravel (via SA2)	1B	1.8	t/m3	74,375	133,875	133,875	Truck Trailer	36	3,719
Turbine Hardstand Area Gravel (via SA3)	1B	1.8	t/m3	43,750	78,750	78,750	Truck Trailer	36	2,188
Turbine Hardstand Area Gravel (via SA5)	1B	1.8	t/m4	13,125	23,625	23,625	Truck Trailer	36	657
Culverts/Pipes (via SA2)	1B				16	16	Semi	1	16
Culverts/Pipes (via SA3)	1B				11	11	Semi	1	11
Culverts/Pipes (via SA5)	1B				3	3	Semi	1	3
Substation / Switching Station Area Gravel (via SA3)	1C	1.8	t/m3	18,990	34,182	34,182	Truck Trailer	36	950
Battery Storage Area Gravel (via SA3)	1C	1.8	t/m3	4,720	8,496	8,496	Truck Trailer	36	236
Batch Plant Area Gravel (via SA3)	1C	1.8	t/m3	5,976	10,757	10,757	Truck Trailer	36	299
Site Construction Compound Gravel (via SA3)	1C	1.8	t/m3	4,050	7,290	7,290	Truck Trailer	36	203
Operational and Maintenance Facility Area Gravel (via SA3)	1C	1.8	t/m3	5,000	9,000	9,000	Truck Trailer	36	250
Site Laydown Area Gravel (via SA3)	1C	1.8	t/m3	4,500	8,100	8,100	Truck Trailer	36	225
Formwork (via SA2)	1D	1	turbine		17	17	Semi	1	17
Formwork (via SA3)	1D	1	turbine		10	10	Semi	1	10
Formwork (via SA5)	1D	1	turbine		3	3	Semi	1	3
Geomembrane (via SA2)	1D	2	turbine		34	34	Semi	1	34
Geomembrane (via SA3)	1D	2	turbine		20	20	Semi	1	20
Geomembrane (via SA5)	1D	2	turbine		6	6	Semi	1	6
Underground Powerline Cable (via SA2)	2A				204	204	Semi	26.5	8
Underground Powerline Bedding Sand (via SA2)	2A	1.8	t/m3	2,094	3,769	3,769	Truck Trailer	36	105
Underground Powerline Cable (via SA3)	2A				230	230	Semi	26.5	9
Underground Powerline Bedding Sand (via SA3)	2A	1.8	t/m3	2,362	4,252	4,252	Truck Trailer	36	119
Underground Powerline Cable (via SA5)	2A				164	164	Semi	26.5	7
Underground Powerline Bedding Sand (via SA5)	2A	1.8	t/m3	1,684	3,031	3,031	Truck Trailer	36	85
Overhead Powerline Cable (via SA3)	2A				248	248	Semi	26.5	10
Overhead Powerline Poles (via SA3)	2A				53	53	Semi	20	3

Site Water (via SA2)	W	1	t/m3	76,500	76,500	76,500	Semi Water Truck	30	2,550
Site Water (via SA3)	W	1	t/m3	45,000	45,000	45,000	Semi Water Truck	30	1,500
Site Water (via SA5)	W	1	t/m3	13,500	13,500	13,500	Semi Water Truck	30	450
Fuel (via SA2)	F				1,700	1,700	Semi Tanker	26.5	65
Fuel (via SA3)	F				1,000	1,000	Semi Tanker	26.5	38
Fuel (via SA5)	F				300	300	Semi Tanker	26.5	12
								Total	**20,388**

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Stage 1 Site Vehicle Movement Summary

Assumed Work Days per Month 24 days

TASK 1A - PRELIMINARY SITE INVESTIGATIONS

Task Transport Duration 3 months A

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route
Preliminary Site Investigations	360	Light Vehicles	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	180	60	3
Sturt Highway (Balranald to Yanga Way)	180	60	3
Yanga Way (Sturt Highway to Balranald Road)	180	60	3
Balranald Road (Yanga Way to SA2)	360	120	5
Balranald Road (SA2 to SA3)	180	60	3
Balranald Road (SA3 to SA5)	36	12	1
Yanga Way (Balranald Road to Stony Crossing Road)	180	60	3
Stony Crossing Road (Yanga Way to Swan Hill Road)	180	60	3
Swan Hill Road (Stony Crossing Road to Swan Hill)	180	60	3

TASK 1B - OFF SITE ROAD WORKS

Task Transport Duration 4 months A

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
External Access Intersection Upgrade Pavement Materials (Stage 1)	38	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road I/S	A
Site Access SA2 Upgrade Pavement Materials (Stage 1)	25	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Site Access SA3 Upgrade Pavement Materials (Stage 1)	25	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Site Access SA5 Upgrade Pavement Materials (Stage 1)	25	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA5	A
Balranald Road Upgrade Gravel Pavement (Stage 1)	666	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road	A

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	0	0	0
Sturt Highway (Balranald to Yanga Way)	0	0	0
Yanga Way (Sturt Highway to Balranald Road)	0	0	0
Balranald Road (Yanga Way to SA2)	741	186	8
Balranald Road (SA2 to SA3)	300	75	4
Balranald Road (SA3 to SA5)	226	57	3
Yanga Way (Balranald Road to Stony Crossing Road)	779	195	9
Stony Crossing Road (Yanga Way to Swan Hill Road)	779	195	9
Swan Hill Road (Stony Crossing Road to Swan Hill)	779	195	9
Murray River Highway (Swan Hill to Lake Boga)	779	195	9

TASK 1C - MOBILISATION & SITE ESTABLISHMENT

Task Transport Duration 1 month A

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Construction Mobilisation - Ancilliary Equipment (via SA2)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Construction Mobilisation - Ancilliary Equipment (via SA3)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Construction Mobilisation - Ancilliary Equipment (via SA5)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA5	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA5	A
Construction Mobilisation - EW Plant (via SA2)	20	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Construction Mobilisation - EW Plant (via SA3)	20	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Construction Mobilisation - EW Plant (via SA5)	20	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA5	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA5	A
Construction Compound Establishment & Buildings (via SA3)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Batch Plant Area Establishment (via SA3)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	93	93	4
Sturt Highway (Balranald to Yanga Way)	93	93	4
Yanga Way (Sturt Highway to Balranald Road)	93	93	4
Balranald Road (Yanga Way to SA2)	185	185	8
Balranald Road (SA2 to SA3)	140	140	6
Balranald Road (SA3 to SA5)	45	45	2
Yanga Way (Balranald Road to Stony Crossing Road)	93	93	4
Stony Crossing Road (Yanga Way to Swan Hill Road)	93	93	4
Swan Hill Road (Stony Crossing Road to Swan Hill)	93	93	4

TASK 1D - INTERNAL ACCESS ROADS & HARDSTANDS

Task Transport Duration (Internal Tracks / Hardstands)	9	months	A

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Internal Access Track (HV) Gravel Pavement Materials (via SA2)	2,340	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Internal Access Track (HV) Gravel Pavement Materials (via SA3)	1,640	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Internal Access Track (HV) Gravel Pavement Materials (via SA5)	423	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA5	A
Internal Access Track (LV) Gravel Pavement Materials (via SA2)	36	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Turbine Hardstand Area Gravel (via SA2)	3,719	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Turbine Hardstand Area Gravel (via SA3)	2,188	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Turbine Hardstand Area Gravel (via SA5)	657	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA5	A
Culverts/Pipes (via SA2)	16	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Culverts/Pipes (via SA3)	11	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Culverts/Pipes (via SA5)	3	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA5	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA5	A

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	15	2	1
Sturt Highway (Balranald to Yanga Way)	15	2	1
Yanga Way (Sturt Highway to Balranald Road)	15	2	1
Balranald Road (Yanga Way to SA2)	11,033	1,245	52
Balranald Road (SA2 to SA3)	4,922	547	23
Balranald Road (SA3 to SA5)	1,083	120	6
Yanga Way (Balranald Road to Stony Crossing Road)	11,056	1,243	52
Stony Crossing Road (Yanga Way to Swan Hill Road)	11,056	1,243	52
Swan Hill Road (Stony Crossing Road to Swan Hill)	11,056	1,243	52
Murray River Highway (Swan Hill to Lake Boga)	11,041	1,242	52

TASK 1E - SITE COMPOUND AREAS (CIVIL WORKS)

Task Transport Duration (Site Compound Areas Civil Works) 4 months A

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Substation (SA3) Slab Wet Concrete	458	Concrete Truck	100%	SA3 Batch Plant	Internal	A
Substation (SA3) Slab Concrete Sand/Aggregates	99	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Substation (SA3) Slab Cement	23	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Substation (SA3) Slab Reinforcing Steel	39	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Substation (SA3) Slab Water	5	Semi Water Truck	100%	Balranald	Balranald - Yanga Way - Balranald Road - SA3	A
BESS (SA3) Slab Wet Concrete	257	Concrete Truck	100%	SA3 Batch Plant	Internal	A
BESS (SA3) Slab Concrete Sand/Aggregates	56	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
BESS (SA3) Slab Cement	13	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
BESS (SA3) Slab Reinforcing Steel	22	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
BESS (SA3) Slab Water	3	Semi Water Truck	100%	Balranald	Balranald - Yanga Way - Balranald Road - SA3	A
Batch Plant (SA3) Slab Wet Concrete	116	Concrete Truck	100%	SA3 Batch Plant	Internal	A
Batch Plant (SA3) Slab Concrete Sand/Aggregates	25	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Batch Plant (SA3) Slab Cement	6	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Batch Plant (SA3) Slab Reinforcing Steel	10	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Batch Plant (SA3) Slab Water	2	Semi Water Truck	100%	Balranald	Balranald - Yanga Way - Balranald Road - SA3	A
Construction Compound (SA3) Slab Wet Concrete	79	Concrete Truck	100%	SA3 Batch Plant	Internal	A
Construction Compound (SA3) Slab Concrete Sand/Aggregates	17	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Construction Compound (SA3) Slab Cement	4	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Construction Compound (SA3) Slab Reinforcing Steel	7	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Construction Compound (SA3) Slab Water	1	Semi Water Truck	100%	Balranald	Balranald - Yanga Way - Balranald Road - SA3	A
Operational and Maintenance Facility (SA3) Slab Wet Concrete	87	Concrete Truck	100%	SA3 Batch Plant	Internal	A
Operational and Maintenance Facility (SA3) Slab Concrete Sand/Aggregates	19	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Operational and Maintenance Facility (SA3) Slab Cement	5	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Operational and Maintenance Facility (SA3) Slab Reinforcing Steel	8	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Operational and Maintenance Facility (SA3) Slab Water	1	Semi Water Truck	100%	Balranald	Balranald - Yanga Way - Balranald Road - SA3	A
Substation / Switching Station Area Gravel (via SA3)	950	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Battery Storage Area Gravel (via SA3)	236	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Batch Plant Area Gravel (via SA3)	299	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Site Construction Compound Gravel (via SA3)	203	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Operational and Maintenance Facility Area Gravel (via SA3)	250	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Site Laydown Area Gravel (via SA3)	225	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	69	18	1
Sturt Highway (Balranald to Yanga Way)	81	21	1
Yanga Way (Sturt Highway to Balranald Road)	81	21	1
Balranald Road (Yanga Way to SA2)	2,528	632	27
Balranald Road (SA2 to SA3)	2,528	632	27
Balranald Road (SA3 to SA5)	0	0	0
Yanga Way (Balranald Road to Stony Crossing Road)	2,448	612	26
Stony Crossing Road (Yanga Way to Swan Hill Road)	2,448	612	26
Swan Hill Road (Stony Crossing Road to Swan Hill)	2,448	612	26
Murray River Highway (Swan Hill to Lake Boga)	2,379	595	25

TASK 1F - TURBINE FOUNDATIONS

Task Transport Duration (Turbine Foundations) 9 months A

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Concrete aggregates for turbine footings (SA2)	510	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Reinforcing steel for turbine footings (SA2)	200	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Other concrete supplies for turbine footings (SA2)	116	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Water for turbine footings concrete (SA2)	23	Semi Water Truck	100%	Balranald	Balranald - Yanga Way - Balranald Road - SA3	A
Wet concrete for turbine footings (SA2)	2,267	Concrete Truck	100%	SA3 Batch Plant	SA3 - Balranald Road - SA2	A
Formwork (via SA2)	17	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Geomembrane (via SA2)	34	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Concrete aggregates for turbine footings (SA3)	300	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Reinforcing steel for turbine footings (SA3)	118	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Other concrete supplies for turbine footings (SA3)	68	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Water for turbine footings concrete (SA3)	13	Semi Water Truck	100%	Balranald	Balranald - Yanga Way - Balranald Road - SA3	A
Wet concrete for turbine footings (SA3)	1,333	Concrete Truck	100%	SA3 Batch Plant	Internal	A
Formwork (via SA3)	10	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Geomembrane (via SA3)	20	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Concrete aggregates for turbine footings (SA5)	90	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Reinforcing steel for turbine footings (SA5)	35	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA5	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA5	A
Other concrete supplies for turbine footings (SA5)	21	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Water for turbine footings concrete (SA5)	4	Semi Water Truck	100%	Balranald	Balranald - Yanga Way - Balranald Road - SA3	A
Wet concrete for turbine footings (SA5)	400	Concrete Truck	100%	SA3 Batch Plant	Internal	A
Formwork (via SA5)	3	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA5	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA5	A
Geomembrane (via SA5)	6	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA5	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA5	A

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	324	37	2
Sturt Highway (Balranald to Yanga Way)	364	41	2
Yanga Way (Sturt Highway to Balranald Road)	364	41	2
Balranald Road (Yanga Way to SA2)	1,588	177	8
Balranald Road (SA2 to SA3)	3,604	401	17
Balranald Road (SA3 to SA5)	44	5	1
Yanga Way (Balranald Road to Stony Crossing Road)	1,224	137	6
Stony Crossing Road (Yanga Way to Swan Hill Road)	1,224	137	6
Swan Hill Road (Stony Crossing Road to Swan Hill)	1,224	137	6
Murray River Highway (Swan Hill to Lake Boga)	900	100	5

TASK 2A - CABLING

Task Transport Duration (Cabling) 9 months A

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Underground Powerline Cable (via SA2)	8	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	
Underground Powerline Bedding Sand (via SA2)	105	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Underground Powerline Cable (via SA3)	9	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	
Underground Powerline Bedding Sand (via SA3)	119	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Underground Powerline Cable (via SA5)	7	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA5	
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA5	
Underground Powerline Bedding Sand (via SA5)	85	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA5	
Overhead Powerline Cable (via SA3)	10	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	
Overhead Powerline Poles (via SA3)	3	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	19	3	1
Sturt Highway (Balranald to Yanga Way)	19	3	1
Yanga Way (Sturt Highway to Balranald Road)	19	3	1
Balranald Road (Yanga Way to SA2)	346	39	2
Balranald Road (SA2 to SA3)	233	26	2
Balranald Road (SA3 to SA5)	92	11	1
Yanga Way (Balranald Road to Stony Crossing Road)	328	37	2
Stony Crossing Road (Yanga Way to Swan Hill Road)	328	37	2
Swan Hill Road (Stony Crossing Road to Swan Hill)	328	37	2
Murray River Highway (Swan Hill to Lake Boga)	309	35	2

TASK 2B - SITE COMPOUND AREAS (ELECTRICAL WORKS)

Task Transport Duration (Electrical Area Establishment)	3	months	A

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Transformer (via SA3)	1	Special	100%	Port Adelaide	Port Adelaide - M2 - A1 - Gawler Rd - Wilkinson Rd - Hatcher Rd - Oates Rd - Mudla Wirra Rd - College Rd - Roseworthy Rd - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A
Switchroom (via SA3)	1	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA3	A
Electrical Components (via SA3)	200	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Substation / Switching Station Area Establishment & Buildings (via SA3)	40	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Battery Storage Establishment (via SA3)	40	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Operational and Maintenance Facility Establishment (via SA3)	25	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	155	52	3
Sturt Highway (Balranald to Yanga Way)	155	52	3
Yanga Way (Sturt Highway to Balranald Road)	155	52	3
Balranald Road (Yanga Way to SA2)	307	103	5
Balranald Road (SA2 to SA3)	307	103	5
Balranald Road (SA3 to SA5)	0	0	0
Yanga Way (Balranald Road to Stony Crossing Road)	153	51	3
Stony Crossing Road (Yanga Way to Swan Hill Road)	153	51	3
Swan Hill Road (Stony Crossing Road to Swan Hill)	153	51	3
Murray River Highway (Swan Hill to Lake Boga)	0	0	0

TASK 3A - TURBINE TRANSPORTATION

Proposed Turbine Transport Rate	2	turbines / week	A
No. Days per Week Haulage	6	days	

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Turbine Blades (SA2)	51	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Werrimull N Road - C254 - A79 - C252 - C251 - A20 (Sturt Hwy) - Yanga Way - Balranald Road - SA2	A
Turbine Blades (SA3)	30	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Werrimull N Road - C254 - A79 - C252 - C251 - A20 (Sturt Hwy) - Yanga Way - Balranald Road - SA3	A
Turbine Blades (SA5)	9	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Werrimull N Road - C254 - A79 - C252 - C251 - A20 (Sturt Hwy) - Yanga Way - Balranald Road - SA5	A
Turbine Nacelles (SA2)	17	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A
Turbine Nacelles (SA3)	10	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA3	A
Turbine Nacelles (SA5)	3	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA5	A
Turbine Drive Trains (SA2)	17	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A
Turbine Drive Trains (SA3)	10	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA3	A
Turbine Drive Trains (SA5)	3	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA5	A
Turbine Hub & Nose Cone (SA2)	17	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A
Turbine Hub & Nose Cone (SA3)	10	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA3	A
Turbine Hub & Nose Cone (SA5)	3	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA5	A
Tower Sections 1-2 (SA2)	34	Special	100%	Port Adelaide	Port Adelaide - M2 - A1 - Gawler Rd - Wilkinson Rd - Hatcher Rd - Oates Rd - Mudla Wirra Rd - College Rd - Roseworthy Rd - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A
Tower Sections 1-2 (SA3)	20	Special	100%	Port Adelaide	Port Adelaide - M2 - A1 - Gawler Rd - Wilkinson Rd - Hatcher Rd - Oates Rd - Mudla Wirra Rd - College Rd - Roseworthy Rd - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA3	A
Tower Sections 1-2 (SA5)	6	Special	100%	Port Adelaide	Port Adelaide - M2 - A1 - Gawler Rd - Wilkinson Rd - Hatcher Rd - Oates Rd - Mudla Wirra Rd - College Rd - Roseworthy Rd - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA5	A
Tower Sections 3-7 (SA2)	85	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A

Tower Sections 3-7 (SA3)	50	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA3	A
Tower Sections 3-7 (SA5)	15	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA5	A
Tower Base Rings (SA2)	6	Semi	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A
Tower Base Rings (SA3)	4	Semi	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA3	A
Tower Base Rings (SA5)	1	Semi	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA5	A
Tower Assembly Components (SA2)	17	Semi	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A
Tower Assembly Components (SA3)	10	Semi	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA3	A
Tower Assembly Components (SA5)	3	Semi	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA5	A
Escorting LV (SA2)	442	LV	100%	Port Adelaide	-	A
Escorting LV (SA3)	260	LV	100%	Port Adelaide	-	A
Escorting LV (SA5)	78	LV	100%	Port Adelaide	-	A
Performance Monitoring Masts (SA2)	5	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A
Performance Monitoring Masts (SA3)	0	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA3	A
Performance Monitoring Masts (SA5)	0	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA5	A

Road Section	Total Trips	HV Trips / Week**	Max. HV Trips / Day
Sturt Highway (Euston to Balranald)	1,216	30	7
Sturt Highway (Balranald to Yanga Way)	1,216	30	7
Yanga Way (Sturt Highway to Balranald Road)	1,216	30	7
Balranald Road (Yanga Way to SA2)	1,216	30	7
Balranald Road (SA2 to SA3)	525	30	7
Balranald Road (SA3 to SA5)	121	30	7
Yanga Way (Balranald Road to Stony Crossing Road)	0	0	0
Stony Crossing Road (Yanga Way to Swan Hill Road)	0	0	0
Swan Hill Road (Stony Crossing Road to Swan Hill)	0	0	0
Murray River Highway (Swan Hill to Lake Boga)	0	0	0

390

4.333333333

TASK 3B - TURBINE ERECTION

Task Transport Duration (Turbine Erection - Crane Transport)	1	month	A

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Site Crane (Turbines)	8	Special / Crane	100%	Port Adelaide	Port Adelaide - M2 - A1 - Gawler Rd - Wilkinson Rd - Hatcher Rd - Gates Rd - Mudla Wirra Rd - College Rd - Roseworthy Rd - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A
Secondary Crane	1	Crane / Semi	100%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Euston to Balranald)	9	9	2
Sturt Highway (Balranald to Yanga Way)	9	9	2
Yanga Way (Sturt Highway to Balranald Road)	9	9	2
Balranald Road (Yanga Way to SA2)	9	9	2
Balranald Road (SA2 to SA3)	9	9	2
Balranald Road (SA3 to SA5)	9	9	2
Yanga Way (Balranald Road to Stony Crossing Road)	0	0	0
Stony Crossing Road (Yanga Way to Swan Hill Road)	0	0	0
Swan Hill Road (Stony Crossing Road to Swan Hill)	0	0	0
Murray River Highway (Swan Hill to Lake Boga)	0	0	0

TASK 4 - FINALISATION / COMMISSIONING / DEMOBILISATION

Task Transport Duration (Demobilisation) 3 month A

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Construction Demobilisation - Ancilliary Equipment (via SA2)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Construction Demobilisation - Ancilliary Equipment (via SA3)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Construction Demobilisation - Ancilliary Equipment (via SA5)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA5	
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA5	
Construction Demobilisation - EW Plant (via SA2)	20	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Construction Demobilisation - EW Plant (via SA3)	20	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A
Construction Demobilisation - EW Plant (via SA5)	20	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA5	
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA5	
Construction Compound Decommissioning (via SA3)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Batch Plant Area Decommissioning (via SA3)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3	A

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	93	31	2
Sturt Highway (Balranald to Yanga Way)	93	31	2
Yanga Way (Sturt Highway to Balranald Road)	93	31	2
Balranald Road (Yanga Way to SA2)	185	62	3
Balranald Road (SA2 to SA3)	140	47	2
Balranald Road (SA3 to SA5)	45	15	1
Yanga Way (Balranald Road to Stony Crossing Road)	93	31	2
Stony Crossing Road (Yanga Way to Swan Hill Road)	93	31	2
Swan Hill Road (Stony Crossing Road to Swan Hill)	93	31	2

TASK W - SITE WATER

Task Duration (Site Water SA2 & SA3) 18 months A

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Site Water (via SA2)	2,550	Semi Water Truck	100%	Balranald	Balranald - Yanga Way - Balranald Road - SA2	A
Site Water (via SA3)	1,500	Semi Water Truck	100%	Balranald	Balranald - Yanga Way - Balranald Road - SA3	A
Site Water (via SA5)	450	Semi Water Truck	100%	Balranald	Balranald - Yanga Way - Balranald Road - SA5	

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	0	0	0
Sturt Highway (Balranald to Yanga Way)	4,500	250	11
Yanga Way (Sturt Highway to Balranald Road)	4,500	250	11
Balranald Road (Yanga Way to SA2)	4,500	250	11
Balranald Road (SA2 to SA3)	1,950	109	5
Balranald Road (SA3 to SA5)	450	25	2
Yanga Way (Balranald Road to Stony Crossing Road)	0	0	0
Stony Crossing Road (Yanga Way to Swan Hill Road)	0	0	0
Swan Hill Road (Stony Crossing Road to Swan Hill)	0	0	0
Murray River Highway (Swan Hill to Lake Boga)	0	0	0

TASK F - SITE FUEL

Task Duration (Site Fuel SA2 & SA3) 18 months

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route
Fuel (via SA2)	65	Semi Tanker	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2
Fuel (via SA3)	38	Semi Tanker	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA3
Fuel (via SA5)	12	Semi Tanker	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA5
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA5

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	58	4	1
Sturt Highway (Balranald to Yanga Way)	58	4	1
Yanga Way (Sturt Highway to Balranald Road)	58	4	1
Balranald Road (Yanga Way to SA2)	115	7	1
Balranald Road (SA2 to SA3)	50	3	1
Balranald Road (SA3 to SA5)	12	1	1
Yanga Way (Balranald Road to Stony Crossing Road)	58	4	1
Stony Crossing Road (Yanga Way to Swan Hill Road)	58	4	1
Swan Hill Road (Stony Crossing Road to Swan Hill)	58	4	1
Murray River Highway (Swan Hill to Lake Boga)	0	0	0

TASK WC - WASTE COLLECTION

Task Duration (Waste Collection SA2 & SA3) 18 months

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route
Waste Collection (via SA2)	78	Semi	100%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2
Waste Collection (via SA3)	78	Semi	100%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3
Waste Collection (via SA5)	78	Semi	100%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA5

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	235	14	1
Sturt Highway (Balranald to Yanga Way)	235	14	1
Yanga Way (Sturt Highway to Balranald Road)	235	14	1
Balranald Road (Yanga Way to SA2)	235	14	1
Balranald Road (SA2 to SA3)	156	9	1
Balranald Road (SA3 to SA5)	78	5	1
Yanga Way (Balranald Road to Stony Crossing Road)	0	0	0
Stony Crossing Road (Yanga Way to Swan Hill Road)	0	0	0
Swan Hill Road (Stony Crossing Road to Swan Hill)	0	0	0
Murray River Highway (Swan Hill to Lake Boga)	0	0	0

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Stage 1 Project Staff Movements

Project Timeframe

Element	Qty	Unit
Hours per day	12	hrs
Working days per week	6	days
Working days per month	24	days
Expected project length	18	months
Totals days	432	days

Construction Workforce

Element	Qty	Unit
Peak Workforce (NW Area - SA2)	200	staff
Local Workforce	80%	%
Fly In Fly Out	20%	%

Construction Workforce Distribution - (NW Area - SA2)

Location	Distribution	Unit	Qty	Vehicle Type	% Vehicle	Staff No. per Vehicle Type	Average Vehicle Capacity	Movements Round Trip (per day)	
Local Workforce									
Balranald	80%	%	128	LV	50%	64	2	32	
				Bus	50%	64	15	5	
Tooleybuc	5%	%	8	LV	100%	8	2	4	
				Bus	0%	0	15	0	
Swan Hill	15%	%	24	LV	100%	24	2	12	
				Bus	0%	0	15	0	
FIFO Workforce									
Balranald	100%	%	40	LV	25%	10	2	5	
				Bus	75%	30	15	2	
							Total	**44**	**Peak @ Sturt Highway / Yanga Way**
							Total	**60**	**Peak @ Yanga Way / Balranald Road**

Operations (to Stage 1 O&M Facility - SA3)

Element	Qty	Unit
Hours per day	12	hrs
Working days per week	7	days
Peak Workforce	15	each

Location	Distribution	Unit	Qty	Vehicle Type	Vehicle Capacity	Movements 2-way (per day)
Balranald	100%	%	15	LV	1	15
					Total	**15**

Appendix G – Project Traffic Calculations – Stage 2

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Stage 2 Site Properties

Site Components

Element	Qty	Unit
Number of Turbines (via SA2)	27	ea
Number of Turbines (via SA4)	0	ea
Number of Turbines (via SA5)	0	ea
Number of Turbines (via SA6)	17	ea
Number of Turbines (via SA7)	6	ea
Number of Turbines (via SA8)	16	ea
Number of PPM (via SA8)	1	ea
Length of Internal Access Tracks - HV (via SA2)	27,169	m
Length of Internal Access Tracks - HV (via SA4)	103	m
Length of Internal Access Tracks - HV (via SA6)	17,262	m
Length of Internal Access Tracks - HV (via SA7)	6,745	m
Length of Internal Access Tracks - HV (via SA8)	12,631	m
Length of Internal Access Tracks - LV (via SA8)	389	m
Length of Balranald Road Upgrade - Stage 2 (SA5 to SA6)	6,246	m
Length of Balranald Road Upgrade - Stage 2 (SA6 to SA7)	1,615	m
Length of Balranald Road Upgrade - Stage 2 (SA7 to SA8)	3,185	m
Average Width of Existing Balranald Road	8	m
Length of Arundel Road Upgrade - Stage 2 (Balranald Road to SA4)	710	m
Average Width of Existing Balranald Road	4	m
Number of Substations / Switching Stations (via SA2)	1	ea
Number of Battery Energy Storage System (BESS) Areas (via SA2)	0	ea
Number of Turbine Hardstands / Crane Assembly Areas (via SA2)	27	ea
Number of Batch Plants (via SA2)	1	ea
Number of Site Construction Compound Areas (via SA1)	1	ea
Number of Operations & Maintenance Facilities (via SA2)	0	ea
Number of Site Laydown Areas (via SA2)	1	ea
Number of Substations / Switching Stations (via SA4)	0	ea
Number of Battery Energy Storage System (BESS) Areas (via SA4)	0	ea
Number of Turbine Hardstands / Crane Assembly Areas (via SA4)	0	ea
Number of Batch Plants (via SA4)	0	ea
Number of Construction Compound Areas (via SA4)	1	ea
Number of Operations & Maintenance Facilities (via SA4)	1	ea
Number of Site Laydown Areas (via SA4)	0	ea
Number of Substations / Switching Stations (via SA6)	1	ea
Number of Battery Energy Storage System (BESS) Areas (via SA6)	0	ea
Number of Turbine Hardstands / Crane Assembly Areas (via SA6)	17	ea
Number of Batch Plants (via SA6)	1	ea
Number of Site Construction Compound Areas (via SA6)	1	ea
Number of Operations & Maintenance Facilities (via SA6)	0	ea
Number of Site Laydown Areas (via SA6)	1	ea
Number of Substations / Switching Stations (via SA7)	0	ea
Number of Battery Energy Storage System (BESS) Areas (via SA7)	0	ea
Number of Turbine Hardstands / Crane Assembly Areas (via SA7)	6	ea
Number of Batch Plants (via SA7)	0	ea
Number of Site Construction Compound Areas (via SA7)	0	ea
Number of Operations & Maintenance Facilities (via SA7)	0	ea
Number of Site Laydown Areas (via SA7)	1	ea
Number of Substations / Switching Stations (via SA8)	0	ea
Number of Battery Energy Storage System (BESS) Areas (via SA8)	0	ea
Number of Turbine Hardstands / Crane Assembly Areas (via SA8)	16	ea
Number of Batch Plants (via SA8)	1	ea
Number of Site Construction Compound Areas (via SA8)	1	ea
Number of Operations & Maintenance Facilities (via SA8)	0	ea
Number of Site Laydown Areas (via SA8)	1	ea
Length of Underground Powerline Cable (via SA2)	57,293	m
Length of Overhead Transmission Line (via SA2)	4,028	m
Length of Underground Powerline Cable (via SA4)	0	m
Length of Overhead Transmission Line (via SA4)	0	m
Length of Underground Powerline Cable (via SA6)	39,507	m
Length of Overhead Transmission Line (via SA6)	8,097	m
Length of Underground Powerline Cable (via SA7)	7,307	m
Length of Underground Powerline Cable (via SA8	19,606	m
Site Water (via SA2)	113	ML
Site Water (via SA4)	0	ML
Site Water (via SA5)	0	ML
Site Water (via SA6)	71	ML
Site Water (via SA7)	25	ML
Site Water (via SA8)	67	ML
% of Gravel Materials Sourced Onsite	0%	%
% of Gravel Materials Imported	100%	%
% of Aggregate Materials Sourced Onsite	0%	%
% of Aggregate Materials Imported	100%	%
% of Water Sourced Onsite	0%	%
% of Water Imported	100%	%
% of Bedding Sand (Electrical) Sourced Onsite	0%	%
% of Bedding Sand (Electrical) Imported	100%	%

Site Areas

Element	Number	Hardstand Area	Unit	% Concrete	Concrete Area	Unit	Gravel Area	Unit
Substation / Switching Station Area (via SA2)	1	39,750	m2	20%	7,950	m2	31,800	m2
Turbine Hardstand / Crane Assembly Area (via SA2)	27	17,500	m2	0%	0	m2	472,500	m2
Batch Plant Area (via SA2)	1	30,500	m2	10%	3,050	m2	27,450	m2
Construction Compound Area (via SA2)	1	22,500	m2	10%	2,250	m2	20,250	m2
Site Laydown Area (via SA2)	1	22,500	m2	0%	0	m2	22,500	m2
Construction Compound Area (via SA4)	1	22,500	m2	10%	2,250	m2	20,250	m2
Operations & Maintenance Facility Area (via SA4)	1	25,000	m2	10%	2,500	m2	22,500	m2
Substation / Switching Station Area (via SA6)	1	39,750	m2	20%	7,950	m2	31,800	m2
Turbine Hardstand / Crane Assembly Area (via SA6)	17	17,500	m2	0%	0	m2	297,500	m2
Batch Plant Area (via SA6)	1	31,800	m2	10%	3,180	m2	28,620	m2
Construction Compound Area (via SA6)	1	22,500	m2	10%	2,250	m2	20,250	m2
Site Laydown Area (via SA6)	1	22,500	m2	0%	0	m2	22,500	m2
Turbine Hardstand / Crane Assembly Area (via SA7)	6	17,500	m2	0%	0	m2	105,000	m2
Site Laydown Area (via SA7)	1	22,500	m2	0%	0	m2	22,500	m2
Turbine Hardstand / Crane Assembly Area (via SA8)	16	17,500	m2	0%	0	m2	280,000	m2
Batch Plant Area (via SA8)	1	31,500	m2	10%	3,150	m2	28,350	m2
Construction Compound Area (via SA8)	1	22,500	m2	10%	2,250	m2	20,250	m2
Site Laydown Area (via SA8)	1	22,500	m2	0%	0	m2	22,500	m2

Concrete Composition

Element	Composition	Unit
Aggregates & Sand	75%	%
Cement	15%	%
Steel	5%	%
Water	5%	%
Total	100%	%

Material Assumptions

Element	Qty	Unit
Internal Access Track HV Width	7.5	m
Internal Access Track HV Pavement Depth	0.4	m
Internal Access Track LV Width	5.5	m
Internal Access Track LV Pavement Depth	0.25	m
Balranald Road Stage 2 Upgrade Width	8	m
Balranald Road Stage 2 Upgrade Depth	0.15	m
Balranald Road Stage 2 Upgrade Depth (Widening)	0.4	m
Arundel Road Stage 2 Upgrade Width	8	m
Arundel Road Stage 2 Upgrade Depth	0.15	m
Arundel Road Stage 2 Upgrade Depth (Widening)	0.4	m
Substation / Switching Station Area Slab Concrete Depth	0.25	m
BESS Area Slab Concrete Depth	0.25	m
Batch Plant Area Slab Concrete Depth	0.2	m
Construction Compound Area Slab Concrete Depth	0.2	m
Operations and Maintenance Facility Slab Concrete Depth	0.2	m
Substation / Switching Station Area Gravel Depth	0.2	m
BESS Area Gravel Depth	0.2	m
Turbine Hardstand / Crane Assembly Area Gravel Depth	0.25	m
Batch Plant Area Gravel Depth	0.2	m
Construction Compound Area Gravel Depth	0.2	m
Operations and Maintenance Facility Gravel Depth	0.2	m
Site Laydown Area Gravel Depth	0.2	m
Concrete Sand/Aggregates Mass	1.8	t/m3
Concrete Cement Mass	1.51	t/m3
Concrete Steel Mass	7.8	t/m3
Concrete Water Mass	1	t/m3
Wet Concrete Mass	2.5	t/m3
Power Line Length per Roll / Drum	250	m
Power Line Mass per Roll / Drum	2.925	tonnes
Spacing Overhead Power Poles	100	m
Underground Powerline Trench Width	0.4	m
Underground Powerline Bedding Sand Depth	0.3	m

Movements

Components & Equipment

Element	Task	Qty per Turbine	Unit	Stage 1 Qty	Stg 1 Transp. Qty	Vehicle Type	Vehicle Capacity	Movements
Concrete volume in turbine footings	1D	800	m3	52,800				
Concrete aggregates for turbine footings	1D	600	m3	39,600	39,600	Truck Trailer	20	1,980
Reinforcing steel for turbine footings	1D	40	m3	2,640	2,640	Semi	3.4	777
Other concrete supplies for turbine footings	1D	120	m3	7,920	7,920	Semi	17.5	451
Water for turbine footings concrete	1D	40	m3	2,640	2,640	Semi Water Truck	30.0	88
Wet concrete for turbine footings	1D	1,920	tonnes	126,720	126,720	Concrete Truck	14.4	8,800
Turbine Blades	3A	3	each	198	198	Special	1	198
Turbine Nacelles	3A	1	each	66	66	Special	1	66
Turbine Drive Trains	3A	1	each	66	66	Special	1	66
Turbine Hub & Nose Cone	3A	1	each	66	66	Special	1	66
Tower Sections	3A	7	each	462	462	Special	1	462
Tower Base Rings	3A	0.35	each	23	23	Semi	1	23
Tower Assembly Components	3A	1	each	66	66	Semi	1	66
Escorting LV	3A	26	each	1,716	1,716	LV	1	1,716
Transformer (via SA2)	2B	-	each	1	1	Special	1	1
Switchroom (via SA2)	2B	-	each	1	1	Special	1	1
Transformer (via SA6)	2B	-	each	1	1	Special	1	1
Switchroom (via SA6)	2B	-	each	1	1	Special	1	1
Site Crane (Turbines)	3B	-	each	2	2	Special / Crane	1	2
Secondary Crane	3B	-	each	1	1	Crane / Semi	1	1
Performance Monitoring Masts (via SA8)	3A	-	each	1	1	Semi	0.4	3
Electrical Components (via SA2 - Switching Station)	2B	-	each	150	150	Semi	1	150
Electrical Components (via SA6 - Switching Station)	2B	-	each	150	150	Semi	1	150
							Total	**15,069**

Mobilisation / Site Establishment

Element	Task	Qty per Area	Unit	Site Qty	Site Transport Qty	Vehicle Type	Vehicle Capacity	Movements
Construction Mobilisation - Ancilliary Equipment (via SA2)	1A	25	each	25	25	Semi / Low Loader	1	25
Construction Mobilisation - Ancilliary Equipment (via SA4)	1A	25	each	25	25	Semi / Low Loader	1	25
Construction Mobilisation - Ancilliary Equipment (via SA6)	1A	25	each	25	25	Semi / Low Loader	1	25
Construction Mobilisation - Ancilliary Equipment (via SA7)	1A	25	each	25	25	Semi / Low Loader	1	25
Construction Mobilisation - Ancilliary Equipment (via SA8)	1A	25	each	25	25	Semi / Low Loader	1	25
Construction Mobilisation - EW Plant (via SA2)	1A	20	each	20	20	Semi / Low Loader	1	20
Construction Mobilisation - EW Plant (via SA4)	1A	20	each	20	20	Semi / Low Loader	1	20
Construction Mobilisation - EW Plant (via SA6)	1A	20	each	20	20	Semi / Low Loader	1	20
Construction Mobilisation - EW Plant (via SA7)	1A	20	each	20	20	Semi / Low Loader	1	20
Construction Mobilisation - EW Plant (via SA8)	1A	20	each	20	20	Semi / Low Loader	1	20
Construction Compound Establishment & Buildings (via SA2)	1A	25	each	25	25	Semi / Low Loader	1	25
Batch Plant Area Establishment (via SA2)	1A	25	each	25	25	Semi / Low Loader	1	25
Construction Compound Establishment & Buildings (via SA4)	1A	25	each	25	25	Semi / Low Loader	1	25
Batch Plant Area Establishment (via SA6)	1A	25	each	25	25	Semi / Low Loader	1	25
Construction Compound Establishment & Buildings (via SA6)	1A	25	each	25	25	Semi / Low Loader	1	25
Batch Plant Area Establishment (via SA8)	1A	25	each	25	25	Semi / Low Loader	1	25
Construction Compound Establishment & Buildings (via SA8)	1A	25	each	25	25	Semi / Low Loader	1	25
Switching Station Area Establishment & Buildings (via SA2)	2B	40	each	40	40	Semi	1	40
Operations and Maintenance Facility Establishment (via SA4)	2B	25	each	25	25	Semi	1	25
Switching Station Area Establishment & Buildings (via SA6)	2B	40	each	40	40	Semi	1	40
							Total	**505**

Demobilisation / Commissioning

Element	Task	Qty per Area	Unit	Site Qty	Site Transport Qty	Vehicle Type	Vehicle Capacity	Movements
Construction Demobilisation - Ancilliary Equipment (via SA2)	4	25	each	25	25	Semi / Low Loader	1	25
Construction Demobilisation - Ancilliary Equipment (via SA4)	4	25	each	25	25	Semi / Low Loader	1	25
Construction Demobilisation - Ancilliary Equipment (via SA6)	4	25	each	25	25	Semi / Low Loader	1	25
Construction Demobilisation - Ancilliary Equipment (via SA7)	4	25	each	25	25	Semi / Low Loader	1	25
Construction Demobilisation - Ancilliary Equipment (via SA8)	4	25	each	25	25	Semi / Low Loader	1	25
Construction Demobilisation - EW Plant (via SA2)	4	20	each	20	20	Semi / Low Loader	1	20
Construction Demobilisation - EW Plant (via SA4)	4	20	each	20	20	Semi / Low Loader	1	20
Construction Demobilisation - EW Plant (via SA6)	4	20	each	20	20	Semi / Low Loader	1	20
Construction Demobilisation - EW Plant (via SA7)	4	20	each	20	20	Semi / Low Loader	1	20
Construction Demobilisation - EW Plant (via SA8)	4	20	each	20	20	Semi / Low Loader	1	20
Construction Compound Decommissioning (via SA2)	4	25	each	25	25	Semi / Low Loader	1	25
Batch Plant Area Decommissioning (via SA2)	4	25	each	25	25	Semi / Low Loader	1	25
Construction Compound Decommissioning (via SA4)	4	25	each	25	25	Semi / Low Loader	1	25
Construction Compound Decommissioning (via SA6)	4	25	each	25	25	Semi / Low Loader	1	25
Batch Plant Area Decommissioning (via SA6)	4	25	each	25	25	Semi / Low Loader	1	25
Construction Compound Decommissioning (via SA8)	4	25	each	25	25	Semi / Low Loader	1	25
Batch Plant Area Decommissioning (via SA8)	4	25	each	25	25	Semi / Low Loader	1	25
							Total	**400**

Construction Materials

Element	Task	Qty per Unit	Unit	Volume (m3)	Site Qty (tonnes)	Site Trasnport Qty (tonnes)	Vehicle Type	Vehicle Capacity (tonnes)	Movements
Switching Station (SA2) Slab Wet Concrete	1C	2.5	t/m3	1,988	4,969	4,969	Concrete Truck	14.4	346
Switching Station (SA2) Slab Concrete Sand/Aggregates	1C	1.8	t/m3	1,491	2,683	2,683	Truck Trailer	36	75
Switching Station (SA2) Slab Cement	1C	1.51	t/m3	298	450	450	Semi	26.5	17
Switching Station (SA2) Slab Reinforcing Steel	1C	7.8	t/m3	99	775	775	Semi	26.5	30
Switching Station (SA2) Slab Water	1C	1	t/m3	99	99	99	Semi Water Truck	30	4
Batch Plant (SA2) Slab Wet Concrete	1C	2.5	t/m3	610	1,525	1,525	Concrete Truck	14.4	106
Batch Plant (SA2) Slab Concrete Sand/Aggregates	1C	1.8	t/m3	458	824	824	Truck Trailer	36	23
Batch Plant (SA2) Slab Cement	1C	1.51	t/m3	92	138	138	Semi	26.5	6
Batch Plant (SA2) Slab Reinforcing Steel	1C	7.8	t/m3	31	238	238	Semi	26.5	9
Batch Plant (SA2) Slab Water	1C	1	t/m3	31	31	31	Semi Water Truck	30	2
Construction Compound (SA2) Slab Wet Concrete	1C	2.5	t/m3	450	1,125	1,125	Concrete Truck	14.4	79
Construction Compound (SA2) Slab Concrete Sand/Aggregates	1C	1.8	t/m3	338	608	608	Truck Trailer	36	17
Construction Compound (SA2) Slab Cement	1C	1.51	t/m3	68	102	102	Semi	26.5	4
Construction Compound (SA2) Slab Reinforcing Steel	1C	7.8	t/m3	23	176	176	Semi	26.5	7
Construction Compound (SA2) Slab Water	1C	1	t/m3	23	23	23	Semi Water Truck	30	1
Construction Compound (SA4) Slab Wet Concrete	1C	2.5	t/m3	450	1,125	1,125	Concrete Truck	14.4	79
Construction Compound (SA4) Slab Concrete Sand/Aggregates	1C	1.8	t/m3	338	608	608	Truck Trailer	36	17
Construction Compound (SA4) Slab Cement	1C	1.51	t/m3	68	102	102	Semi	26.5	4
Construction Compound (SA4) Slab Reinforcing Steel	1C	7.8	t/m3	23	176	176	Semi	26.5	7
Construction Compound (SA4) Slab Water	1C	1	t/m3	23	23	23	Semi Water Truck	30	1
Operational and Maintenance Facility (SA4) Slab Wet Concrete	1C	2.5	t/m3	500	1,250	1,250	Concrete Truck	14.4	87
Operational and Maintenance Facility (SA4) Slab Concrete Sand/Aggregates	1C	1.8	t/m3	375	675	675	Truck Trailer	36	19
Operational and Maintenance Facility (SA4) Slab Cement	1C	1.51	t/m3	75	113	113	Semi	26.5	5
Operational and Maintenance Facility (SA4) Slab Reinforcing Steel	1C	7.8	t/m3	25	195	195	Semi	26.5	8
Operational and Maintenance Facility (SA4) Slab Water	1C	1	t/m3	25	25	25	Semi Water Truck	30	1
Switching Station (SA6) Slab Wet Concrete	1C	2.5	t/m3	1,988	4,969	4,969	Concrete Truck	14.4	346
Switching Station (SA6) Slab Concrete Sand/Aggregates	1C	1.8	t/m3	1,491	2,683	2,683	Truck Trailer	36	75
Switching Station (SA6) Slab Cement	1C	1.51	t/m3	298	450	450	Semi	26.5	17
Switching Station (SA6) Slab Reinforcing Steel	1C	7.8	t/m3	99	775	775	Semi	26.5	30
Switching Station (SA6) Slab Water	1C	1	t/m3	99	99	99	Semi Water Truck	30	4
Batch Plant (SA6) Slab Wet Concrete	1C	2.5	t/m3	636	1,590	1,590	Concrete Truck	14.4	111
Batch Plant (SA6) Slab Concrete Sand/Aggregates	1C	1.8	t/m3	477	859	859	Truck Trailer	36	24
Batch Plant (SA6) Slab Cement	1C	1.51	t/m3	95	144	144	Semi	26.5	6
Batch Plant (SA6) Slab Reinforcing Steel	1C	7.8	t/m3	32	248	248	Semi	26.5	10
Batch Plant (SA6) Slab Water	1C	1	t/m3	32	32	32	Semi Water Truck	30	2
Construction Compound (SA6) Slab Wet Concrete	1C	2.5	t/m3	450	1,125	1,125	Concrete Truck	14.4	79
Construction Compound (SA6) Slab Concrete Sand/Aggregates	1C	1.8	t/m3	338	608	608	Truck Trailer	36	17
Construction Compound (SA6) Slab Cement	1C	1.51	t/m3	68	102	102	Semi	26.5	4
Construction Compound (SA6) Slab Reinforcing Steel	1C	7.8	t/m3	23	176	176	Semi	26.5	7
Construction Compound (SA6) Slab Water	1C	1	t/m3	23	23	23	Semi Water Truck	30	1
Batch Plant (SA8) Slab Wet Concrete	1C	2.5	t/m3	630	1,575	1,575	Concrete Truck	14.4	110
Batch Plant (SA8) Slab Concrete Sand/Aggregates	1C	1.8	t/m3	473	851	851	Truck Trailer	36	24
Batch Plant (SA8) Slab Cement	1C	1.51	t/m3	95	143	143	Semi	26.5	6
Batch Plant (SA8) Slab Reinforcing Steel	1C	7.8	t/m3	32	246	246	Semi	26.5	10
Batch Plant (SA8) Slab Water	1C	1	t/m3	32	32	32	Semi Water Truck	30	2
Construction Compound (SA8) Slab Wet Concrete	1C	2.5	t/m3	450	1,125	1,125	Concrete Truck	14.4	79
Construction Compound (SA8) Slab Concrete Sand/Aggregates	1C	1.8	t/m3	338	608	608	Truck Trailer	36	17
Construction Compound (SA8) Slab Cement	1C	1.51	t/m3	68	102	102	Semi	26.5	4
Construction Compound (SA8) Slab Reinforcing Steel	1C	7.8	t/m3	23	176	176	Semi	26.5	7
Construction Compound (SA8) Slab Water	1C	1	t/m3	23	23	23	Semi Water Truck	30	1
Internal Access Track (HV) Gravel Pavement Materials (via SA2)	1B	1.8	t/m3	81,507	146,713	146,713	Truck Trailer	36	4,076
Internal Access Track (HV) Gravel Pavement Materials (via SA4)	1B	1.8	t/m3	309	556	556	Truck Trailer	36	16
Internal Access Track (HV) Gravel Pavement Materials (via SA5)	1B	1.8	t/m3	0	0	0	Truck Trailer	36	0
Internal Access Track (HV) Gravel Pavement Materials (via SA6)	1B	1.8	t/m3	51,786	93,215	93,215	Truck Trailer	36	2,590
Internal Access Track (HV) Gravel Pavement Materials (via SA7)	1B	1.8	t/m3	20,235	36,423	36,423	Truck Trailer	36	1,012
Internal Access Track (HV) Gravel Pavement Materials (via SA8)	1B	1.8	t/m3	37,893	68,207	68,207	Truck Trailer	36	1,895
Internal Access Track (LV) Gravel Pavement Materials (via SA8)	1B	1.8	t/m3	535	963	963	Truck Trailer	36	27
Balranald / Arundel Intersection Upgrade Pavement Materials (Stage 2)	1B	1.8	t/m3	750	1,350	1,350	Truck Trailer	36	38
Site Access SA1 Upgrade Pavement Materials (Stage 2)	1B	1.8	t/m3	500	900	900	Truck Trailer	36	25
Site Access SA4 Upgrade Pavement Materials (Stage 2)	1B	1.8	t/m3	500	900	900	Truck Trailer	36	25
Site Access SA5 Upgrade Pavement Materials (Stage 2)	1B	1.8	t/m3	0	0	0	Truck Trailer	36	0
Site Access SA6 Upgrade Pavement Materials (Stage 2)	1B	1.8	t/m3	500	900	900	Truck Trailer	36	25
Site Access SA7 Upgrade Pavement Materials (Stage 2)	1B	1.8	t/m3	500	900	900	Truck Trailer	36	25
Site Access SA8 Upgrade Pavement Materials (Stage 2)	1B	1.8	t/m3	500	900	900	Truck Trailer	36	25
Balranald Road Upgrade Gravel Pavement (Stage 2 - SA3 to SA5)	1B	1.8	t/m3	0	0	0	Truck Trailer	36	0
Balranald Road Upgrade Gravel Pavement (Stage 2 - SA5 to SA6)	1B	1.8	t/m3	7,495	13,490	13,490	Truck Trailer	36	375
Balranald Road Upgrade Gravel Pavement (Stage 2 - SA6 to SA7)	1B	1.8	t/m3	1,938	3,488	3,488	Truck Trailer	36	97
Balranald Road Upgrade Gravel Pavement (Stage 2 - SA7 to SA8)	1B	1.8	t/m3	3,822	6,880	6,880	Truck Trailer	36	192
Arundel Road Upgrade Gravel Pavement (Stage 2 - Balranald Rd to SA4)	1B	1.8	t/m3	1,562	2,812	2,812	Truck Trailer	36	79
Turbine Hardstand Area Gravel (via SA2)	1B	1.8	t/m3	118,125	212,625	212,625	Truck Trailer	36	5,907
Turbine Hardstand Area Gravel (via SA5)	1B	1.8	t/m3	0	0	0	Truck Trailer	36	0
Turbine Hardstand Area Gravel (via SA6)	1B	1.8	t/m3	74,375	133,875	133,875	Truck Trailer	36	3,719
Turbine Hardstand Area Gravel (via SA7)	1B	1.8	t/m3	26,250	47,250	47,250	Truck Trailer	36	1,313
Turbine Hardstand Area Gravel (via SA8)	1B	1.8	t/m3	70,000	126,000	126,000	Truck Trailer	36	3,500
Culverts/Pipes (via SA2)	1B				27	27	Semi	1	28
Culverts/Pipes (via SA4)	1B				1	1	Semi	1	1
Culverts/Pipes (via SA5)	1B				0	0	Semi	1	0
Culverts/Pipes (via SA6)	1B				17	17	Semi	1	18
Culverts/Pipes (via SA7)	1B				7	7	Semi	1	7
Culverts/Pipes (via SA8)	1B				13	13	Semi	1	13

Element	Task	Qty per Unit	Unit	Volume (m3)	Site Qty (tonnes)	Site Trasnport Qty (tonnes)	Vehicle Type	Vehicle Capacity (tonnes)	Movements
Switching Station Area Gravel (via SA2)	1C	1.8	t/m3	6,360	11,448	11,448	Truck Trailer	36	318
Batch Plant Area Gravel (via SA2)	1C	1.8	t/m3	5,490	9,882	9,882	Truck Trailer	36	275
Site Construction Compound Gravel (via SA2)	1C	1.8	t/m3	4,050	7,290	7,290	Truck Trailer	36	203
Site Laydown Area Gravel (via SA2)	1C	1.8	t/m3	4,500	8,100	8,100	Truck Trailer	36	225
Site Construction Compound Gravel (via SA4)	1C	1.8	t/m3	4,050	7,290	7,290	Truck Trailer	36	203
Operational and Maintenance Facility Area Gravel (via SA4)	1C	1.8	t/m3	4,500	8,100	8,100	Truck Trailer	36	225
Switching Station Area Gravel (via SA6)	1C	1.8	t/m3	6,360	11,448	11,448	Truck Trailer	36	318
Batch Plant Area Gravel (via SA6)	1C	1.8	t/m3	5,724	10,303	10,303	Truck Trailer	36	287
Site Construction Compound Gravel (via SA6)	1C	1.8	t/m3	4,050	7,290	7,290	Truck Trailer	36	203
Site Laydown Area Gravel (via SA6)	1C	1.8	t/m3	4,500	8,100	8,100	Truck Trailer	36	225
Site Laydown Area Gravel (via SA7)	1C	1.8	t/m3	4,500	8,100	8,100	Truck Trailer	36	225
Batch Plant Area Gravel (via SA8)	1C	1.8	t/m3	5,670	10,206	10,206	Truck Trailer	36	284
Site Construction Compound Gravel (via SA8)	1C	1.8	t/m3	4,050	7,290	7,290	Truck Trailer	36	203
Site Laydown Area Gravel (via SA8)	1C	1.8	t/m3	4,500	8,100	8,100	Truck Trailer	36	225
Formwork (via SA2)	1D	1	turbine		27	27	Semi	1	27
Formwork (via SA6)	1D	1	turbine		17	17	Semi	1	17
Formwork (via SA7)	1D	1	turbine		6	6	Semi	1	6
Formwork (via SA8)	1D	1	turbine		16	16	Semi	1	16
Geomembrane (via SA2)	1D	2	turbine		54	54	Semi	1	54
Geomembrane (via SA6)	1D	2	turbine		34	34	Semi	1	34
Geomembrane (via SA7)	1D	2	turbine		12	12	Semi	1	12
Geomembrane (via SA8)	1D	2	turbine		32	32	Semi	1	32
Underground Powerline Cable (via SA2)	2A				670	670	Semi	26.5	26
Underground Powerline Bedding Sand (via SA2)	2A	1.8	t/m3	6,875	12,375	12,375	Truck Trailer	36	344
Overhead Powerline Cable (via SA2)	2A				189	189	Semi	26.5	8
Overhead Powerline Poles (via SA2)	2A				40	40	Semi	20	3
Underground Powerline Cable (via SA6)	2A				462	462	Semi	26.5	18
Underground Powerline Bedding Sand (via SA6)	2A	1.8	t/m3	4,741	8,534	8,534	Truck Trailer	36	238
Overhead Powerline Cable (via SA6)	2A				379	379	Semi	26.5	15
Overhead Powerline Poles (via SA6)	2A				81	81	Semi	20	5
Underground Powerline Cable (via SA7)	2A				85	85	Semi	26.5	4
Underground Powerline Bedding Sand (via SA7)	2A	1.8	t/m3	877	1,578	1,578	Truck Trailer	36	44
Underground Powerline Cable (via SA8)	2A				229	229	Semi	26.5	9
Underground Powerline Bedding Sand (via SA8)	2A	1.8	t/m3	2,353	4,235	4,235	Truck Trailer	36	118
Site Water (via SA2)	W	1	t/m3	112,500	112,500	112,500	Semi Water Truck	30	3,750
Site Water (via SA4)	W	1	t/m3	0	0	0	Semi Water Truck	30	0
Site Water (via SA6)	W	1	t/m3	70,833	70,833	70,833	Semi Water Truck	30	2,362
Site Water (via SA7)	W	1	t/m3	25,000	25,000	25,000	Semi Water Truck	30	834
Site Water (via SA8)	W	1	t/m3	66,667	66,667	66,667	Semi Water Truck	30	2,223
Fuel (via SA2)	F				2,700	2,700	Semi Tanker	26.5	102
Fuel (via SA4)	F				300	300	Semi Tanker	26.5	12
Fuel (via SA6)	F				1,700	1,700	Semi Tanker	26.5	65
Fuel (via SA7)	F				600	600	Semi Tanker	26.5	23
Fuel (via SA8)	F				1,600	1,600	Semi Tanker	26.5	61
								Total	**40,856**

UMW0122-006 | Junction Rivers Wind Farm

Stage 2 Site Vehicle Movement Summary

Assumed Work Days per Month 24 days

TASK 1A - MOBILISATION AND ESTABLISHMENT

Task Transport Duration 2 month A

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Construction Mobilisation - Ancilliary Equipment (via SA2)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Construction Mobilisation - Ancilliary Equipment (via SA4)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - Arundel Road - SA4	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4	A
Construction Mobilisation - Ancilliary Equipment (via SA6)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Construction Mobilisation - Ancilliary Equipment (via SA7)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA7	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA7	A
Construction Mobilisation - Ancilliary Equipment (via SA8)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Construction Mobilisation - EW Plant (via SA2)	20	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Construction Mobilisation - EW Plant (via SA4)	20	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - Arundel Road - SA4	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4	A
Construction Mobilisation - EW Plant (via SA6)	20	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Construction Mobilisation - EW Plant (via SA7)	20	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA7	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA7	A
Construction Mobilisation - EW Plant (via SA8)	20	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Construction Compound Establishment & Buildings (via SA2)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Batch Plant Area Establishment (via SA2)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Construction Compound Establishment & Buildings (via SA4)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - Arundel Road - SA4	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4	A
Batch Plant Area Establishment (via SA6)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Construction Compound Establishment & Buildings (via SA6)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Batch Plant Area Establishment (via SA8)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Construction Compound Establishment & Buildings (via SA8)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	200	100	5
Sturt Highway (Balranald to Yanga Way)	200	100	5
Yanga Way (Sturt Highway to Balranald Road)	200	100	5
Balranald Road (Yanga Way to SA2)	400	200	9
Balranald Road (SA2 to Arundel Road)	305	153	7
Balranald Road (Arundel Road to SA5)	235	118	5
Balranald Road (SA5 to SA6)	235	118	5
Balranald Road (SA6 to SA7)	140	70	3
Balranald Road (SA7 to SA8)	95	48	2
Arundel Road (Balranald Road to SA4)	70	35	2
Yanga Way (Balranald Road to SA1)	200	100	5
Yanga Way (SA1 to Stony Crossing Road)	200	100	5
Stony Crossing Road (Yanga Way to Swan Hill Road)	200	100	5
Swan Hill Road (Stony Crossing Road to Swan Hill)	200	100	5
Murray River Highway (Swan Hill to Lake Boga)	0	0	0

TASK 1B - ACCESS ROADS, HARDSTANDS & SITE ENTRANCES

Task Transport Duration (Internal Tracks / Hardstands) 18 months A
Task Transport Duration (Intersection Upgrades) 3 months B
Task Transport Duration (Road Upgrades) 9 months C

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Internal Access Track (HV) Gravel Pavement Materials (via SA2)	4,076	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Internal Access Track (HV) Gravel Pavement Materials (via SA4)	16	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4	A
Internal Access Track (HV) Gravel Pavement Materials (via SA6)	2,590	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Internal Access Track (HV) Gravel Pavement Materials (via SA7)	1,012	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA7	A
Internal Access Track (HV) Gravel Pavement Materials (via SA8)	1,895	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Internal Access Track (LV) Gravel Pavement Materials (via SA8)	27	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Balranald / Arundel Intersection Upgrade Pavement Materials (Stage 2)	38	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road	B
Site Access SA1 Upgrade Pavement Materials (Stage 2)	25	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - SA1	B
Site Access SA4 Upgrade Pavement Materials (Stage 2)	25	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4	B
Site Access SA6 Upgrade Pavement Materials (Stage 2)	25	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	B
Site Access SA7 Upgrade Pavement Materials (Stage 2)	25	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA7	B
Site Access SA8 Upgrade Pavement Materials (Stage 2)	25	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	B
Balranald Road Upgrade Gravel Pavement (Stage 2 - SA5 to SA6)	375	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	C
Balranald Road Upgrade Gravel Pavement (Stage 2 - SA6 to SA7)	97	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA7	C
Balranald Road Upgrade Gravel Pavement (Stage 2 - SA7 to SA8)	192	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	C
Arundel Road Upgrade Gravel Pavement (Stage 2 - Balranald Rd to SA4)	79	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4	C
Turbine Hardstand Area Gravel (via SA2)	5,907	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Turbine Hardstand Area Gravel (via SA6)	3,719	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Turbine Hardstand Area Gravel (via SA7)	1,313	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA7	A
Turbine Hardstand Area Gravel (via SA8)	3,500	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Culverts/Pipes (via SA2)	28	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Culverts/Pipes (via SA4)	1	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - Arundel Road - SA4	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4	A
Culverts/Pipes (via SA6)	18	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Culverts/Pipes (via SA7)	7	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA7	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA7	A
Culverts/Pipes (via SA8)	13	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	34	2	1
Sturt Highway (Balranald to Yanga Way)	34	2	1
Yanga Way (Sturt Highway to Balranald Road)	34	2	1
Balranald Road (Yanga Way to SA2)	25,003	1,469	62
Balranald Road (SA2 to Arundel Road)	14,992	913	39
Balranald Road (Arundel Road to SA5)	14,833	882	37
Balranald Road (SA5 to SA6)	14,458	840	36
Balranald Road (SA6 to SA7)	8,106	480	21
Balranald Road (SA7 to SA8)	5,652	332	14
Arundel Road (Balranald Road to SA4)	121	18	1
Yanga Way (Balranald Road to SA1)	24,970	1,467	62
Yanga Way (SA1 to Stony Crossing Road)	24,995	1,475	62
Stony Crossing Road (Yanga Way to Swan Hill Road)	24,995	1,475	62
Swan Hill Road (Stony Crossing Road to Swan Hill)	24,995	1,475	62
Murray River Highway (Swan Hill to Lake Boga)	24,961	1,473	62

TASK 1C - SITE COMPOUND AREAS (CIVIL WORKS)

Task Transport Duration (Site Compound Areas Civil Works)	9	months	A

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Switching Station (SA2) Slab Wet Concrete	346	Concrete Truck	100%	SA1 Batch Plant	Internal	A
Switching Station (SA2) Slab Concrete Sand/Aggregates	75	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Switching Station (SA2) Slab Cement	17	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Switching Station (SA2) Slab Reinforcing Steel	30	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Switching Station (SA2) Slab Water	4	Semi Water Truck	100%	Balranald	Balranald - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
Batch Plant (SA2) Slab Wet Concrete	106	Concrete Truck	100%	SA1 Batch Plant	Internal	A
Batch Plant (SA2) Slab Concrete Sand/Aggregates	23	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Batch Plant (SA2) Slab Cement	6	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Batch Plant (SA2) Slab Reinforcing Steel	9	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Batch Plant (SA2) Slab Water	2	Semi Water Truck	100%	Balranald	Balranald - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
Construction Compound (SA2) Slab Wet Concrete	79	Concrete Truck	100%	SA1 Batch Plant	Internal	A
Construction Compound (SA2) Slab Concrete Sand/Aggregates	17	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Construction Compound (SA2) Slab Cement	4	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Construction Compound (SA2) Slab Reinforcing Steel	7	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Construction Compound (SA2) Slab Water	1	Semi Water Truck	100%	Balranald	Balranald - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
Construction Compound (SA4) Slab Wet Concrete	79	Concrete Truck	100%	SA6 Batch Plant	SA6 - Balranald Road - Arundel Road - SA4	A
Construction Compound (SA4) Slab Concrete Sand/Aggregates	17	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4	A
Construction Compound (SA4) Slab Cement	4	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - Arundel Road - SA4	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4	A
Construction Compound (SA4) Slab Reinforcing Steel	7	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - Arundel Road - SA4	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4	A
Construction Compound (SA4) Slab Water	1	Semi Water Truck	100%	Balranald	Balranald - Sturt Hwy - Yanga Way - Balranald Road - Arundel Road - SA4	A
Operational and Maintenance Facility (SA4) Slab Wet Concrete	87	Concrete Truck	100%	SA6 Batch Plant	SA6 - Balranald Road - Arundel Road - SA4	A
Operational and Maintenance Facility (SA4) Slab Concrete Sand/Aggregates	19	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4	A
Operational and Maintenance Facility (SA4) Slab Cement	5	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - Arundel Road - SA4	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4	A
Operational and Maintenance Facility (SA4) Slab Reinforcing Steel	8	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - Arundel Road - SA4	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4	A
Operational and Maintenance Facility (SA4) Slab Water	1	Semi Water Truck	100%	Balranald	Balranald - Sturt Hwy - Yanga Way - Balranald Road - Arundel Road - SA4	A
Switching Station (SA6) Slab Wet Concrete	346	Concrete Truck	100%	SA6 Batch Plant	Internal	A
Switching Station (SA6) Slab Concrete Sand/Aggregates	75	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Switching Station (SA6) Slab Cement	17	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Switching Station (SA6) Slab Reinforcing Steel	30	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Switching Station (SA6) Slab Water	4	Semi Water Truck	100%	Balranald	Balranald - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
Batch Plant (SA6) Slab Wet Concrete	111	Concrete Truck	100%	SA6 Batch Plant	Internal	A
Batch Plant (SA6) Slab Concrete Sand/Aggregates	24	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Batch Plant (SA6) Slab Cement	6	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Batch Plant (SA6) Slab Reinforcing Steel	10	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Batch Plant (SA6) Slab Water	2	Semi Water Truck	100%	Balranald	Balranald - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
Construction Compound (SA6) Slab Wet Concrete	79	Concrete Truck	100%	SA6 Batch Plant	Internal	A
Construction Compound (SA6) Slab Concrete Sand/Aggregates	17	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Construction Compound (SA6) Slab Cement	4	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Construction Compound (SA6) Slab Reinforcing Steel	7	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Construction Compound (SA6) Slab Water	1	Semi Water Truck	100%	Balranald	Balranald - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
Batch Plant (SA8) Slab Wet Concrete	110	Concrete Truck	100%	SA8 Batch Plant	Internal	A
Batch Plant (SA8) Slab Concrete Sand/Aggregates	24	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Batch Plant (SA8) Slab Cement	6	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Batch Plant (SA8) Slab Reinforcing Steel	10	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Batch Plant (SA8) Slab Water	2	Semi Water Truck	100%	Balranald	Balranald - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
Construction Compound (SA8) Slab Wet Concrete	79	Concrete Truck	100%	SA8 Batch Plant	Internal	A
Construction Compound (SA8) Slab Concrete Sand/Aggregates	17	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Construction Compound (SA8) Slab Cement	4	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Construction Compound (SA8) Slab Reinforcing Steel	7	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Construction Compound (SA8) Slab Water	1	Semi Water Truck	100%	Balranald	Balranald - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
Switching Station Area Gravel (via SA2)	318	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Batch Plant Area Gravel (via SA2)	275	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Site Construction Compound Gravel (via SA2)	203	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Site Laydown Area Gravel (via SA2)	225	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Site Construction Compound Gravel (via SA4)	203	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4	A
Operational and Maintenance Facility Area Gravel (via SA4)	225	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4	A
Switching Station Area Gravel (via SA6)	318	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Batch Plant Area Gravel (via SA6)	287	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Site Construction Compound Gravel (via SA6)	203	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Site Laydown Area Gravel (via SA6)	225	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Site Laydown Area Gravel (via SA7)	225	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA7	A
Batch Plant Area Gravel (via SA8)	284	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Site Construction Compound Gravel (via SA8)	203	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Site Laydown Area Gravel (via SA8)	225	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	99	11	1
Sturt Highway (Balranald to Yanga Way)	118	14	1
Yanga Way (Sturt Highway to Balranald Road)	118	14	1
Balranald Road (Yanga Way to SA2)	3,945	439	19
Balranald Road (SA2 to Arundel Road)	2,728	304	13
Balranald Road (Arundel Road to SA5)	2,404	268	12
Balranald Road (SA5 to SA6)	2,404	268	12
Balranald Road (SA6 to SA7)	1,007	112	5
Balranald Road (SA7 to SA8)	782	87	4
Arundel Road (Balranald Road to SA4)	656	73	4
Yanga Way (Balranald Road to SA1)	3,826	426	18
Yanga Way (SA1 to Stony Crossing Road)	3,826	426	18
Stony Crossing Road (Yanga Way to Swan Hill Road)	3,826	426	18
Swan Hill Road (Stony Crossing Road to Swan Hill)	3,826	426	18
Murray River Highway (Swan Hill to Lake Boga)	3,727	415	18

TASK 1D - TURBINE FOUNDATIONS

Task Transport Duration (Turbine Foundations)	18	months	A

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Concrete aggregates for turbine footings (SA2)	810	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Reinforcing steel for turbine footings (SA2)	318	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Other concrete supplies for turbine footings (SA2)	185	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Water for turbine footings concrete (SA2)	36	Semi Water Truck	100%	Balranald	Balranald - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
Wet concrete for turbine footings (SA2	3,600	Concrete Truck	100%	SA1 Batch Plant	Internal	A
Formwork (via SA2)	27	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Geomembrane (via SA2)	54	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Concrete aggregates for turbine footings (SA6)	510	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Reinforcing steel for turbine footings (SA6)	200	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Other concrete supplies for turbine footings (SA6)	116	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Water for turbine footings concrete (SA6)	23	Semi Water Truck	100%	Balranald	Balranald - Yanga Way - Balranald Road - SA6	A
Wet concrete for turbine footings (SA6)	2,267	Concrete Truck	100%	SA6 Batch Plant	Internal	A
Formwork (via SA6)	17	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Geomembrane (via SA6)	34	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Concrete aggregates for turbine footings (SA7)	180	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA7	A
Reinforcing steel for turbine footings (SA7)	71	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA7	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA7	A
Other concrete supplies for turbine footings (SA7)	41	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA7	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA7	A
Water for turbine footings concrete (SA7)	8	Semi Water Truck	100%	Balranald	Balranald - Yanga Way - Balranald Road - SA7	A
Wet concrete for turbine footings (SA7)	800	Concrete Truck	100%	SA8 Batch Plant	SA8 - Balranald Road - SA7	A
Formwork (via SA7)	6	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA7	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA7	A
Geomembrane (via SA7)	12	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA7	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA7	A
Concrete aggregates for turbine footings (SA8)	480	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Reinforcing steel for turbine footings (SA8)	188	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Other concrete supplies for turbine footings (SA8)	109	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Water for turbine footings concrete (SA8)	21	Semi Water Truck	100%	Balranald	Balranald - Yanga Way - Balranald Road - SA8	A
Wet concrete for turbine footings (SA8)	2,133	Concrete Truck	100%	SA8 Batch Plant	Internal	A
Formwork (via SA8)	16	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Geomembrane (via SA8)	32	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	713	40	2
Sturt Highway (Balranald to Yanga Way)	801	45	2
Yanga Way (Sturt Highway to Balranald Road)	801	45	2
Balranald Road (Yanga Way to SA2)	3,494	195	9
Balranald Road (SA2 to Arundel Road)	2,065	115	5
Balranald Road (Arundel Road to SA5)	2,065	115	5
Balranald Road (SA5 to SA6)	2,065	115	5
Balranald Road (SA6 to SA7)	1,165	65	3
Balranald Road (SA7 to SA8)	847	48	2
Arundel Road (Balranald Road to SA4)	0	0	0
Yanga Way (Balranald Road to SA1)	2,693	150	7
Yanga Way (SA1 to Stony Crossing Road)	2,693	150	7
Stony Crossing Road (Yanga Way to Swan Hill Road)	2,693	150	7
Swan Hill Road (Stony Crossing Road to Swan Hill)	2,693	150	7
Murray River Highway (Swan Hill to Lake Boga)	1,980	110	5

TASK 2A - CABLING

Task Transport Duration (Cabling)	15	months	A

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Underground Powerline Cable (via SA2)	26	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Underground Powerline Bedding Sand (via SA2)	344	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Overhead Powerline Cable (via SA2)	8	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Overhead Powerline Poles (via SA2)	3	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Underground Powerline Cable (via SA6)	18	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Underground Powerline Bedding Sand (via SA6)	238	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Overhead Powerline Cable (via SA6)	15	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - SA1	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - SA1	A
Overhead Powerline Poles (via SA6)	5	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - SA1	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - SA1	A
Underground Powerline Cable (via SA7)	4	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA7	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA7	A
Underground Powerline Bedding Sand (via SA7)	44	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA7	A
Underground Powerline Cable (via SA8)	9	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Underground Powerline Bedding Sand (via SA8)	118	Truck Trailer	100%	Mawsons Quarry Lake Boga	Quarry - Quarry Road - Cumnock Road - Lalbert Road - Murray Valley Highway - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	44	3	1
Sturt Highway (Balranald to Yanga Way)	44	3	1
Yanga Way (Sturt Highway to Balranald Road)	44	3	1
Balranald Road (Yanga Way to SA2)	832	56	3
Balranald Road (SA2 to Arundel Road)	451	31	2
Balranald Road (Arundel Road to SA5)	451	31	2
Balranald Road (SA5 to SA6)	451	31	2
Balranald Road (SA6 to SA7)	175	12	1
Balranald Road (SA7 to SA8)	127	9	1
Arundel Road (Balranald Road to SA4)	11	1	1
Yanga Way (Balranald Road to SA1)	788	53	3
Yanga Way (SA1 to Stony Crossing Road)	788	53	3
Stony Crossing Road (Yanga Way to Swan Hill Road)	788	53	3
Swan Hill Road (Stony Crossing Road to Swan Hill)	788	53	3
Murray River Highway (Swan Hill to Lake Boga)	744	50	3

TASK 2B - SITE COMPOUND AREAS (ELECTRICAL WORKS)

Task Transport Duration (Electrical Area Establishment) 6 months A

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Transformer (via SA2)	1	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A
Switchroom (via SA2)	1	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A
Transformer (via SA6)	1	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA6	A
Switchroom (via SA6)	1	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA6	A
Electrical Components (via SA2 - Switching Station)	150	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Electrical Components (via SA6 - Switching Station)	150	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Switching Station Area Establishment & Buildings (via SA2)	40	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Operations and Maintenance Facility Establishment (via SA4)	25	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - Arundel Road - SA4	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4	A
Switching Station Area Establishment & Buildings (via SA6)	40	Semi	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	207	35	2
Sturt Highway (Balranald to Yanga Way)	207	35	2
Yanga Way (Sturt Highway to Balranald Road)	207	35	2
Balranald Road (Yanga Way to SA2)	409	69	3
Balranald Road (SA2 to Arundel Road)	192	32	2
Balranald Road (Arundel Road to SA5)	192	32	2
Balranald Road (SA5 to SA6)	192	32	2
Balranald Road (SA6 to SA7)	0	0	0
Balranald Road (SA7 to SA8)	0	0	0
Arundel Road (Balranald Road to SA4)	25	5	1
Yanga Way (Balranald Road to SA1)	203	34	2
Yanga Way (SA1 to Stony Crossing Road)	203	34	2
Stony Crossing Road (Yanga Way to Swan Hill Road)	203	34	2
Swan Hill Road (Stony Crossing Road to Swan Hill)	203	34	2
Murray River Highway (Swan Hill to Lake Boga)	0	0	0

TASK 3A - TURBINE TRANSPORTATION

Proposed Turbine Transport Rate 2 turbines / week A
No. Days per Week Haulage 6 days

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Turbine Blades (SA2)	81	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Werrimull N Road - C254 - A79 - C252 - C251 - A20 (Sturt Hwy) - Yanga Way - Balranald Road - SA2	A
Turbine Blades (SA6)	51	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Werrimull N Road - C254 - A79 - C252 - C251 - A20 (Sturt Hwy) - Yanga Way - Balranald Road - SA6	A
Turbine Blades (SA7)	18	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Werrimull N Road - C254 - A79 - C252 - C251 - A20 (Sturt Hwy) - Yanga Way - Balranald Road - SA7	A
Turbine Blades (SA8)	48	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Werrimull N Road - C254 - A79 - C252 - C251 - A20 (Sturt Hwy) - Yanga Way - Balranald Road - SA8	A
Turbine Nacelles (SA2)	27	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A
Turbine Nacelles (SA6)	17	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA6	A
Turbine Nacelles (SA7)	6	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA7	A
Turbine Nacelles (SA8)	16	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA8	A
Turbine Drive Trains (SA2)	27	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A
Turbine Drive Trains (SA6)	17	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA6	A
Turbine Drive Trains (SA7)	6	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA7	A
Turbine Drive Trains (SA8)	16	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA8	A
Turbine Hub & Nose Cone (SA2)	27	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A
Turbine Hub & Nose Cone (SA6)	17	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA6	A
Turbine Hub & Nose Cone (SA7)	6	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA7	A
Turbine Hub & Nose Cone (SA8)	16	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA8	A
Tower Sections 1-2 (SA2)	54	Special	100%	Port Adelaide	Port Adelaide - M2 - A1 - Gawler Rd - Wilkinson Rd - Hatcher Rd - Oates Rd - Mudla Wirra Rd - College Rd - Roseworthy Rd - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A
Tower Sections 1-2 (SA6)	34	Special	100%	Port Adelaide	Port Adelaide - M2 - A1 - Gawler Rd - Wilkinson Rd - Hatcher Rd - Oates Rd - Mudla Wirra Rd - College Rd - Roseworthy Rd - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA6	A
Tower Sections 1-2 (SA7)	12	Special	100%	Port Adelaide	Port Adelaide - M2 - A1 - Gawler Rd - Wilkinson Rd - Hatcher Rd - Oates Rd - Mudla Wirra Rd - College Rd - Roseworthy Rd - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA7	A
Tower Sections 1-2 (SA8)	32	Special	100%	Port Adelaide	Port Adelaide - M2 - A1 - Gawler Rd - Wilkinson Rd - Hatcher Rd - Oates Rd - Mudla Wirra Rd - College Rd - Roseworthy Rd - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA8	A
Tower Sections 3-7 (SA2)	135	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A
Tower Sections 3-7 (SA6)	85	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA6	A
Tower Sections 3-7 (SA7)	30	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA7	A
Tower Sections 3-7 (SA8)	80	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA8	A
Tower Base Rings (SA2)	9	Semi	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A
Tower Base Rings (SA6)	6	Semi	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA6	A
Tower Base Rings (SA7)	2	Semi	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA7	A
Tower Base Rings (SA8)	6	Semi	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA8	A
Tower Assembly Components (SA2)	27	Semi	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A
Tower Assembly Components (SA6)	17	Semi	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA6	A
Tower Assembly Components (SA7)	6	Semi	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA7	A
Tower Assembly Components (SA8)	16	Semi	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA8	A
Escorting LV (SA2)	702	LV	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA2	A
Escorting LV (SA6)	442	LV	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA6	A
Escorting LV (SA7)	156	LV	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA7	A
Escorting LV (SA8)	416	LV	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA8	A
Performance Monitoring Masts (SA8)	3	Special	100%	Port Adelaide	Port Adelaide - M2 - A20 (Sturt Highway) - Yanga Way - Balranald Road - SA8	A

Road Section	Total Trips	HV Trips / Week**	Max. HV Trips / Day
Sturt Highway (Euston to Balranald)	2,666	120	7
Sturt Highway (Balranald to Yanga Way)	2,666	120	7
Yanga Way (Sturt Highway to Balranald Road)	2,666	120	7
Balranald Road (Yanga Way to SA2)	2,666	120	7
Balranald Road (SA2 to Arundel Road)	1,576	120	7
Balranald Road (Arundel Road to SA5)	1,576	120	7
Balranald Road (SA5 to SA6)	1,576	120	7
Balranald Road (SA6 to SA7)	890	120	7
Balranald Road (SA7 to SA8)	648	120	7
Arundel Road (Balranald Road to SA4)	0	0	0
Yanga Way (Balranald Road to SA1)	0	0	0
Yanga Way (SA1 to Stony Crossing Road)	0	0	0
Stony Crossing Road (Yanga Way to Swan Hill Road)	0	0	0
Swan Hill Road (Stony Crossing Road to Swan Hill)	0	0	0
Murray River Highway (Swan Hill to Lake Boga)	0	0	0

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TASK 3B - TURBINE ERECTION

Task Transport Duration (Turbine Erection - Crane Transport) 1 month A

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Site Crane (Turbines)	8	Special / Crane	100%	Port Adelaide	Port Adelaide - M2 - A1 - Gawler Rd - Wilkinson Rd - Hatcher Rd - Oates Rd - Mudla Wirra Rd - College Rd - Roseworthy Rd - A20 - Kingston Road - B55 - Stanitzki Road - A20 (Sturt Highway) - Yanga Way - Balranald Rd - SA2	A
Secondary Crane	1	Crane / Semi	100%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Rd - SA2	A

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Euston to Balranald)	9	9	2
Sturt Highway (Balranald to Yanga Way)	9	9	2
Yanga Way (Sturt Highway to Balranald Road)	9	9	2
Balranald Road (Yanga Way to SA2)	9	9	2
Balranald Road (SA2 to Arundel Road)	9	9	2
Balranald Road (Arundel Road to SA5)	9	9	2
Balranald Road (SA5 to SA6)	9	9	2
Balranald Road (SA6 to SA7)	9	9	2
Balranald Road (SA7 to SA8)	9	9	2
Arundel Road (Balranald Road to SA4)	0	0	0
Yanga Way (Balranald Road to SA1)	0	0	0
Yanga Way (SA1 to Stony Crossing Road)	0	0	0
Stony Crossing Road (Yanga Way to Swan Hill Road)	0	0	0
Swan Hill Road (Stony Crossing Road to Swan Hill)	0	0	0
Murray River Highway (Swan Hill to Lake Boga)	0	0	0

TASK 4 - FINALISATION / COMMISSIONING / DEMOBILISATION

Task Transport Duration (Demobilisation) 5 months A

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Construction Demobilisation - Ancilliary Equipment (via SA2)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Construction Demobilisation - Ancilliary Equipment (via SA4)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - Arundel Road - SA4	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4	A
Construction Demobilisation - Ancilliary Equipment (via SA6)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Construction Demobilisation - Ancilliary Equipment (via SA7)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA7	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA7	A
Construction Demobilisation - Ancilliary Equipment (via SA8)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Construction Demobilisation - EW Plant (via SA2)	20	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Construction Demobilisation - EW Plant (via SA4)	20	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - Arundel Road - SA4	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4	A
Construction Demobilisation - EW Plant (via SA6)	20	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Construction Demobilisation - EW Plant (via SA7)	20	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA7	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA7	A
Construction Demobilisation - EW Plant (via SA8)	20	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Construction Compound Decommissioning (via SA2)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Batch Plant Area Decommissioning (via SA2)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2	A
Construction Compound Decommissioning (via SA4)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - Arundel Road - SA4	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4	A
Construction Compound Decommissioning (via SA6)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Batch Plant Area Decommissioning (via SA6)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6	A
Construction Compound Decommissioning (via SA8)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A
Batch Plant Area Decommissioning (via SA8)	25	Semi / Low Loader	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA8	A
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8	A

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	200	40	2
Sturt Highway (Balranald to Yanga Way)	200	40	2
Yanga Way (Sturt Highway to Balranald Road)	200	40	2
Balranald Road (Yanga Way to SA2)	400	80	4
Balranald Road (SA2 to Arundel Road)	305	61	3
Balranald Road (Arundel Road to SA5)	235	47	2
Balranald Road (SA5 to SA6)	235	47	2
Balranald Road (SA6 to SA7)	140	28	2
Balranald Road (SA7 to SA8)	95	19	1
Arundel Road (Balranald Road to SA4)	70	14	1
Yanga Way (Balranald Road to SA1)	200	40	2
Yanga Way (SA1 to Stony Crossing Road)	200	40	2
Stony Crossing Road (Yanga Way to Swan Hill Road)	200	40	2
Swan Hill Road (Stony Crossing Road to Swan Hill)	200	40	2
Murray River Highway (Swan Hill to Lake Boga)	0	0	0

TASK W - SITE WATER

Task Duration (Site Water SA2 & SA3) 30 months A

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route	
Site Water (via SA2)	3,750	Semi Water Truck	100%	Balranald	Balranald - Yanga Way - Balranald Road - SA2	A
Site Water (via SA4)	0	Semi Water Truck	100%	Balranald	Balranald - Yanga Way - Balranald Road - Arundel Road - SA4	A
Site Water (via SA6)	2,362	Semi Water Truck	100%	Balranald	Balranald - Yanga Way - Balranald Road - SA6	A
Site Water (via SA7)	834	Semi Water Truck	100%	Balranald	Balranald - Yanga Way - Balranald Road - SA7	A
Site Water (via SA8)	2,223	Semi Water Truck	100%	Balranald	Balranald - Yanga Way - Balranald Road - SA8	A

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	0	0	0
Sturt Highway (Balranald to Yanga Way)	9,169	306	13
Yanga Way (Sturt Highway to Balranald Road)	9,169	306	13
Balranald Road (Yanga Way to SA2)	9,169	306	13
Balranald Road (SA2 to Arundel Road)	5,419	181	8
Balranald Road (Arundel Road to SA5)	5,419	181	8
Balranald Road (SA5 to SA6)	5,419	181	8
Balranald Road (SA6 to SA7)	3,057	102	5
Balranald Road (SA7 to SA8)	2,223	75	4
Arundel Road (Balranald Road to SA4)	0	0	0
Yanga Way (Balranald Road to SA1)	0	0	0
Yanga Way (SA1 to Stony Crossing Road)	0	0	0
Stony Crossing Road (Yanga Way to Swan Hill Road)	0	0	0
Swan Hill Road (Stony Crossing Road to Swan Hill)	0	0	0
Murray River Highway (Swan Hill to Lake Boga)	0	0	0

TASK F - SITE FUEL

Task Duration (Site Fuel SA2 & SA3) 30 months

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route
Fuel (via SA2)	102	Semi Tanker	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA2
Fuel (via SA4)	12	Semi Tanker	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - Arundel Road - SA4
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - Arundel Road - SA4
Fuel (via SA6)	65	Semi Tanker	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA6
Fuel (via SA7)	23	Semi Tanker	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA7
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA7
Fuel (via SA8)	61	Semi Tanker	50%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA8
			50%	Swan Hill	Swan Hill - Swan Hill Road - Stony Crossing Road - Yanga Way - Balranald Road - SA8

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	132	5	1
Sturt Highway (Balranald to Yanga Way)	132	5	1
Yanga Way (Sturt Highway to Balranald Road)	132	5	1
Balranald Road (Yanga Way to SA2)	263	9	1
Balranald Road (SA2 to Arundel Road)	161	6	1
Balranald Road (Arundel Road to SA5)	149	5	1
Balranald Road (SA5 to SA6)	149	5	1
Balranald Road (SA6 to SA7)	84	3	1
Balranald Road (SA7 to SA8)	61	3	1
Arundel Road (Balranald Road to SA4)	12	1	1
Yanga Way (Balranald Road to SA1)	132	5	1
Yanga Way (SA1 to Stony Crossing Road)	132	5	1
Stony Crossing Road (Yanga Way to Swan Hill Road)	132	5	1
Swan Hill Road (Stony Crossing Road to Swan Hill)	132	5	1
Murray River Highway (Swan Hill to Lake Boga)	0	0	0

TASK WC - WASTE COLLECTION

Task Duration (Waste Collection SA2 & SA3) 30 months

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route
Waste Collection (via SA2)	130	Semi	100%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA2
Waste Collection (via SA4)	130	Semi	100%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA3
Waste Collection (via SA6)	130	Semi	100%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA5
Waste Collection (via SA7)	130	Semi	100%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA6
Waste Collection (via SA8)	130	Semi	100%	Mildura	Mildura - Sturt Hwy - Yanga Way - Balranald Road - SA7

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Sturt Highway (Mildura to Balranald)	652	22	1
Sturt Highway (Balranald to Yanga Way)	652	22	1
Yanga Way (Sturt Highway to Balranald Road)	652	22	1
Balranald Road (Yanga Way to SA2)	652	22	1
Balranald Road (SA2 to Arundel Road)	521	18	1
Balranald Road (Arundel Road to SA5)	391	14	1
Balranald Road (SA5 to SA6)	391	14	1
Balranald Road (SA6 to SA7)	261	9	1
Balranald Road (SA7 to SA8)	130	5	1
Arundel Road (Balranald Road to SA4)	130	5	1
Yanga Way (Balranald Road to SA1)	0	0	0
Yanga Way (SA1 to Stony Crossing Road)	0	0	0
Stony Crossing Road (Yanga Way to Swan Hill Road)	0	0	0
Swan Hill Road (Stony Crossing Road to Swan Hill)	0	0	0
Murray River Highway (Swan Hill to Lake Boga)	0	0	0

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Stage 2 Project Staff Movements

Project Timeframe

Element	Qty	Unit
Hours per day	12	hrs
Working days per week	6	days
Working days per month	24	days
Expected project length	30	months
Totals days	720	days

Construction Workforce

Element	Qty	Unit
Peak Workforce	400	staff
Local Workforce	80%	%
Fly In Fly Out	20%	%

Construction Workforce Distribution

Location	Distribution	Unit	Qty	Vehicle Type	% Vehicle	Staff No. per Vehicle Type	Average Vehicle Capacity	Movements Round Trip (per day)	
Local Workforce									
Balranald	80%	%	256	LV	50%	128	2	64	
				Bus	50%	128	15	9	
Tooleybuc	5%	%	16	LV	100%	16	2	8	
				Bus	0%	0	15	0	
Swan Hill	15%	%	48	LV	100%	48	2	24	
				Bus	0%	0	15	0	
FIFO Workforce									
Balranald	100%	%	80	LV	25%	20	2	10	
				Bus	75%	60	15	4	
							Total	**87**	**Peak @ Sturt Hwy / Yanga Way**
							Total	**119**	**Peak @ Yanga Way / Balranald Rd**

Operations (to Stage 2 O&M Facility - SA4)

Element	Qty	Unit
Hours per day	12	hrs
Working days per week	7	days
Peak Workforce	15	each

Location	Distribution	Unit	Qty	Vehicle Type	Vehicle Capacity	Movements 2-way (per day)
Balranald	100%	%	15	LV	1	15
					Total	**15**

Appendix H – Intersection Volume Forecast Calculations

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Sturt Highway / Yanga Way (Mallee Highway)

Peak Hour Intersection Volume Forecasts

AM PEAK (6-7am)

GR %	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
YEAR	Sturt Highway - NW				Yanga Way - S				Sturt Highway - SE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2022	20	9	14	6	8	1	5	0	5	3	14	17
2023	20	9	14	6	8	1	5	0	5	3	14	17
2024	21	9	15	6	8	1	5	0	5	3	15	18
2025	21	10	15	6	8	1	5	0	5	3	15	18
2026	22	10	15	6	9	1	5	0	5	3	15	18
2027	22	10	15	7	9	1	6	0	6	3	15	19
2028	23	10	16	7	9	1	6	0	6	3	16	19
2029	23	10	16	7	9	1	6	0	6	3	16	20
2030	23	11	16	7	9	1	6	0	6	4	16	20
2031	24	11	17	7	10	1	6	0	6	4	17	20
2032	24	11	17	7	10	1	6	0	6	4	17	21
2033	25	11	17	7	10	1	6	0	6	4	17	21
2034	25	11	18	8	10	1	6	0	6	4	18	22
2035	26	12	18	8	10	1	6	0	6	4	18	22
2036	26	12	18	8	11	1	7	0	7	4	18	22
2037	27	12	19	8	11	1	7	0	7	4	19	23
2038	27	12	19	8	11	1	7	0	7	4	19	23
2039	28	13	20	8	11	1	7	0	7	4	20	24
2040	29	13	20	9	11	1	7	0	7	4	20	24
2041	29	13	20	9	12	1	7	0	7	4	20	25
2042	30	13	21	9	12	1	7	0	7	4	21	25
2043	30	14	21	9	12	2	8	0	8	5	21	26
2044	31	14	22	9	12	2	8	0	8	5	22	26
2045	32	14	22	9	13	2	8	0	8	5	22	27
2046	32	14	23	10	13	2	8	0	8	5	23	27
2047	33	15	23	10	13	2	8	0	8	5	23	28
2048	33	15	23	10	13	2	8	0	8	5	23	28
2049	34	15	24	10	14	2	9	0	9	5	24	29
2050	35	16	24	10	14	2	9	0	9	5	24	30
2051	36	16	25	11	14	2	9	0	9	5	25	30
2052	36	16	25	11	14	2	9	0	9	5	25	31
2053	37	17	26	11	15	2	9	0	9	6	26	31
2054	38	17	26	11	15	2	9	0	9	6	26	32
2055	38	17	27	12	15	2	10	0	10	6	27	33
2056	39	18	27	12	16	2	10	0	10	6	27	33
2057	40	18	28	12	16	2	10	0	10	6	28	34
2058	41	18	29	12	16	2	10	0	10	6	29	35
2059	42	19	29	12	17	2	10	0	10	6	29	35
2060	42	19	30	13	17	2	11	0	11	6	30	36
STG 1 PRELIM CONST TRAFFIC	0	0	17	2	0	2	0	0	0	0	0	0
STG 1 PRELIM CONSTRUCTION	22	10	32	8	9	3	5	0	5	3	15	18
STG 1 PEAK CONST TRAFFIC	0	0	44	3	0	3	0	0	0	0	0	0
STG 1 PEAK CONSTRUCTION	22	10	59	10	9	4	6	0	6	3	15	19
STG 2 PEAK CONST TRAFFIC	0	0	102	2	0	2	0	0	0	0	0	0
STG 2 PEAK CONSTRUCTION	23	10	118	9	9	3	6	0	6	3	16	19
PEAK OPERATIONS TRAFFIC	0	0	30	2	0	2	0	0	0	0	0	0
PROJECT OPERATIONS	29	13	50	11	11	3	7	0	7	4	20	24
DECOMMISSIONING TRAFFIC	0	0	61	2	0	2	0	0	0	0	0	0
PROJECT DECOMMISIONING	42	19	91	15	17	4	11	0	11	6	30	36
EXTERNAL PROJECTS	113	5	0	9	0	9	0	0	0	0	0	5
STG 1 PRELIM CONST CUMULATIVE	135	15	32	17	9	12	5	0	5	3	15	24
STG 1 PEAK CONST CUMULATIVE	135	15	59	18	9	13	6	0	6	3	15	24
STG 2 PEAK CONST CUMULATIVE	136	16	118	17	9	12	6	0	6	3	16	25

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Sturt Highway / Yanga Way (Mallee Highway)

Peak Hour Intersection Volume Forecasts

PM PEAK (5:30-6:30pm)

GR %	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
YEAR	Sturt Highway - NW				Yanga Way - S				Sturt Highway - SE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2022	17	26	16	3	14	3	5	2	4	0	21	20
2023	17	27	16	3	14	3	5	2	4	0	21	20
2024	18	27	17	3	15	3	5	2	4	0	22	21
2025	18	28	17	3	15	3	5	2	4	0	22	21
2026	18	28	17	3	15	3	5	2	4	0	23	22
2027	19	29	18	3	15	3	6	2	4	0	23	22
2028	19	29	18	3	16	3	6	2	5	0	24	23
2029	20	30	18	3	16	3	6	2	5	0	24	23
2030	20	30	19	4	16	4	6	2	5	0	25	23
2031	20	31	19	4	17	4	6	2	5	0	25	24
2032	21	32	20	4	17	4	6	2	5	0	26	24
2033	21	32	20	4	17	4	6	2	5	0	26	25
2034	22	33	20	4	18	4	6	3	5	0	27	25
2035	22	34	21	4	18	4	6	3	5	0	27	26
2036	22	34	21	4	18	4	7	3	5	0	28	26
2037	23	35	22	4	19	4	7	3	5	0	28	27
2038	23	36	22	4	19	4	7	3	5	0	29	27
2039	24	36	22	4	20	4	7	3	6	0	29	28
2040	24	37	23	4	20	4	7	3	6	0	30	29
2041	25	38	23	4	20	4	7	3	6	0	31	29
2042	25	39	24	4	21	4	7	3	6	0	31	30
2043	26	39	24	5	21	5	8	3	6	0	32	30
2044	26	40	25	5	22	5	8	3	6	0	32	31
2045	27	41	25	5	22	5	8	3	6	0	33	32
2046	27	42	26	5	23	5	8	3	6	0	34	32
2047	28	43	26	5	23	5	8	3	7	0	34	33
2048	28	44	27	5	23	5	8	3	7	0	35	33
2049	29	44	27	5	24	5	9	3	7	0	36	34
2050	30	45	28	5	24	5	9	3	7	0	37	35
2051	30	46	28	5	25	5	9	4	7	0	37	36
2052	31	47	29	5	25	5	9	4	7	0	38	36
2053	31	48	30	6	26	6	9	4	7	0	39	37
2054	32	49	30	6	26	6	9	4	8	0	40	38
2055	33	50	31	6	27	6	10	4	8	0	40	38
2056	33	51	31	6	27	6	10	4	8	0	41	39
2057	34	52	32	6	28	6	10	4	8	0	42	40
2058	35	53	33	6	29	6	10	4	8	0	43	41
2059	35	54	33	6	29	6	10	4	8	0	44	42
2060	36	55	34	6	30	6	11	4	8	0	45	42
STG 1 PRELIM CONST TRAFFIC	0	0	0	2	17	2	0	0	0	0	0	0
STG 1 PRELIM CONSTRUCTION	18	28	17	5	32	5	5	2	4	0	23	22
STG 1 PEAK CONST TRAFFIC	0	0	0	3	44	3	0	0	0	0	0	0
STG 1 PEAK CONSTRUCTION	19	29	18	6	59	6	6	2	4	0	23	22
STG 2 PEAK CONST TRAFFIC	0	0	0	2	102	2	0	0	0	0	0	0
STG 2 PEAK CONSTRUCTION	19	29	18	5	118	5	6	2	5	0	24	23
PEAK OPERATIONS TRAFFIC	0	0	0	2	30	2	0	0	0	0	0	0
PROJECT OPERATIONS	24	37	23	6	50	6	7	3	6	0	30	29
DECOMMISSIONING TRAFFIC	0	0	0	2	61	2	0	0	0	0	0	0
PROJECT DECOMMISIONING	36	55	34	8	91	8	11	4	8	0	45	42
EXTERNAL PROJECTS	0	5	0	9	0	9	0	0	0	0	113	5
STG 1 PRELIM CONST CUMULATIVE	18	34	17	14	32	14	5	2	4	0	136	27
STG 1 PEAK CONST CUMULATIVE	19	34	18	15	59	15	6	2	4	0	136	27
STG 2 PEAK CONST CUMULATIVE	19	35	18	14	118	14	6	2	5	0	137	28

UMW0122-006 | Junction Rivers Wind Farm

Sturt Highway / Yanga Way (Mallee Highway)

Peak Hour Intersection Volume Forecasts

Stage 1 Prelim Construction Scenario - Schedule Tasks 1A + 1B + 1C + Site Water + Site Fuel + Project (Stage 1 Prelim) Staff

Stage 1 Peak Construction Scenario - Schedule Tasks 1D + 1E + 1F + 2A + 2B + 3A + 3B + Site Water + Site Fuel + Project (Stage 1 Peak) Staff

Stage 2 Peak Construction Scenario - Schedule Tasks 1B + 1C + 1D + 2A + 3A + 3B + Site Water + Site Fuel + Project (Stage 2 Peak) Staff

Staff Movements - Stage 1 Preliminary Construction

Task	Sturt Highway - NW				Yanga Way - S				Sturt Highway - SE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	0	0	17	0	0	0	0	0	0	0	0	0
PM Peak Staff	0	0	0	0	17	0	0	0	0	0	0	0

Staff Movements - Stage 1 Peak Construction

Task	Sturt Highway - NW				Yanga Way - S				Sturt Highway - SE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	0	0	44	0	0	0	0	0	0	0	0	0
PM Peak Staff	0	0	0	0	44	0	0	0	0	0	0	0

Staff Movements - Stage 2 Peak Construction

Task	Sturt Highway - NW				Yanga Way - S				Sturt Highway - SE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff - Stage 2	0	0	87	0	0	0	0	0	0	0	0	0
AM Peak Staff - Stage 1 Ops	0	0	15	0	0	0	0	0	0	0	0	0
PM Peak Staff - Stage 2	0	0	0	0	87	0	0	0	0	0	0	0
PM Peak Staff - Stage 1 Ops	0	0	0	0	15	0	0	0	0	0	0	0

Staff Movements - Operations

Task	Sturt Highway - NW				Yanga Way - S				Sturt Highway - SE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	0	0	30	0	0	0	0	0	0	0	0	0
AM HV	0	0	0	2	0	2	0	0	0	0	0	0
PM Peak Staff	0	0	0	0	30	0	0	0	0	0	0	0
PM HV	0	0	0	2	0	2	0	0	0	0	0	0

Staff Movements - Decommissioning

Task	Sturt Highway - NW				Yanga Way - S				Sturt Highway - SE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	0	0	61	0	0	0	0	0	0	0	0	0
PM Peak Staff	0	0	0	0	61	0	0	0	0	0	0	0

Heavy Vehicle Movements - Stage 1 Preliminary Construction

Task	Sturt Highway - NW				Yanga Way - S				Sturt Highway - SE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
1A	0	0	0	3	0	3	0	0	0	0	0	0
1B	0	0	0	0	0	0	0	0	0	0	0	0
1C	0	0	0	4	0	4	0	0	0	0	0	0
Water	0	0	0	11	0	11	0	0	0	0	0	0
Fuel	0	0	0	1	0	1	0	0	0	0	0	0
Waste Management	0	0	0	1	0	1	0	0	0	0	0	0
Total (11 hrs)	**0**	**0**	**0**	**20**	**0**	**20**	**0**	**0**	**0**	**0**	**0**	**0**
Peak Hour	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**

Heavy Vehicle Movements - Stage 1 Peak Construction

Task	Sturt Highway - NW				Yanga Way - S				Sturt Highway - SE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
1D	0	0	0	1	0	1	0	0	0	0	0	0
1E	0	0	0	1	0	1	0	0	0	0	0	0
1F	0	0	0	2	0	2	0	0	0	0	0	0
2A	0	0	0	1	0	1	0	0	0	0	0	0
2B	0	0	0	3	0	3	0	0	0	0	0	0
3B	0	0	0	2	0	2	0	0	0	0	0	0
Water	0	0	0	11	0	11	0	0	0	0	0	0
Fuel	0	0	0	1	0	1	0	0	0	0	0	0
Waste Management	0	0	0	1	0	1	0	0	0	0	0	0
Total (11 hrs)	**0**	**0**	**0**	**23**	**0**	**23**	**0**	**0**	**0**	**0**	**0**	**0**
Peak Hour	**0**	**0**	**0**	**3**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**

** Vehicle numbers for Task 3A (Turbine Transportation) not considered as these movements will be scheduled outside of peak hours under full escort.

Heavy Vehicle Movements - Stage 2 Peak Construction

Task	Sturt Highway - NW				Yanga Way - S				Sturt Highway - SE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
1B	0	0	0	1	0	1	0	0	0	0	0	0
1C	0	0	0	1	0	1	0	0	0	0	0	0
1D	0	0	0	2	0	2	0	0	0	0	0	0
2A	0	0	0	1	0	1	0	0	0	0	0	0
3B	0	0	0	2	0	2	0	0	0	0	0	0
Water	0	0	0	13	0	13	0	0	0	0	0	0
Fuel	0	0	0	1	0	1	0	0	0	0	0	0
Waste Management	0	0	0	1	0	1	0	0	0	0	0	0
Total (11 hrs)	**0**	**0**	**0**	**22**	**0**	**22**	**0**	**0**	**0**	**0**	**0**	**0**
Peak Hour	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**

** Vehicle numbers for Task 3A (Turbine Transportation) not considered as these movements will be scheduled outside of peak hours under full escort.

Heavy Vehicle Movements - Decommissioning

Task	Sturt Highway - NW				Yanga Way - S				Sturt Highway - SE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Peak Hour	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**

UMW0122-006 | Junction Rivers Wind Farm

Yanga Way / Balranald Road

Peak Hour Intersection Volume Forecasts

AM PEAK (6-7am)

GR %	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
YEAR	Yanga Way - SW				Balranald Road - E				Yanga Way - NE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2022	14	7	1	0	1	0	1	1	1	1	15	3
2023	14	7	1	0	1	0	1	1	1	1	15	3
2024	15	7	1	0	1	0	1	1	1	1	16	3
2025	15	7	1	0	1	0	1	1	1	1	16	3
2026	15	8	1	0	1	0	1	1	1	1	16	3
2027	15	8	1	0	1	0	1	1	1	1	17	3
2028	16	8	1	0	1	0	1	1	1	1	17	3
2029	16	8	1	0	1	0	1	1	1	1	17	3
2030	16	8	1	0	1	0	1	1	1	1	18	4
2031	17	8	1	0	1	0	1	1	1	1	18	4
2032	17	9	1	0	1	0	1	1	1	1	18	4
2033	17	9	1	0	1	0	1	1	1	1	19	4
2034	18	9	1	0	1	0	1	1	1	1	19	4
2035	18	9	1	0	1	0	1	1	1	1	19	4
2036	18	9	1	0	1	0	1	1	1	1	20	4
2037	19	9	1	0	1	0	1	1	1	1	20	4
2038	19	10	1	0	1	0	1	1	1	1	21	4
2039	20	10	1	0	1	0	1	1	1	1	21	4
2040	20	10	1	0	1	0	1	1	1	1	21	4
2041	20	10	1	0	1	0	1	1	1	1	22	4
2042	21	10	1	0	1	0	1	1	1	1	22	4
2043	21	11	2	0	2	0	2	2	2	2	23	5
2044	22	11	2	0	2	0	2	2	2	2	23	5
2045	22	11	2	0	2	0	2	2	2	2	24	5
2046	23	11	2	0	2	0	2	2	2	2	24	5
2047	23	11	2	0	2	0	2	2	2	2	25	5
2048	23	12	2	0	2	0	2	2	2	2	25	5
2049	24	12	2	0	2	0	2	2	2	2	26	5
2050	24	12	2	0	2	0	2	2	2	2	26	5
2051	25	12	2	0	2	0	2	2	2	2	27	5
2052	25	13	2	0	2	0	2	2	2	2	27	5
2053	26	13	2	0	2	0	2	2	2	2	28	6
2054	26	13	2	0	2	0	2	2	2	2	28	6
2055	27	13	2	0	2	0	2	2	2	2	29	6
2056	27	14	2	0	2	0	2	2	2	2	29	6
2057	28	14	2	0	2	0	2	2	2	2	30	6
2058	29	14	2	0	2	0	2	2	2	2	31	6
2059	29	15	2	0	2	0	2	2	2	2	31	6
2060	30	15	2	0	2	0	2	2	2	2	32	6
STG 1 PRELIM CONST TRAFFIC	0	0	7	2	0	2	0	2	17	2	0	0
STG 1 PRELIM CONSTRUCTION	15	8	8	2	1	2	1	3	18	3	16	3
STG 1 PEAK CONST TRAFFIC	0	0	16	9	0	9	0	3	44	3	0	0
STG 1 PEAK CONSTRUCTION	15	8	17	9	1	9	1	4	45	4	17	3
STG 2 PEAK CONST TRAFFIC	0	0	32	9	0	9	0	2	102	2	0	0
STG 2 PEAK CONSTRUCTION	16	8	33	9	1	9	1	3	103	3	17	3
PEAK OPERATIONS TRAFFIC	0	0	0	0	0	0	0	2	30	2	0	0
PROJECT OPERATIONS	20	10	1	0	1	0	1	3	31	3	21	4
DECOMMISSIONING TRAFFIC	0	0	22	7	0	7	0	2	61	2	0	0
PROJECT DECOMMISIONING	30	15	25	7	2	7	2	4	63	4	32	6
EXTERNAL PROJECTS	0	9	0	0	0	0	0	0	0	0	0	9
STG 1 PRELIM CONST CUMULATIVE	15	17	8	2	1	2	1	3	18	3	16	12
STG 1 PEAK CONST CUMULATIVE	15	17	17	9	1	9	1	4	45	4	17	12
STG 2 PEAK CONST CUMULATIVE	16	17	33	9	1	9	1	3	103	3	17	12

UMW0122-006 | Junction Rivers Wind Farm

Yanga Way / Balranald Road

Peak Hour Intersection Volume Forecasts

PM PEAK (5:30-6:30pm)

GR %	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
YEAR	Yanga Way - SW				Balranald Road - E				Yanga Way - NE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2022	17	3	0	1	0	2	1	0	1	0	21	3
2023	17	3	0	1	0	2	1	0	1	0	21	3
2024	18	3	0	1	0	2	1	0	1	0	22	3
2025	18	3	0	1	0	2	1	0	1	0	22	3
2026	18	3	0	1	0	2	1	0	1	0	23	3
2027	19	3	0	1	0	2	1	0	1	0	23	3
2028	19	3	0	1	0	2	1	0	1	0	24	3
2029	20	3	0	1	0	2	1	0	1	0	24	3
2030	20	4	0	1	0	2	1	0	1	0	25	4
2031	20	4	0	1	0	2	1	0	1	0	25	4
2032	21	4	0	1	0	2	1	0	1	0	26	4
2033	21	4	0	1	0	2	1	0	1	0	26	4
2034	22	4	0	1	0	3	1	0	1	0	27	4
2035	22	4	0	1	0	3	1	0	1	0	27	4
2036	22	4	0	1	0	3	1	0	1	0	28	4
2037	23	4	0	1	0	3	1	0	1	0	28	4
2038	23	4	0	1	0	3	1	0	1	0	29	4
2039	24	4	0	1	0	3	1	0	1	0	29	4
2040	24	4	0	1	0	3	1	0	1	0	30	4
2041	25	4	0	1	0	3	1	0	1	0	31	4
2042	25	4	0	1	0	3	1	0	1	0	31	4
2043	26	5	0	2	0	3	2	0	2	0	32	5
2044	26	5	0	2	0	3	2	0	2	0	32	5
2045	27	5	0	2	0	3	2	0	2	0	33	5
2046	27	5	0	2	0	3	2	0	2	0	34	5
2047	28	5	0	2	0	3	2	0	2	0	34	5
2048	28	5	0	2	0	3	2	0	2	0	35	5
2049	29	5	0	2	0	3	2	0	2	0	36	5
2050	30	5	0	2	0	3	2	0	2	0	37	5
2051	30	5	0	2	0	4	2	0	2	0	37	5
2052	31	5	0	2	0	4	2	0	2	0	38	5
2053	31	6	0	2	0	4	2	0	2	0	39	6
2054	32	6	0	2	0	4	2	0	2	0	40	6
2055	33	6	0	2	0	4	2	0	2	0	40	6
2056	33	6	0	2	0	4	2	0	2	0	41	6
2057	34	6	0	2	0	4	2	0	2	0	42	6
2058	35	6	0	2	0	4	2	0	2	0	43	6
2059	35	6	0	2	0	4	2	0	2	0	44	6
2060	36	6	0	2	0	4	2	0	2	0	45	6
STG 1 PRELIM CONST TRAFFIC	0	0	0	2	7	2	17	2	0	2	0	0
STG 1 PRELIM CONSTRUCTION	18	3	0	3	7	4	18	2	1	2	23	3
STG 1 PEAK CONST TRAFFIC	0	0	0	9	16	9	44	3	0	3	0	0
STG 1 PEAK CONSTRUCTION	19	3	0	10	16	11	45	3	1	3	23	3
STG 2 PEAK CONST TRAFFIC	0	0	0	9	32	9	102	2	0	2	0	0
STG 2 PEAK CONSTRUCTION	19	3	0	10	32	11	103	2	1	2	24	3
PEAK OPERATIONS TRAFFIC	0	0	0	0	0	0	30	2	0	2	0	0
PROJECT OPERATIONS	24	4	0	1	0	3	31	2	1	2	30	4
DECOMMISSIONING TRAFFIC	0	0	0	7	22	7	61	2	0	2	0	0
PROJECT DECOMMISIONING	36	6	0	9	22	11	63	2	2	2	45	6
EXTERNAL PROJECTS	0	9	0	0	0	0	0	0	0	0	0	9
STG 1 PRELIM CONST CUMULATIVE	18	12	0	3	7	4	18	2	1	2	23	12
STG 1 PEAK CONST CUMULATIVE	19	12	0	10	16	11	45	3	1	3	23	12
STG 2 PEAK CONST CUMULATIVE	19	12	0	10	32	11	103	2	1	2	24	12

AADT Estimate	Balranald Rd			
	Inbound - Gaz		Outbound - Agaz	
	LV	HV	LV	HV
AM Peak	2	1	2	1
PM Peak	1	1	1	2
Combined Peak	3	2	3	3
Estimated Daily	15	10	15	15
AADT / %HV	25	40.0%	30	50.0%

UMW0122-006 | Junction Rivers Wind Farm

Yanga Way / Balranald Road

Peak Hour Intersection Volume Forecasts

Stage 1 Prelim Construction Scenario - Schedule Tasks 1A + 1B + 1C + Site Water + Site Fuel + Project (Stage 1 Prelim) Staff

Stage 1 Peak Construction Scenario - Schedule Tasks 1D + 1E + 1F + 2A + 2B + 3A + 3B + Site Water + Site Fuel + Project (Stage 1 Peak) Staff

Stage 2 Peak Construction Scenario - Schedule Tasks 1B + 1C + 1D + 2A + 3A + 3B + Site Water + Site Fuel + Project (Stage 2 Peak) Staff

Staff Movements - Stage 1 Prelim Construction

Task	Yanga Way - SW				Balranald Road - E				Yanga Way - NE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	0	0	7	0	0	0	0	0	17	0	0	0
PM Peak Staff	0	0	0	0	7	0	17	0	0	0	0	0

Staff Movements - Stage 1 Peak Construction

Task	Yanga Way - SW				Balranald Road - E				Yanga Way - NE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	0	0	16	0	0	0	0	0	44	0	0	0
PM Peak Staff	0	0	0	0	16	0	44	0	0	0	0	0

Staff Movements - Stage 2 Construction

Task	Yanga Way - SW				Balranald Road - E				Yanga Way - NE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff - Stage 2	0	0	32	0	0	0	0	0	87	0	0	0
AM Peak Staff - Stage 1 Ops	0	0	0	0	0	0	0	0	15	0	0	0
PM Peak Staff - Stage 2	0	0	0	0	32	0	87	0	0	0	0	0
PM Peak Staff - Stage 1 Ops	0	0	0	0	0	0	15	0	0	0	0	0

Staff Movements - Operations

Task	Yanga Way - SW				Balranald Road - E				Yanga Way - NE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	0	0	0	0	0	0	0	0	30	0	0	0
AM HV	0	0	0	0	0	0	0	2	0	2	0	0
PM Peak Staff	0	0	0	0	0	0	30	0	0	0	0	0
PM HV	0	0	0	0	0	0	0	2	0	2	0	0

Staff Movements - Decommissioning

Task	Yanga Way - SW				Balranald Road - E				Yanga Way - NE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	0	0	22	0	0	0	0	0	61	0	0	0
PM Peak Staff	0	0	0	0	22	0	61	0	0	0	0	0

Heavy Vehicle Movements - Stage 1 Preliminary Construction

Task	Yanga Way - SW				Balranald Road - E				Yanga Way - NE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
1A	0	0	0	3	0	3	0	3	0	3	0	0
1B	0	0	0	9	0	9	0	0	0	0	0	0
1C	0	0	0	4	0	4	0	4	0	4	0	0
Water	0	0	0	0	0	0	0	11	0	11	0	0
Fuel	0	0	0	1	0	1	0	1	0	1	0	0
Waste Management	0	0	0	0	0	0	0	1	0	1	0	0
Total (11 hrs)	**0**	**0**	**0**	**17**	**0**	**17**	**0**	**20**	**0**	**20**	**0**	**0**
Peak Hour	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**2**	**0**	**2**	**0**	**0**

Heavy Vehicle Movements - Stage 1 Peak Construction

Task	Yanga Way - SW				Balranald Road - E				Yanga Way - NE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
1D	0	0	0	52	0	52	0	1	0	1	0	0
1E	0	0	0	26	0	26	0	1	0	1	0	0
1F	0	0	0	6	0	6	0	2	0	2	0	0
2A	0	0	0	2	0	2	0	1	0	1	0	0
2B	0	0	0	3	0	3	0	3	0	3	0	0
3B	0	0	0	0	0	0	0	2	0	2	0	0
Water	0	0	0	0	0	0	0	11	0	11	0	0
Fuel	0	0	0	1	0	1	0	1	0	1	0	0
Waste Management	0	0	0	0	0	0	0	1	0	1	0	0
Total (11 hrs)	**0**	**0**	**0**	**90**	**0**	**90**	**0**	**23**	**0**	**23**	**0**	**0**
Peak Hour	**0**	**0**	**0**	**9**	**0**	**9**	**0**	**3**	**0**	**3**	**0**	**0**

** Vehicle numbers for Task 3A (Turbine Transportation) not considered as these movements will be scheduled outside of peak hours under full escort.

Heavy Vehicle Movements - Stage 2 Peak Construction

Task	Yanga Way - SW				Balranald Road - E				Yanga Way - NE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
1B	0	0	0	62	0	62	0	1	0	1	0	0
1C	0	0	0	18	0	18	0	1	0	1	0	0
1D	0	0	0	7	0	7	0	2	0	2	0	0
2A	0	0	0	3	0	3	0	1	0	1	0	0
3B	0	0	0	0	0	0	0	2	0	2	0	0
Water	0	0	0	0	0	0	0	13	0	13	0	0
Fuel	0	0	0	1	0	1	0	1	0	1	0	0
Waste Management	0	0	0	0	0	0	0	1	0	1	0	0
Total (11 hrs)	**0**	**0**	**0**	**91**	**0**	**91**	**0**	**21**	**0**	**21**	**0**	**0**
Peak Hour	**0**	**0**	**0**	**9**	**0**	**9**	**0**	**2**	**0**	**2**	**0**	**0**

** Vehicle numbers for Task 3A (Turbine Transportation) not considered as these movements will be scheduled outside of peak hours under full escort.

Heavy Vehicle Movements - Decommissioning

Task	Yanga Way - SW				Balranald Road - E				Yanga Way - NE			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Peak Hour	**0**	**0**	**0**	**7**	**0**	**7**	**0**	**2**	**0**	**2**	**0**	**0**

Appendix I – Turn Warrant Assessment - Sturt Highway / Yanga Way

Turn Warrant Assessment

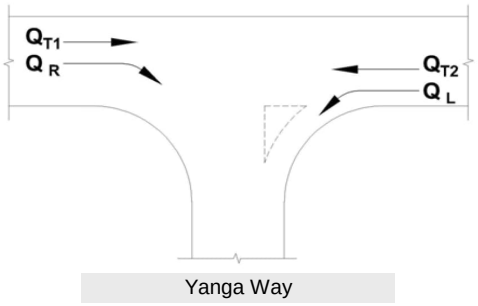
Intersection:	**Sturt Highway / Yanga Way**
Year / Peak:	**2026 AM & PM Peak**
Scenario:	**Stage 1 Prelim Construction**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	*PM Peak*
Q_{T1} =	31	47
Q_R =	41	23

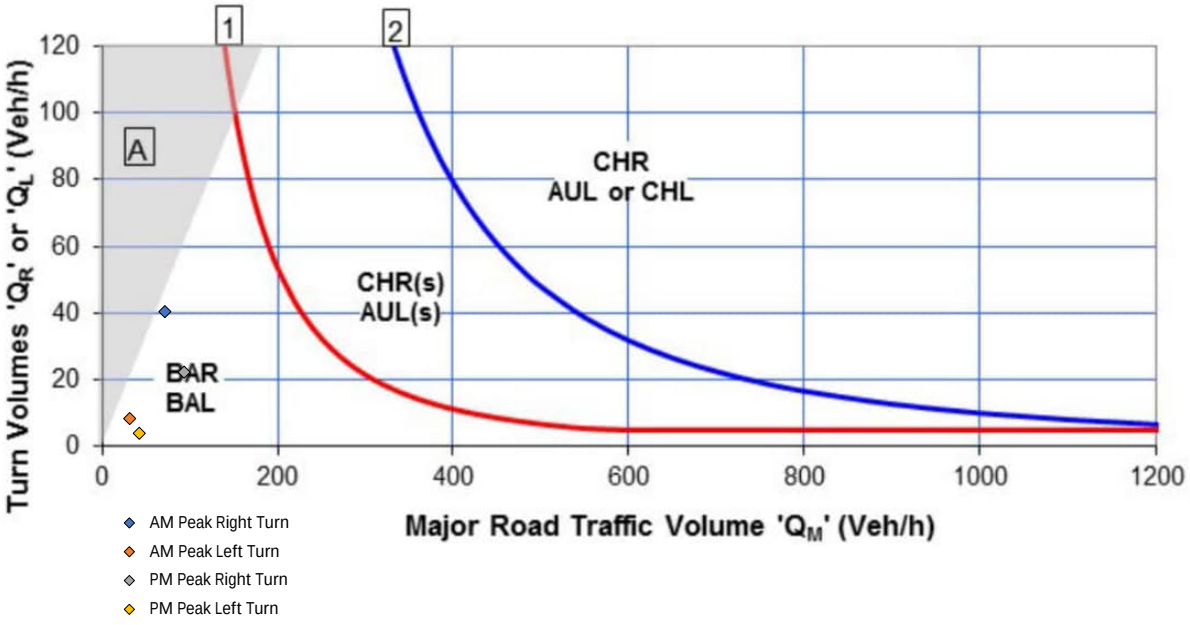
Splitter Island? No

Design speed (km/h) 90



	AM Peak	*PM Peak*
Q_{T2} =	34	44
Q_L =	9	4

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	74	41
Left	34	9
PM Peak		
Right	95	23
Left	44	4



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	9/06/2025

Turn Warrant Assessment

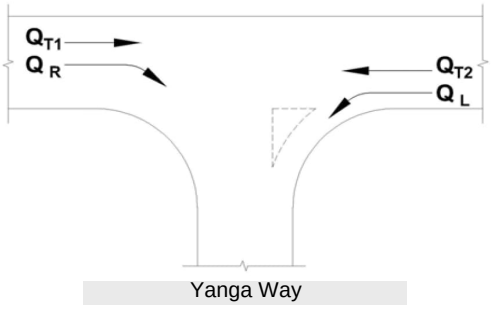
Intersection:	**Sturt Highway / Yanga Way**		
Year / Peak:	**2026 AM & PM Peak**	Scenario:	**Stage 1 Prelim Construction Cumulative**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	*PM Peak*
Q_{T1} =	150	52
Q_R =	49	31

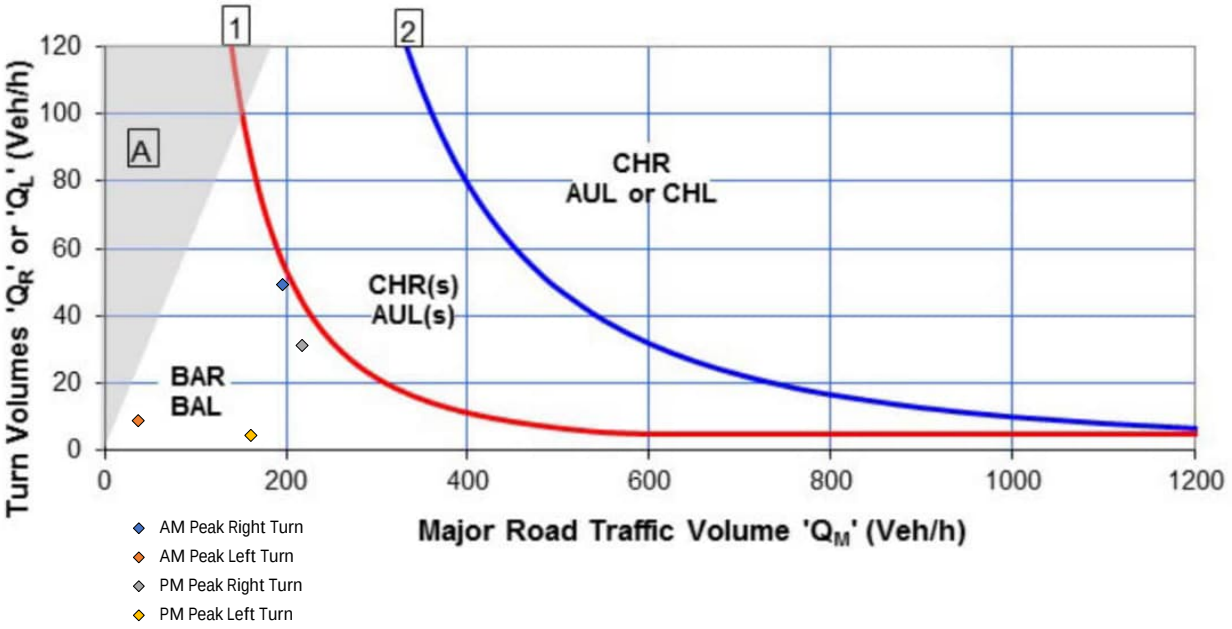
Splitter Island? No

Design speed (km/h) 90



	AM Peak	*PM Peak*
Q_{T2} =	39	163
Q_L =	9	4

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	197	49
Left	39	9
PM Peak		
Right	219	31
Left	163	4



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	9/06/2025

ACCESS TRAFFIC CONSULTING

Turn Warrant Assessment

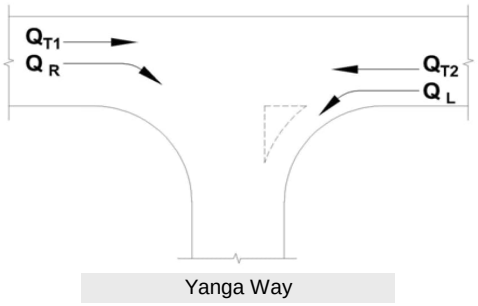
Intersection:	**Sturt Highway / Yanga Way**
Year / Peak:	**2027 AM & PM Peak**
Scenario:	**Stage 1 Peak Construction**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	*PM Peak*
Q_{T1} =	32	47
Q_R =	69	24

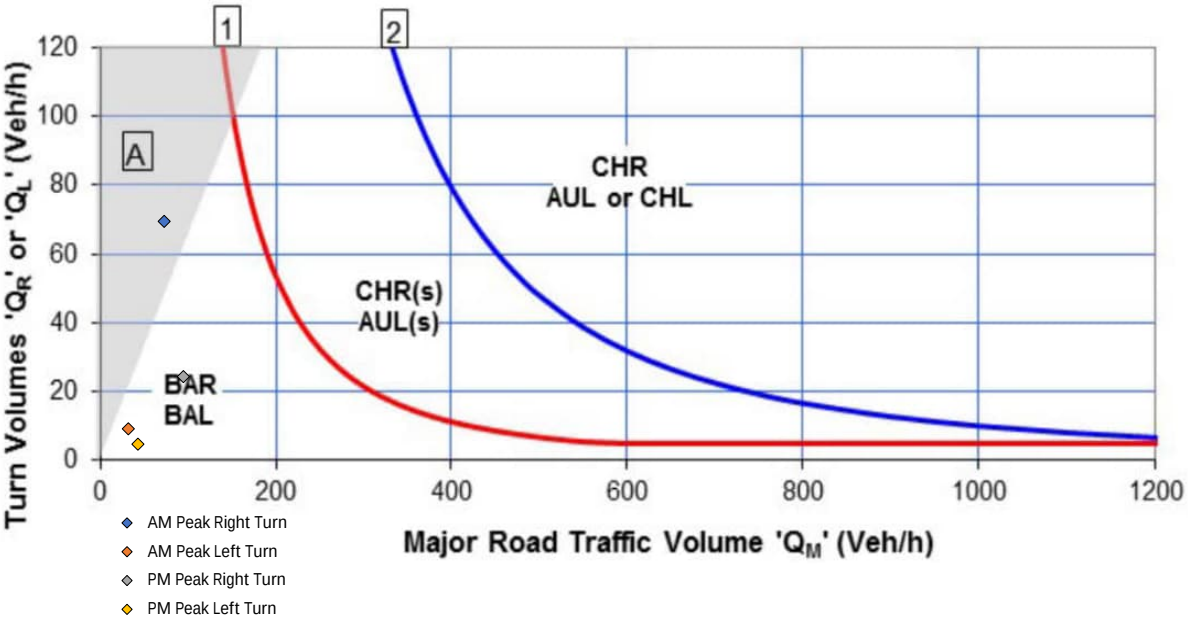
Splitter Island? No

Design speed (km/h) 90



	AM Peak	*PM Peak*
Q_{T2} =	34	45
Q_L =	9	4

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	75	69
Left	34	9
PM Peak		
Right	97	24
Left	45	4



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	9/06/2025

Turn Warrant Assessment

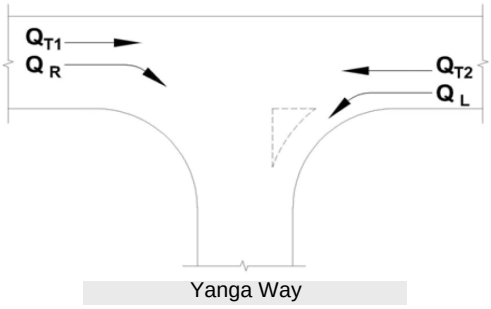
Intersection:	**Sturt Highway / Yanga Way**		
Year / Peak:	**2027 AM & PM Peak**	Scenario:	**Stage 1 Peak Construction Cumulative**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	PM Peak
Q_{T1} =	150	53
Q_R =	78	32

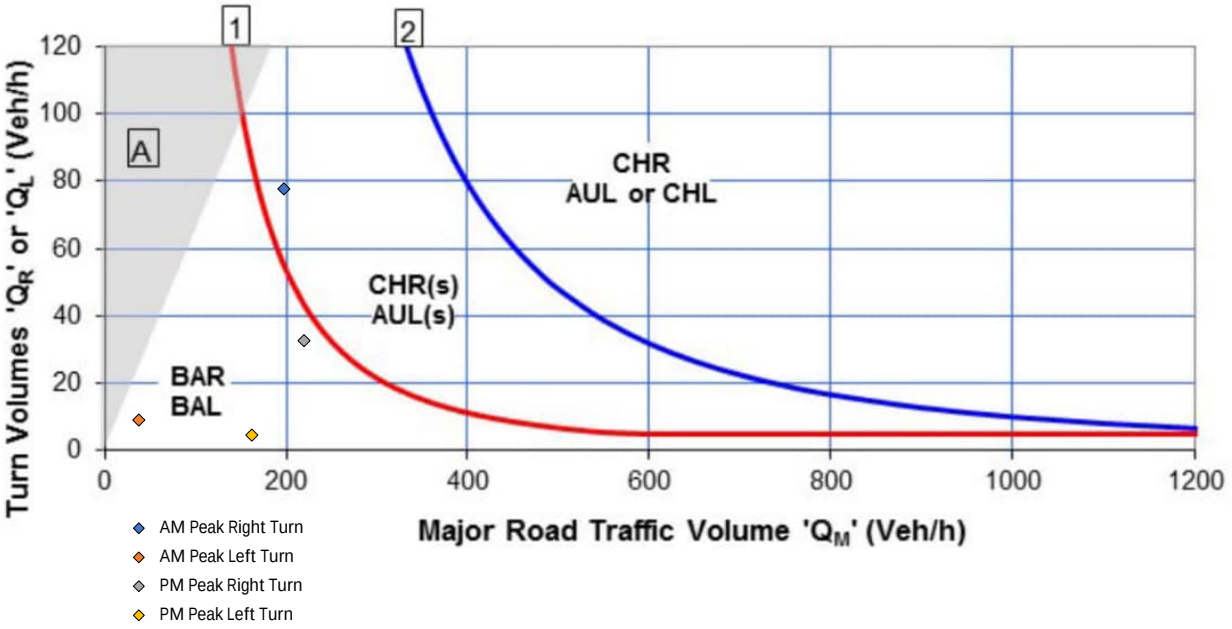
Splitter Island? No

Design speed (km/h) 90



	AM Peak	PM Peak
Q_{T2} =	40	164
Q_L =	9	4

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	199	78
Left	40	9
PM Peak		
Right	221	32
Left	164	4



Recommended treatments:

Right Turn	CHRs
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	9/06/2025

Turn Warrant Assessment

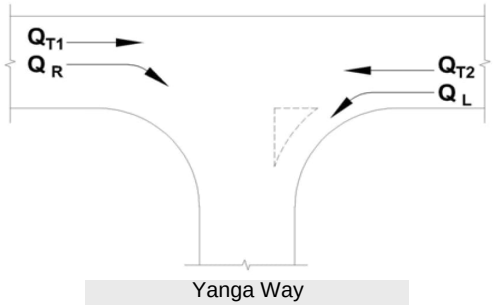
Intersection:	**Sturt Highway / Yanga Way**
Year / Peak:	**2028 AM & PM Peak**
Scenario:	**Stage 2 Peak Construction**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

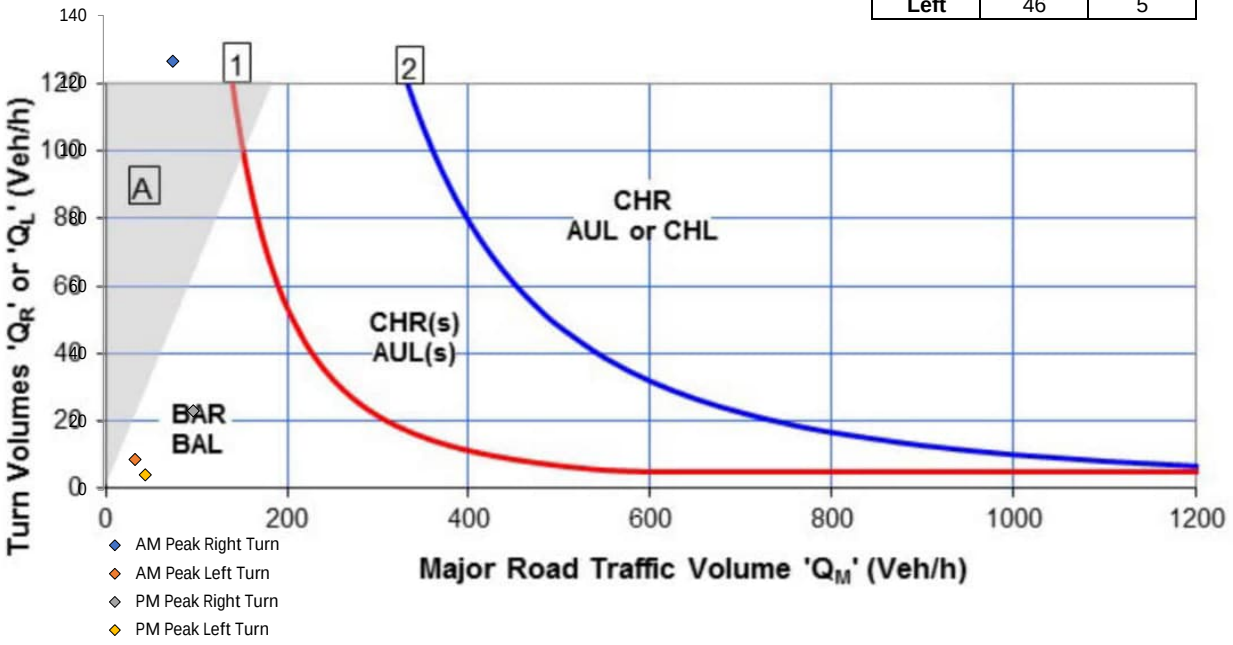
	AM Peak	*PM Peak*
Q_{T1} =	33	48
Q_R =	127	23

	AM Peak	*PM Peak*
Q_{T2} =	35	46
Q_L =	9	5

Splitter Island?	No
Design speed (km/h)	90



Graph	Q_M	Q_R/Q_L
AM Peak		
Right	77	127
Left	35	9
PM Peak		
Right	99	23
Left	46	5



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	9/06/2025

ACCESS TRAFFIC CONSULTING

Turn Warrant Assessment

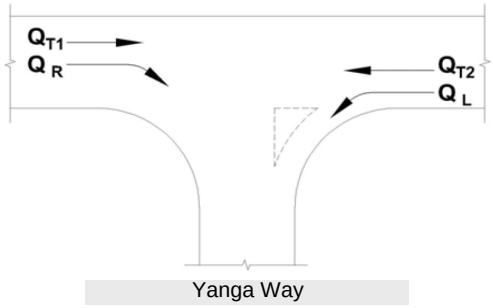
Intersection:	**Sturt Highway / Yanga Way**
Year / Peak:	**2028 AM & PM Peak**
Scenario:	**Stage 2 Construction Cumulative**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	PM Peak
Q_{T1} =	151	54
Q_R =	135	32

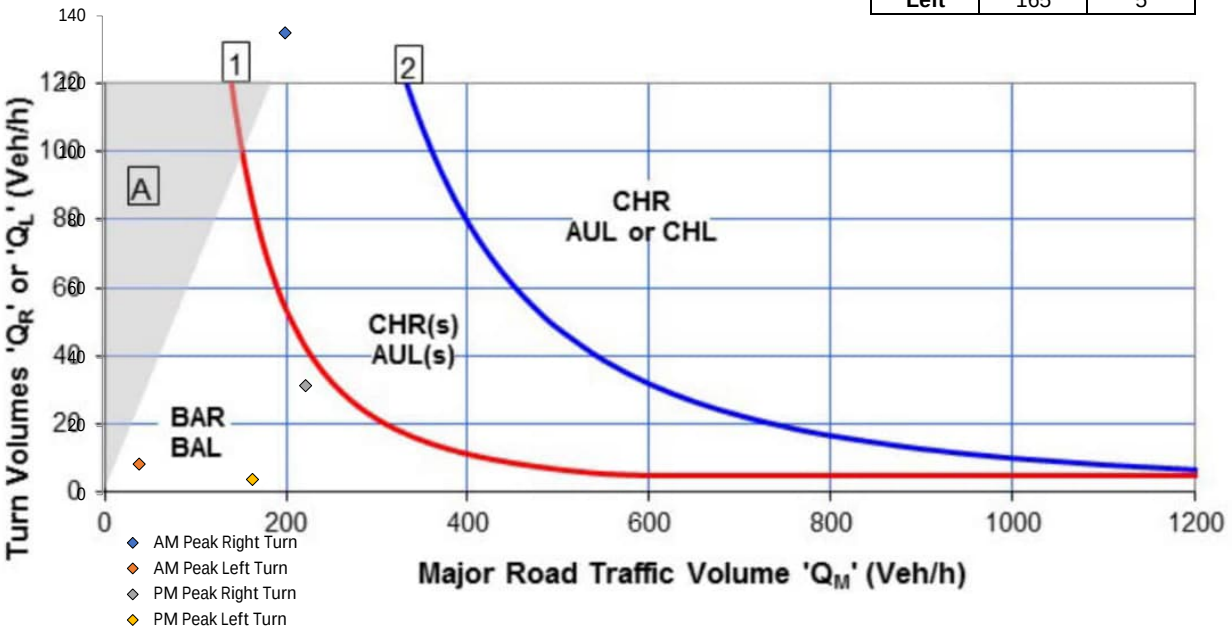
Splitter Island? No

Design speed (km/h) 90



	AM Peak	PM Peak
Q_{T2} =	40	165
Q_L =	9	5

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	200	135
Left	40	9
PM Peak		
Right	223	32
Left	165	5



Recommended treatments:

Right Turn	CHRs
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	9/06/2025

Turn Warrant Assessment

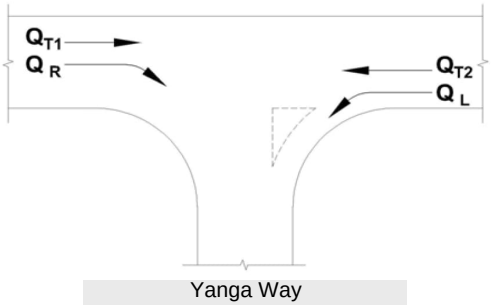
Intersection:	**Sturt Highway / Yanga Way**
Year / Peak:	**2040 AM & PM Peak**
Scenario:	**Operations**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	PM Peak
Q_{T1} =	41	61
Q_R =	61	29

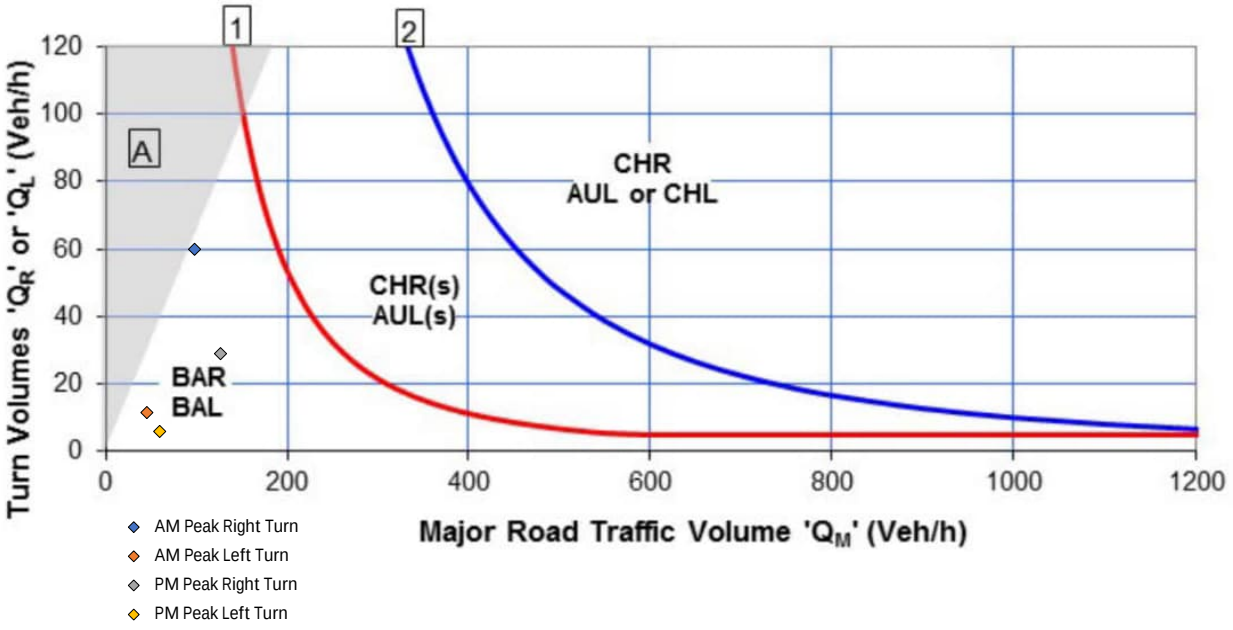
Splitter Island? No

Design speed (km/h) 100



	AM Peak	PM Peak
Q_{T2} =	44	59
Q_L =	11	6

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	97	61
Left	44	11
PM Peak		
Right	126	29
Left	59	6



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	9/06/2025

Turn Warrant Assessment

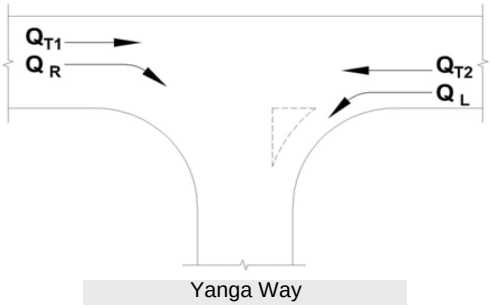
Intersection:	**Sturt Highway / Yanga Way**
Year / Peak:	**2060 AM & PM Peak**
Scenario:	**Decommissioning**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	PM Peak
Q_{T1} =	62	91
Q_R =	105	42

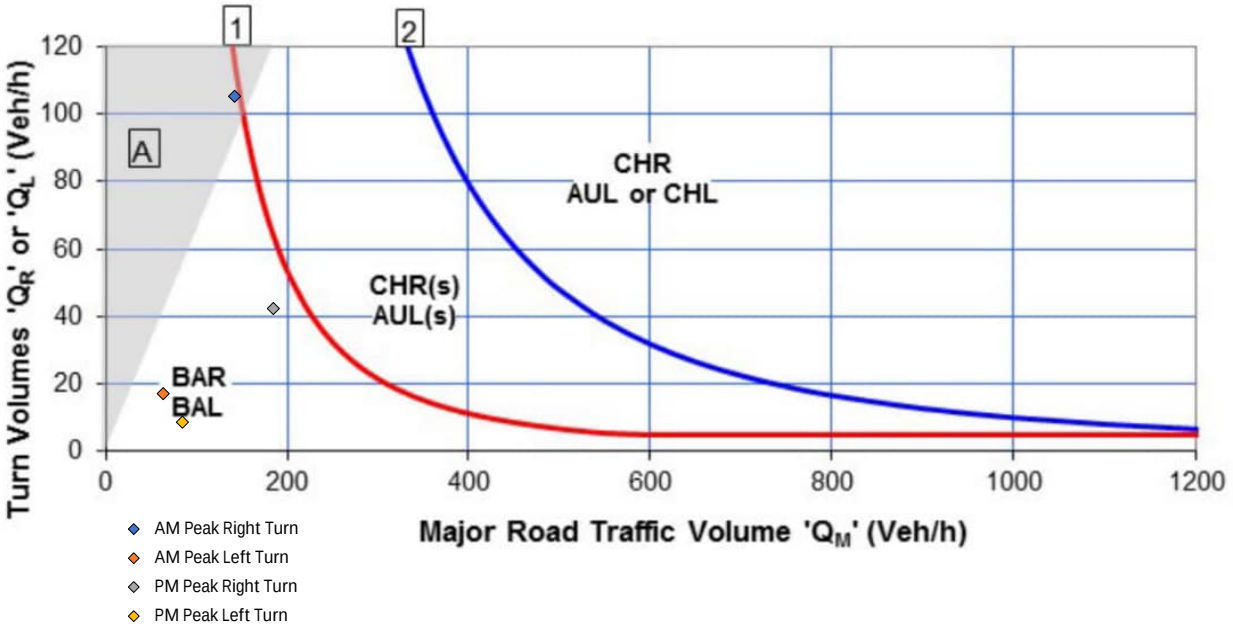
Splitter Island? No

Design speed (km/h) 90



	AM Peak	PM Peak
Q_{T2} =	66	87
Q_L =	17	8

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	144	105
Left	66	17
PM Peak		
Right	187	42
Left	87	8



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	9/06/2025

Appendix J – Turn Warrant Assessment – Yanga Way / Balranald-Moulamein Road

ACCESS TRAFFIC CONSULTING

Turn Warrant Assessment

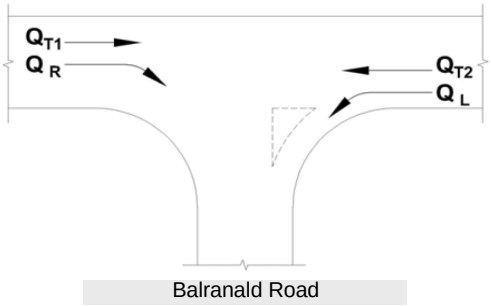
Intersection:	**Yanga Way / Balranald Road**
Year / Peak:	**2026 AM & PM**
Scenario:	**Stage 1 Prelim Construction**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	*PM Peak*
Q_{T1} =	23	22
Q_R =	10	3

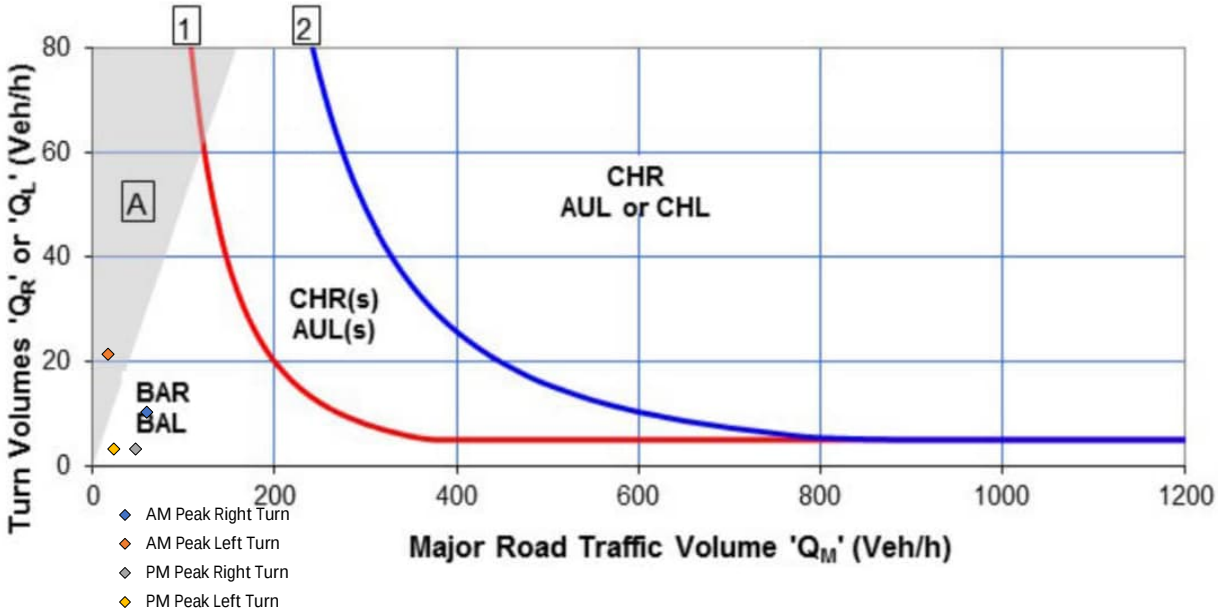
Splitter Island? No

Design speed (km/h) 110



	AM Peak	*PM Peak*
Q_{T2} =	19	26
Q_L =	21	3

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	63	10
Left	19	21
PM Peak		
Right	51	3
Left	26	3



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	9/06/2025

Turn Warrant Assessment

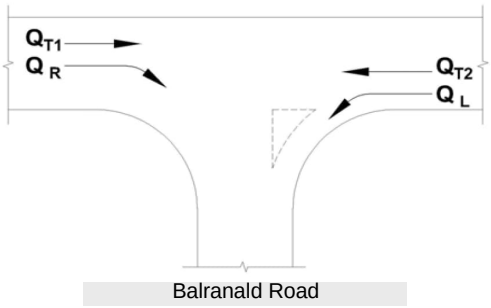
Intersection:	**Yanga Way / Balranald Road**
Year / Peak:	**2026 AM & PM**
Scenario:	**Stage 1 Prelim Const (Cumulative)**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	PM Peak
Q_{T1} =	32	31
Q_R =	10	3

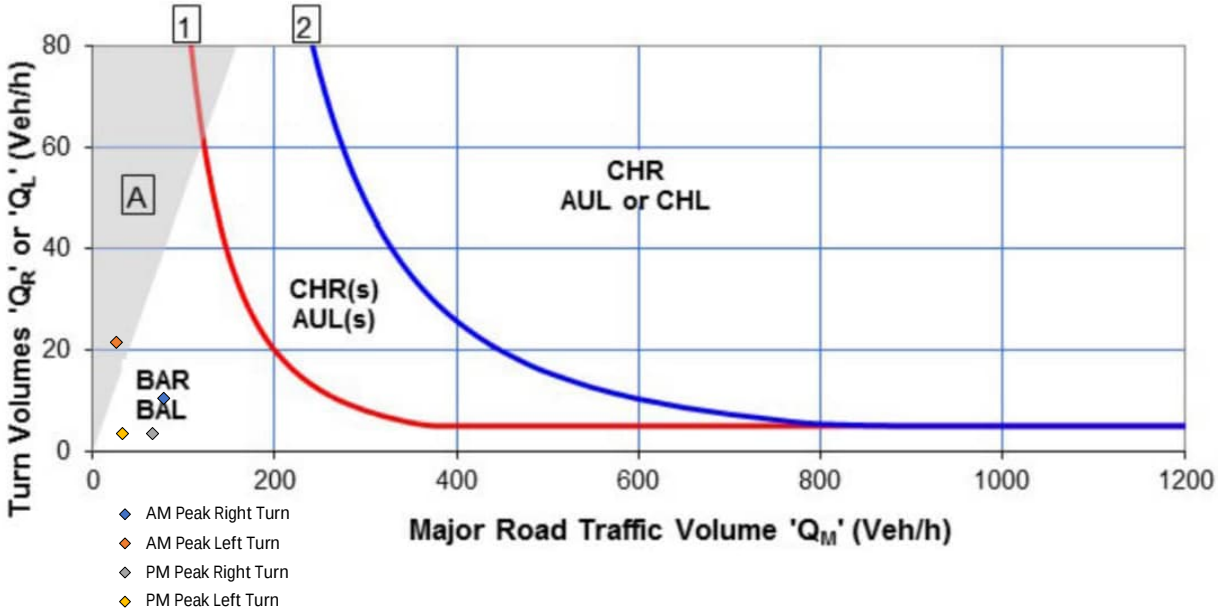
Splitter Island? No

Design speed (km/h) 110



	AM Peak	PM Peak
Q_{T2} =	28	35
Q_L =	21	3

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	81	10
Left	28	21
PM Peak		
Right	69	3
Left	35	3



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	9/06/2025

ACCESS TRAFFIC CONSULTING

Turn Warrant Assessment

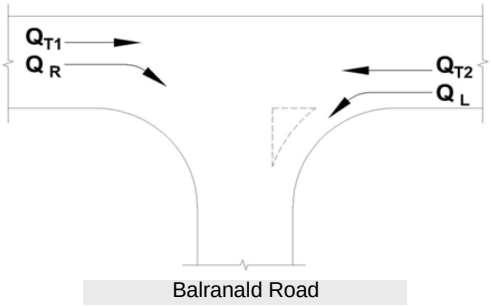
Intersection:	**Yanga Way / Balranald Road**
Year / Peak:	**2027 AM & PM**
Scenario:	**Stage 1 Peak Construction**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	*PM Peak*
Q_{T1} =	23	22
Q_R =	26	10

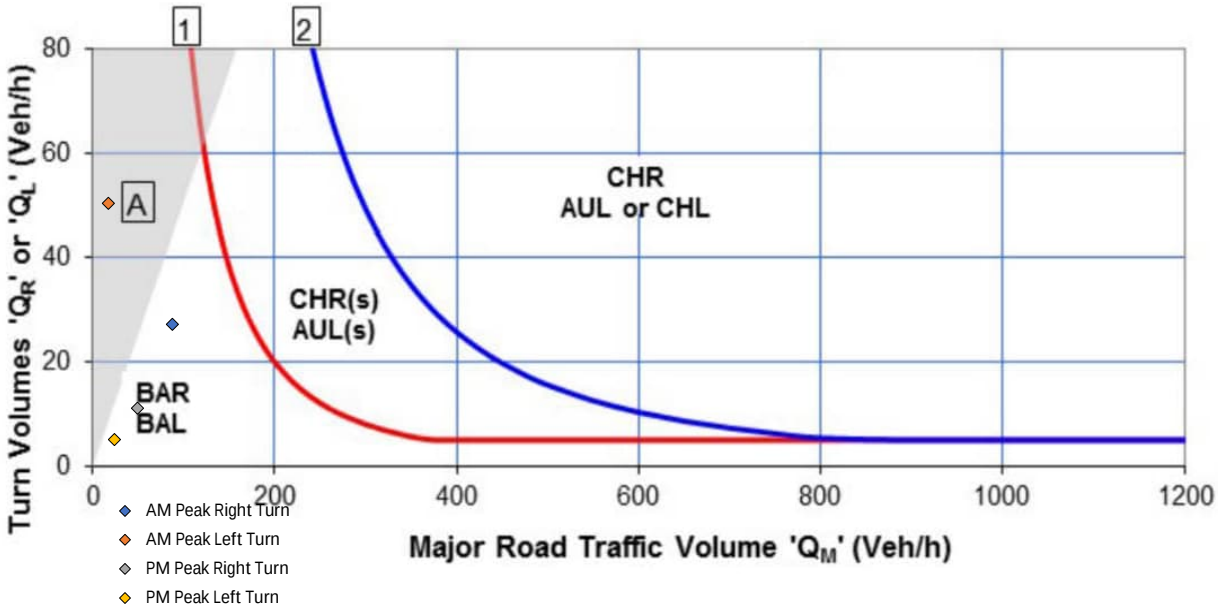
Splitter Island? No

Design speed (km/h) 110



	AM Peak	*PM Peak*
Q_{T2} =	20	26
Q_L =	49	4

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	92	26
Left	20	49
PM Peak		
Right	53	10
Left	26	4



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	9/06/2025

ACCESS TRAFFIC CONSULTING

Turn Warrant Assessment

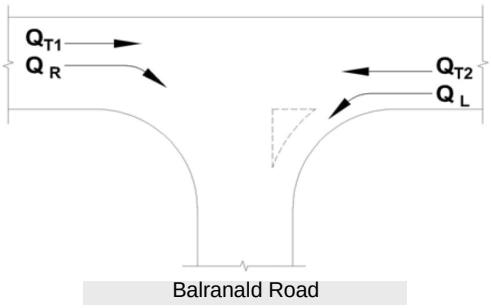
Intersection:	**Yanga Way / Balranald Road**		
Year / Peak:	**2027 AM & PM**	Scenario:	**Stage 1 Peak Const (Cumulative)**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	*PM Peak*
Q_{T1} =	32	31
Q_R =	26	10

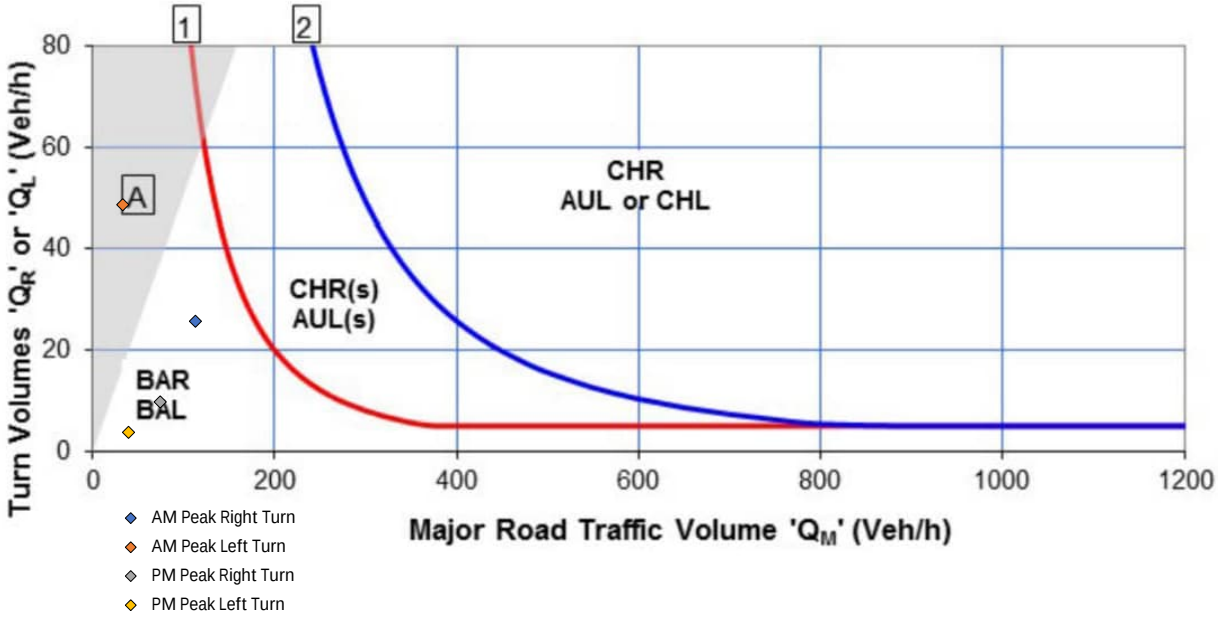
Splitter Island? No

Design speed (km/h) 110



	AM Peak	*PM Peak*
Q_{T2} =	29	35
Q_L =	49	4

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	110	26
Left	29	49
PM Peak		
Right	71	10
Left	35	4



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	17/11/2023

ACCESS TRAFFIC CONSULTING

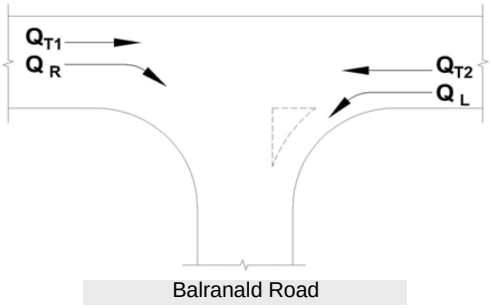
Turn Warrant Assessment

Intersection:	**Yanga Way / Balranald Road**
Year / Peak:	**2028 AM & PM**
Scenario:	**Stage 2 Peak Construction**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

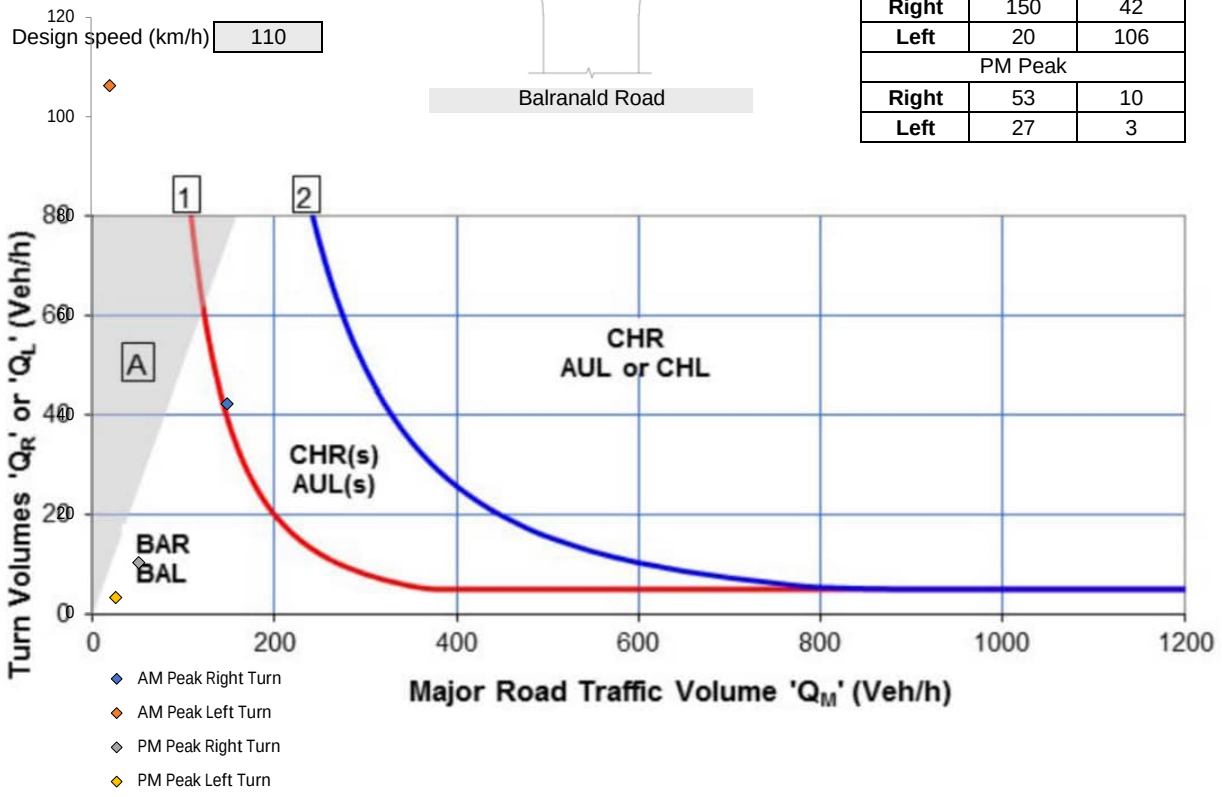
	AM Peak	*PM Peak*
Q_{T1} =	24	23
Q_R =	42	10

	AM Peak	*PM Peak*
Q_{T2} =	20	27
Q_L =	106	3



Splitter Island?	No
Design speed (km/h)	110

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	150	42
Left	20	106
PM Peak		
Right	53	10
Left	27	3



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

It is noted that the AM right turns are on the border of the BAR / CHRs treatments, but as the assessment is based on peak construction volumes that are only realised temporarily, with volumes decreasing to nearly zero at the end of construction, the provision of a channelised right turn lane at the intersection is not considered necessary.
Furthermore, additional traffic management measures such as advanced warning truck turning signage etc, can be provided to improve delineation of intersection and potential for turning movements.

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	9/06/2025

Turn Warrant Assessment

Intersection:	**Yanga Way / Balranald Road**
Year / Peak:	**2028 AM & PM**
Scenario:	**Stage 2 Construction (Cumulative)**

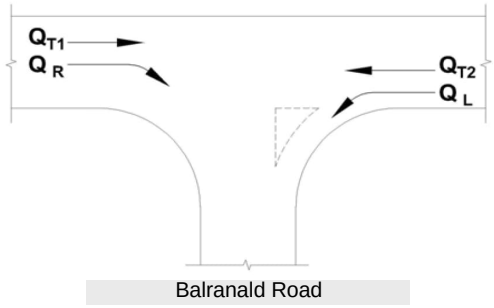
Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	PM Peak
Q_{T1} =	33	32
Q_R =	42	10

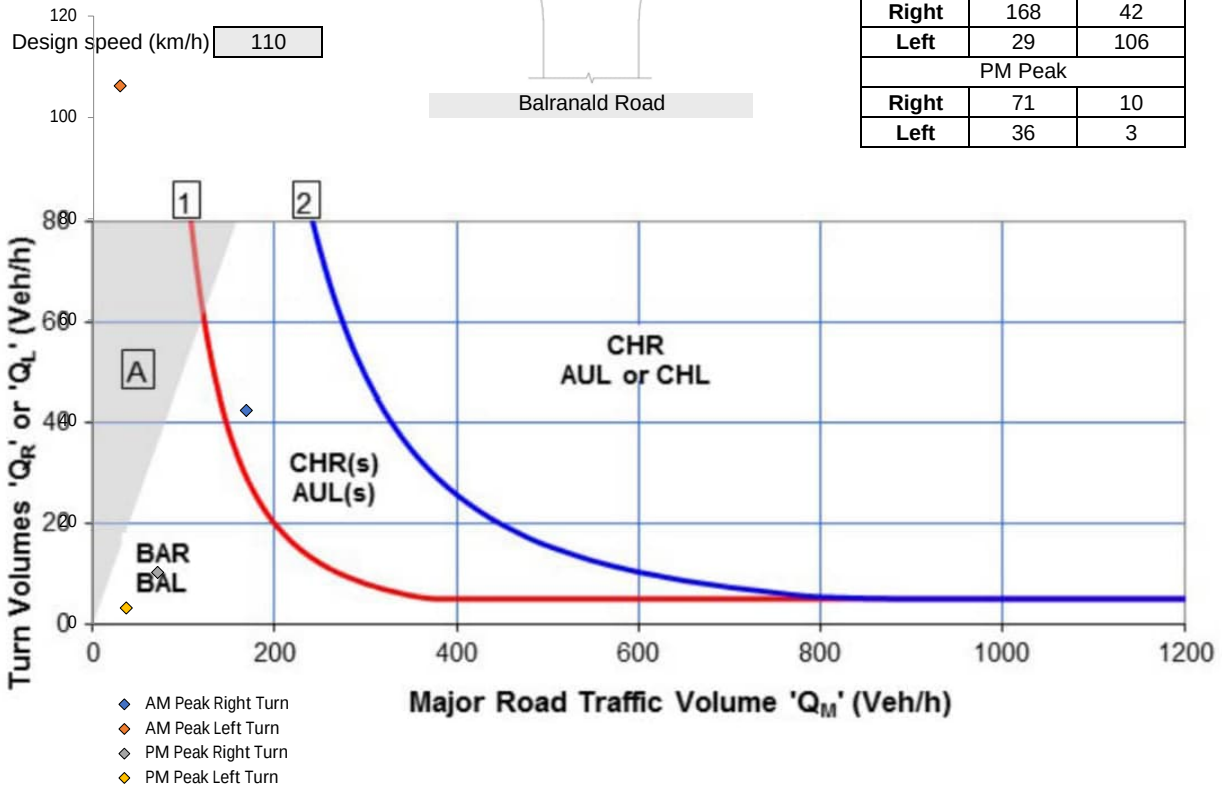
	AM Peak	PM Peak
Q_{T2} =	29	36
Q_L =	106	3

Splitter Island? No

Design speed (km/h) 110



Graph	Q_M	Q_R/Q_L
AM Peak		
Right	168	42
Left	29	106
PM Peak		
Right	71	10
Left	36	3



Recommended treatments:

Right Turn	CHRs
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

It is noted that the AM right turns are slightly BAR / CHRs treatments, but as the assessment is based on peak construction volumes with cumulative volumes from external projects (that may not eventuate) that are only realised temporarily, with volumes decreasing to nearly zero at the end of construction, the provision of a channelised right turn lane at the intersection is not considered necessary. Furthermore, additional traffic management measures such as advanced warning truck turning signage etc, can be provided to improve delineation of intersection and potential for turning movements.

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	9/06/2025

Turn Warrant Assessment

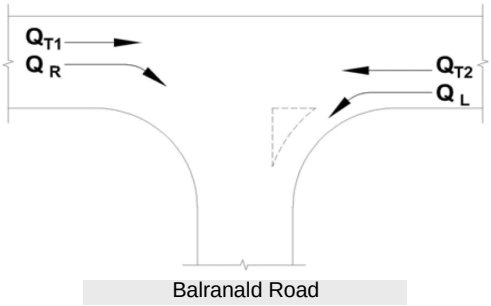
Intersection:	**Yanga Way / Balranald Road**
Year / Peak:	**2040 AM & PM**
Scenario:	**Operations**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	PM Peak
Q_{T1} =	30	29
Q_R =	1	1

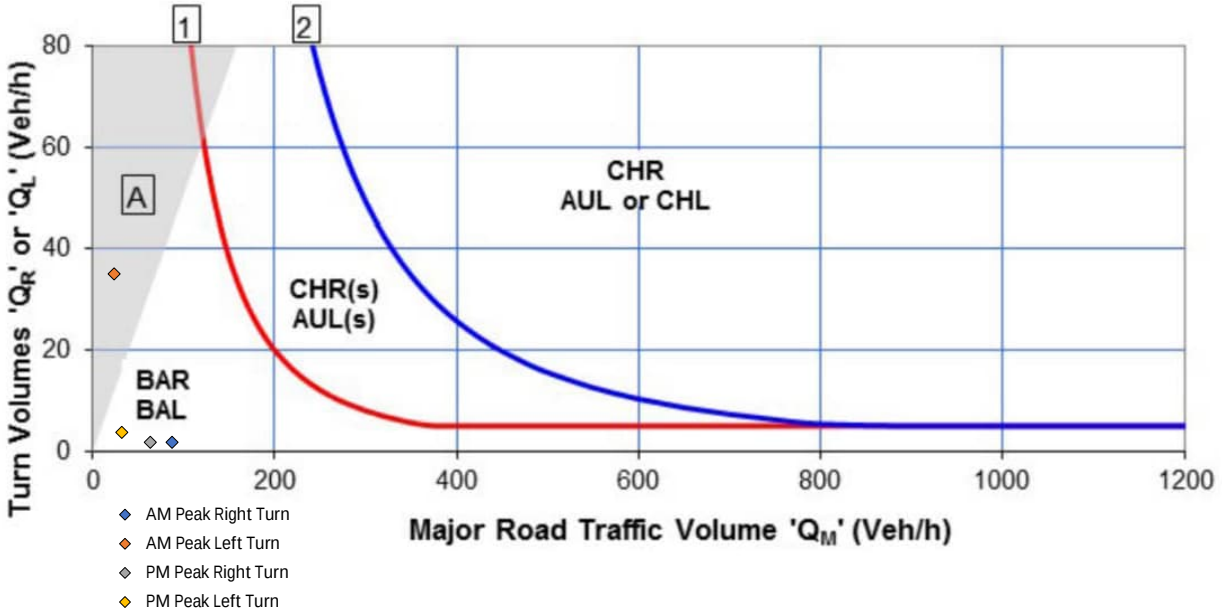
Splitter Island? No

Design speed (km/h) 110



	AM Peak	PM Peak
Q_{T2} =	26	34
Q_L =	35	3

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	91	1
Left	26	35
PM Peak		
Right	66	1
Left	34	3



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	9/06/2025

ACCESS TRAFFIC CONSULTING

Turn Warrant Assessment

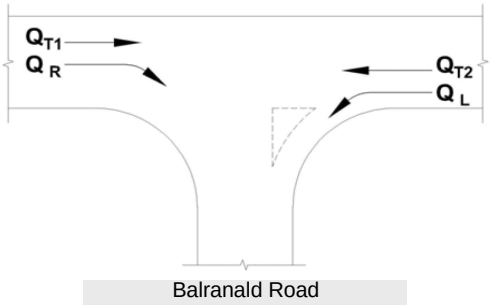
Intersection:	**Yanga Way / Balranald Road**
Year / Peak:	**2060 AM & PM**
Scenario:	**Decommissioning**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	PM Peak
Q_{T1} =	45	42
Q_R =	32	9

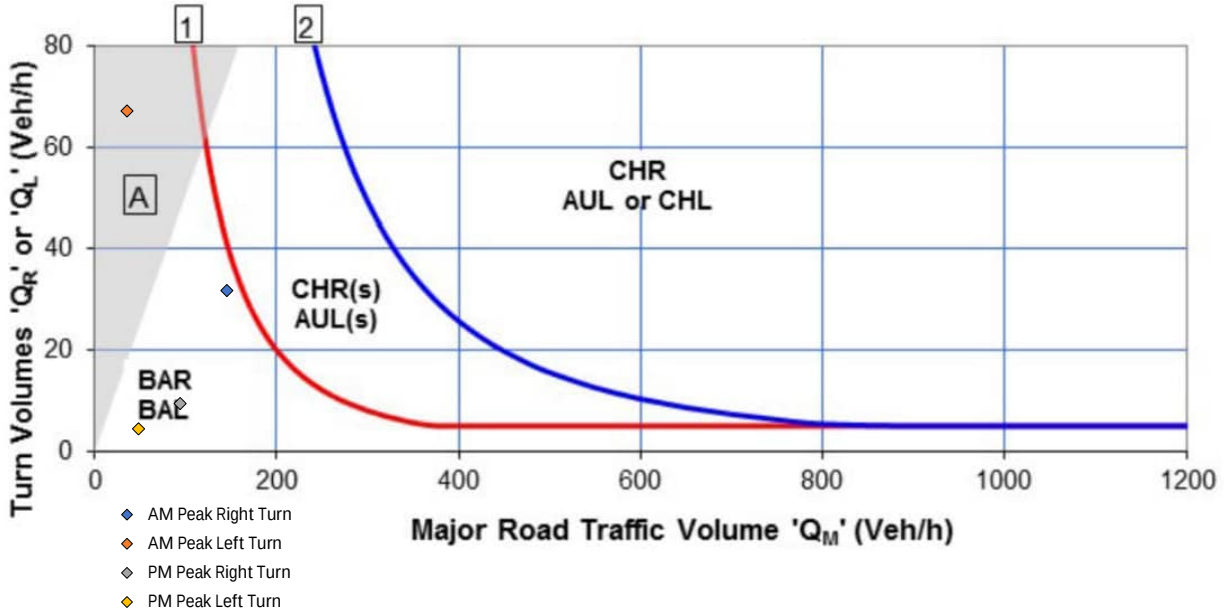
Splitter Island? No

Design speed (km/h) 110



	AM Peak	PM Peak
Q_{T2} =	38	51
Q_L =	67	4

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	150	32
Left	38	67
PM Peak		
Right	98	9
Left	51	4



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	9/06/2025

Appendix K – Project Traffic Impact Calculations

UMW0122-006 | Junction Rivers Wind Farm

Stage 1 Project Traffic Impact % Calculations

Road ID	Road Description	AADT Segment	AADT Segment		Base Data Year	Base Year AADT			Base Year HV%		Base Year HV		10 Yr GR%	Background Prelim Construction 2026 AADT			2026 HV		Background Peak Construction 2027 AADT			2027 HV	
			Start (km)	End (km)		Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Gaz	A-Gaz		Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz
A20	Sturt Highway (Mildura to Euston)	98064	0.000	82.400	2007	1,023	1,047	2,070	26.7%	26.9%	273	282	2.0%	1,490	1,525	3,016	398	411	1,520	1,556	3,076	406	419
A20	Sturt Highway (Euston to Balranald)	98064	82.400	162.100	2007	1,023	1,047	2,070	26.7%	26.9%	273	282	2.0%	1,490	1,525	3,016	398	411	1,520	1,556	3,076	406	419
A20	Sturt Highway (Balranald to Yanga Way)	T0234	162.100	165.500	2021	483	494	977	59.0%	60.1%	285	297	2.0%	533	545	1,079	315	328	544	556	1,100	321	334
-	Yanga Way (Sturt Highway to Balranald Road)	97488	0.000	11.800	2010	272	376	648	*26.9%*	*27.7%*	73	104	2.0%	373	516	890	100	143	381	526	907	102	146
-	Yanga Way (Balranald Road to Stony Crossing Road)	97494	11.800	36.200	2012	283	285	568	26.9%	27.7%	76	79	2.0%	373	376	749	100	104	381	384	764	102	106
-	Yanga Way (Stony Crossing Road to Tooleybuc)	97207	36.200	49.100	2006	221	220	441	34.8%	34.1%	77	75	2.0%	328	327	655	114	111	335	333	668	117	114
MRC	Balranald Road (Yanga Way to SA2)	-	0.000	6.930	2022	25	30	55	40.0%	50.0%	10	15	2.0%	27	32	60	11	16	28	33	61	11	17
MRC	Balranald Road (SA2 to SA3)	-	6.930	7.750	2022	25	30	55	40.0%	50.0%	10	15	2.0%	27	32	60	11	16	28	33	61	11	17
MRC	Balranald Road (SA3 to SA5)	-	7.750	11.095	2022	25	30	55	40.0%	50.0%	10	15	2.0%	27	32	60	11	16	28	33	61	11	17
-	Stony Crossing Road (Yanga Way to Swan Hill Road)	97206	0.000	40.900	2006	122	123	245	18.9%	26.8%	23	33	2.0%	181	183	364	34	49	185	186	371	35	50
-	Swan Hill Road (Swan Hill to Stony Crossing Road)	97200	0.000	11.100	2010	342	362	704	17.0%	16.9%	58	61	2.0%	469	497	966	80	84	479	507	986	81	85
B400	Murray River Highway (Swan Hill to Lake Boga)	-	0.000	16.000	2020	2,900	2,900	5,800	14.9%	17.7%	431	512	2.0%	3,266	3,266	6,532	485	577	3,331	3,331	6,662	495	588

% Increase Stage 1 Prelim Construction			Daily Volumes Stg 1 Prelim Construction			% Increase Stage 1 Peak Construction			Daily Volumes Stg 1 Peak Construction		
Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
0.6%	0.6%	0.6%	1,499	1,534	3,034	0.8%	0.8%	0.8%	1,532	1,568	3,100
0.6%	0.6%	0.6%	1,499	1,534	3,034	0.8%	0.8%	0.8%	1,532	1,568	3,100
6.9%	6.8%	6.9%	570	582	1,153	12.3%	12.0%	12.2%	611	623	1,234
9.9%	7.2%	8.3%	410	553	964	17.6%	12.7%	14.8%	448	593	1,041
6.4%	6.4%	6.4%	397	400	797	27.8%	27.6%	27.7%	487	490	976
0.6%	0.6%	0.6%	330	329	659	1.2%	1.2%	1.2%	339	337	676
214.3%	178.6%	194.8%	85	90	176	612.3%	510.2%	556.6%	197	202	399
162.6%	135.5%	147.8%	71	76	148	518.1%	431.7%	471.0%	171	176	347
81.3%	67.7%	73.9%	49	54	104	159.4%	132.8%	144.9%	72	77	149
12.1%	12.0%	12.1%	203	205	408	55.2%	54.7%	54.9%	287	288	575
4.7%	4.4%	4.6%	491	519	1,010	21.3%	20.1%	20.7%	581	609	1,190
0.3%	0.3%	0.3%	3,275	3,275	6,550	2.5%	2.5%	2.5%	3,415	3,415	6,830

UMW0122-006 | Junction Rivers Wind Farm

Stage 1 Project Traffic Impact % Calculations

Road ID	Road Description	AADT Segment	AADT Segment		Project Traffic (Daily) - Stage 1 Construction																																			
					Gazettal																	A-Gazettal																	Bi-Dir	
			Start (km)	End (km)	1A	1B	1C	1D	1E	1F	2A	2B	3A	3B	4	Water	Fuel	Waste	Prelim Const Staff	Peak Const Staff	Prelim ConstMax	Peak ConstMax	1A	1B	1C	1D	1E	1F	2A	2B	3A	3B	4	Water	Fuel	Waste	Prelim Const Staff	Peak Const Staff	Prelim ConstMax	Peak ConstMax	Prelim ConstTotal	Peak ConstTotal
A20	Sturt Highway (Mildura to Euston)	98064	0.000	82.400	3	0	4	1	1	2	1	3	7	2	2	0	1	1	0	0	**9**	**12**	3	0	4	1	1	2	1	3	7	2	2	0	1	1	0	0	**9**	**12**	**18**	**24**
A20	Sturt Highway (Euston to Balranald)	T0234	82.400	162.100	3	0	4	1	1	2	1	3	7	2	2	0	1	1	0	0	**9**	**12**	3	0	4	1	1	2	1	3	7	2	2	0	1	1	0	0	**9**	**12**	**18**	**24**
A20	Sturt Highway (Balranald to Yanga Way)	T0234	162.100	165.500	3	0	4	1	1	2	1	3	7	2	2	11	1	1	17	44	**37**	**67**	3	0	4	1	1	2	1	3	7	2	2	11	1	1	17	44	**37**	**67**	**74**	**134**
-	Yanga Way (Sturt Highway to Balranald Road)	97488	0.000	11.800	3	0	4	1	1	2	1	3	7	2	2	11	1	1	17	44	**37**	**67**	3	0	4	1	1	2	1	3	7	2	2	11	1	1	17	44	**37**	**67**	**74**	**134**
-	Yanga Way (Balranald Road to Stony Crossing Road)	97494	11.800	36.200	3	9	4	52	26	6	2	3	0	0	2	0	1	0	7	16	**24**	**106**	3	9	4	52	26	6	2	3	0	0	2	0	1	0	7	16	**24**	**106**	**48**	**212**
-	Yanga Way (Stony Crossing Road to Tooleybuc)	97207	36.200	49.100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	**2**	**4**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	**2**	**4**	**4**	**8**
MRC	Balranald Road (Yanga Way to SA2)	-	0.000	6.930	5	8	8	52	27	8	2	5	7	2	3	11	1	1	24	60	**58**	**169**	5	8	8	52	27	8	2	5	7	2	3	11	1	1	24	60	**58**	**169**	**116**	**338**
MRC	Balranald Road (SA2 to SA3)	-	6.930	7.750	3	4	6	23	27	17	2	5	7	2	2	5	1	1	24	60	**44**	**143**	3	4	6	23	27	17	2	5	7	2	2	5	1	1	24	60	**44**	**143**	**88**	**286**
MRC	Balranald Road (SA3 to SA5)	-	7.750	11.095	1	3	2	6	0	1	1	0	7	2	1	2	1	1	12	30	**22**	**44**	1	3	2	6	0	1	1	0	7	2	1	2	1	1	12	30	**22**	**44**	**44**	**88**
-	Stony Crossing Road (Yanga Way to Swan Hill Road)	97206	0.000	40.900	3	9	4	52	26	6	2	3	0	0	2	0	1	0	5	12	**22**	**102**	3	9	4	52	26	6	2	3	0	0	2	0	1	0	5	12	**22**	**102**	**44**	**204**
-	Swan Hill Road (Swan Hill to Stony Crossing Road)	97200	0.000	11.100	3	9	4	52	26	6	2	3	0	0	2	0	1	0	5	12	**22**	**102**	3	9	4	52	26	6	2	3	0	0	2	0	1	0	5	12	**22**	**102**	**44**	**204**
B400	Murray River Highway (Swan Hill to Lake Boga)	-	0.000	16.000	0	9	0	52	25	5	2	0	0	0	0	0	0	0	0	0	**9**	**84**	0	9	0	52	25	5	2	0	0	0	0	0	0	0	0	0	**9**	**84**	**18**	**168**

UMW0122-006 | Junction Rivers Wind Farm

Stage 2 Project Traffic Impact % Calculations

Road ID	Road Description	AADT Segment	AADT Segment		Base Data Year	Base Year AADT			Base Year HV%		Base Year HV		10 Yr GR%	Background Peak Construction 2028 AADT			2028 HV	
			Start (km)	End (km)		Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Gaz	A-Gaz		Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz
A20	Sturt Highway (Mildura to Euston)	98064	0.000	82.400	2007	1,023	1,047	2,070	26.7%	26.9%	273	282	2.0%	1,551	1,587	3,137	414	427
A20	Sturt Highway (Euston to Balranald)	98064	82.400	162.100	2021	1,023	1,047	2,070	26.7%	26.9%	273	282	2.0%	1,175	1,203	2,378	314	324
A20	Sturt Highway (Balranald to Yanga Way)	T0234	162.100	165.500	2021	483	494	977	59.0%	60.1%	285	297	2.0%	555	567	1,122	327	341
-	Yanga Way (Sturt Highway to Balranald Road)	97488	0.000	11.800	2010	272	376	648	26.9%	27.7%	73	104	2.0%	388	537	926	104	149
-	Yanga Way (Balranald Road to SA1)	97494	11.800	19.800	2012	283	285	568	26.9%	27.7%	76	79	2.0%	388	391	780	104	108
-	Yanga Way (SA1 to Stony Crossing Road)	97494	19.800	36.200	2012	283	285	568	26.9%	27.7%	76	79	2.0%	388	391	780	104	108
-	Yanga Way (Stony Crossing Road to Tooleybuc)	97207	36.200	49.100	2006	221	220	441	34.8%	34.1%	77	75	2.0%	342	340	682	119	116
MRC	Balranald Road (Yanga Way to SA2)	-	0.000	6.930	2022	25	30	55	40.0%	50.0%	10	15	2.0%	28	34	62	11	17
MRC	Balranald Road (SA2 to Arundel Road)	-	6.930	10.402	2022	25	30	55	40.0%	50.0%	10	15	2.0%	28	34	62	11	17
MRC	Balranald Road (Arundel Road to SA5)	-	10.402	11.095	2022	25	30	55	40.0%	50.0%	10	15	2.0%	28	34	62	11	17
MRC	Balranald Road (SA5 to SA6)	-	11.095	17.340	2022	25	30	55	40.0%	50.0%	10	15	2.0%	28	34	62	11	17
MRC	Balranald Road (SA6 to SA7)	-	17.340	18.995	2022	25	30	55	40.0%	50.0%	10	15	2.0%	28	34	62	11	17
MRC	Balranald Road (SA7 to SA8)	-	18.995	22.140	2022	25	30	55	40.0%	50.0%	10	15	2.0%	28	34	62	11	17
MRC	Arundel Road (Balranald Road to SA4)	-	0.000	0.710	2022	10	10	20	40.0%	40.0%	4	4	2.0%	11	11	23	5	5
-	Stony Crossing Road (Yanga Way to Swan Hill Road)	97206	0.000	40.900	2006	122	123	245	18.9%	26.8%	23	33	2.0%	189	190	379	36	51
-	Swan Hill Road (Swan Hill to Stony Crossing Road)	97200	0.000	11.100	2010	342	362	704	17.0%	16.9%	58	61	2.0%	488	517	1,005	83	87
B400	Murray River Highway (Swan Hill to Lake Boga)	-	0.000	16.000	2020	2,900	2,900	5,800	14.9%	17.7%	431	512	2.0%	3,398	3,398	6,796	505	600

% Increase Stage 2 Peak Construction		
Gaz	A-Gaz	Bi-Dir
0.6%	0.6%	0.6%
0.8%	0.7%	0.8%
22.3%	21.9%	22.1%
31.9%	23.1%	26.8%
31.7%	31.4%	31.5%
31.7%	31.4%	31.5%
2.3%	2.4%	2.3%
866.7%	722.2%	787.9%
728.1%	606.8%	661.9%
664.2%	553.5%	603.8%
660.7%	550.5%	600.6%
349.9%	291.6%	318.1%
208.7%	173.9%	189.7%
137.1%	137.1%	137.1%
61.0%	60.5%	60.7%
23.5%	22.2%	22.9%
2.6%	2.6%	2.6%

Daily Volumes Stg 2 Peak Construction		
Gaz	A-Gaz	Bi-Dir
1,560	1,596	3,155
1,184	1,212	2,396
679	691	1,370
512	661	1,174
511	514	1,026
511	514	1,026
350	348	698
272	278	550
233	239	472
215	221	436
214	220	434
127	132	259
87	93	179
27	27	53
304	305	609
603	632	1,235
3,486	3,486	6,972

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11.045

Stage 2 Project Traffic Impact % Calculations

Road ID	Road Description	AADT Segment	AADT Segment		Project Traffic (Daily) - Stage 2 Construction																																
					Gazettal															A-Gazettal															Bi-Dir		
			Start (km)	End (km)	1A	1B	1C	1D	2A	2B	3A	3B	4	Water	Fuel	Waste	Staff	Stg 1 Op	Max	1A	1B	1C	1D	2A	2B	3A	3B	4	Water	Fuel	Waste	Staff	Stg 1 Op	Max	Total	LV	HV
A20	Sturt Highway (Mildura to Euston)	98064	0.000	82.400	5	1	1	2	1	2	7	2	2	0	1	1	0	0	**9**	5	1	1	2	1	2	7	2	2	0	1	1	0	0	**9**	**18**	0	18
A20	Sturt Highway (Euston to Balranald)	T0234	82.400	162.100	5	1	1	2	1	2	7	2	2	0	1	1	0	0	**9**	5	1	1	2	1	2	7	2	2	0	1	1	0	0	**9**	**18**	0	18
A20	Sturt Highway (Balranald to Yanga Way)	T0234	162.100	165.500	5	1	1	2	1	2	7	2	2	13	1	1	87	15	**124**	5	1	1	2	1	2	7	2	2	13	1	1	87	15	**124**	**248**	204	44
-	Yanga Way (Sturt Highway to Balranald Road)	97488	0.000	11.800	5	1	1	2	1	2	7	2	2	13	1	1	87	15	**124**	5	1	1	2	1	2	7	2	2	13	1	1	87	15	**124**	**248**	204	44
-	Yanga Way (Balranald Road to SA1)	97494	11.800	19.800	5	62	18	7	3	2	0	0	2	0	1	0	32	0	**123**	5	62	18	7	3	2	0	0	2	0	1	0	32	0	**123**	**246**	64	182
-	Yanga Way (SA1 to Stony Crossing Road)	97494	19.800	36.200	5	62	18	7	3	2	0	0	2	0	1	0	32	0	**123**	5	62	18	7	3	2	0	0	2	0	1	0	32	0	**123**	**246**	64	182
-	Yanga Way (Stony Crossing Road to Tooleybuc)	97207	36.200	49.100	0	0	0	0	0	0	0	0	0	0	0	0	8	0	**8**	0	0	0	0	0	0	0	0	0	0	0	0	8	0	**8**	**16**	16	0
MRC	Balranald Road (Yanga Way to SA2)	-	0.000	6.930	9	62	19	9	3	3	7	2	4	13	1	1	119	15	**244**	9	62	19	9	3	3	7	2	4	13	1	1	119	15	**244**	**488**	268	220
MRC	Balranald Road (SA2 to Arundel Road)	-	6.930	10.402	7	39	13	5	2	2	7	2	3	8	1	1	119	15	**205**	7	39	13	5	2	2	7	2	3	8	1	1	119	15	**205**	**410**	268	142
MRC	Balranald Road (Arundel Road to SA5)	-	10.402	11.095	5	37	12	5	2	2	7	2	2	8	1	1	119	0	**187**	5	37	12	5	2	2	7	2	2	8	1	1	119	0	**187**	**374**	238	136
MRC	Balranald Road (SA5 to SA6)	-	11.095	17.340	5	36	12	5	2	2	7	2	2	8	1	1	119	0	**186**	5	36	12	5	2	2	7	2	2	8	1	1	119	0	**186**	**372**	238	134
MRC	Balranald Road (SA6 to SA7)	-	17.340	18.995	3	21	5	3	1	0	7	2	2	5	1	1	60	0	**99**	3	21	5	3	1	0	7	2	2	5	1	1	60	0	**99**	**197**	119	78
MRC	Balranald Road (SA7 to SA8)	-	18.995	22.140	2	14	4	2	1	0	7	2	1	4	1	1	30	0	**59**	2	14	4	2	1	0	7	2	1	4	1	1	30	0	**59**	**118**	60	58
MRC	Arundel Road (Balranald Road to SA4)	-	0.000	0.710	2	1	4	0	1	1	0	0	1	0	1	1	7	0	**15**	2	1	4	0	1	1	0	0	1	0	1	1	7	0	**15**	**31**	15	16
-	Stony Crossing Road (Yanga Way to Swan Hill Road)	97206	0.000	40.900	5	62	18	7	3	2	0	0	2	0	1	0	24	0	**115**	5	62	18	7	3	2	0	0	2	0	1	0	24	0	**115**	**230**	48	182
-	Swan Hill Road (Swan Hill to Stony Crossing Road)	97200	0.000	11.100	5	62	18	7	3	2	0	0	2	0	1	0	24	0	**115**	5	62	18	7	3	2	0	0	2	0	1	0	24	0	**115**	**230**	48	182
B400	Murray River Highway (Swan Hill to Lake Boga)	-	0.000	16.000	0	62	18	5	3	0	0	0	0	0	0	0	0	0	**88**	0	62	18	5	3	0	0	0	0	0	0	0	0	0	**88**	**176**	0	176

ACCESS TRAFFIC CONSULTING

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Project Traffic Volume Calculations

Road ID	Road Description	AADT Segment	AADT Segment		Base Data Year	Base Year AADT			Base Year HV%			Base Year HV			10 Yr GR%	2026 AADT			2026 HV			2027 AADT			2027 HV			2028 AADT			2028 HV			2040 AADT			2040 HV			2060 AADT			2060 HV		
			Start (km)	End (km)		Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir		Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
A20	Sturt Highway (Mildura to Euston)	98064	0.000	82.400	2007	1,023	1,047	2,070	26.7%	26.9%	273	282	2.0%	1,490	1,525	3,016	398	411	1,520	1,556	3,076	406	419	1,551	1,587	3,137	414	427	1,966	2,013	3,979	525	542	2,922	2,991	5,913	780	805								
A20	Sturt Highway (Euston to Balranald)	98064	82.400	162.100	2021	1,023	1,047	2,070	26.7%	26.9%	273	282	2.0%	1,129	1,156	2,285	301	311	1,152	1,179	2,331	307	318	1,175	1,203	2,378	314	324	1,490	1,525	3,016	398	411	2,215	2,266	4,481	591	610								
A20	Sturt Highway (Balranald to Yanga Way)	T0234	162.100	165.500	2021	483	494	977	59.0%	60.1%	285	297	2.0%	533	545	1,079	315	328	544	556	1,100	321	334	555	567	1,122	327	341	704	720	1,423	415	433	1,046	1,069	2,115	617	643								
-	Yanga Way (Sturt Highway to Balranald Road)	97488	0.000	11.800	2010	272	376	648	26.9%	27.7%	73	104	2.0%	373	516	890	100	143	381	526	907	102	146	388	537	926	104	149	493	681	1,174	132	189	732	1,012	1,744	197	281								
-	Yanga Way (Balranald Road to SA1)	97494	11.800	19.800	2012	283	285	568	26.9%	27.7%	76	79	2.0%	373	376	749	100	104	381	384	764	102	106	388	391	780	104	108	493	496	989	132	138	732	737	1,469	197	204								
-	Yanga Way (SA1 to Stony Crossing Road)	97494	19.800	36.200	2012	283	285	568	26.9%	27.7%	76	79	2.0%	373	376	749	100	104	381	384	764	102	106	388	391	780	104	108	493	496	989	132	138	732	737	1,469	197	204								
-	Yanga Way (Stony Crossing Road to Tooleybuc)	97207	36.200	49.100	2006	221	220	441	34.8%	34.1%	77	75	2.0%	328	327	655	114	111	335	333	668	117	114	342	340	682	119	116	433	431	865	151	147	644	641	1,285	224	219								
MRC	Balranald Road (Yanga Way to SA2)	-	0.000	6.930	2022	25	30	55	40.0%	50.0%	10	15	2.0%	27	32	60	11	16	28	33	61	11	17	28	34	62	11	17	36	43	79	14	21	53	64	117	21	32								
MRC	Balranald Road (SA2 to SA3)	-	6.930	7.750	2022	25	30	55	40.0%	50.0%	10	15	2.0%	27	32	60	11	16	28	33	61	11	17	28	34	62	11	17	36	43	79	14	21	53	64	117	21	32								
MRC	Balranald Road (SA3 to Arundel Road)	-	7.750	10.402	2022	25	30	55	40.0%	50.0%	10	15	2.0%	27	32	60	11	16	28	33	61	11	17	28	34	62	11	17	36	43	79	14	21	53	64	117	21	32								
MRC	Balranald Road (Arundel Road to SA5)	-	10.402	11.095	2022	25	30	55	40.0%	50.0%	10	15	2.0%	27	32	60	11	16	28	33	61	11	17	28	34	62	11	17	36	43	79	14	21	53	64	117	21	32								
MRC	Balranald Road (SA5 to SA6)	-	11.095	17.340	2022	25	30	55	40.0%	50.0%	10	15	2.0%	27	32	60	11	16	28	33	61	11	17	28	34	62	11	17	36	43	79	14	21	53	64	117	21	32								
MRC	Balranald Road (SA6 to SA7)	-	17.340	18.995	2022	25	30	55	40.0%	50.0%	10	15	2.0%	27	32	60	11	16	28	33	61	11	17	28	34	62	11	17	36	43	79	14	21	53	64	117	21	32								
MRC	Balranald Road (SA7 to SA8)	-	18.995	22.140	2022	25	30	55	40.0%	50.0%	10	15	2.0%	27	32	60	11	16	28	33	61	11	17	28	34	62	11	17	36	43	79	14	21	53	64	117	21	32								
MRC	Arundel Road (Balranald Road to SA4)	-	0.000	0.710	2022	10	10	20	40.0%	40.0%	4	4	2.0%	11	11	22	4	4	11	11	22	4	4	11	11	23	5	5	14	14	29	6	6	21	21	42	8	8								
-	Stony Crossing Road (Yanga Way to Swan Hill Road)	97206	0.000	40.900	2006	122	123	245	18.9%	26.8%	23	33	2.0%	181	183	364	34	49	185	186	371	35	50	189	190	379	36	51	239	241	480	45	65	355	358	714	67	96								
-	Swan Hill Road (Swan Hill to Stony Crossing Road)	97200	0.000	11.100	2010	342	362	704	17.0%	16.9%	58	61	2.0%	469	497	966	80	84	479	507	986	81	85	488	517	1,005	83	87	619	656	1,275	105	110	921	974	1,895	156	164								
B400	Murray River Highway (Swan Hill to Lake Boga)	-	0.000	16.000	2020	2,900	2,900	5,800	14.9%	17.7%	431	512	2.0%	3,266	3,266	6,532	485	577	3,331	3,331	6,662	495	588	3,398	3,398	6,796	505	600	4,309	4,309	8,618	640	761	6,403	6,403	12,807	952	1,131								

Project Traffic Impact % Calculations

Road ID	Road Description	AADT Segment	AADT Segment		Stage 1 Prelim Const.			Stage 1 Peak Const.			Stage 2 Construction			Operations			Decommissioning		
			Start (km)	End (km)	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
A20	Sturt Highway (Mildura to Euston)	98064	0.000	82.400	9	9	**18**	12	12	**24**	9	9	**18**	2	2	**4**	6	6	**13**
A20	Sturt Highway (Euston to Balranald)	T0234	82.400	162.100	9	9	**18**	12	12	**24**	9	9	**18**	2	2	**4**	6	6	**13**
A20	Sturt Highway (Balranald to Yanga Way)	T0234	162.100	165.500	37	37	**74**	67	67	**134**	124	124	**248**	32	32	**64**	87	87	**174**
-	Yanga Way (Sturt Highway to Balranald Road)	97488	0.000	11.800	37	37	**74**	67	67	**134**	124	124	**248**	32	32	**64**	87	87	**174**
-	Yanga Way (Balranald Road to SA1)	97494	11.800	19.800	24	24	**48**	106	106	**212**	123	123	**246**	0	0	**0**	86	86	**172**
-	Yanga Way (SA1 to Stony Crossing Road)	97494	19.800	36.200	24	24	**48**	106	106	**212**	123	123	**246**	0	0	**0**	86	86	**172**
-	Yanga Way (Stony Crossing Road to Tooleybuc)	97207	36.200	49.100	2	2	**4**	4	4	**8**	8	8	**16**	0	0	**0**	6	6	**11**
-	Balranald Road (Yanga Way to SA2)	-	0.000	6.930	58	58	**116**	169	169	**338**	244	244	**488**	32	32	**64**	171	171	**342**
	Balranald Road (SA2 to SA3)	-	6.930	7.750	44	44	**88**	143	143	**286**	244	244	**488**	32	32	**64**	171	171	**342**
	Balranald Road (SA3 to Arundel Road)	-	7.750	10.402	22	22	**44**	44	44	**88**	244	244	**488**	16	16	**32**	171	171	**342**
-	Balranald Road (Arundel Road to SA5)	-	10.402	11.095	22	22	**44**	44	44	**88**	187	187	**374**	0	0	**0**	133	131	**262**
-	Balranald Road (SA5 to SA6)	-	11.095	17.340	0	0	**0**	0	0	**0**	186	186	**372**	0	0	**0**	130	130	**260**
-	Balranald Road (SA6 to SA7)	-	17.340	18.995	0	0	**0**	0	0	**0**	99	99	**197**	0	0	**0**	69	69	**138**
-	Balranald Road (SA7 to SA8)	-	18.995	22.140	0	0	**0**	0	0	**0**	59	59	**118**	0	0	**0**	41	41	**82**
-	Arundel Road (Balranald Road to SA4)	-	0.000	0.710	0	0	**0**	0	0	**0**	15	15	**31**	16	16	**32**	11	11	**22**
-	Stony Crossing Road (Yanga Way to Swan Hill Road)	97206	0.000	40.900	22	22	**44**	102	102	**204**	115	115	**230**	0	0	**0**	81	81	**161**
-	Swan Hill Road (Swan Hill to Stony Crossing Road)	97200	0.000	11.100	22	22	**44**	102	102	**204**	115	115	**230**	0	0	**0**	81	81	**161**
B400	Murray River Highway (Swan Hill to Lake Boga)	-	0.000	16.000	9	9	**18**	84	84	**168**	88	88	**176**	0	0	**0**	62	62	**123**

Stage 1 Prelim % Increase			Stage 1 Prelim Const Vols			Stage 1 Peak % Increase			Stage 1 Peak Const Vols			Stage 2 Peak % Increase			Stage 2 Peak Const			Operations % Increase			Operations			Decommissioning %			Decommissioning		
Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
0.6%	0.6%	0.6%	1,499	1,534	3,034	0.8%	0.8%	0.8%	1,532	1,568	3,100	0.6%	0.6%	0.6%	1,560	1,596	3,155	0.1%	0.1%	0.1%	1,968	2,015	3,983	0.2%	0.2%	0.2%	2,928	2,997	5,925
0.8%	0.8%	0.8%	1,138	1,165	2,303	1.0%	1.0%	1.0%	1,164	1,191	2,355	0.8%	0.7%	0.8%	1,184	1,212	2,396	0.1%	0.1%	0.1%	1,492	1,527	3,020	0.3%	0.3%	0.3%	2,221	2,273	4,494
6.9%	**6.8%**	**6.9%**	570	582	1,153	**12.3%**	**12.0%**	**12.2%**	611	623	1,234	**22.3%**	**21.9%**	**22.1%**	679	691	1,370	4.5%	4.4%	4.5%	736	752	1,487	**8.3%**	**8.1%**	**8.2%**	1,132	1,156	2,289
9.9%	**7.2%**	**8.3%**	410	553	964	**17.6%**	**12.7%**	**14.8%**	448	593	1,041	**31.9%**	**23.1%**	**26.8%**	512	661	1,174	**6.5%**	4.7%	**5.5%**	525	713	1,238	**11.9%**	**8.6%**	**10.0%**	819	1,099	1,918
6.4%	**6.4%**	**6.4%**	397	400	797	**27.8%**	**27.6%**	**27.7%**	487	490	976	**31.7%**	**31.4%**	**31.5%**	511	514	1,026	0.0%	0.0%	0.0%	493	496	989	**11.8%**	**11.7%**	**11.7%**	818	823	1,642
6.4%	**6.4%**	**6.4%**	397	400	797	**27.8%**	**27.6%**	**27.7%**	487	490	976	**31.7%**	**31.4%**	**31.5%**	511	514	1,026	0.0%	0.0%	0.0%	493	496	989	**11.8%**	**11.7%**	**11.7%**	818	823	1,642
0.6%	0.6%	0.6%	330	329	659	1.2%	1.2%	1.2%	339	337	676	2.3%	2.4%	2.3%	350	348	698	0.0%	0.0%	0.0%	433	431	865	0.9%	0.9%	0.9%	649	647	1,296
214.3%	**178.6%**	**194.8%**	85	90	176	**612.3%**	**510.2%**	**556.6%**	197	202	399	**866.7%**	**722.2%**	**787.9%**	272	278	550	**89.6%**	**74.7%**	**81.5%**	68	75	143	**321.9%**	**268.3%**	**292.7%**	224	234	458
162.6%	**135.5%**	**147.8%**	71	76	148	**518.1%**	**431.7%**	**471.0%**	171	176	347	**866.7%**	**722.2%**	**787.9%**	272	278	550	**89.6%**	**74.7%**	**81.5%**	68	75	143	**321.9%**	**268.3%**	**292.7%**	224	234	458
81.3%	**67.7%**	**73.9%**	49	54	104	**159.4%**	**132.8%**	**144.9%**	72	77	149	**866.7%**	**722.2%**	**787.9%**	272	278	550	**44.8%**	**37.3%**	**40.7%**	52	59	111	**321.9%**	**268.3%**	**292.7%**	224	234	458
81.3%	**67.7%**	**73.9%**	49	54	104	**159.4%**	**132.8%**	**144.9%**	72	77	149	**664.2%**	**553.5%**	**603.8%**	215	221	436	0.0%	0.0%	0.0%	36	43	79	**246.7%**	**205.6%**	**224.3%**	184	195	379
0.0%	0.0%	0.0%	27	32	60	0.0%	0.0%	0.0%	28	33	61	**660.7%**	**550.5%**	**600.6%**	214	220	434	0.0%	0.0%	0.0%	36	43	79	**245.4%**	**204.5%**	**223.1%**	183	194	377
0.0%	0.0%	0.0%	27	32	60	0.0%	0.0%	0.0%	28	33	61	**349.9%**	**291.6%**	**318.1%**	127	132	259	0.0%	0.0%	0.0%	36	43	79	**130.0%**	**108.3%**	**118.1%**	122	133	255
0.0%	0.0%	0.0%	27	32	60	0.0%	0.0%	0.0%	28	33	61	**208.7%**	**173.9%**	**189.7%**	87	93	179	0.0%	0.0%	0.0%	36	43	79	**77.5%**	**64.6%**	**70.5%**	94	105	199
0.0%	0.0%	0.0%	11	11	22	0.0%	0.0%	0.0%	11	11	22	**137.1%**	**137.1%**	**137.1%**	27	27	53	**112.0%**	**112.0%**	**112.0%**	30	30	61	**50.9%**	**50.9%**	**50.9%**	32	32	64
12.1%	**12.0%**	**12.1%**	203	205	408	**55.2%**	**54.7%**	**54.9%**	287	288	575	**61.0%**	**60.5%**	**60.7%**	304	305	609	0.0%	0.0%	0.0%	239	241	480	**22.6%**	**22.5%**	**22.6%**	436	439	875
4.7%	4.4%	4.6%	491	519	1,010	**21.3%**	**20.1%**	**20.7%**	581	609	1,190	**23.5%**	**22.2%**	**22.9%**	603	632	1,235	0.0%	0.0%	0.0%	619	656	1,275	**8.7%**	**8.3%**	**8.5%**	1,001	1,055	2,056
0.3%	0.3%	0.3%	3,275	3,275	6,550	2.5%	2.5%	2.5%	3,415	3,415	6,830	2.6%	2.6%	2.6%	3,486	3,486	6,972	0.0%	0.0%	0.0%	4,309	4,309	8,618	1.0%	1.0%	1.0%	6,465	6,465	12,930

External Project Traffic Volume Calculations

Road ID	Road Description	AADT Segment	AADT Segment		Balranald Mineral Sands			Baldon Wind Farm			Keri Keri Solar Farm			Keri Keri Wind Farm			Tchelery Wind Farm			Wilan Wind Farm			Overall External Project		
			Start (km)	End (km)	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
A20	Sturt Highway (Mildura to Euston)	98064	0.000	82.400	43	43	**86**	11	11	**22**	11	11	**22**	11	11	**22**	0	0	**0**	11	11	**22**	87	87	**174**
A20	Sturt Highway (Euston to Balranald)	T0234	82.400	162.100	43	43	**86**	11	11	**22**	11	11	**22**	11	11	**22**	0	0	**0**	11	11	**22**	87	87	**174**
A20	Sturt Highway (Balranald to Yanga Way)	T0234	162.100	165.500	95	95	**190**	36	36	**72**	36	36	**72**	36	36	**72**	13	13	**26**	36	36	**72**	252	252	**504**
-	Yanga Way (Sturt Highway to Balranald Road)	97488	0.000	11.800	85	85	**170**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	85	85	**170**
-	Yanga Way (Balranald Road to SA1)	97494	11.800	19.800	85	85	**170**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	85	85	**170**
-	Yanga Way (SA1 to Stony Crossing Road)	97494	19.800	36.200	85	85	**170**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	85	85	**170**
-	Yanga Way (Stony Crossing Road to Tooleybuc)	97207	36.200	49.100	85	85	**170**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	85	85	**170**
-	Balranald Road (Yanga Way to SA2)	-	0.000	6.930	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
	Balranald Road (SA2 to SA3)	-	6.930	7.750	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
	Balranald Road (SA3 to Arundel Road)	-	7.750	10.402	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
-	Balranald Road (Arundel Road to SA5)	-	10.402	11.095	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
-	Balranald Road (SA5 to SA6)	-	11.095	17.340	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
-	Balranald Road (SA6 to SA7)	-	17.340	18.995	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
-	Balranald Road (SA7 to SA8)	-	18.995	22.140	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
-	Arundel Road (Balranald Road to SA4)	-	0.000	0.710	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
-	Stony Crossing Road (Yanga Way to Swan Hill Road)	97206	0.000	40.900	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
-	Swan Hill Road (Swan Hill to Stony Crossing Road)	97200	0.000	11.100	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
B400	Murray River Highway (Swan Hill to Lake Boga)	-	0.000	16.000	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**

Stage 1 Prelim + External			Stg 1 Prelim + Ext % Inc			Stage 1 Peak + External			Stg 1 Peak + Ext % Inc			Stage 2 Peak + External			Stg 2 Peak + Ext % Inc		
Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
1,586	1,621	3,208	**6.4%**	**6.3%**	**6.4%**	1,619	1,655	3,274	**6.6%**	**6.5%**	**6.6%**	1,647	1,683	3,329	**6.2%**	**6.0%**	**6.1%**
1,225	1,252	2,477	**8.5%**	**8.3%**	**8.4%**	1,251	1,278	2,529	**8.8%**	**8.6%**	**8.7%**	1,271	1,299	2,570	**8.2%**	**8.0%**	**8.1%**
822	834	1,657	**54.2%**	**53.0%**	**53.6%**	863	875	1,738	**59.8%**	**58.5%**	**59.1%**	931	943	1,874	**67.8%**	**66.3%**	**67.0%**
495	638	1,134	**32.7%**	**23.6%**	**27.4%**	533	678	1,211	**40.7%**	**29.4%**	**34.2%**	597	746	1,344	**53.8%**	**38.9%**	**45.2%**
482	485	967	**29.2%**	**29.0%**	**29.1%**	572	575	1,146	**51.1%**	**50.8%**	**51.0%**	596	599	1,196	**53.5%**	**53.2%**	**53.4%**
482	485	967	**29.2%**	**29.0%**	**29.1%**	572	575	1,146	**51.1%**	**50.8%**	**51.0%**	596	599	1,196	**53.5%**	**53.2%**	**53.4%**
415	414	829	**26.5%**	**26.6%**	**26.6%**	424	422	846	**27.1%**	**27.2%**	**27.2%**	435	433	868	**27.2%**	**27.3%**	**27.3%**
85	90	176	**214.3%**	**178.6%**	**194.8%**	197	202	399	**624.5%**	**520.4%**	**567.7%**	272	278	550	**866.7%**	**722.2%**	**787.9%**
71	76	148	**162.6%**	**135.5%**	**147.8%**	171	176	347	**528.4%**	**440.4%**	**480.4%**	272	278	550	**866.7%**	**722.2%**	**787.9%**
49	54	104	**81.3%**	**67.7%**	**73.9%**	72	77	149	**162.6%**	**135.5%**	**147.8%**	272	278	550	**866.7%**	**722.2%**	**787.9%**
49	54	104	**81.3%**	**67.7%**	**73.9%**	72	77	149	**162.6%**	**135.5%**	**147.8%**	272	278	550	**866.7%**	**722.2%**	**787.9%**
27	32	60	0.0%	0.0%	0.0%	28	33	61	0.0%	0.0%	0.0%	214	220	434	**660.7%**	**550.5%**	**600.6%**
27	32	60	0.0%	0.0%	0.0%	28	33	61	0.0%	0.0%	0.0%	127	132	259	**349.9%**	**291.6%**	**318.1%**
27	32	60	0.0%	0.0%	0.0%	28	33	61	0.0%	0.0%	0.0%	87	93	179	**208.7%**	**173.9%**	**189.7%**
11	11	22	0.0%	0.0%	0.0%	11	11	22	0.0%	0.0%	0.0%	27	27	53	**137.1%**	**137.1%**	**137.1%**
203	205	408	**12.1%**	**12.0%**	**12.1%**	287	288	575	**56.3%**	**55.8%**	**56.0%**	304	305	609	**61.0%**	**60.5%**	**60.7%**
491	519	1,010	4.7%	4.4%	4.6%	581	609	1,190	**21.7%**	**20.5%**	**21.1%**	603	632	1,235	**23.5%**	**22.2%**	**22.9%**
3,275	3,275	6,550	0.3%	0.3%	0.3%	3,415	3,415	6,830	2.6%	2.6%	2.6%	3,486	3,486	6,972	2.6%	2.6%	2.6%

Appendix L – Project Pavement Loading Calculations

UMW0122-006 | Junction Rivers Wind Farm

Stage 1 - Project Pavement Loadings

TASK 1B - OFF SITE ROAD WORKS

Activity Description	Project Volume	Vehicle	Origin
External Access Intersection Upgrade Pavement Materials (Stage 1)	38	Truck Trailer	Mawsons Quarry Lake Boga
Site Access SA2 Upgrade Pavement Materials (Stage 1)	25	Truck Trailer	Mawsons Quarry Lake Boga
Site Access SA3 Upgrade Pavement Materials (Stage 1)	25	Truck Trailer	Mawsons Quarry Lake Boga
Site Access SA5 Upgrade Pavement Materials (Stage 1)	25	Truck Trailer	Mawsons Quarry Lake Boga
Balranald Road Upgrade Gravel Pavement (Stage 1)	666	Truck Trailer	Mawsons Quarry Lake Boga

Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	0	0
Sturt Highway (Balranald to Yanga Way)	0	0
Yanga Way (Sturt Highway to Balranald Road)	0	0
Balranald Road (Yanga Way to SA2)	4,557	1,215
Balranald Road (SA2 to SA3)	1,845	492
Balranald Road (SA3 to SA5)	1,542	411
Yanga Way (Balranald Road to Stony Crossing Road)	4,791	1,278
Stony Crossing Road (Yanga Way to Swan Hill Road)	4,791	1,278
Swan Hill Road (Stony Crossing Road to Swan Hill)	4,791	1,278
Murray River Highway (Swan Hill to Lake Boga)	4,791	1,278

TASK 1C - MOBILISATION & ESTABLISHMENT

Activity Description	Project Volume	Vehicle	Origin
Construction Mobilisation - Ancilliary Equipment (via SA2)	13	Semi / Low Loader	Mildura
	13	Semi / Low Loader	Swan Hill
Construction Mobilisation - Ancilliary Equipment (via SA3)	13	Semi / Low Loader	Mildura
	13	Semi / Low Loader	Swan Hill
Construction Mobilisation - Ancilliary Equipment (via SA5)	13	Semi / Low Loader	Mildura
	13	Semi / Low Loader	Swan Hill
Construction Mobilisation - EW Plant (via SA2)	10	Semi / Low Loader	Mildura
	10	Semi / Low Loader	Swan Hill
Construction Mobilisation - EW Plant (via SA3)	10	Semi / Low Loader	Mildura
	10	Semi / Low Loader	Swan Hill
Construction Mobilisation - EW Plant (via SA5)	10	Semi / Low Loader	Mildura
	10	Semi / Low Loader	Swan Hill
Construction Compound Establishment & Buildings (via SA3)	13	Semi / Low Loader	Mildura
	13	Semi / Low Loader	Swan Hill
Batch Plant Area Establishment (via SA3)	13	Semi / Low Loader	Mildura
	13	Semi / Low Loader	Swan Hill

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	456	47
Sturt Highway (Balranald to Yanga Way)	456	47
Yanga Way (Sturt Highway to Balranald Road)	456	47
Balranald Road (Yanga Way to SA2)	912	94
Balranald Road (SA2 to SA3)	690	71
Balranald Road (SA3 to SA5)	222	23
Yanga Way (Balranald Road to Stony Crossing Road)	456	47
Stony Crossing Road (Yanga Way to Swan Hill Road)	456	47
Swan Hill Road (Stony Crossing Road to Swan Hill)	456	47

TASK 1D - INTERNAL ACCESS ROADS & HARDSTANDS

Activity Description	Project Volume	Vehicle	Origin
Internal Access Track (HV) Gravel Pavement Materials (via SA2)	2,340	Truck Trailer	Mawsons Quarry Lake Boga
Internal Access Track (HV) Gravel Pavement Materials (via SA3)	1,640	Truck Trailer	Mawsons Quarry Lake Boga
Internal Access Track (HV) Gravel Pavement Materials (via SA5)	423	Truck Trailer	Mawsons Quarry Lake Boga
Internal Access Track (LV) Gravel Pavement Materials (via SA2)	36	Truck Trailer	Mawsons Quarry Lake Boga
Turbine Hardstand Area Gravel (via SA2)	3,719	Truck Trailer	Mawsons Quarry Lake Boga
Turbine Hardstand Area Gravel (via SA3)	2,188	Truck Trailer	Mawsons Quarry Lake Boga
Turbine Hardstand Area Gravel (via SA5)	657	Truck Trailer	Mawsons Quarry Lake Boga
Culverts/Pipes (via SA2)	8	Semi	Mildura
	8	Semi	Swan Hill
Culverts/Pipes (via SA3)	6	Semi	Mildura
	6	Semi	Swan Hill
Culverts/Pipes (via SA5)	2	Semi	Mildura
	2	Semi	Swan Hill

Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs
Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	74	8
Sturt Highway (Balranald to Yanga Way)	74	8
Yanga Way (Sturt Highway to Balranald Road)	74	8
Balranald Road (Yanga Way to SA2)	67,816	18,060
Balranald Road (SA2 to SA3)	30,253	8,056
Balranald Road (SA3 to SA5)	6,657	1,773
Yanga Way (Balranald Road to Stony Crossing Road)	67,742	18,053
Stony Crossing Road (Yanga Way to Swan Hill Road)	67,742	18,053
Swan Hill Road (Stony Crossing Road to Swan Hill)	67,742	18,053
Murray River Highway (Swan Hill to Lake Boga)	67,668	18,045

TASK 1E - SITE COMPOUND AREAS (CIVIL)

Activity Description	Project Volume	Vehicle	Origin	
Substation (SA3) Slab Wet Concrete	458	Concrete Truck	SA3 Batch Plant	*Internal*
Substation (SA3) Slab Concrete Sand/Aggregates	99	Truck Trailer	Mawsons Quarry Lake Boga	
Substation (SA3) Slab Cement	12	Semi	Mildura	
	12		Swan Hill	
Substation (SA3) Slab Reinforcing Steel	20	Semi	Mildura	
	20		Swan Hill	
Substation (SA3) Slab Water	5	Semi Water Truck	Balranald	
BESS (SA3) Slab Wet Concrete	257	Concrete Truck	SA3 Batch Plant	*Internal*
BESS (SA3) Slab Concrete Sand/Aggregates	56	Truck Trailer	Mawsons Quarry Lake Boga	
BESS (SA3) Slab Cement	7	Semi	Mildura	
	7		Swan Hill	
BESS (SA3) Slab Reinforcing Steel	11	Semi	Mildura	
	11		Swan Hill	
BESS (SA3) Slab Water	3	Semi Water Truck	Balranald	
Batch Plant (SA3) Slab Wet Concrete	116	Concrete Truck	SA3 Batch Plant	*Internal*
Batch Plant (SA3) Slab Concrete Sand/Aggregates	25	Truck Trailer	Mawsons Quarry Lake Boga	
Batch Plant (SA3) Slab Cement	3	Semi	Mildura	
	3		Swan Hill	
Batch Plant (SA3) Slab Reinforcing Steel	5	Semi	Mildura	
	5		Swan Hill	
Batch Plant (SA3) Slab Water	2	Semi Water Truck	Balranald	
Construction Compound (SA3) Slab Wet Concrete	79	Concrete Truck	SA3 Batch Plant	*Internal*
Construction Compound (SA3) Slab Concrete Sand/Aggregates	17	Truck Trailer	Mawsons Quarry Lake Boga	
Construction Compound (SA3) Slab Cement	2	Semi	Mildura	
	2		Swan Hill	
Construction Compound (SA3) Slab Reinforcing Steel	4	Semi	Mildura	
	4		Swan Hill	
Construction Compound (SA3) Slab Water	1	Semi Water Truck	Balranald	
Operational and Maintenance Facility (SA3) Slab Wet Concrete	87	Concrete Truck	SA3 Batch Plant	*Internal*
Operational and Maintenance Facility (SA3) Slab Concrete Sand/Aggregates	19	Truck Trailer	Mawsons Quarry Lake Boga	
Operational and Maintenance Facility (SA3) Slab Cement	3	Semi	Mildura	
	3		Swan Hill	
Operational and Maintenance Facility (SA3) Slab Reinforcing Steel	4	Semi	Mildura	
	4		Swan Hill	
Operational and Maintenance Facility (SA3) Slab Water	1	Semi Water Truck	Balranald	
Substation / Switching Station Area Gravel (via SA3)	950	Truck Trailer	Mawsons Quarry Lake Boga	
Battery Storage Area Gravel (via SA3)	236	Truck Trailer	Mawsons Quarry Lake Boga	
Batch Plant Area Gravel (via SA3)	299	Truck Trailer	Mawsons Quarry Lake Boga	
Site Construction Compound Gravel (via SA3)	203	Truck Trailer	Mawsons Quarry Lake Boga	
Operational and Maintenance Facility Area Gravel (via SA3)	250	Truck Trailer	Mawsons Quarry Lake Boga	
Site Laydown Area Gravel (via SA3)	225	Truck Trailer	Mawsons Quarry Lake Boga	

Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs
Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs
Concrete Truck (4 Axle Rigid) Unloaded (0%)	0.46	ESAs
Concrete Truck (4 Axle Rigid) Loaded (100%)	4.09	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	338	35
Sturt Highway (Balranald to Yanga Way)	397	41
Yanga Way (Sturt Highway to Balranald Road)	397	41
Balranald Road (Yanga Way to SA2)	15,365	4,333
Balranald Road (SA2 to SA3)	15,365	4,333
Balranald Road (SA3 to SA5)	0	0
Yanga Way (Balranald Road to Stony Crossing Road)	14,969	3,936
Stony Crossing Road (Yanga Way to Swan Hill Road)	14,969	3,936
Swan Hill Road (Stony Crossing Road to Swan Hill)	14,969	3,936
Murray River Highway (Swan Hill to Lake Boga)	14,631	3,902

TASK 1F - TURBINE FOUNDATIONS

Activity Description	Project Volume	Vehicle	Origin	
Concrete aggregates for turbine footings (SA2)	510	Truck Trailer	Mawsons Quarry Lake Boga	
Reinforcing steel for turbine footings (SA2)	100	Semi	Mildura	
	100		Swan Hill	
Other concrete supplies for turbine footings (SA2)	58	Semi	Mildura	
	58		Swan Hill	
Water for turbine footings concrete (SA2)	23	Semi Water Truck	Balranald	
Wet concrete for turbine footings (SA2)	2,267	Concrete Truck	SA3 Batch Plant	
Formwork (via SA2)	9	Semi	Mildura	
	9		Swan Hill	
Geomembrane (via SA2)	17	Semi	Mildura	
	17		Swan Hill	
Concrete aggregates for turbine footings (SA3)	300	Truck Trailer	Mawsons Quarry Lake Boga	
Reinforcing steel for turbine footings (SA3)	59	Semi	Mildura	
	59		Swan Hill	
Other concrete supplies for turbine footings (SA3)	34	Semi	Mildura	
	34		Swan Hill	
Water for turbine footings concrete (SA3)	13	Semi Water Truck	Balranald	
Wet concrete for turbine footings (SA3)	1,333	Concrete Truck	SA3 Batch Plant	*Internal*
Formwork (via SA3)	5	Semi	Mildura	
	5		Swan Hill	
Geomembrane (via SA3)	10	Semi	Mildura	
	10		Swan Hill	
Concrete aggregates for turbine footings (SA5)	90	Truck Trailer	Mawsons Quarry Lake Boga	
Reinforcing steel for turbine footings (SA5)	18	Semi	Mildura	
	18		Swan Hill	
Other concrete supplies for turbine footings (SA5)	10	Semi	Mildura	
	10		Swan Hill	
Water for turbine footings concrete (SA5)	4	Semi Water Truck	Balranald	
Wet concrete for turbine footings (SA5)	400	Concrete Truck	SA3 Batch Plant	
Formwork (via SA5)	2	Semi	Mildura	
	2		Swan Hill	
Geomembrane (via SA5)	3	Semi	Mildura	
	3		Swan Hill	

Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs
Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs
Concrete Truck (4 Axle Rigid) Unloaded (0%)	0.46	ESAs
Concrete Truck (4 Axle Rigid) Loaded (100%)	4.09	ESAs

Route Summary	Loaded	Unloaded	
Sturt Highway (Mildura to Balranald)	1,598	165	
Sturt Highway (Balranald to Yanga Way)	1,795	186	
Yanga Way (Sturt Highway to Balranald Road)	1,795	186	
Balranald Road (Yanga Way to SA2)	10,901	5,232	
Balranald Road (SA2 to SA3)	7,690	1,699	
Balranald Road (SA2 to SA3)	*9,271*	*1,043*	*Concrete Trucks SA3 to SA2*
Balranald Road (SA3 to SA5)	219	23	
Yanga Way (Balranald Road to Stony Crossing Road)	7,133	1,641	
Stony Crossing Road (Yanga Way to Swan Hill Road)	7,133	1,641	
Swan Hill Road (Stony Crossing Road to Swan Hill)	7,133	1,641	
Murray River Highway (Swan Hill to Lake Boga)	5,535	1,476	

TASK 2A - CABLING

Activity Description	Project Volume	Vehicle	Origin
Underground Powerline Cable (via SA2)	4	Semi	Mildura
	4		Swan Hill
Underground Powerline Bedding Sand (via SA2)	105	Truck Trailer	Mawsons Quarry Lake Boga
Underground Powerline Cable (via SA3)	5	Semi	Mildura
	5		Swan Hill
Underground Powerline Bedding Sand (via SA3)	119	Truck Trailer	Mawsons Quarry Lake Boga
Underground Powerline Cable (via SA5)	4	Semi	Mildura
	4		Swan Hill
Underground Powerline Bedding Sand (via SA5)	85	Truck Trailer	Mawsons Quarry Lake Boga
Overhead Powerline Cable (via SA3)	5	Semi	Mildura
	5		Swan Hill
Overhead Powerline Poles (via SA3)	2	Semi	Mildura
	2		Swan Hill

Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs
Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	91	9
Sturt Highway (Balranald to Yanga Way)	91	9
Yanga Way (Sturt Highway to Balranald Road)	91	9
Balranald Road (Yanga Way to SA2)	2,083	526
Balranald Road (SA2 to SA3)	1,398	349
Balranald Road (SA3 to SA5)	557	143
Yanga Way (Balranald Road to Stony Crossing Road)	1,992	516
Stony Crossing Road (Yanga Way to Swan Hill Road)	1,992	516
Swan Hill Road (Stony Crossing Road to Swan Hill)	1,992	516
Murray River Highway (Swan Hill to Lake Boga)	1,900	507

TASK 2B - SITE COMPOUND AREAS (ELECTRICAL WORKS)

Activity Description	Project Volume	Vehicle	Origin
Transformer (via SA3)	1	Special	Port Adelaide
Switchroom (via SA3)	1	Special	Port Adelaide
Electrical Components (via SA3)	100	Semi	Mildura
	100		Swan Hill
Substation / Switching Station Area Establishment & Buildings (via SA3)	20	Semi	Mildura
	20		Swan Hill
Battery Storage Establishment (via SA3)	20	Semi	Mildura
	20		Swan Hill
Operational and Maintenance Facility Establishment (via SA3)	13	Semi	Mildura
	13		Swan Hill

Transformer Unloaded (0%)	37.77	ESAs
Transformer Loaded (100%)	89.31	ESAs
Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	930	153
Sturt Highway (Balranald to Yanga Way)	930	153
Yanga Way (Sturt Highway to Balranald Road)	930	153
Balranald Road (Yanga Way to SA2)	1,682	231
Balranald Road (SA2 to SA3)	1,682	231
Balranald Road (SA3 to SA5)	0	0
Yanga Way (Balranald Road to Stony Crossing Road)	752	78
Stony Crossing Road (Yanga Way to Swan Hill Road)	752	78
Swan Hill Road (Stony Crossing Road to Swan Hill)	752	78
Murray River Highway (Swan Hill to Lake Boga)	752	78

TASK 3A - TURBINE TRANSPORTATION

Activity Description	Project Volume	Vehicle	Origin
Turbine Blades (SA2)	51	Special	Port Adelaide
Turbine Blades (SA3)	30	Special	Port Adelaide
Turbine Blades (SA5)	9	Special	Port Adelaide
Turbine Nacelles (SA2)	17	Special	Port Adelaide
Turbine Nacelles (SA3)	10	Special	Port Adelaide
Turbine Nacelles (SA5)	3	Special	Port Adelaide
Turbine Drive Trains (SA2)	17	Special	Port Adelaide
Turbine Drive Trains (SA3)	10	Special	Port Adelaide
Turbine Drive Trains (SA5)	3	Special	Port Adelaide
Turbine Hub & Nose Cone (SA2)	17	Special	Port Adelaide
Turbine Hub & Nose Cone (SA3)	10	Special	Port Adelaide
Turbine Hub & Nose Cone (SA5)	3	Special	Port Adelaide
Tower Sections 1-2 (SA2)	34	Special	Port Adelaide
Tower Sections 1-2 (SA3)	20	Special	Port Adelaide
Tower Sections 1-2 (SA5)	6	Special	Port Adelaide
Tower Sections 3-7 (SA2)	85	Special	Port Adelaide
Tower Sections 3-7 (SA3)	50	Special	Port Adelaide
Tower Sections 3-7 (SA5)	15	Special	Port Adelaide
Tower Base Rings (SA2)	6	Semi	Port Adelaide
Tower Base Rings (SA3)	4	Semi	Port Adelaide
Tower Base Rings (SA5)	1	Semi	Port Adelaide
Tower Assembly Components (SA2)	17	Semi	Port Adelaide
Tower Assembly Components (SA3)	10	Semi	Port Adelaide
Tower Assembly Components (SA5)	3	Semi	Port Adelaide
Performance Monitoring Masts (SA2)	5	Special	Port Adelaide
Performance Monitoring Masts (SA3)	0	Special	Port Adelaide
Performance Monitoring Masts (SA5)	0	Special	Port Adelaide

Turbine Blade Transport Unloaded (0%)	7.95	ESAs
Turbine Blade Transport Loaded (100%)	11.47	ESAs
Turbine Nacelle Transport Unloaded (0%)	4.88	ESAs
Turbine Nacelle Transport Loaded (100%)	24.41	ESAs
Turbine Drive Train Transport Unloaded (0%)	4.98	ESAs
Turbine Drive Train Transport Loaded (100%)	22.78	ESAs
Turbine Hub Transport Unloaded (0%)	4.77	ESAs
Turbine Hub Transport Loaded (100%)	12.38	ESAs
Turbine Tower Section (1-2) Transport Unloaded (Average) (0%)	2.59	ESAs
Turbine Tower Section (1-2) Transport Loaded (Average) (100%)	14.86	ESAs
Turbine Tower Section (3-7) Transport Unloaded (Average) (0%)	2.73	ESAs
Turbine Tower Section (3-7) Transport Loaded (Average) (100%)	22.87	ESAs
PMM Unloaded (0%)	1.87	ESAs
PMM Loaded (100%)	7.91	ESAs
Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Euston)	6,348	1,034
Sturt Highway (Euston to Balranald)	7,381	1,749
Sturt Highway (Balranald to Yanga Way)	7,381	1,749
Yanga Way (Sturt Highway to Balranald Road)	7,381	1,749
Balranald Road (Yanga Way to SA2)	7,381	1,749
Balranald Road (SA2 to SA3)	3,181	754
Balranald Road (SA3 to SA5)	734	174
Yanga Way (Balranald Road to Stony Crossing Road)	0	0
Stony Crossing Road (Yanga Way to Swan Hill Road)	0	0
Swan Hill Road (Stony Crossing Road to Swan Hill)	0	0
Murray River Highway (Swan Hill to Lake Boga)	0	0

TASK 3B - TURBINE ERECTION

Activity Description	Project Volume	Vehicle	Origin
Site Crane (Turbines)	8	Special / Crane	Port Adelaide
Secondary Crane	1	Crane / Semi	Mildura

Special Crane (Assume B-Double) Unloaded (0%)	1.69	ESAs
Special Crane (Assume B-Double) Loaded (100%)	6.91	ESAs
Crane / Semi Unloaded (0%)	0.51	ESAs
Crane / Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Euston to Balranald)	60	14
Sturt Highway (Balranald to Yanga Way)	60	14
Yanga Way (Sturt Highway to Balranald Road)	60	14
Balranald Road (Yanga Way to SA2)	60	14
Balranald Road (SA2 to SA3)	60	14
Balranald Road (SA3 to SA5)	60	14
Yanga Way (Balranald Road to Stony Crossing Road)	0	0
Stony Crossing Road (Yanga Way to Swan Hill Road)	0	0
Swan Hill Road (Stony Crossing Road to Swan Hill)	0	0
Murray River Highway (Swan Hill to Lake Boga)	0	0

TASK 4 - FINALISATION / COMMISSIONING / DEMOBILISATION

Activity Description	Project Volume	Vehicle	Origin
Construction Demobilisation - Ancilliary Equipment (via SA2)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Construction Demobilisation - Ancilliary Equipment (via SA3)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Construction Demobilisation - Ancilliary Equipment (via SA5)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Construction Demobilisation - EW Plant (via SA2)	10	Semi / Low Loader	Mildura
	10		Swan Hill
Construction Demobilisation - EW Plant (via SA3)	10	Semi / Low Loader	Mildura
	10		Swan Hill
Construction Demobilisation - EW Plant (via SA5)	10	Semi / Low Loader	Mildura
	10		Swan Hill
Construction Compound Decommissioning (via SA3)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Batch Plant Area Decommissioning (via SA3)	13	Semi / Low Loader	Mildura
	13		Swan Hill

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	456	47
Sturt Highway (Balranald to Yanga Way)	456	47
Yanga Way (Sturt Highway to Balranald Road)	456	47
Balranald Road (Yanga Way to SA2)	912	94
Balranald Road (SA2 to SA3)	690	71
Balranald Road (SA3 to SA5)	222	23
Yanga Way (Balranald Road to Stony Crossing Road)	456	47
Stony Crossing Road (Yanga Way to Swan Hill Road)	456	47
Swan Hill Road (Stony Crossing Road to Swan Hill)	456	47

TASK W - SITE WATER

Activity Description	Project Volume	Vehicle	Origin
Site Water (via SA2)	2,550	Semi Water Truck	Balranald
Site Water (via SA3)	1,500	Semi Water Truck	Balranald
Site Water (via SA5)	450	Semi Water Truck	Balranald

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	0	0
Sturt Highway (Balranald to Yanga Way)	22,185	2,295
Yanga Way (Sturt Highway to Balranald Road)	22,185	2,295
Balranald Road (Yanga Way to SA2)	22,185	2,295
Balranald Road (SA2 to SA3)	9,614	995
Balranald Road (SA3 to SA5)	2,219	230
Yanga Way (Balranald Road to Stony Crossing Road)	0	0
Stony Crossing Road (Yanga Way to Swan Hill Road)	0	0
Swan Hill Road (Stony Crossing Road to Swan Hill)	0	0
Murray River Highway (Swan Hill to Lake Boga)	0	0

TASK F - SITE FUEL

Activity Description	Project Volume	Vehicle	Origin
Fuel (via SA2)	33	Semi Tanker	Mildura
	33		Swan Hill
Fuel (via SA3)	19	Semi Tanker	Mildura
	19		Swan Hill
Fuel (via SA5)	6	Semi Tanker	Mildura
	6		Swan Hill

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	283	29
Sturt Highway (Balranald to Yanga Way)	283	29
Yanga Way (Sturt Highway to Balranald Road)	283	29
Balranald Road (Yanga Way to SA2)	567	59
Balranald Road (SA2 to SA3)	247	26
Balranald Road (SA3 to SA5)	59	6
Yanga Way (Balranald Road to Stony Crossing Road)	283	29
Stony Crossing Road (Yanga Way to Swan Hill Road)	283	29
Swan Hill Road (Stony Crossing Road to Swan Hill)	283	29
Murray River Highway (Swan Hill to Lake Boga)	0	0

TASK WC - WASTE COLLECTION

Activity Description	Project Volume	Vehicle	Origin
Waste Collection (via SA2)	78	Semi	Mildura
Waste Collection (via SA3)	78	Semi	Mildura
Waste Collection (via SA5)	78	Semi	Mildura

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	1,157	120
Sturt Highway (Balranald to Yanga Way)	1,157	120
Yanga Way (Sturt Highway to Balranald Road)	1,157	120
Balranald Road (Yanga Way to SA2)	1,157	120
Balranald Road (SA2 to SA3)	771	80
Balranald Road (SA3 to SA5)	386	40
Yanga Way (Balranald Road to Stony Crossing Road)	0	0
Stony Crossing Road (Yanga Way to Swan Hill Road)	0	0
Swan Hill Road (Stony Crossing Road to Swan Hill)	0	0
Murray River Highway (Swan Hill to Lake Boga)	0	0

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Stage 1 Construction Pavement Impact % Calculations

Road ID	Road Description	AADT Segment	AADT Segment		Base Data Year	Base Year AADT			Base Year HV%		Base Year HV		10 Yr GR%	2026	AADT		2026	HV	ESAs / HV	Duration (Days)	Background Pavement Loading (ESAs)		
			Start (km)	End (km)		Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Gaz	A-Gaz		Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz			Gaz	A-Gaz	Bi-Dir
A20	Sturt Highway (Mildura to Euston)	98064	0.000	82.400	2007	1,023	1,047	2,070	26.7%	26.9%	273	282	2.0%	1,490	1,525	3,016	398	411	3.19	548	694,609	717,509	1,412,118
A20	Sturt Highway (Euston to Balranald)	98064	82.400	162.100	2007	1,023	1,047	2,070	26.7%	26.9%	273	282	2.0%	1,490	1,525	3,016	398	411	3.19	548	694,609	717,509	1,412,118
A20	Sturt Highway (Balranald to Yanga Way)	T0234	162.100	165.500	2021	483	494	977	59.0%	60.1%	285	297	2.0%	533	545	1,079	315	328	3.19	548	549,567	572,707	1,122,273
-	Yanga Way (Sturt Highway to Balranald Road)	97488	0.000	11.800	2010	272	376	648	26.9%	27.7%	73	104	2.0%	373	516	890	100	143	3.19	548	175,135	249,889	425,025
-	Yanga Way (Balranald Road to Stony Crossing Road)	97494	11.800	36.200	2012	283	285	568	26.9%	27.7%	76	79	2.0%	373	376	749	100	104	3.19	548	175,142	182,056	357,198
-	Yanga Way (Stony Crossing Road to Tooleybuc)	97207	36.200	49.100	2006	221	220	441	34.8%	34.1%	77	75	2.0%	328	327	655	114	111	3.19	548	199,834	194,643	394,477
MRC	Balranald Road (Yanga Way to SA2)	-	0.000	6.930	2022	25	30	55	40.0%	50.0%	10	15	2.0%	27	32	60	11	16	3.19	548	18,905	28,357	47,262
MRC	Balranald Road (SA2 to SA3)	-	6.930	7.750	2022	25	30	55	40.0%	50.0%	10	15	2.0%	27	32	60	11	16	3.19	548	18,905	28,357	47,262
MRC	Balranald Road (SA3 to SA5)	-	7.750	11.095	2022	25	30	55	40.0%	50.0%	10	15	2.0%	27	32	60	11	16	3.19	548	18,905	28,357	47,262
-	Stony Crossing Road (Yanga Way to Swan Hill Road)	97206	0.000	40.900	2006	122	123	245	18.9%	26.8%	23	33	2.0%	181	183	364	34	49	3.19	548	59,691	85,643	145,334
-	Swan Hill Road (Swan Hill to Stony Crossing Road)	97200	0.000	11.100	2010	342	362	704	17.0%	16.9%	58	61	2.0%	469	497	966	80	84	3.19	548	139,061	146,254	285,315
B400	Murray River Highway (Swan Hill to Lake Boga)	-	0.000	16.000	2020	2,900	2,900	5,800	14.9%	17.7%	431	512	2.0%	3,266	3,266	6,532	485	577	3.19	548	847,721	1,007,038	1,854,759

% Increase ESAs Stage 1 Construction		
Gaz	A-Gaz	Bi-Dir
1.7%	0.2%	1.0%
1.8%	0.3%	1.1%
6.4%	0.8%	3.6%
20.1%	1.9%	9.4%
14.6%	54.1%	**34.8%**
0.0%	0.0%	0.0%
717.2%	120.0%	**358.8%**
394.2%	93.2%	**213.6%**
116.1%	14.4%	**55.1%**
42.9%	115.1%	**85.5%**
70.9%	17.5%	**43.5%**
11.2%	2.5%	6.5%

Road ID	Road Description	AADT Segment	AADT Segment		Project Loading (ESAs) - Stage 1 Construction																												
					Gazettal													A-Gazettal															Bi-Dir
			Start (km)	End (km)	1A	1B	1C	1D	1E	1F	2A	2B	3A	3B	4	Water	Fuel	Waste	Total	1A	1B	1C	1D	1E	1F	2A	2B	3A	3B	4	Water	Fuel	Waste	Total	Total
A20	Sturt Highway (Mildura to Euston)	98064	0.000	82.400	0	0	456	74	338	1,598	91	930	6,348	60	456	0	283	1,157	**11,792**	0	0	47	8	35	165	9	153	1,034	14	47	0	29	120	**1,662**	**13,454**
A20	Sturt Highway (Euston to Balranald)	98064	82.400	162.100	0	0	456	74	338	1,598	91	930	7,381	60	456	0	283	1,157	**12,825**	0	0	47	8	35	165	9	153	1,749	14	47	0	29	120	**2,377**	**15,202**
A20	Sturt Highway (Balranald to Yanga Way)	T0234	162.100	165.500	0	0	456	74	397	1,795	91	930	7,381	60	456	22,185	283	1,157	**35,266**	0	0	47	8	41	186	9	153	1,749	14	47	2,295	29	120	**4,699**	**39,965**
-	Yanga Way (Sturt Highway to Balranald Road)	97488	0.000	11.800	0	0	456	74	397	1,795	91	930	7,381	60	456	22,185	283	1,157	**35,266**	0	0	47	8	41	186	9	153	1,749	14	47	2,295	29	120	**4,699**	**39,965**
-	Yanga Way (Balranald Road to Stony Crossing Road)	97494	11.800	36.200	0	1,278	47	18,053	3,936	1,641	516	78	0	0	47	0	29	0	**25,626**	0	4,791	456	67,742	14,969	7,133	1,992	752	0	0	456	0	283	0	**98,574**	**124,199**
-	Yanga Way (Stony Crossing Road to Tooleybuc)	97207	36.200	49.100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
MRC	Balranald Road (Yanga Way to SA2)	-	0.000	6.930	0	4,557	912	67,816	15,365	10,901	2,083	1,682	7,381	60	912	22,185	567	1,157	**135,578**	0	1,215	94	18,060	4,333	5,232	526	231	1,749	14	94	2,295	59	120	**34,023**	**169,601**
MRC	Balranald Road (SA2 to SA3)	-	6.930	7.750	0	1,845	690	30,253	15,365	8,733	1,398	1,682	3,181	60	690	9,614	247	771	**74,529**	0	492	71	8,056	4,333	10,970	349	231	754	14	71	995	26	80	**26,442**	**100,972**
MRC	Balranald Road (SA3 to SA5)	-	7.750	11.095	0	1,542	222	6,657	0	9,293	557	0	734	60	222	2,219	59	386	**21,951**	0	411	23	1,773	0	1,261	143	0	174	14	23	230	6	40	**4,098**	**26,048**
`	Stony Crossing Road (Yanga Way to Swan Hill Road)	97206	0.000	40.900	0	1,278	47	18,053	3,936	1,641	516	78	0	0	47	0	29	0	**25,626**	0	4,791	456	67,742	14,969	7,133	1,992	752	0	0	456	0	283	0	**98,574**	**124,199**
-	Swan Hill Road (Swan Hill to Stony Crossing Road)	97200	0.000	11.100	0	4,791	456	67,742	14,969	7,133	1,992	752	0	0	456	0	283	0	**98,574**	0	1,278	47	18,053	3,936	1,641	516	78	0	0	47	0	29	0	**25,626**	**124,199**
B400	Murray River Highway (Swan Hill to Lake Boga)	-	0.000	16.000	0	4,791	0	67,668	14,631	5,535	1,900	752	0	0	0	0	0	0	**95,277**	0	1,278	0	18,045	3,902	1,476	507	78	0	0	0	0	0	0	**25,285**	**120,562**

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Stage 2 - Project Pavement Loadings

TASK 1A - MOBILISATION AND ESTABLISHMENT

Activity Description	Project Volume	Vehicle	Origin
Construction Mobilisation - Ancilliary Equipment (via SA2)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Construction Mobilisation - Ancilliary Equipment (via SA4)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Construction Mobilisation - Ancilliary Equipment (via SA6)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Construction Mobilisation - Ancilliary Equipment (via SA7)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Construction Mobilisation - Ancilliary Equipment (via SA8)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Construction Mobilisation - EW Plant (via SA2)	10	Semi / Low Loader	Mildura
	10		Swan Hill
Construction Mobilisation - EW Plant (via SA4)	10	Semi / Low Loader	Mildura
	10		Swan Hill
Construction Mobilisation - EW Plant (via SA6)	10	Semi / Low Loader	Mildura
	10		Swan Hill
Construction Mobilisation - EW Plant (via SA7)	10	Semi / Low Loader	Mildura
	10		Swan Hill
Construction Mobilisation - EW Plant (via SA8)	10	Semi / Low Loader	Mildura
	10		Swan Hill
Construction Compound Establishment & Buildings (via SA2)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Batch Plant Area Establishment (via SA2)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Construction Compound Establishment & Buildings (via SA4)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Batch Plant Area Establishment (via SA6)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Construction Compound Establishment & Buildings (via SA6)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Batch Plant Area Establishment (via SA8)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Construction Compound Establishment & Buildings (via SA8)	13	Semi / Low Loader	Mildura
	13		Swan Hill

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	986	102
Sturt Highway (Balranald to Yanga Way)	986	102
Yanga Way (Sturt Highway to Balranald Road)	986	102
Balranald Road (Yanga Way to SA2)	1,972	204
Balranald Road (SA2 to Arundel Road)	1,504	156
Balranald Road (Arundel Road to SA5)	1,159	120
Balranald Road (SA5 to SA6)	1,159	120
Balranald Road (SA6 to SA7)	690	71
Balranald Road (SA7 to SA8)	468	48
Arundel Road (Balranald Road to SA4)	345	36
Yanga Way (Balranald Road to SA1)	986	102
Yanga Way (SA1 to Stony Crossing Road)	986	102
Stony Crossing Road (Yanga Way to Swan Hill Road)	986	102
Swan Hill Road (Stony Crossing Road to Swan Hill)	986	102
Murray River Highway (Swan Hill to Lake Boga)	0	0

TASK 1B - ACCESS ROADS, HARDSTANDS & SITE ENTRANCES

Activity Description	Project Volume	Vehicle	Origin
Internal Access Track (HV) Gravel Pavement Materials (via SA2)	4,076	Truck Trailer	Mawsons Quarry Lake Boga
Internal Access Track (HV) Gravel Pavement Materials (via SA4)	16	Truck Trailer	Mawsons Quarry Lake Boga
Internal Access Track (HV) Gravel Pavement Materials (via SA6)	2,590	Truck Trailer	Mawsons Quarry Lake Boga
Internal Access Track (HV) Gravel Pavement Materials (via SA7)	1,012	Truck Trailer	Mawsons Quarry Lake Boga
Internal Access Track (HV) Gravel Pavement Materials (via SA8)	1,895	Truck Trailer	Mawsons Quarry Lake Boga
Internal Access Track (LV) Gravel Pavement Materials (via SA8)	27	Truck Trailer	Mawsons Quarry Lake Boga
Balranald / Arundel Intersection Upgrade Pavement Materials (Stage 2)	38	Truck Trailer	Mawsons Quarry Lake Boga
Site Access SA1 Upgrade Pavement Materials (Stage 2)	25	Truck Trailer	Mawsons Quarry Lake Boga
Site Access SA4 Upgrade Pavement Materials (Stage 2)	25	Truck Trailer	Mawsons Quarry Lake Boga
Site Access SA6 Upgrade Pavement Materials (Stage 2)	25	Truck Trailer	Mawsons Quarry Lake Boga
Site Access SA7 Upgrade Pavement Materials (Stage 2)	25	Truck Trailer	Mawsons Quarry Lake Boga
Site Access SA8 Upgrade Pavement Materials (Stage 2)	25	Truck Trailer	Mawsons Quarry Lake Boga
Balranald Road Upgrade Gravel Pavement (Stage 2 - SA5 to SA6)	375	Truck Trailer	Mawsons Quarry Lake Boga
Balranald Road Upgrade Gravel Pavement (Stage 2 - SA6 to SA7)	97	Truck Trailer	Mawsons Quarry Lake Boga
Balranald Road Upgrade Gravel Pavement (Stage 2 - SA7 to SA8)	192	Truck Trailer	Mawsons Quarry Lake Boga
Arundel Road Upgrade Gravel Pavement (Stage 2 - Balranald Rd to SA4)	79	Truck Trailer	Mawsons Quarry Lake Boga
Turbine Hardstand Area Gravel (via SA2)	5,907	Truck Trailer	Mawsons Quarry Lake Boga
Turbine Hardstand Area Gravel (via SA6)	3,719	Truck Trailer	Mawsons Quarry Lake Boga
Turbine Hardstand Area Gravel (via SA7)	1,313	Truck Trailer	Mawsons Quarry Lake Boga
Turbine Hardstand Area Gravel (via SA8)	3,500	Truck Trailer	Mawsons Quarry Lake Boga
Culverts/Pipes (via SA2)	14	Semi	Mildura
	14		Swan Hill
Culverts/Pipes (via SA4)	1	Semi	Mildura
	1		Swan Hill
Culverts/Pipes (via SA6)	9	Semi	Mildura
	9		Swan Hill
Culverts/Pipes (via SA7)	4	Semi	Mildura
	4		Swan Hill
Culverts/Pipes (via SA8)	7	Semi	Mildura
	7		Swan Hill

Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs
Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	165	17
Sturt Highway (Balranald to Yanga Way)	165	17
Yanga Way (Sturt Highway to Balranald Road)	165	17
Balranald Road (Yanga Way to SA2)	153,687	40,929
Balranald Road (SA2 to Arundel Road)	92,153	24,543
Balranald Road (Arundel Road to SA5)	91,177	24,283
Balranald Road (SA5 to SA6)	91,177	24,283
Balranald Road (SA6 to SA7)	49,828	13,271
Balranald Road (SA7 to SA8)	34,744	9,255
Arundel Road (Balranald Road to SA4)	743	197
Yanga Way (Balranald Road to SA1)	153,522	40,953
Yanga Way (SA1 to Stony Crossing Road)	153,675	40,953
Stony Crossing Road (Yanga Way to Swan Hill Road)	153,675	40,953
Swan Hill Road (Stony Crossing Road to Swan Hill)	153,675	40,953
Murray River Highway (Swan Hill to Lake Boga)	153,510	40,936

TASK 1C - SITE COMPOUND AREAS (CIVIL)

Activity Description	Project Volume	Vehicle	Origin	
Switching Station (SA2) Slab Wet Concrete	346	Concrete Truck	SA1 Batch Plant	*Internal*
Switching Station (SA2) Slab Concrete Sand/Aggregates	75	Truck Trailer	Mawsons Quarry Lake Boga	
Switching Station (SA2) Slab Cement	9	Semi	Mildura	
	9		Swan Hill	
Switching Station (SA2) Slab Reinforcing Steel	15	Semi	Mildura	
	15		Swan Hill	
Switching Station (SA2) Slab Water	4	Semi Water Truck	Balranald	
Batch Plant (SA2) Slab Wet Concrete	106	Concrete Truck	SA1 Batch Plant	*Internal*
Batch Plant (SA2) Slab Concrete Sand/Aggregates	23	Truck Trailer	Mawsons Quarry Lake Boga	
Batch Plant (SA2) Slab Cement	3	Semi	Mildura	
	3		Swan Hill	
Batch Plant (SA2) Slab Reinforcing Steel	5	Semi	Mildura	
	5		Swan Hill	
Batch Plant (SA2) Slab Water	2	Semi Water Truck	Balranald	
Construction Compound (SA2) Slab Wet Concrete	79	Concrete Truck	SA1 Batch Plant	*Internal*
Construction Compound (SA2) Slab Concrete Sand/Aggregates	17	Truck Trailer	Mawsons Quarry Lake Boga	
Construction Compound (SA2) Slab Cement	2	Semi	Mildura	
	2		Swan Hill	
Construction Compound (SA2) Slab Reinforcing Steel	4	Semi	Mildura	
	4		Swan Hill	
Construction Compound (SA2) Slab Water	1	Semi Water Truck	Balranald	
Construction Compound (SA4) Slab Wet Concrete	79	Concrete Truck	SA6 Batch Plant	
Construction Compound (SA4) Slab Concrete Sand/Aggregates	17	Truck Trailer	Mawsons Quarry Lake Boga	
Construction Compound (SA4) Slab Cement	2	Semi	Mildura	
	2		Swan Hill	
Construction Compound (SA4) Slab Reinforcing Steel	4	Semi	Mildura	
	4		Swan Hill	
Construction Compound (SA4) Slab Water	1	Semi Water Truck	Balranald	
Operational and Maintenance Facility (SA4) Slab Wet Concrete	87	Concrete Truck	SA6 Batch Plant	
Operational and Maintenance Facility (SA4) Slab Concrete Sand/Aggregates	19	Truck Trailer	Mawsons Quarry Lake Boga	
Operational and Maintenance Facility (SA4) Slab Cement	3	Semi	Mildura	
	3		Swan Hill	
Operational and Maintenance Facility (SA4) Slab Reinforcing Steel	4	Semi	Mildura	
	4		Swan Hill	
Operational and Maintenance Facility (SA4) Slab Water	1	Semi Water Truck	Balranald	
Switching Station (SA6) Slab Wet Concrete	346	Concrete Truck	SA6 Batch Plant	*Internal*
Switching Station (SA6) Slab Concrete Sand/Aggregates	75	Truck Trailer	Mawsons Quarry Lake Boga	
Switching Station (SA6) Slab Cement	9	Semi	Mildura	
	9		Swan Hill	
Switching Station (SA6) Slab Reinforcing Steel	15	Semi	Mildura	
	15		Swan Hill	
Switching Station (SA6) Slab Water	4	Semi Water Truck	Balranald	
Batch Plant (SA6) Slab Wet Concrete	111	Concrete Truck	SA6 Batch Plant	*Internal*
Batch Plant (SA6) Slab Concrete Sand/Aggregates	24	Truck Trailer	Mawsons Quarry Lake Boga	
Batch Plant (SA6) Slab Cement	3	Semi	Mildura	
	3		Swan Hill	
Batch Plant (SA6) Slab Reinforcing Steel	5	Semi	Mildura	
	5		Swan Hill	
Batch Plant (SA6) Slab Water	2	Semi Water Truck	Balranald	
Construction Compound (SA6) Slab Wet Concrete	79	Concrete Truck	SA6 Batch Plant	*Internal*
Construction Compound (SA6) Slab Concrete Sand/Aggregates	17	Truck Trailer	Mawsons Quarry Lake Boga	
Construction Compound (SA6) Slab Cement	2	Semi	Mildura	
	2		Swan Hill	
Construction Compound (SA6) Slab Reinforcing Steel	4	Semi	Mildura	
	4		Swan Hill	
Construction Compound (SA6) Slab Water	1	Semi Water Truck	Balranald	
Batch Plant (SA8) Slab Wet Concrete	110	Concrete Truck	SA8 Batch Plant	*Internal*
Batch Plant (SA8) Slab Concrete Sand/Aggregates	24	Truck Trailer	Mawsons Quarry Lake Boga	
Batch Plant (SA8) Slab Cement	3	Semi	Mildura	
	3		Swan Hill	
Batch Plant (SA8) Slab Reinforcing Steel	5	Semi	Mildura	
	5		Swan Hill	
Batch Plant (SA8) Slab Water	2	Semi Water Truck	Balranald	
Construction Compound (SA8) Slab Wet Concrete	79	Concrete Truck	SA8 Batch Plant	*Internal*
Construction Compound (SA8) Slab Concrete Sand/Aggregates	17	Truck Trailer	Mawsons Quarry Lake Boga	
Construction Compound (SA8) Slab Cement	2	Semi	Mildura	
	2		Swan Hill	
Construction Compound (SA8) Slab Reinforcing Steel	4	Semi	Mildura	
	4		Swan Hill	
Construction Compound (SA8) Slab Water	1	Semi Water Truck	Balranald	
Switching Station Area Gravel (via SA2)	318	Truck Trailer	Mawsons Quarry Lake Boga	
Batch Plant Area Gravel (via SA2)	275	Truck Trailer	Mawsons Quarry Lake Boga	
Site Construction Compound Gravel (via SA2)	203	Truck Trailer	Mawsons Quarry Lake Boga	
Site Laydown Area Gravel (via SA2)	225	Truck Trailer	Mawsons Quarry Lake Boga	
Site Construction Compound Gravel (via SA4)	203	Truck Trailer	Mawsons Quarry Lake Boga	
Operational and Maintenance Facility Area Gravel (via SA4)	225	Truck Trailer	Mawsons Quarry Lake Boga	
Switching Station Area Gravel (via SA6)	318	Truck Trailer	Mawsons Quarry Lake Boga	
Batch Plant Area Gravel (via SA6)	287	Truck Trailer	Mawsons Quarry Lake Boga	
Site Construction Compound Gravel (via SA6)	203	Truck Trailer	Mawsons Quarry Lake Boga	
Site Laydown Area Gravel (via SA6)	225	Truck Trailer	Mawsons Quarry Lake Boga	
Site Laydown Area Gravel (via SA7)	225	Truck Trailer	Mawsons Quarry Lake Boga	
Batch Plant Area Gravel (via SA8)	284	Truck Trailer	Mawsons Quarry Lake Boga	
Site Construction Compound Gravel (via SA8)	203	Truck Trailer	Mawsons Quarry Lake Boga	
Site Laydown Area Gravel (via SA8)	225	Truck Trailer	Mawsons Quarry Lake Boga	

Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs
Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs
Concrete Truck (4 Axle Rigid) Unloaded (0%)	0.46	ESAs
Concrete Truck (4 Axle Rigid) Loaded (100%)	4.09	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	488	50
Sturt Highway (Balranald to Yanga Way)	582	60
Yanga Way (Sturt Highway to Balranald Road)	582	60
Balranald Road (Yanga Way to SA2)	23,991	6,223
Balranald Road (SA2 to Arundel Road)	16,610	4,319
Balranald Road (Arundel Road to SA5)	13,628	3,545
Balranald Road (SA5 to Arundel Road)	*679*	*76*
Balranald Road (SA5 to SA6)	13,628	3,545
Balranald Road (SA6 to SA5)	*679*	*76*
Balranald Road (SA6 to SA7)	5,910	1,552
Balranald Road (SA7 to SA8)	4,527	1,183
Arundel Road (Balranald Road to SA4)	2,982	774
Yanga Way (Balranald Road to SA1)	23,409	6,163
Yanga Way (SA1 to Stony Crossing Road)	23,409	6,163
Stony Crossing Road (Yanga Way to Swan Hill Road)	23,409	6,163
Swan Hill Road (Stony Crossing Road to Swan Hill)	23,409	6,163
Murray River Highway (Swan Hill to Lake Boga)	22,921	6,112

TASK 1D - TURBINE FOUNDATIONS

Activity Description	Project Volume	Vehicle	Origin	
Concrete aggregates for turbine footings (SA2)	810	Truck Trailer	Mawsons Quarry Lake Boga	
Reinforcing steel for turbine footings (SA2)	159	Semi	Mildura	
	159		Swan Hill	
Other concrete supplies for turbine footings (SA2)	92	Semi	Mildura	
	92		Swan Hill	
Water for turbine footings concrete (SA2)	36	Semi Water Truck	Balranald	
Wet concrete for turbine footings (SA2	3,600	Concrete Truck	SA1 Batch Plant	*Internal*
Formwork (via SA2)	14	Semi	Mildura	
	14		Swan Hill	
Geomembrane (via SA2)	27	Semi	Mildura	
	27		Swan Hill	
Concrete aggregates for turbine footings (SA6)	510	Truck Trailer	Mawsons Quarry Lake Boga	
Reinforcing steel for turbine footings (SA6)	100	Semi	Mildura	
	100		Swan Hill	
Other concrete supplies for turbine footings (SA6)	58	Semi	Mildura	
	58		Swan Hill	
Water for turbine footings concrete (SA6)	23	Semi Water Truck	Balranald	
Wet concrete for turbine footings (SA6)	2,267	Concrete Truck	SA6 Batch Plant	*Internal*
Formwork (via SA6)	9	Semi	Mildura	
	9		Swan Hill	
Geomembrane (via SA6)	17	Semi	Mildura	
	17		Swan Hill	
Concrete aggregates for turbine footings (SA7)	180	Truck Trailer	Mawsons Quarry Lake Boga	
Reinforcing steel for turbine footings (SA7)	35	Semi	Mildura	
	35		Swan Hill	
Other concrete supplies for turbine footings (SA7)	21	Semi	Mildura	
	21		Swan Hill	
Water for turbine footings concrete (SA7)	8	Semi Water Truck	Balranald	
Wet concrete for turbine footings (SA7)	800	Concrete Truck	SA8 Batch Plant	
Formwork (via SA7)	3	Semi	Mildura	
	3		Swan Hill	
Geomembrane (via SA7)	6	Semi	Mildura	
	6		Swan Hill	
Concrete aggregates for turbine footings (SA8)	480	Truck Trailer	Mawsons Quarry Lake Boga	
Reinforcing steel for turbine footings (SA8)	94	Semi	Mildura	
	94		Swan Hill	
Other concrete supplies for turbine footings (SA8)	55	Semi	Mildura	
	55		Swan Hill	
Water for turbine footings concrete (SA8)	21	Semi Water Truck	Balranald	
Wet concrete for turbine footings (SA8)	2,133	Concrete Truck	SA8 Batch Plant	*Internal*
Formwork (via SA8)	8	Semi	Mildura	
	8		Swan Hill	
Geomembrane (via SA8)	16	Semi	Mildura	
	16		Swan Hill	

Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs
Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs
Concrete Truck (4 Axle Rigid) Unloaded (0%)	0.46	ESAs
Concrete Truck (4 Axle Rigid) Loaded (100%)	4.09	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	3,516	364
Sturt Highway (Balranald to Yanga Way)	3,950	409
Yanga Way (Sturt Highway to Balranald Road)	3,950	409
Balranald Road (Yanga Way to SA2)	19,643	4,020
Balranald Road (SA2 to Arundel Road)	11,607	2,375
Balranald Road (Arundel Road to SA5)	11,607	2,375
Balranald Road (SA5 to SA6)	11,607	2,375
Balranald Road (SA6 to SA5)	*0*	*0*
Balranald Road (SA6 to SA7)	6,548	1,340
Balranald Road (SA7 to SA8)	4,762	974
Balranald Road (SA8 to SA7)	*3,272*	*368*
Arundel Road (Balranald Road to SA4)	0	0
Yanga Way (Balranald Road to SA1)	15,693	3,611
Yanga Way (SA1 to Stony Crossing Road)	15,693	3,611
Stony Crossing Road (Yanga Way to Swan Hill Road)	15,693	3,611
Swan Hill Road (Stony Crossing Road to Swan Hill)	15,693	3,611
Murray River Highway (Swan Hill to Lake Boga)	12,177	3,247

TASK 2A - CABLING

Activity Description	Project Volume	Vehicle	Origin
Underground Powerline Cable (via SA2)	13	Semi	Mildura
	13		Swan Hill
Underground Powerline Bedding Sand (via SA2)	344	Truck Trailer	Mawsons Quarry Lake Boga
Overhead Powerline Cable (via SA2)	4	Semi	Mildura
	4		Swan Hill
Overhead Powerline Poles (via SA2)	2	Semi	Mildura
	2		Swan Hill
Underground Powerline Cable (via SA6)	9	Semi	Mildura
	9		Swan Hill
Underground Powerline Bedding Sand (via SA6)	238	Truck Trailer	Mawsons Quarry Lake Boga
Overhead Powerline Cable (via SA6)	8	Semi	Mildura
	8		Swan Hill
Overhead Powerline Poles (via SA6)	3	Semi	Mildura
	3		Swan Hill
Underground Powerline Cable (via SA7)	2	Semi	Mildura
	2		Swan Hill
Underground Powerline Bedding Sand (via SA7)	44	Truck Trailer	Mawsons Quarry Lake Boga
Underground Powerline Cable (via SA8)	5	Semi	Mildura
	5		Swan Hill
Underground Powerline Bedding Sand (via SA8)	118	Truck Trailer	Mawsons Quarry Lake Boga

Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs
Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	217	22
Sturt Highway (Balranald to Yanga Way)	217	22
Yanga Way (Sturt Highway to Balranald Road)	217	22
Balranald Road (Yanga Way to SA2)	5,009	1,265
Balranald Road (SA2 to Arundel Road)	2,711	682
Balranald Road (Arundel Road to SA5)	2,711	682
Balranald Road (SA5 to SA6)	2,711	682
Balranald Road (SA6 to SA7)	1,060	272
Balranald Road (SA7 to SA8)	770	198
Arundel Road (Balranald Road to SA4)	0	0
Yanga Way (Balranald Road to SA1)	4,793	1,243
Yanga Way (SA1 to Stony Crossing Road)	4,793	1,243
Stony Crossing Road (Yanga Way to Swan Hill Road)	4,793	1,243
Swan Hill Road (Stony Crossing Road to Swan Hill)	4,793	1,243
Murray River Highway (Swan Hill to Lake Boga)	4,576	1,220

TASK 2B - SITE COMPOUND AREAS (ELECTRICAL WORKS)

Activity Description	Project Volume	Vehicle	Origin
Transformer (via SA2)	1	Special	Port Adelaide
Switchroom (via SA2)	1	Special	Port Adelaide
Transformer (via SA6)	1	Special	Port Adelaide
Switchroom (via SA6)	1	Special	Port Adelaide
Electrical Components (via SA2 - Switching Station)	75	Semi	Mildura
	75		Swan Hill
Electrical Components (via SA6 - Switching Station)	75	Semi	Mildura
	75		Swan Hill
Switching Station Area Establishment & Buildings (via SA2)	20	Semi	Mildura
	20		Swan Hill
Operations and Maintenance Facility Establishment (via SA4)	13	Semi	Mildura
	13		Swan Hill
Switching Station Area Establishment & Buildings (via SA6)	20	Semi	Mildura
	20		Swan Hill

Transformer Unloaded (0%)	37.77	ESAs
Transformer Loaded (100%)	89.31	ESAs
Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	1,356	254
Sturt Highway (Balranald to Yanga Way)	1,356	254
Yanga Way (Sturt Highway to Balranald Road)	1,356	254
Balranald Road (Yanga Way to SA2)	2,354	358
Balranald Road (SA2 to Arundel Road)	1,239	185
Balranald Road (Arundel Road to SA5)	1,115	172
Balranald Road (SA5 to SA6)	1,115	172
Balranald Road (SA6 to SA7)	0	0
Balranald Road (SA7 to SA8)	0	0
Arundel Road (Balranald Road to SA4)	123	13
Yanga Way (Balranald Road to SA1)	998	103
Yanga Way (SA1 to Stony Crossing Road)	998	103
Stony Crossing Road (Yanga Way to Swan Hill Road)	998	103
Swan Hill Road (Stony Crossing Road to Swan Hill)	998	103
Murray River Highway (Swan Hill to Lake Boga)	0	0

TASK 3A - TURBINE TRANSPORTATION

Activity Description	Project Volume	Vehicle	Origin
Turbine Blades (SA2)	81	Special	Port Adelaide
Turbine Blades (SA6)	51	Special	Port Adelaide
Turbine Blades (SA7)	18	Special	Port Adelaide
Turbine Blades (SA8)	48	Special	Port Adelaide
Turbine Nacelles (SA2)	27	Special	Port Adelaide
Turbine Nacelles (SA6)	17	Special	Port Adelaide
Turbine Nacelles (SA7)	6	Special	Port Adelaide
Turbine Nacelles (SA8)	16	Special	Port Adelaide
Turbine Drive Trains (SA2)	27	Special	Port Adelaide
Turbine Drive Trains (SA6)	17	Special	Port Adelaide
Turbine Drive Trains (SA7)	6	Special	Port Adelaide
Turbine Drive Trains (SA8)	16	Special	Port Adelaide
Turbine Hub & Nose Cone (SA2)	27	Special	Port Adelaide
Turbine Hub & Nose Cone (SA6)	17	Special	Port Adelaide
Turbine Hub & Nose Cone (SA7)	6	Special	Port Adelaide
Turbine Hub & Nose Cone (SA8)	16	Special	Port Adelaide
Tower Sections 1-2 (SA2)	54	Special	Port Adelaide
Tower Sections 1-2 (SA6)	34	Special	Port Adelaide
Tower Sections 1-2 (SA7)	12	Special	Port Adelaide
Tower Sections 1-2 (SA8)	32	Special	Port Adelaide
Tower Sections 3-7 (SA2)	135	Special	Port Adelaide
Tower Sections 3-7 (SA6)	85	Special	Port Adelaide
Tower Sections 3-7 (SA7)	30	Special	Port Adelaide
Tower Sections 3-7 (SA8)	80	Special	Port Adelaide
Tower Base Rings (SA2)	9	Semi	Port Adelaide
Tower Base Rings (SA6)	6	Semi	Port Adelaide
Tower Base Rings (SA7)	2	Semi	Port Adelaide
Tower Base Rings (SA8)	6	Semi	Port Adelaide
Tower Assembly Components (SA2)	27	Semi	Port Adelaide
Tower Assembly Components (SA6)	17	Semi	Port Adelaide
Tower Assembly Components (SA7)	6	Semi	Port Adelaide
Tower Assembly Components (SA8)	16	Semi	Port Adelaide
Performance Monitoring Masts (SA8)	3	Special	Port Adelaide

Turbine Blade Transport Unloaded (0%)	7.95	ESAs
Turbine Blade Transport Loaded (100%)	11.47	ESAs
Turbine Nacelle Transport Unloaded (0%)	4.88	ESAs
Turbine Nacelle Transport Loaded (100%)	24.41	ESAs
Turbine Drive Train Transport Unloaded (0%)	4.98	ESAs
Turbine Drive Train Transport Loaded (100%)	22.78	ESAs
Turbine Hub Transport Unloaded (0%)	4.77	ESAs
Turbine Hub Transport Loaded (100%)	12.38	ESAs
Turbine Tower Section (1-2) Transport Unloaded (Average) (0%)	2.59	ESAs
Turbine Tower Section (1-2) Transport Loaded (Average) (100%)	14.86	ESAs
Turbine Tower Section (3-7) Transport Unloaded (Average) (0%)	2.73	ESAs
Turbine Tower Section (3-7) Transport Loaded (Average) (100%)	22.87	ESAs
PMM Unloaded (0%)	1.87	ESAs
PMM Loaded (100%)	7.91	ESAs
Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Euston)	13,899	2,258
Sturt Highway (Euston to Balranald)	16,170	3,833
Sturt Highway (Balranald to Yanga Way)	16,170	3,833
Yanga Way (Sturt Highway to Balranald Road)	16,170	3,833
Balranald Road (Yanga Way to SA2)	16,170	3,833
Balranald Road (SA2 to Arundel Road)	9,563	2,267
Balranald Road (Arundel Road to SA5)	9,563	2,267
Balranald Road (SA5 to SA6)	9,563	2,267
Balranald Road (SA6 to SA7)	5,403	1,281
Balranald Road (SA7 to SA8)	3,935	933
Arundel Road (Balranald Road to SA4)	0	0
Yanga Way (Balranald Road to SA1)	0	0
Yanga Way (SA1 to Stony Crossing Road)	0	0
Stony Crossing Road (Yanga Way to Swan Hill Road)	0	0
Swan Hill Road (Stony Crossing Road to Swan Hill)	0	0
Murray River Highway (Swan Hill to Lake Boga)	0	0

TASK 3B - TURBINE ERECTION

Activity Description	Project Volume	Vehicle	Origin
Site Crane (Turbines)	8	Special / Crane	Port Adelaide
Secondary Crane	1	Crane / Semi	Mildura

Special Crane (Assume B-Double) Unloaded (0%)	1.69	ESAs
Special Crane (Assume B-Double) Loaded (100%)	6.91	ESAs
Crane / Semi Unloaded (0%)	0.51	ESAs
Crane / Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Euston)	60	14
Sturt Highway (Euston to Balranald)	60	14
Sturt Highway (Balranald to Yanga Way)	60	14
Yanga Way (Sturt Highway to Balranald Road)	60	14
Balranald Road (Yanga Way to SA2)	60	14
Balranald Road (SA2 to Arundel Road)	60	14
Balranald Road (Arundel Road to SA5)	60	14
Balranald Road (SA5 to SA6)	60	14
Balranald Road (SA6 to SA7)	60	14
Balranald Road (SA7 to SA8)	60	14
Arundel Road (Balranald Road to SA4)	0	0
Yanga Way (Balranald Road to SA1)	0	0
Yanga Way (SA1 to Stony Crossing Road)	0	0
Stony Crossing Road (Yanga Way to Swan Hill Road)	0	0
Swan Hill Road (Stony Crossing Road to Swan Hill)	0	0
Murray River Highway (Swan Hill to Lake Boga)	0	0

TASK 4 - FINALISATION / COMMISSIONING / DEMOBILISATION

Activity Description	Project Volume	Vehicle	Origin
Construction Demobilisation - Ancilliary Equipment (via SA2)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Construction Demobilisation - Ancilliary Equipment (via SA4)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Construction Demobilisation - Ancilliary Equipment (via SA6)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Construction Demobilisation - Ancilliary Equipment (via SA7)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Construction Demobilisation - Ancilliary Equipment (via SA8)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Construction Demobilisation - EW Plant (via SA2)	10	Semi / Low Loader	Mildura
	10		Swan Hill
Construction Demobilisation - EW Plant (via SA4)	10	Semi / Low Loader	Mildura
	10		Swan Hill
Construction Demobilisation - EW Plant (via SA6)	10	Semi / Low Loader	Mildura
	10		Swan Hill
Construction Demobilisation - EW Plant (via SA7)	10	Semi / Low Loader	Mildura
	10		Swan Hill
Construction Demobilisation - EW Plant (via SA8)	10	Semi / Low Loader	Mildura
	10		Swan Hill
Construction Compound Decommissioning (via SA2)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Batch Plant Area Decommissioning (via SA2)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Construction Compound Decommissioning (via SA4)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Construction Compound Decommissioning (via SA6)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Batch Plant Area Decommissioning (via SA6)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Construction Compound Decommissioning (via SA8)	13	Semi / Low Loader	Mildura
	13		Swan Hill
Batch Plant Area Decommissioning (via SA8)	13	Semi / Low Loader	Mildura
	13		Swan Hill

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	986	102
Sturt Highway (Balranald to Yanga Way)	986	102
Yanga Way (Sturt Highway to Balranald Road)	986	102
Balranald Road (Yanga Way to SA2)	1,972	204
Balranald Road (SA2 to Arundel Road)	1,405	145
Balranald Road (Arundel Road to SA5)	1,159	120
Balranald Road (SA5 to SA6)	1,159	120
Balranald Road (SA6 to SA7)	690	71
Balranald Road (SA7 to SA8)	468	48
Arundel Road (Balranald Road to SA4)	345	36
Yanga Way (Balranald Road to SA1)	986	102
Yanga Way (SA1 to Stony Crossing Road)	986	102
Stony Crossing Road (Yanga Way to Swan Hill Road)	986	102
Swan Hill Road (Stony Crossing Road to Swan Hill)	986	102
Murray River Highway (Swan Hill to Lake Boga)	0	0

TASK W - SITE WATER

Activity Description	Project Volume	Vehicle	Origin
Site Water (via SA2)	3,750	Semi Water Truck	Balranald
Site Water (via SA6)	2,362	Semi Water Truck	Balranald
Site Water (via SA7)	834	Semi Water Truck	Balranald
Site Water (via SA8)	2,223	Semi Water Truck	Balranald

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	0	0
Sturt Highway (Balranald to Yanga Way)	45,203	4,676
Yanga Way (Sturt Highway to Balranald Road)	45,203	4,676
Balranald Road (Yanga Way to SA2)	45,203	4,676
Balranald Road (SA2 to Arundel Road)	26,716	2,764
Balranald Road (Arundel Road to SA5)	26,716	2,764
Balranald Road (SA5 to SA6)	26,716	2,764
Balranald Road (SA6 to SA7)	15,071	1,559
Balranald Road (SA7 to SA8)	10,959	1,134
Arundel Road (Balranald Road to SA4)	0	0
Yanga Way (Balranald Road to SA1)	0	0
Yanga Way (SA1 to Stony Crossing Road)	0	0
Stony Crossing Road (Yanga Way to Swan Hill Road)	0	0
Swan Hill Road (Stony Crossing Road to Swan Hill)	0	0
Murray River Highway (Swan Hill to Lake Boga)	0	0

TASK F - SITE FUEL

Activity Description	Project Volume	Vehicle	Origin
Fuel (via SA2)	51	Semi Tanker	Mildura
	51		Swan Hill
Fuel (via SA4)	6	Semi Tanker	Mildura
	6		Swan Hill
Fuel (via SA6)	33	Semi Tanker	Mildura
	33		Swan Hill
Fuel (via SA7)	12	Semi Tanker	Mildura
	12		Swan Hill
Fuel (via SA8)	31	Semi Tanker	Mildura
	31		Swan Hill

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	648	67
Sturt Highway (Balranald to Yanga Way)	648	67
Yanga Way (Sturt Highway to Balranald Road)	648	67
Balranald Road (Yanga Way to SA2)	1,297	134
Balranald Road (SA2 to Arundel Road)	794	82
Balranald Road (Arundel Road to SA5)	735	76
Balranald Road (SA5 to SA6)	735	76
Balranald Road (SA6 to SA7)	414	43
Balranald Road (SA7 to SA8)	301	31
Arundel Road (Balranald Road to SA4)	59	6
Yanga Way (Balranald Road to SA1)	648	67
Yanga Way (SA1 to Stony Crossing Road)	648	67
Stony Crossing Road (Yanga Way to Swan Hill Road)	648	67
Swan Hill Road (Stony Crossing Road to Swan Hill)	648	67
Murray River Highway (Swan Hill to Lake Boga)	0	0

TASK WC - WASTE COLLECTION

Activity Description	Project Volume	Vehicle	Origin
Waste Collection (via SA2)	130	Semi	Mildura
Waste Collection (via SA4)	130	Semi	Mildura
Waste Collection (via SA6)	130	Semi	Mildura
Waste Collection (via SA7)	130	Semi	Mildura
Waste Collection (via SA8)	130	Semi	Mildura

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Loaded	Unloaded
Sturt Highway (Mildura to Balranald)	3,213	332
Sturt Highway (Balranald to Yanga Way)	3,213	332
Yanga Way (Sturt Highway to Balranald Road)	3,213	332
Balranald Road (Yanga Way to SA2)	3,213	332
Balranald Road (SA2 to Arundel Road)	2,571	266
Balranald Road (Arundel Road to SA5)	1,928	199
Balranald Road (SA5 to SA6)	1,928	199
Balranald Road (SA6 to SA7)	1,285	133
Balranald Road (SA7 to SA8)	643	66
Arundel Road (Balranald Road to SA4)	643	66
Yanga Way (Balranald Road to SA1)	0	0
Yanga Way (SA1 to Stony Crossing Road)	0	0
Stony Crossing Road (Yanga Way to Swan Hill Road)	0	0
Swan Hill Road (Stony Crossing Road to Swan Hill)	0	0
Murray River Highway (Swan Hill to Lake Boga)	0	0

UMW0122-006 | Junction Rivers Wind Farm

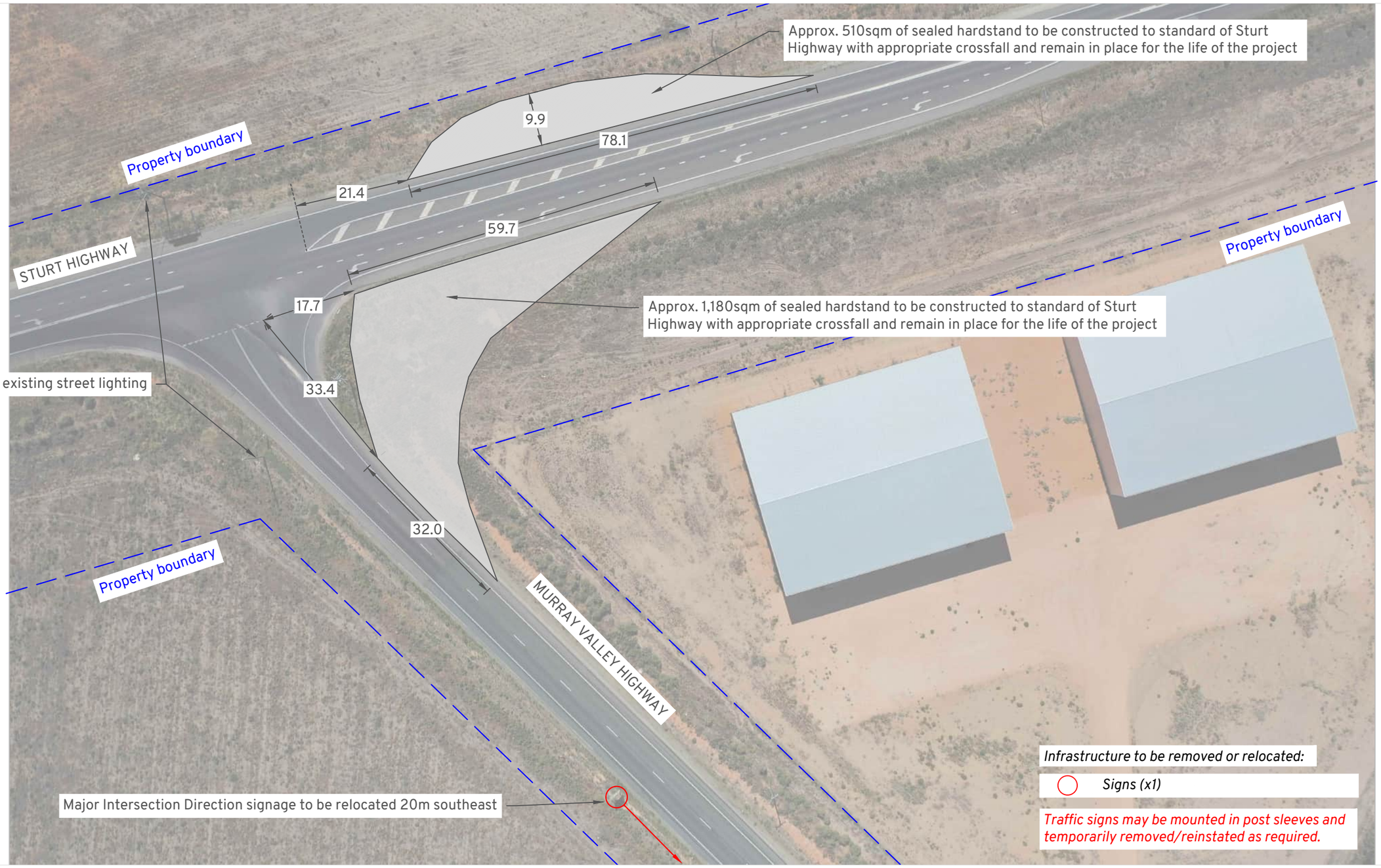
Stage 2 Construction Pavement Impact % Calculations

Road ID	Road Description	AADT Segment	AADT Segment		Base Data Year	Base Year AADT			Base Year HV%		Base Year HV		10 Yr GR%	2028	AADT		2028	HV	ESAs / HV	Duration (Days)	Background Pavement Loading (ESAs)		
			Start (km)	End (km)		Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Gaz	A-Gaz		Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz			Gaz	A-Gaz	Bi-Dir
A20	Sturt Highway (Mildura to Euston)	98064	0.000	82.400	2007	1,023	1,047	2,070	26.7%	26.9%	273	282	2.0%	1,551	1,587	3,137	414	427	3.19	913	1,204,453	1,244,160	2,448,613
A20	Sturt Highway (Euston to Balranald)	98064	82.400	162.100	2021	1,023	1,047	2,070	26.7%	26.9%	273	282	2.0%	1,175	1,203	2,378	314	324	3.19	913	912,825	942,918	1,855,743
A20	Sturt Highway (Balranald to Yanga Way)	T0234	162.100	165.500	2021	483	494	977	59.0%	60.1%	285	297	2.0%	555	567	1,122	327	341	3.19	913	952,949	993,073	1,946,022
-	Yanga Way (Sturt Highway to Balranald Road)	97488	0.000	11.800	2010	272	376	648	*26.9%*	*27.7%*	73	104	2.0%	388	537	926	104	149	3.19	913	303,685	433,308	736,993
-	Yanga Way (Balranald Road to SA1)	97494	11.800	19.800	2012	283	285	568	26.9%	27.7%	76	79	2.0%	388	391	780	104	108	3.19	913	303,697	315,685	619,381
-	Yanga Way (SA1 to Stony Crossing Road)	97494	19.800	36.200	2012	283	285	568	26.9%	27.7%	76	79	2.0%	388	391	780	104	108	3.19	913	303,697	315,685	619,381
-	Yanga Way (Stony Crossing Road to Tooleybuc)	97207	36.200	49.100	2006	221	220	441	34.8%	34.1%	77	75	2.0%	342	340	682	119	116	3.19	913	346,512	337,512	684,023
MRC	Balranald Road (Yanga Way to SA2)	-	0.000	6.930	2022	25	30	55	40.0%	50.0%	10	15	2.0%	28	34	62	11	17	3.19	913	32,781	49,172	81,953
MRC	Balranald Road (SA2 to Arundel Road)	-	6.930	10.402	2023	25	30	55	40.0%	50.0%	10	15	2.0%	28	33	61	11	17	3.19	913	32,138	48,208	80,346
MRC	Balranald Road (Arundel Road to SA5)	-	10.402	11.095	2022	25	30	55	40.0%	50.0%	10	15	2.0%	28	34	62	11	17	3.19	913	32,781	49,172	81,953
MRC	Balranald Road (SA5 to SA6)	-	11.095	17.340	2022	25	30	55	40.0%	50.0%	10	15	2.0%	28	34	62	11	17	3.19	913	32,781	49,172	81,953
MRC	Balranald Road (SA6 to SA7)	-	17.340	18.995	2022	25	30	55	40.0%	50.0%	10	15	2.0%	28	34	62	11	17	3.19	913	32,781	49,172	81,953
MRC	Balranald Road (SA7 to SA8)	-	18.995	22.140	2022	25	30	55	40.0%	50.0%	10	15	2.0%	28	34	62	11	17	3.19	913	32,781	49,172	81,953
MRC	Arundel Road (Balranald Road to SA4)	-	0.000	0.710	2022	10	10	20	40.0%	40.0%	4	4	2.0%	11	11	23	5	5	3.19	913	13,112	13,112	26,225
-	Stony Crossing Road (Yanga Way to Swan Hill Road)	97206	0.000	40.900	2006	122	123	245	18.9%	26.8%	23	33	2.0%	189	190	379	36	51	3.19	913	103,504	148,505	252,009
-	Swan Hill Road (Swan Hill to Stony Crossing Road)	97200	0.000	11.100	2010	342	362	704	17.0%	16.9%	58	61	2.0%	488	517	1,005	83	87	3.19	913	241,132	253,604	494,736
B400	Murray River Highway (Swan Hill to Lake Boga)	-	0.000	16.000	2020	2,900	2,900	5,800	14.9%	17.7%	431	512	2.0%	3,398	3,398	6,796	505	600	3.19	913	1,469,949	1,746,204	3,216,152

% Increase ESAs Construction Stage 2		
Gaz	A-Gaz	Bi-Dir
1.9%	0.5%	1.2%
2.7%	0.9%	1.8%
7.4%	1.3%	4.3%
23.3%	2.9%	**11.3%**
17.3%	63.7%	**40.9%**
17.2%	63.7%	**40.9%**
0.0%	0.0%	0.0%
828.8%	132.3%	**410.9%**
512.2%	83.2%	**254.8%**
487.8%	79.4%	**242.7%**
487.8%	79.4%	**242.7%**
261.8%	42.2%	**130.0%**
187.4%	36.1%	**96.6%**
35.6%	13.0%	**24.3%**
50.6%	135.5%	**100.6%**
83.4%	20.6%	**51.2%**
13.1%	3.0%	7.6%

Road ID	Road Description	AADT Segment	AADT Segment		Project Loading (ESAs) - Stage 2 Construction																									
			Start (km)	End (km)	Gazettal													A-Gazettal												Bi-Dir
					1A	1B	1C	1D	2A	2B	3A	3B	4	Water	Fuel	Waste	Total	1A	1B	1C	1D	2A	2B	3A	3B	4	Water	Fuel	Waste	Total	Total
A20	Sturt Highway (Mildura to Euston)	98064	0.000	82.400	986	165	488	3,516	217	1,356	13,899	60	986	0	648	332	**22,654**	102	17	50	364	22	254	2,258	14	102	0	67	3,213	**6,465**	**29,119**
A20	Sturt Highway (Euston to Balranald)	98064	82.400	162.100	986	165	488	3,516	217	1,356	16,170	60	986	0	648	332	**24,925**	102	17	50	364	22	254	3,833	14	102	0	67	3,213	**8,039**	**32,964**
A20	Sturt Highway (Balranald to Yanga Way)	T0234	162.100	165.500	986	165	582	3,950	217	1,356	16,170	60	986	45,203	648	332	**70,656**	102	17	60	409	22	254	3,833	14	102	4,676	67	3,213	**12,770**	**83,425**
-	Yanga Way (Sturt Highway to Balranald Road)	97488	0.000	11.800	986	165	582	3,950	217	1,356	16,170	60	986	45,203	648	332	**70,656**	102	17	60	409	22	254	3,833	14	102	4,676	67	3,213	**12,770**	**83,425**
-	Yanga Way (Balranald Road to SA1)	97494	11.800	19.800	102	40,953	6,163	3,611	1,243	103	0	60	102	0	67	0	**52,404**	986	153,522	23,409	15,693	4,793	998	0	14	986	0	648	0	**201,049**	**253,453**
-	Yanga Way (SA1 to Stony Crossing Road)	97494	19.800	36.200	102	40,953	6,163	3,611	1,243	103	0	0	102	0	67	0	**52,344**	986	153,675	23,409	15,693	4,793	998	0	0	986	0	648	0	**201,189**	**253,532**
-	Yanga Way (Stony Crossing Road to Tooleybuc)	97207	36.200	49.100	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
MRC	Balranald Road (Yanga Way to SA2)	-	0.000	6.930	1,972	153,687	23,991	19,643	5,009	2,354	16,170	60	1,972	45,203	1,297	332	**271,690**	204	40,929	6,223	4,020	1,265	358	3,833	14	204	4,676	134	3,213	**65,073**	**336,763**
MRC	Balranald Road (SA2 to Arundel Road)	-	6.930	10.402	1,504	92,153	16,610	11,607	2,711	1,239	9,563	60	1,405	26,716	794	266	**164,628**	156	24,543	4,319	2,375	682	185	2,267	14	145	2,764	82	2,571	**40,102**	**204,730**
MRC	Balranald Road (Arundel Road to SA5)	-	10.402	11.095	1,159	91,177	13,705	11,607	2,711	1,115	9,563	60	1,159	26,716	735	199	**159,905**	120	24,283	4,224	2,375	682	172	2,267	14	120	2,764	76	1,928	**39,025**	**198,930**
MRC	Balranald Road (SA5 to SA6)	-	11.095	17.340	1,159	91,177	13,705	11,607	2,711	1,115	9,563	60	1,159	26,716	735	199	**159,905**	120	24,283	4,224	2,375	682	172	2,267	14	120	2,764	76	1,928	**39,025**	**198,930**
MRC	Balranald Road (SA6 to SA7)	-	17.340	18.995	690	49,828	5,910	6,548	1,060	0	5,403	60	690	15,071	414	133	**85,808**	71	13,271	1,552	1,340	272	0	1,281	14	71	1,559	43	1,285	**20,760**	**106,568**
MRC	Balranald Road (SA7 to SA8)	-	18.995	22.140	468	34,744	4,527	5,130	770	0	3,935	60	468	10,959	301	66	**61,429**	48	9,255	1,183	4,246	198	0	933	14	48	1,134	31	643	**17,733**	**79,162**
MRC	Arundel Road (Balranald Road to SA4)	-	0.000	0.710	345	743	2,982	0	0	123	0	0	345	0	59	66	**4,664**	36	197	774	0	0	13	0	0	36	0	6	643	**1,704**	**6,368**
-	Stony Crossing Road (Yanga Way to Swan Hill Road)	97206	0.000	40.900	102	40,953	6,163	3,611	1,243	103	0	0	102	0	67	0	**52,344**	986	153,675	23,409	15,693	4,793	998	0	0	986	0	648	0	**201,189**	**253,532**
-	Swan Hill Road (Swan Hill to Stony Crossing Road)	97200	0.000	11.100	986	153,675	23,409	15,693	4,793	998	0	0	986	0	648	0	**201,189**	102	40,953	6,163	3,611	1,243	103	0	0	102	0	67	0	**52,344**	**253,532**
B400	Murray River Highway (Swan Hill to Lake Boga)	-	0.000	16.000	0	153,510	22,921	12,177	4,576	0	0	0	0	0	0	0	**193,184**	0	40,936	6,112	3,247	1,220	0	0	0	0	0	0	0	**51,516**	**244,699**

Appendix M – Strategic Transport Route Upgrade Designs



Notes:

- Property boundaries shown indicatively based on mapping data.
- Vehicle swept paths provided within RJA report and on Sheet BL1-2
- Hardstand areas are to remain for the life of the project to allow for future replacement of turbine components.

Site Location: Sturt Highway / Murray Valley Highway, Euston NSW

Junction Rivers Wind Farm - 100m Blade from Adelaide

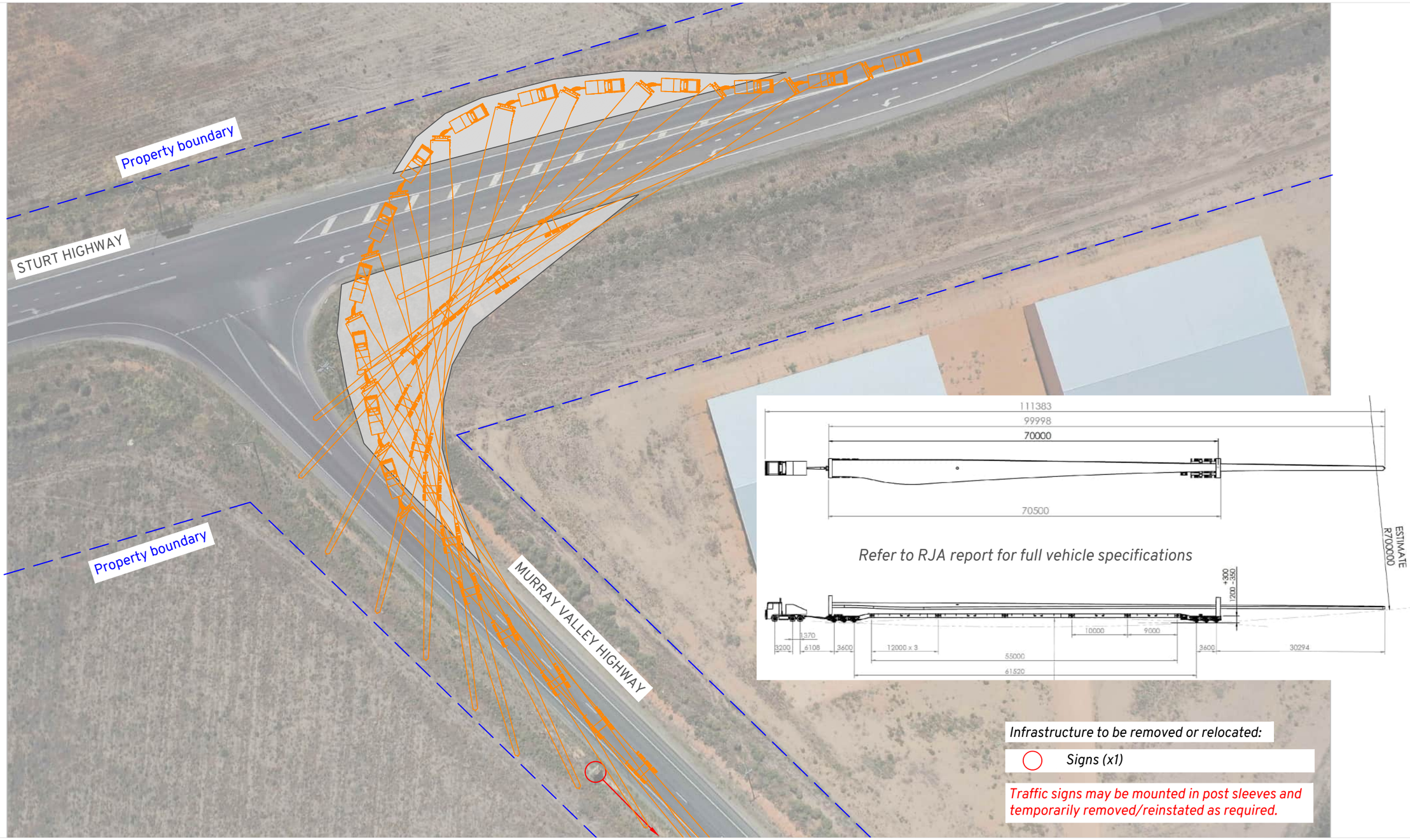
KM Index 546.0: Sturt Highway / Murray Valley Highway, Euston

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber

BL1-1



Vehicle/Load Envelope

Swept Path Assessment prepared by RJA

Junction Rivers Wind Farm - 100m Blade from Adelaide

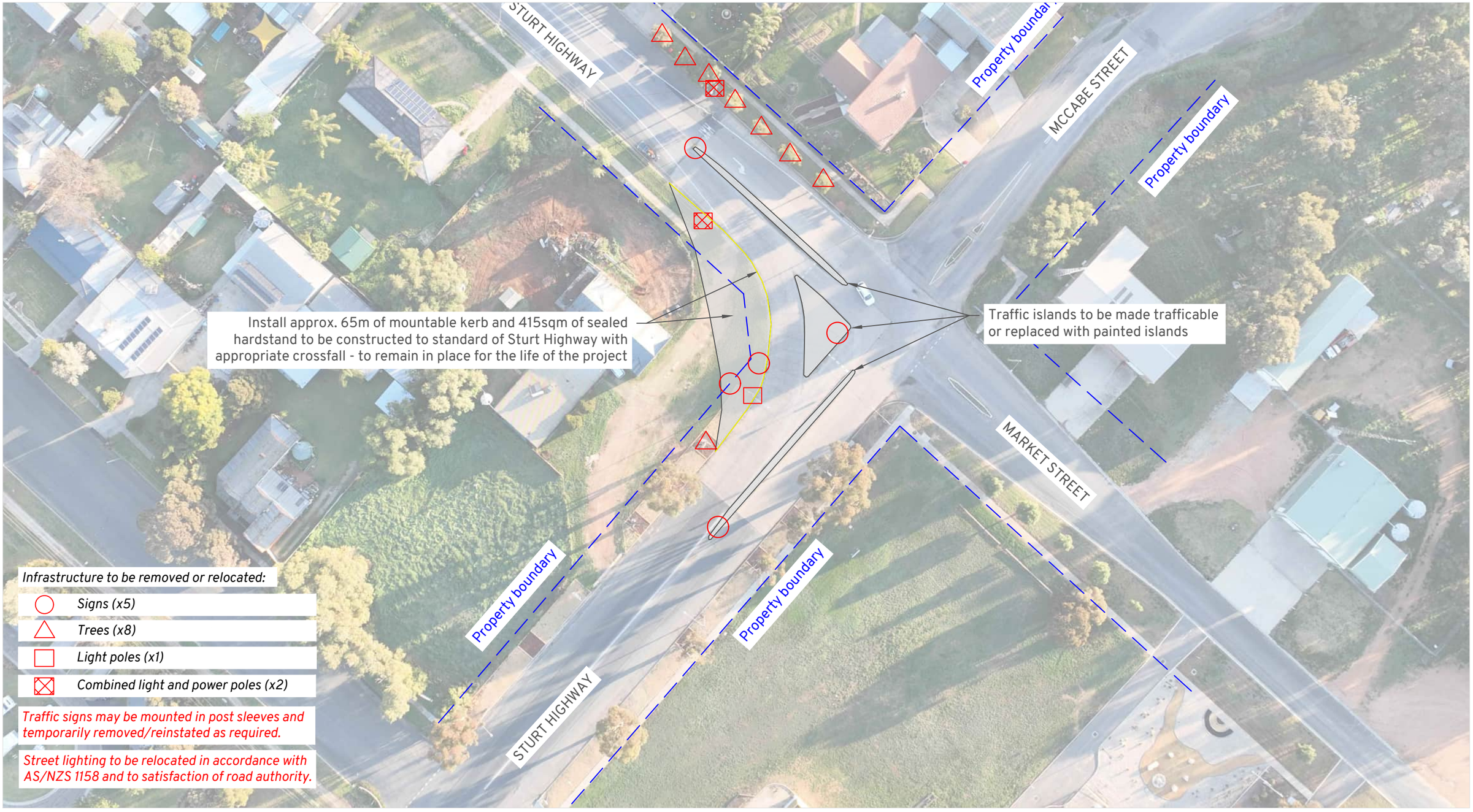
KM Index 546.0: Sturt Highway / Murray Valley Highway, Euston

Swept Path Assessment prepared by RJA

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber

BL1-2



Notes:

- Property boundaries shown indicatively based on mapping data.
- Vehicle swept paths provided within RJA report and on Sheet BL2-2.
- Traffic signs may be mounted in post sleeves and temporarily removed/reinstated as required.
- Street lighting to be relocated in accordance with AS/NZS 1158 and to satisfaction of road authority.
- Hardstand and mountable kerb to remain for the life of the project to allow for future replacement of turbine components.

Site Location: Sturt Highway / Market Street / McCabe Street, Balranald NSW

Junction Rivers Wind Farm - 100m Blade from Adelaide

KM Index 623.7: Sturt Highway / Market Street, Balranald

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber

BL2-1

STURT HIGHWAY

MCCABE STREET

Property boundary

Property boundary

Property boundary

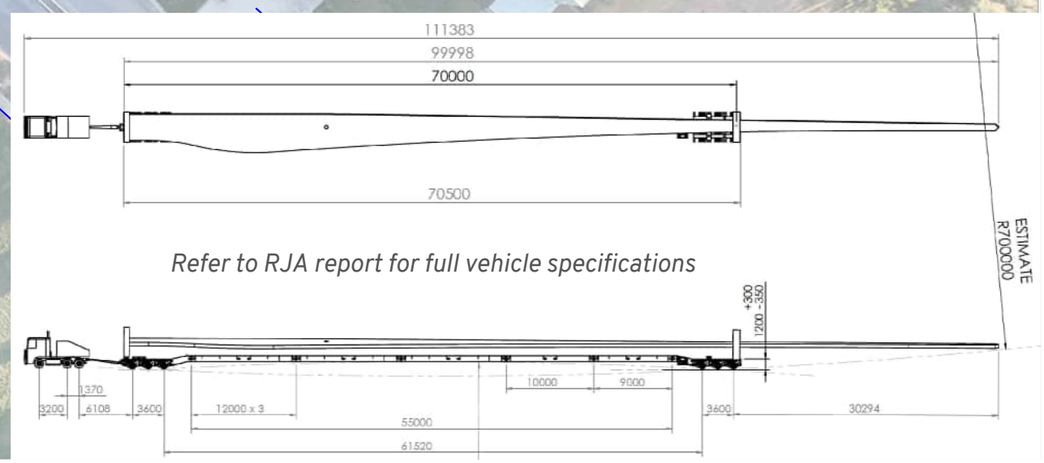
Property boundary

Infrastructure to be removed or relocated:

- *Signs (x10)*
- *Trees (x12)*
- *Light poles (x3)*
- *Combined light and power poles (x1)*

Traffic signs may be mounted in post sleeves and temporarily removed/reinstated as required.

Street lighting to be relocated in accordance with AS/NZS 1158 and to satisfaction of road authority.



Refer to RJA report for full vehicle specifications

Vehicle/Load Envelope

Swept Path Assessment prepared by RJA

Junction Rivers Wind Farm - 100m Blade from Adelaide

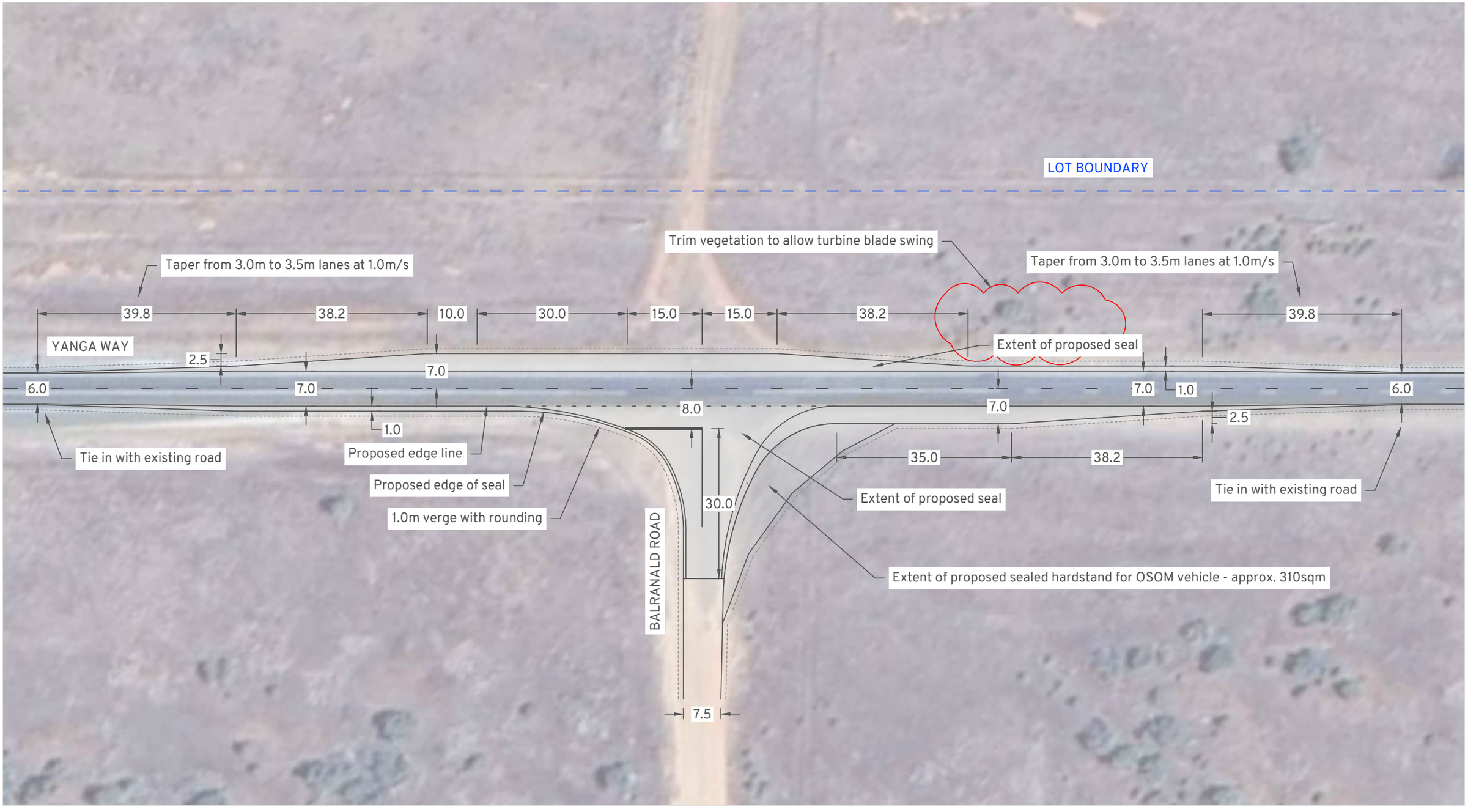
KM Index 623.7: Sturt Highway / Market Street, Balranald

Swept Path Assessment prepared by RJA

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber

BL2-2



The following design details have been adopted from Austroads Guide to Road Design Part 4A:

Rural Basic Right-turn Treatment (BAR) - Part 4A Section 7.2.1.

1: Design speed of 110km/h.
2: Lane widths of 3.5m through intersection.
3: Formation/carriageway widening is 2.5m.
4: Taper lengths calculate to 38.2m.
5: Storage length is 30.0m for one 26.0m B-Double design vehicle.

Rural Basic Left-turn Treatment (BAL) - Part 4A Section 8.2.1.

1: Design speed of 110km/h.
2: Lane widths of 3.5m through intersection.
3: Formation/carriageway widening is 2.5m.
4: Taper length calculates to 38.2m.
5: Minimum length of parallel widened shoulder used from Table 8.1 is 35.0m.

Note: Lot boundaries shown indicatively based on NSW Planning Portal Spatial Viewer

Junction Rivers Wind Farm - 100m Blade from Adelaide

KM Index 636.8: Yanga Way / Balranald Road, Yanga

Strategic Design - BAR/BAL

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber

BL3-1



The following design details have been adopted from Austroads Guide to Road Design Part 4A:

Rural Basic Right-turn Treatment (BAR) - Part 4A Section 7.2.1.

1: Design speed of 110km/h.
2: Lane widths of 3.5m through intersection.
3: Formation/carriageway widening is 2.5m.
4: Taper lengths calculate to 38.2m.
5: Storage length is 30.0m for one 26.0m B-Double design vehicle.

Rural Basic Left-turn Treatment (BAL) - Part 4A Section 8.2.1.

1: Design speed of 110km/h.
2: Lane widths of 3.5m through intersection.
3: Formation/carriageway widening is 2.5m.
4: Taper length calculates to 38.2m.
5: Minimum length of parallel widened shoulder used from Table 8.1 is 35.0m.

Note: Lot boundaries shown indicatively based on NSW Planning Portal Spatial Viewer

Junction Rivers Wind Farm - 100m Blade from Adelaide

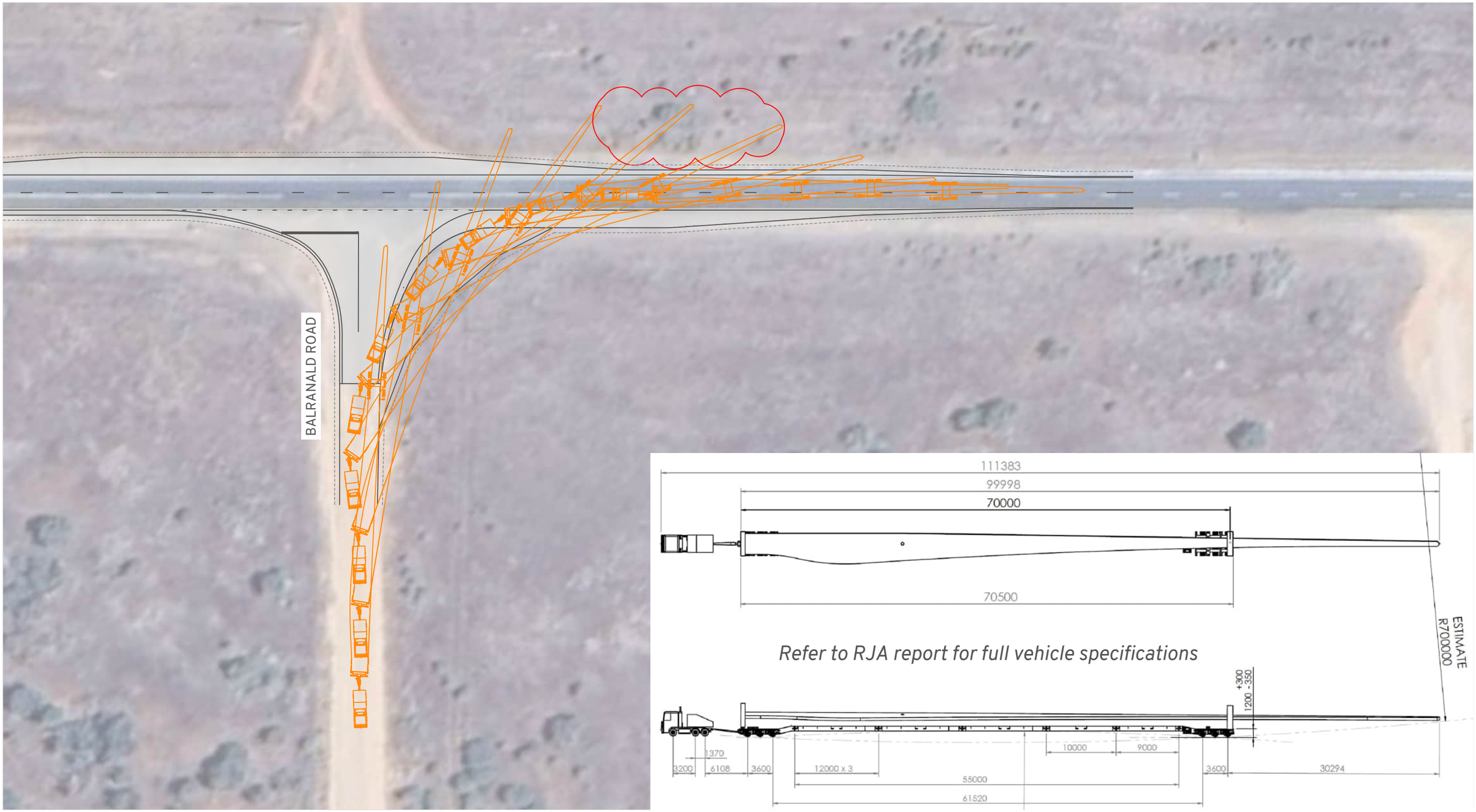
KM Index 636.8: Yanga Way / Balranald Road, Yanga

Strategic Design - BAR/BAL

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber

BL3-2



Refer to RJA report for full vehicle specifications

Vehicle/Load Envelope

Swept Path Assessment prepared by RJA

Junction Rivers Wind Farm - 100m Blade from Adelaide

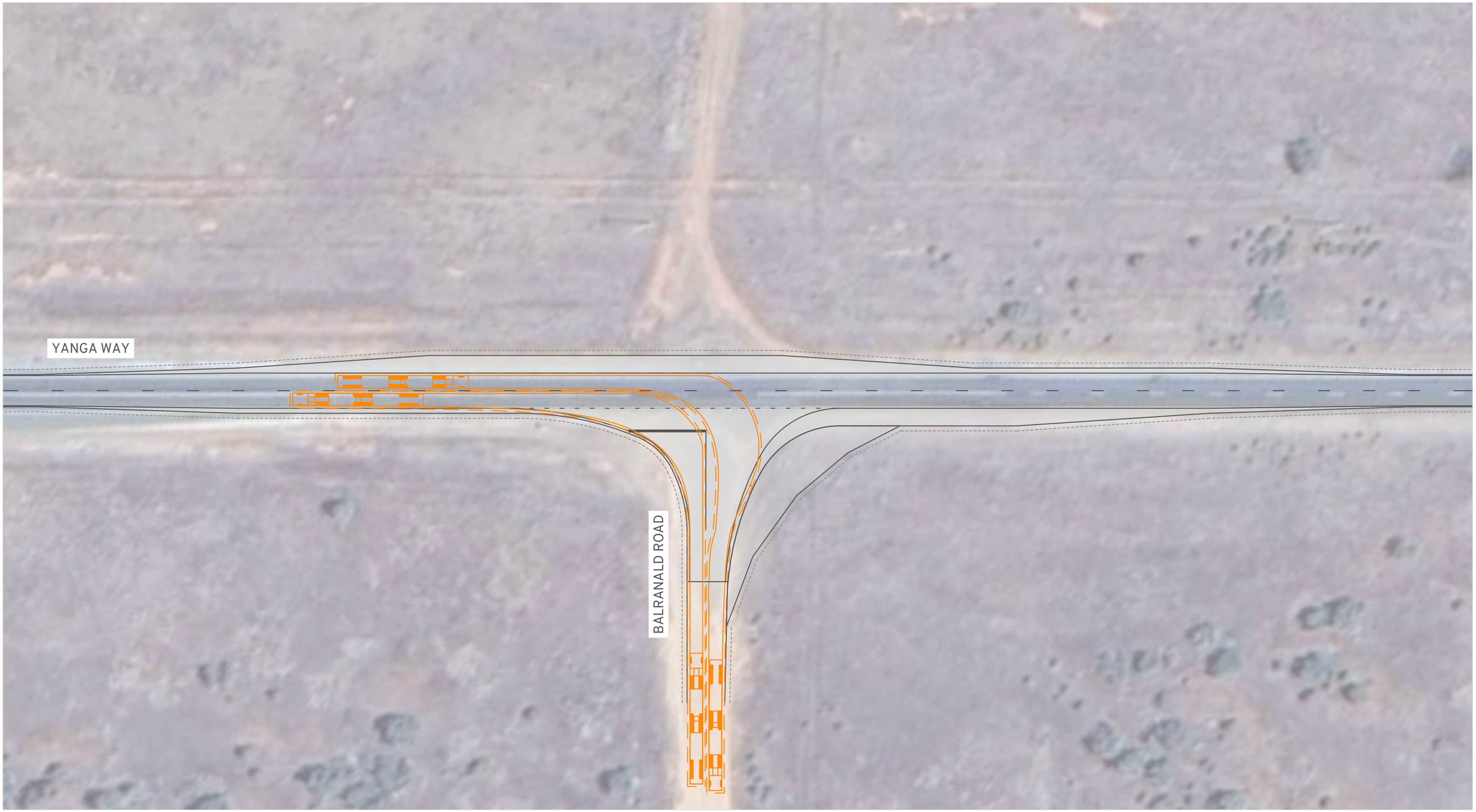
KM Index 636.8: Yanga Way / Balranald Road, Yanga

Strategic Design - BAR/BAL

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber

BL3-3



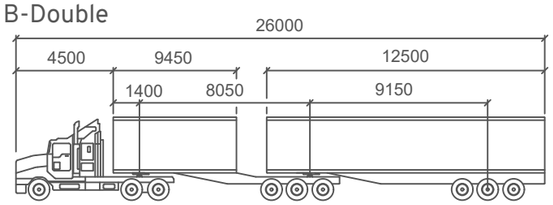
Vehicle Envelope

500mm Clearance

Reverse Manoevure

Min. Design Speed 15km/h

26.0m 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

Junction Rivers Wind Farm - 100m Blade from Adelaide

KM Index 636.8: Yanga Way / Balranald Road, Yanga

Strategic Design - BAR/BAL

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber

BL3-4

YANGA WAY

BALRANALD ROAD

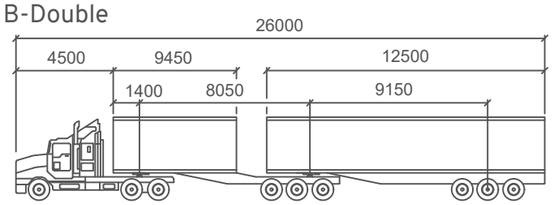
Vehicle Envelope

500mm Clearance

Reverse Manoevure

Min. Design Speed 15km/h

26.0m 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

Junction Rivers Wind Farm - 100m Blade from Adelaide

KM Index 636.8: Yanga Way / Balranald Road, Yanga

Strategic Design - BAR/BAL

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber

BL3-5



Sight Distance

Sight Line

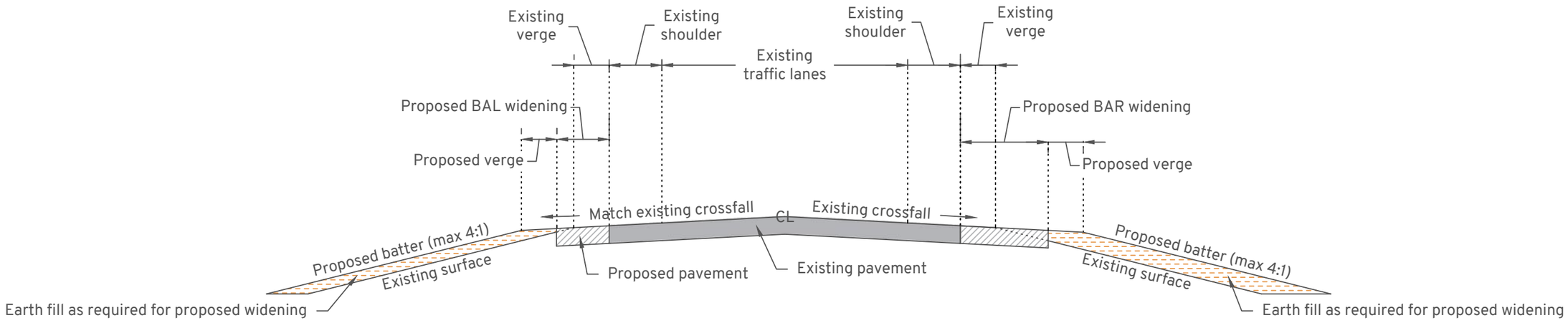
Junction Rivers Wind Farm - 100m Blade from Adelaide

KM Index 636.8: Yanga Way / Balranald Road, Yanga

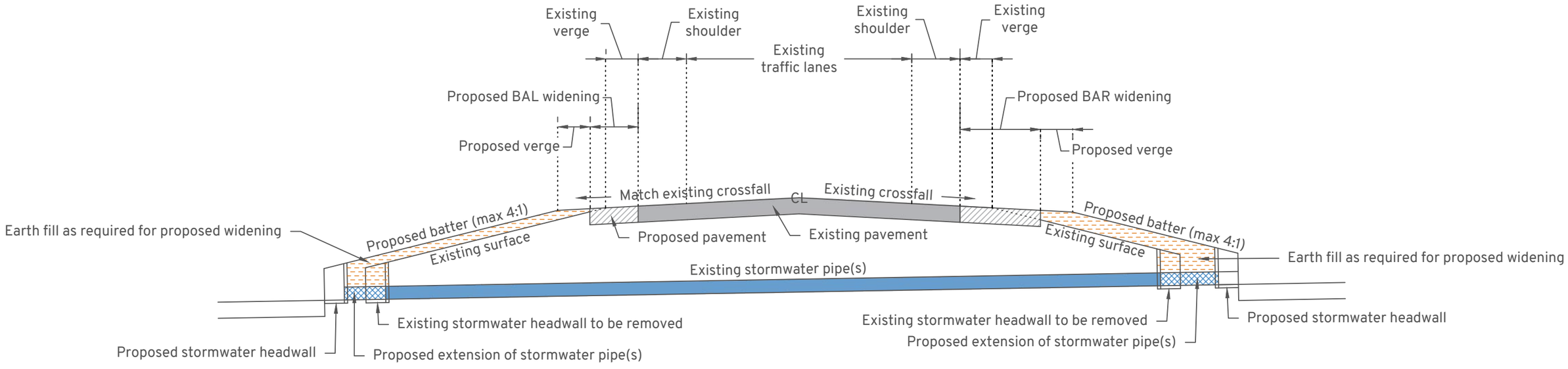
Sight Distance Assessment

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:2000

Amber BL3-6



Typical Cross Section



Typical Cross Section - Culvert

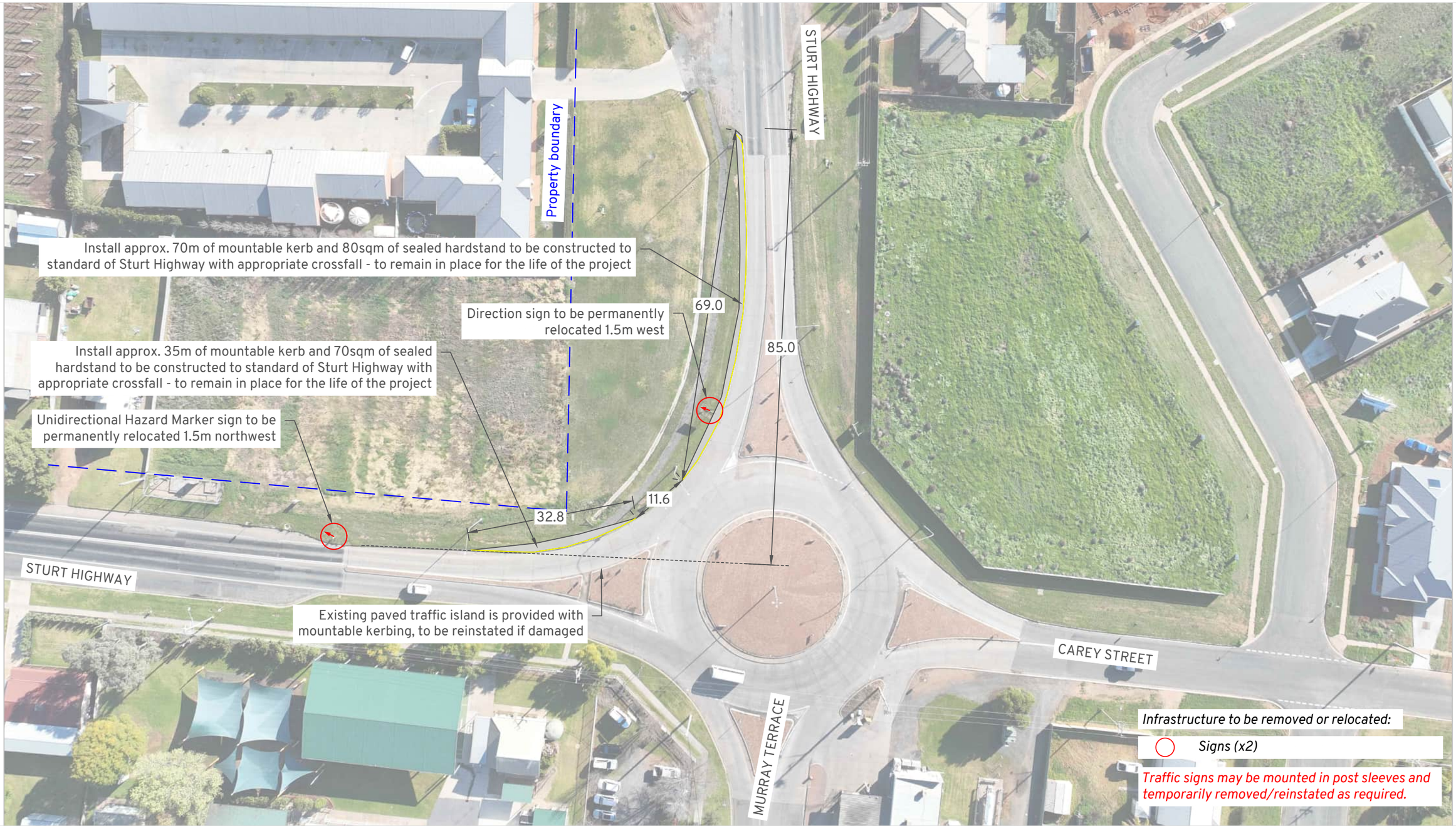
Junction Rivers Wind Farm

Strategic Designs - Typical Cross Sections

CONCEPT FOR DISCUSSION PURPOSES ONLY

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: NTS

Amber BL3-7



Notes:

- Property boundaries shown indicatively based on mapping data.
- Vehicle swept paths provided on Sheet TO1-2.
- Hardstand and mountable kerb to remain for the life of the project to allow for future replacement of turbine components.

Site Location: Sturt Highway / Carey Street / Murray Terrace, Euston NSW

Junction Rivers Wind Farm - Tower fr. Adelaide (Route 3)

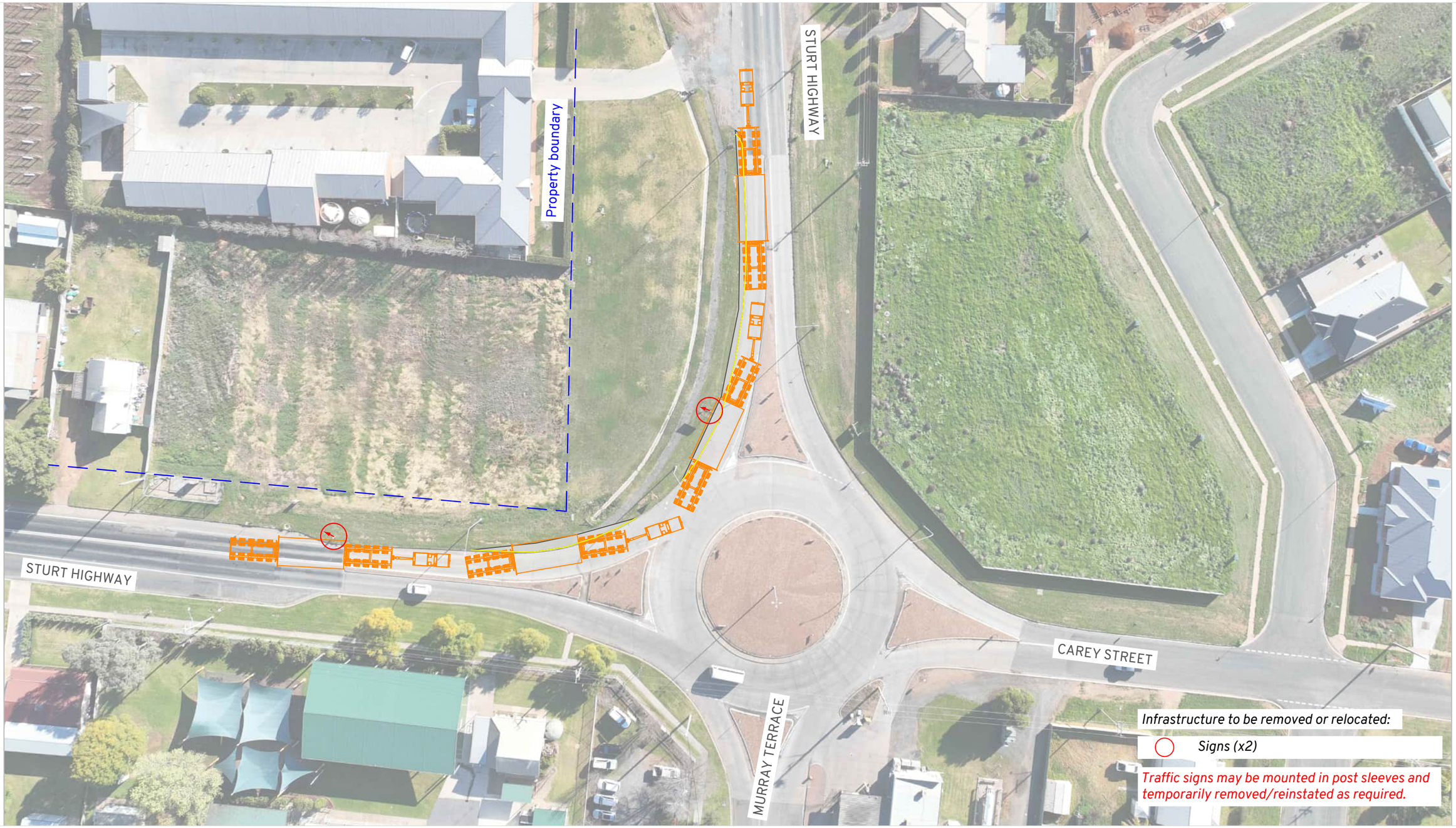
KM Index 519.0 - Sturt Highway / Carey Street, Euston

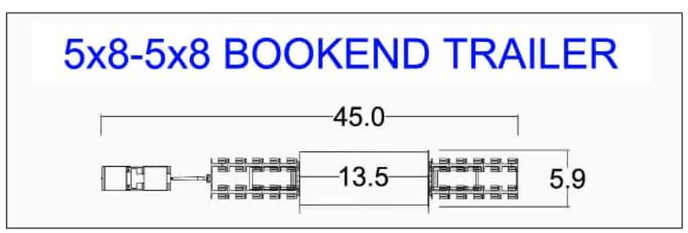
Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber

TO1-1





Refer to RJA report for full vehicle specifications

Junction Rivers Wind Farm - Tower fr. Adelaide (Route 3)

KM Index 519.0 - Sturt Highway / Carey Street, Euston

Swept Path Assessment prepared by RJA

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber TO1-2



Notes:

- Vehicle swept paths provided on Sheet TO2-2.
- Mountable kerb to remain for the life of the project to allow for future replacement of turbine components.

Site Location: Silver City Highway / Armstrong Avenue / Sandwych Street / Adam Street, Wentworth NSW

Junction Rivers Wind Farm - Tower fr. Adelaide (Route 4)

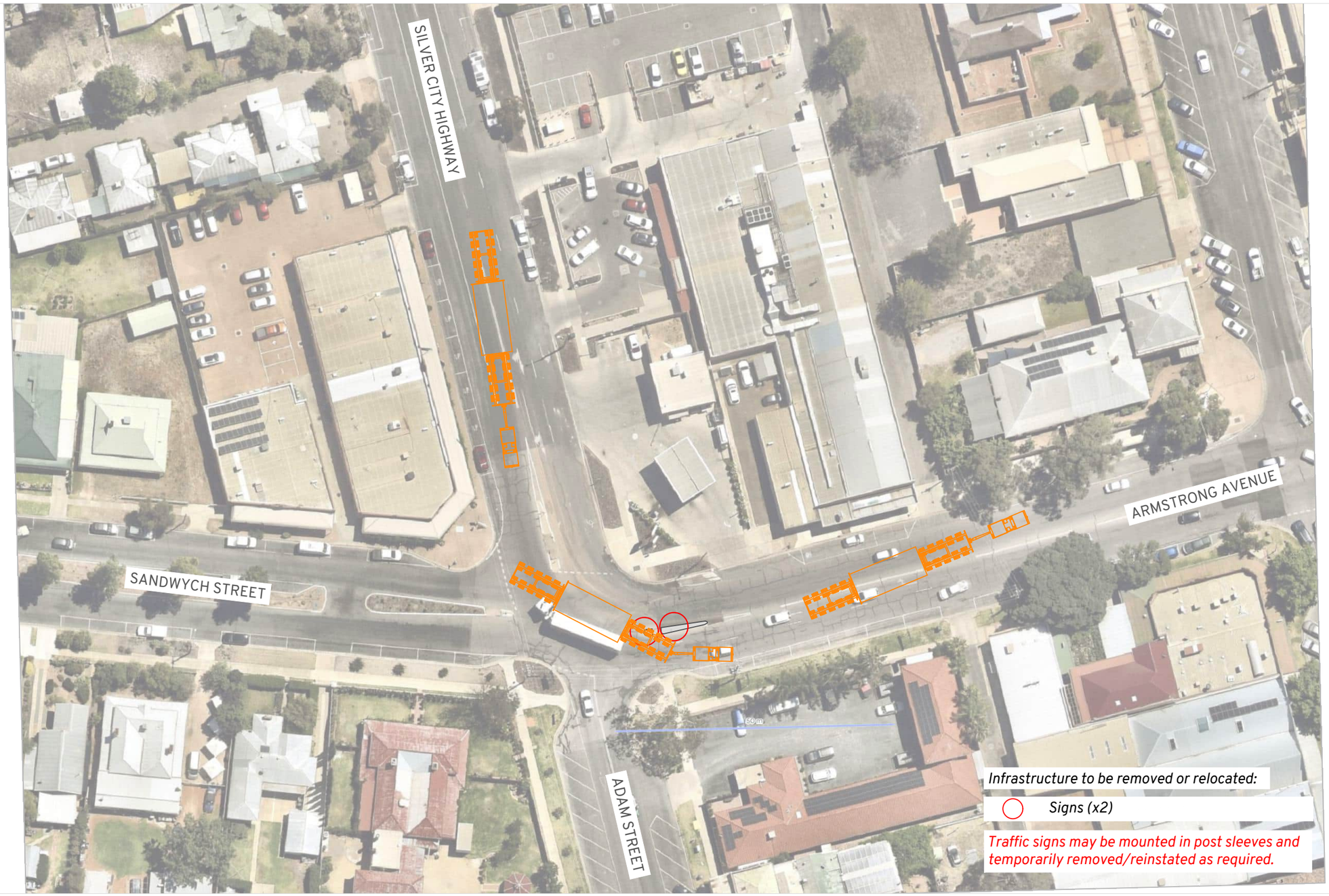
KM Index 434.0 - Silver City Highway / Armstrong Avenue, Wentworth

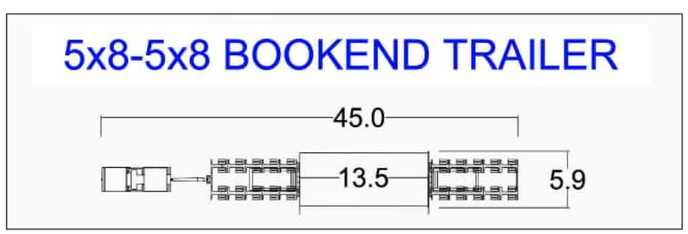
Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber

TO2-1





Refer to RJA report for full vehicle specifications

Junction Rivers Wind Farm - Tower fr. Adelaide (Route 4)

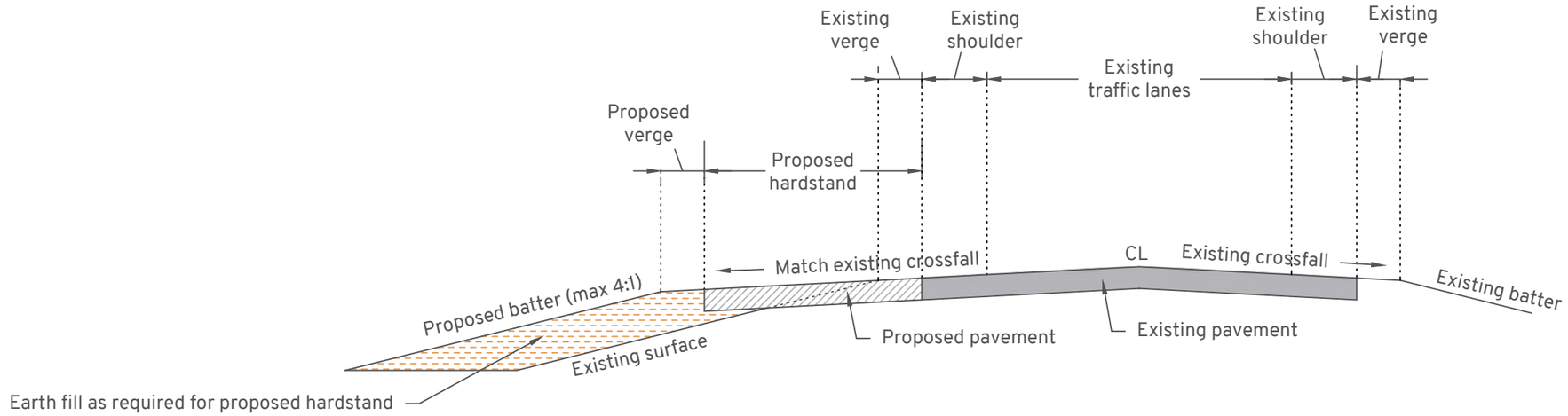
KM Index 434.0 - Silver City Highway / Armstrong Avenue, Wentworth

Swept Path Assessment prepared by RJA

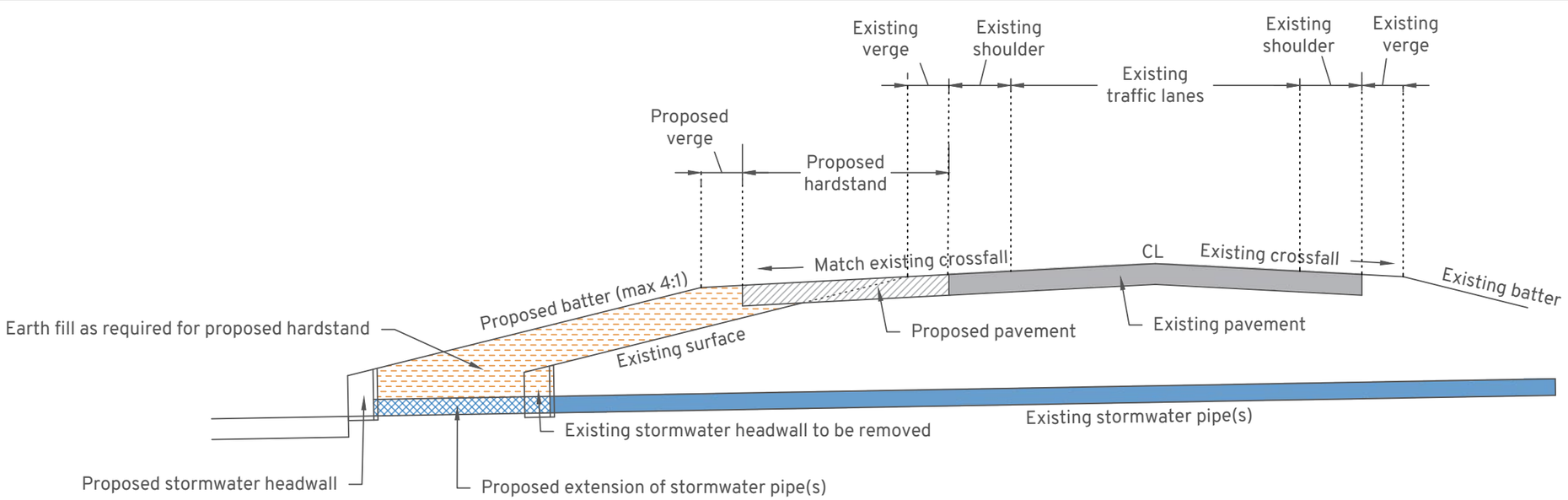
DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber

TO2-2



Typical Cross Section



Typical Cross Section - Culvert

Junction Rivers Wind Farm

Strategic Designs - Typical Cross Sections

CONCEPT FOR DISCUSSION PURPOSES ONLY

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: NTS

Amber

SEC-1



Location: -34.834713, 143.506854

Design in general accordance with Austroads Guide to Road Design Part 4 - Figure 7.4

Junction Rivers Wind Farm

Site Access #1 on Yanga Way -Emergency Access Only

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber

SA1-1



Location: -34.834713, 143.506854

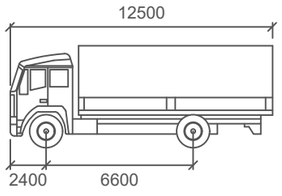
Vehicle Envelope

500mm Clearance

Reverse Manoevure

Min. Design Speed 15km/h

HRV



	mm
Width	: 2500
Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 35.2

Junction Rivers Wind Farm

Site Access #1 on Yanga Way -Emergency Access Only

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber

SA1-2



Location: -34.834713, 143.506854

Sight Distance

Sight Line

Junction Rivers Wind Farm

Site Access #1 on Yanga Way -Emergency Access Only

Sight Distance Assessment

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:2000

Amber

SA1-3



Location: -34.818511, 143.579860

Design in general accordance with Austroads Guide to Road Design Part 4 - Figure 7.4

Junction Rivers Wind Farm

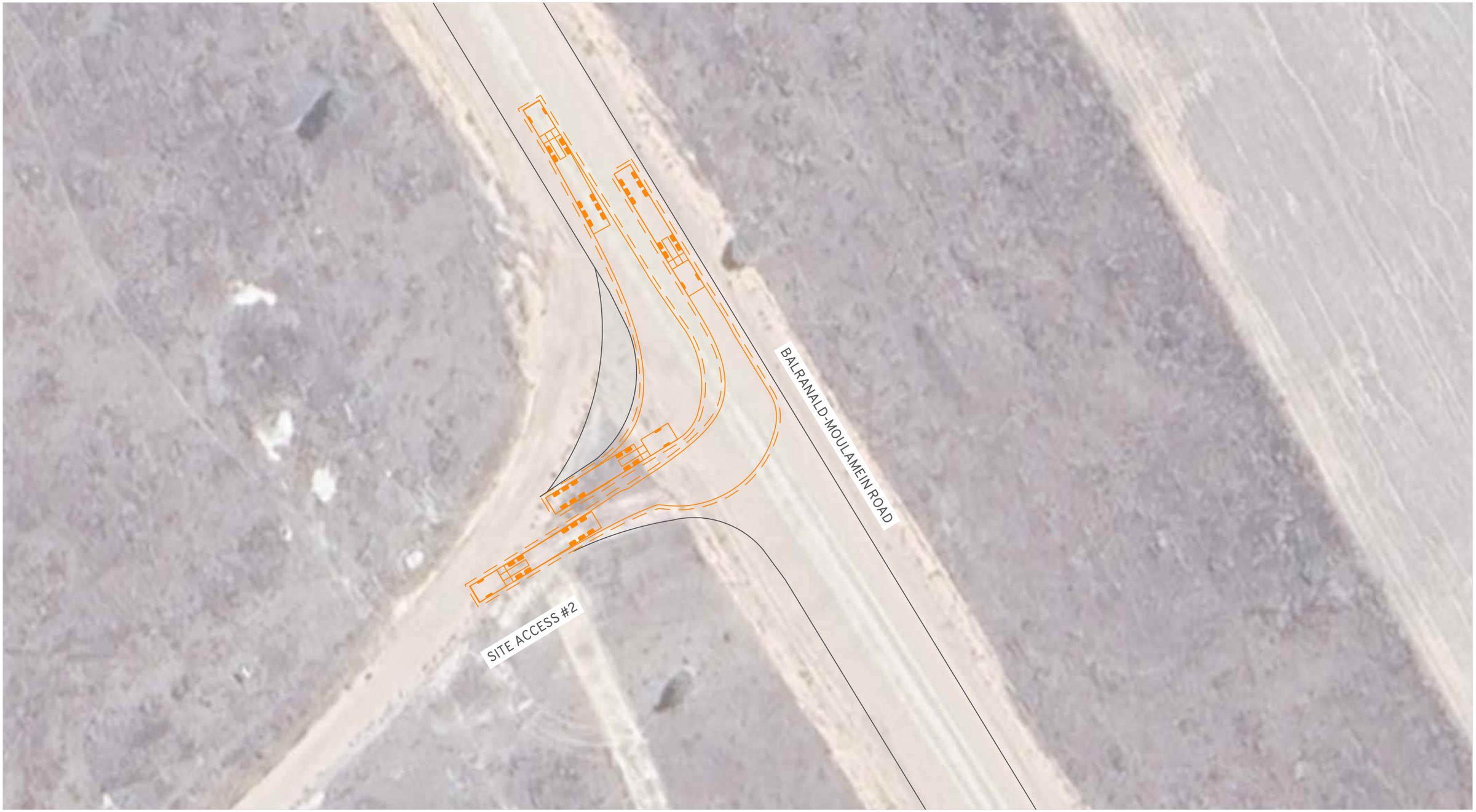
Site Access #2 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

Amber

SA2-1



Location: -34.818511, 143.579860

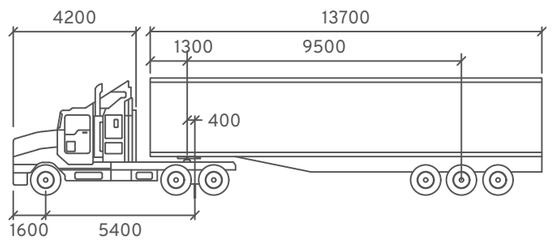
Vehicle Envelope

500mm Clearance

Reverse Manoevure

Min. Design Speed 15km/h

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	: 70.0

Junction Rivers Wind Farm

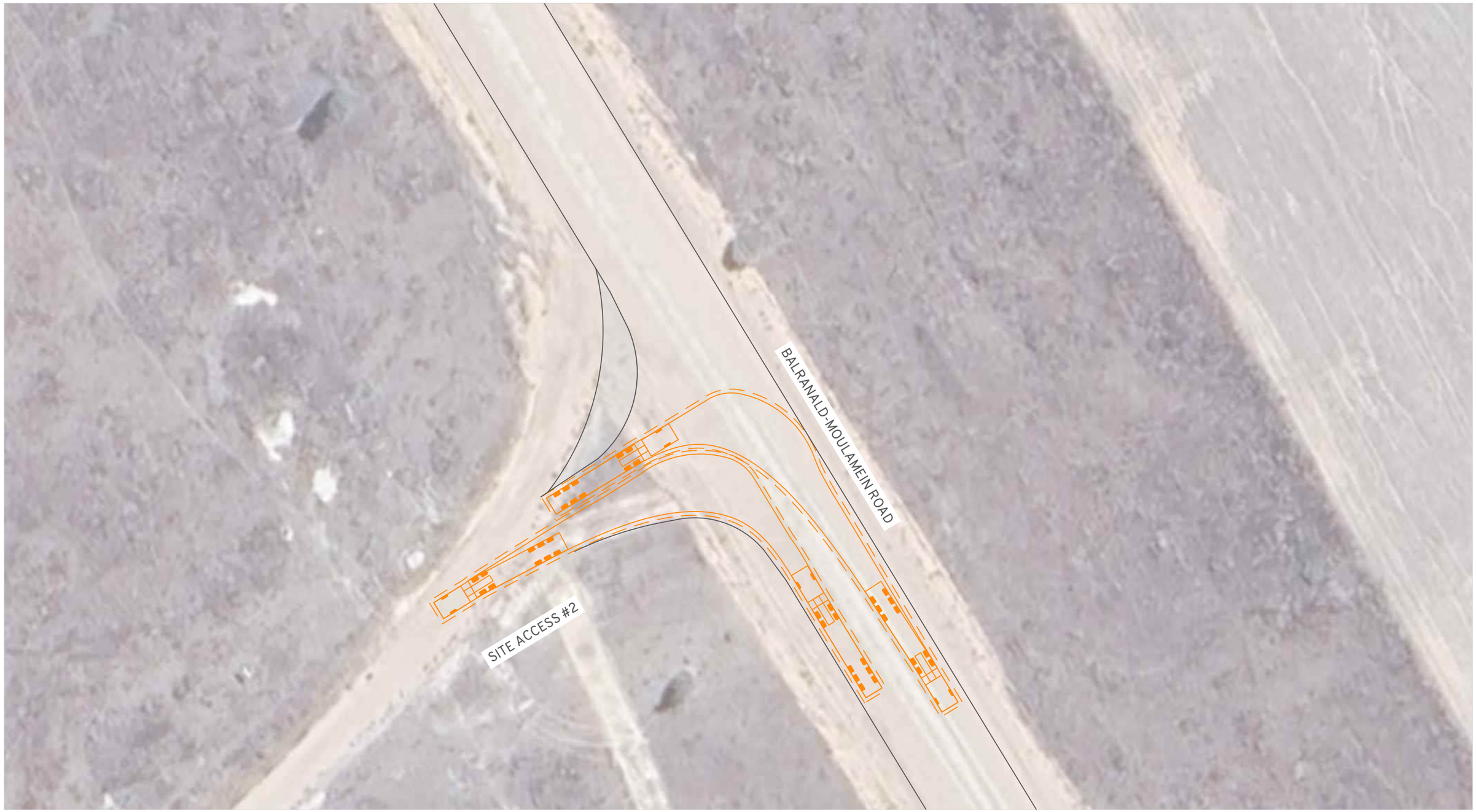
Site Access #2 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

Amber

SA2-2



Location: -34.818511, 143.579860

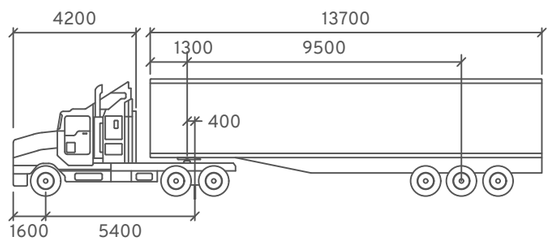
Vehicle Envelope

500mm Clearance

Reverse Manoevure

Min. Design Speed 15km/h

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	: 70.0

Junction Rivers Wind Farm

Site Access #2 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

Amber

SA2-3



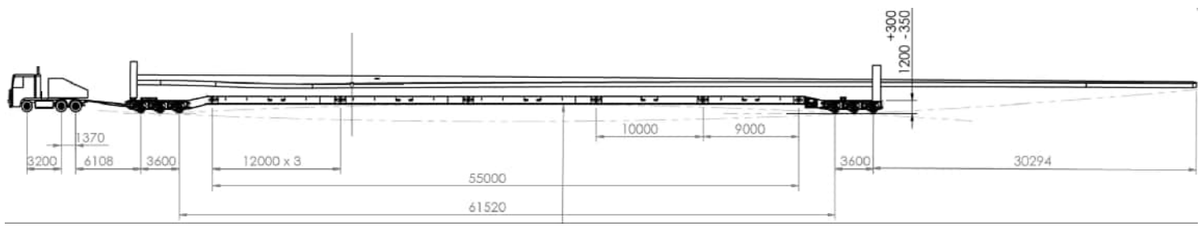
Location: -34.818511, 143.579860

Vehicle/Load Envelope

Vehicle/Load 0.5m Clearance

Wheel Path

Wheel Path 0.5m Clearance



Junction Rivers Wind Farm

Site Access #2 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:1000

Amber

SA2-4



Location: -34.821065, 143.582265

Design in general accordance with Austroads Guide to Road Design Part 4 - Figure 7.4

Junction Rivers Wind Farm

Site Access #3 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

Amber

SA3-1



Location: -34.821065, 143.582265

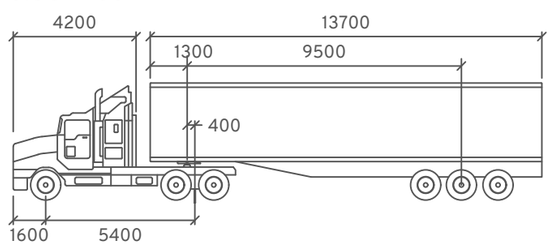
Vehicle Envelope

500mm Clearance

Reverse Manoevure

Min. Design Speed 15km/h

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	: 70.0

Junction Rivers Wind Farm

Site Access #3 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

Amber

SA3-2

BALRANALD-MOULAMEIN ROAD

SITE ACCESS #3

Location: -34.821065, 143.582265

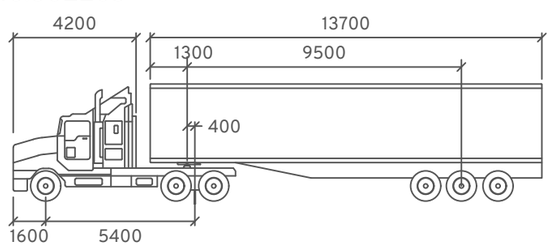
Vehicle Envelope

500mm Clearance

Reverse Manoevure

Min. Design Speed 15km/h

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	: 70.0

Junction Rivers Wind Farm

Site Access #3 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

Amber

SA3-3



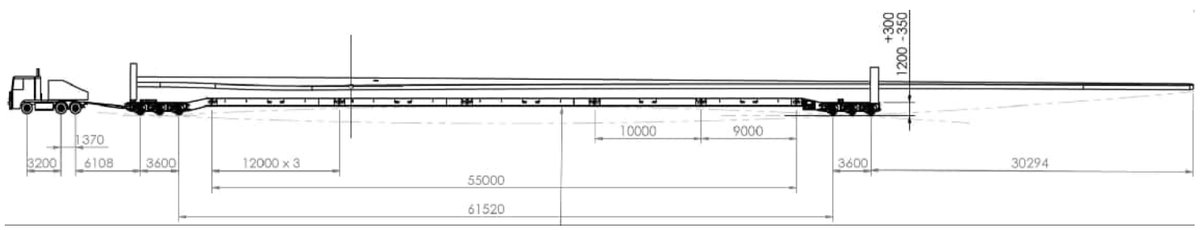
Location: -34.821065, 143.582265

Vehicle/Load Envelope

Vehicle/Load 0.5m Clearance

Wheel Path

Wheel Path 0.5m Clearance



Junction Rivers Wind Farm

Site Access #3 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:1000

Amber

SA3-4



Location: -34.843839, 143.600147

Design in general accordance with Austroads Guide to Road Design Part 4 - Figure 7.4

Junction Rivers Wind Farm

Site Access #4 on Arundel Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

Amber

SA4-1



Entry Manoeuvre

Location: -34.843839, 143.600147



Exit Manoeuvre

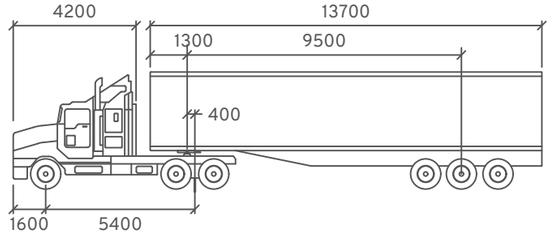
Vehicle Envelope

500mm Clearance

Reverse Manoeuvre

Min. Design Speed 15km/h

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	: 70.0

Junction Rivers Wind Farm

Site Access #4 on Arundel Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

Amber

SA4-2

Vegetation to be assessed on-site with trimming to be undertaken if required

ARUNDEL ROAD

SITE ACCESS #4

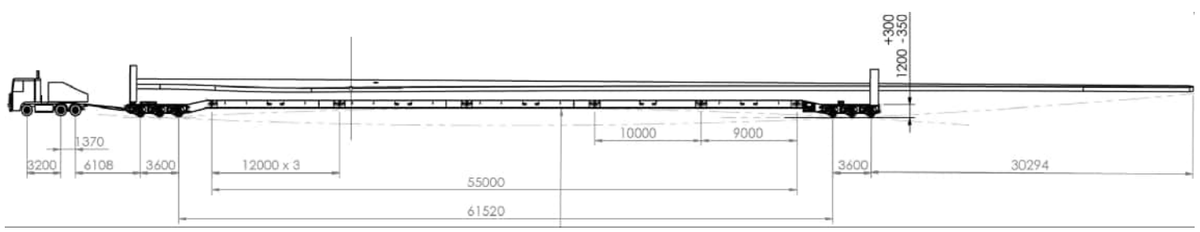
Location: -34.843839, 143.600147

Vehicle/Load Envelope

Vehicle/Load 0.5m Clearance

Wheel Path

Wheel Path 0.5m Clearance



Junction Rivers Wind Farm

Site Access #4 on Arundel Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber

SA4-3



Location: -34.841527, 143.608704

Design in general accordance with Austroads Guide to Road Design Part 4 - Figure 7.4

Junction Rivers Wind Farm

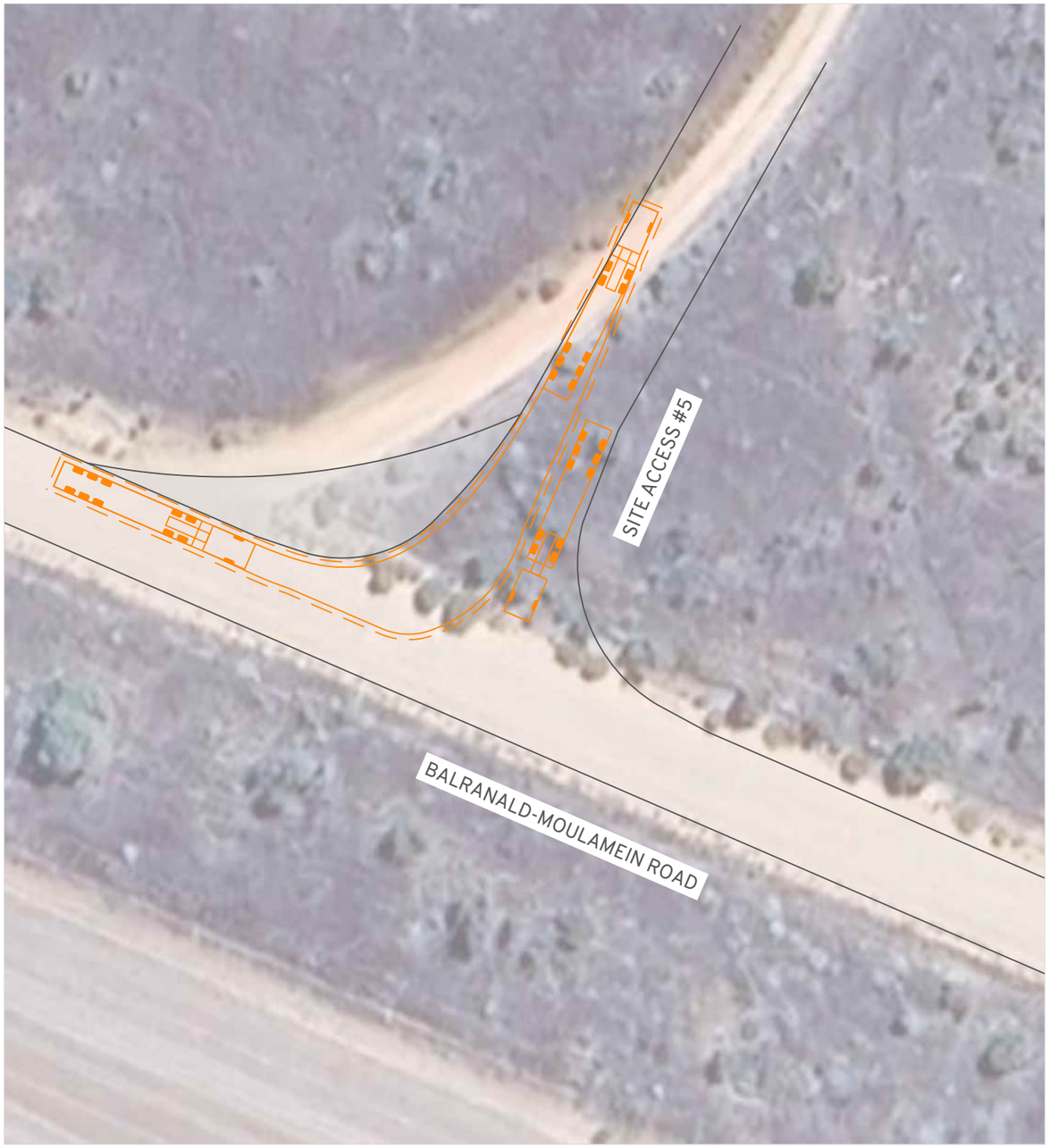
Site Access #5 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

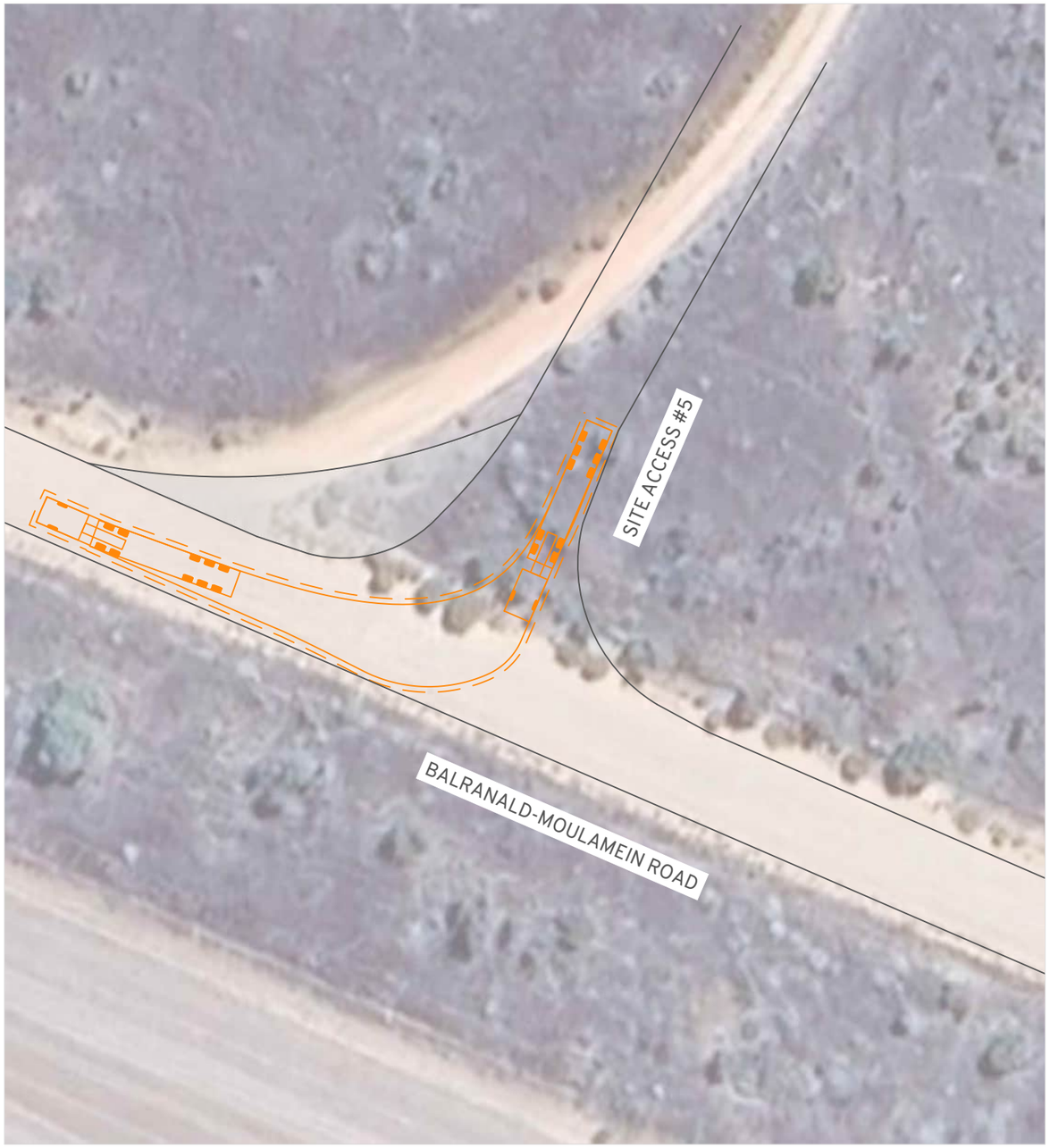
Amber

SA5-1



Entry Manoeuvre

Location: -34.841527, 143.608704



Exit Manoeuvre

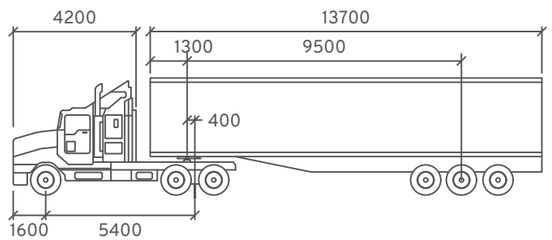
Vehicle Envelope

500mm Clearance

Reverse Manoeuvre

Min. Design Speed 15km/h

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	: 70.0

Junction Rivers Wind Farm

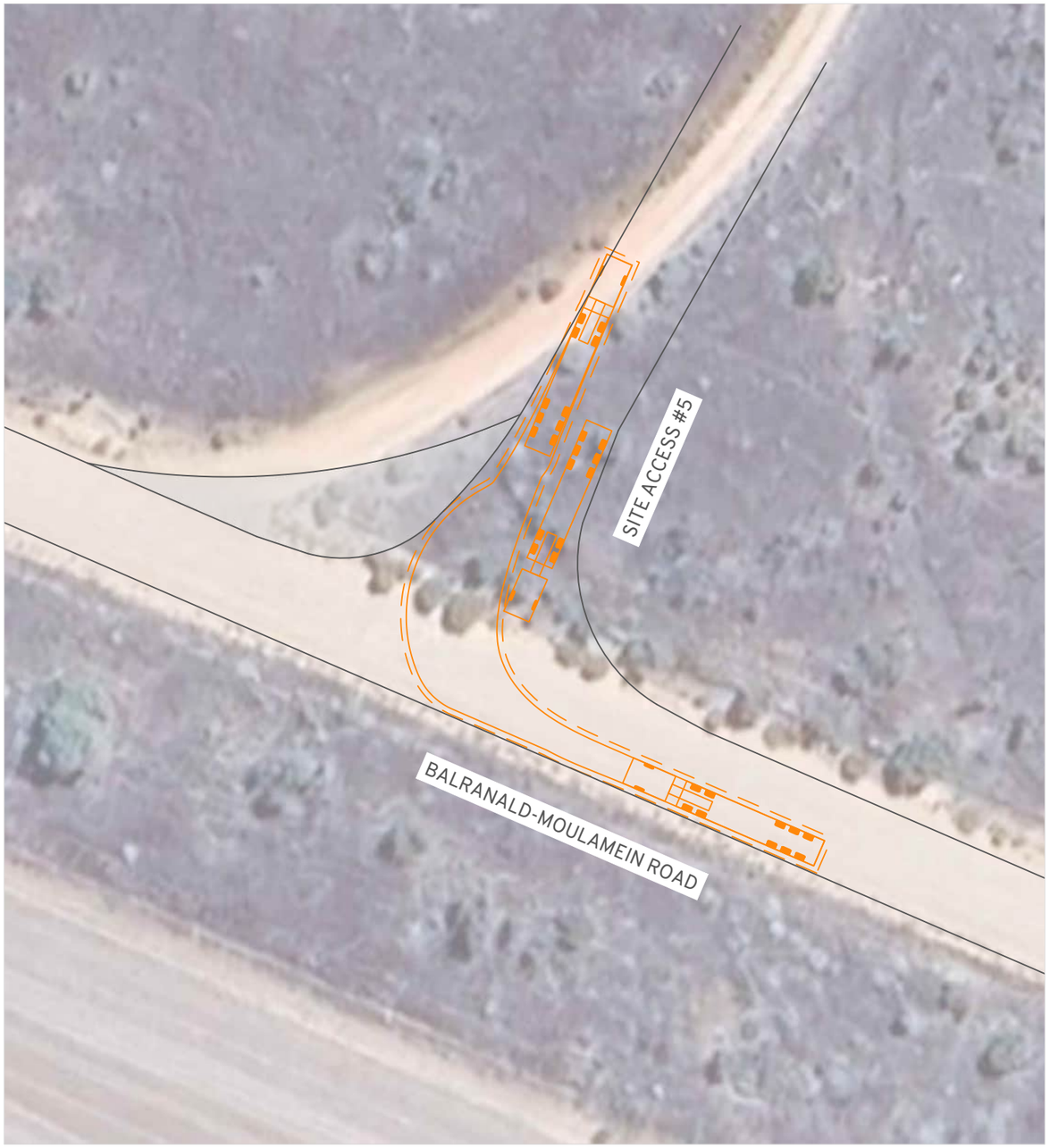
Site Access #5 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

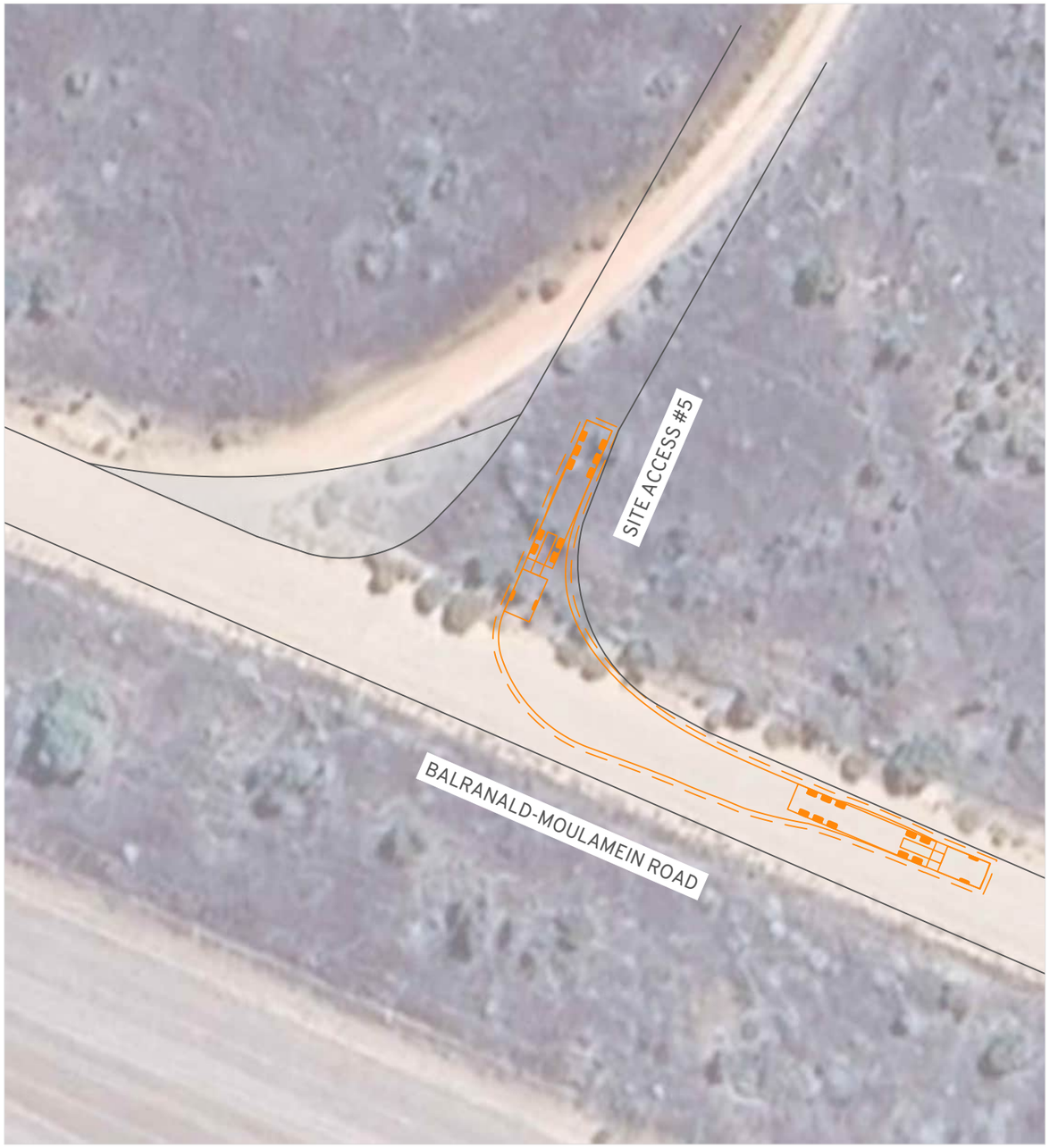
Amber

SA5-2



Entry Manoeuvre

Location: -34.841527, 143.608704



Exit Manoeuvre

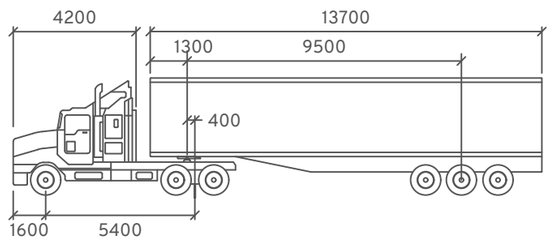
Vehicle Envelope

500mm Clearance

Reverse Manoeuvre

Min. Design Speed 15km/h

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	: 70.0

Junction Rivers Wind Farm

Site Access #5 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

Amber

SA5-3

SITE ACCESS #5

BALRANALD-MOULAMEIN ROAD

Vegetation to be assessed on-site with trimming to be undertaken if required

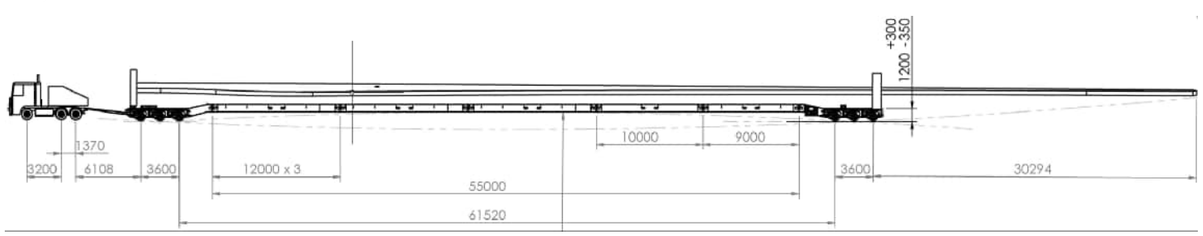
Location: -34.841527, 143.608704

Vehicle/Load Envelope

Vehicle/Load 0.5m Clearance

Wheel Path

Wheel Path 0.5m Clearance



Junction Rivers Wind Farm

Site Access #5 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber

SA5-4



Location: -34.870763, 143.664907

Design in general accordance with Austroads Guide to Road Design Part 4 - Figure 7.4

Junction Rivers Wind Farm

Site Access #6 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

Amber

SA6-1



Entry Manoeuvre

Location: -34.870763, 143.664907



Exit Manoeuvre

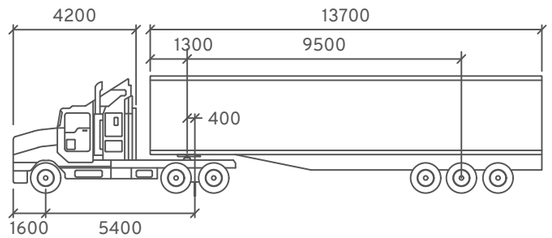
Vehicle Envelope

500mm Clearance

Reverse Manoeuvre

Min. Design Speed 15km/h

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	: 70.0

Junction Rivers Wind Farm

Site Access #6 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

Amber

SA6-2



Entry Manoeuvre

Location: -34.870763, 143.664907



Exit Manoeuvre

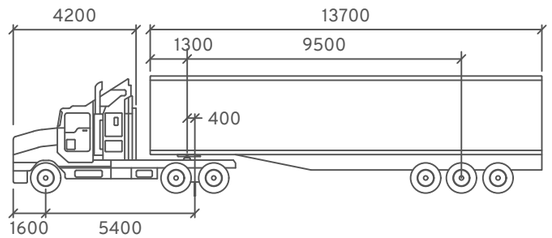
Vehicle Envelope

500mm Clearance

Reverse Manoeuvre

Min. Design Speed 15km/h

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	: 70.0

Junction Rivers Wind Farm

Site Access #6 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

Amber

SA6-3



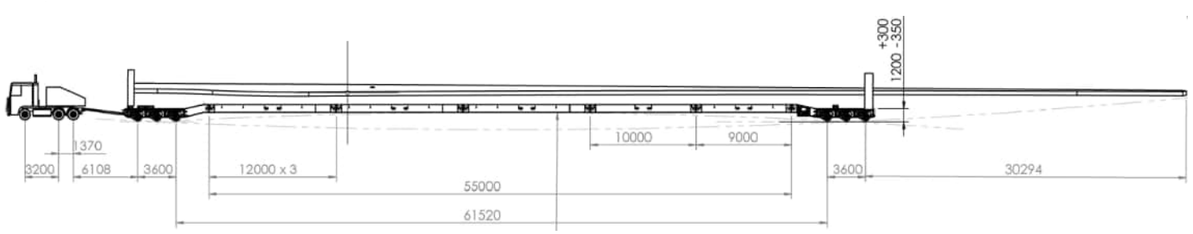
Location: -34.870763, 143.664907

Vehicle/Load Envelope

Vehicle/Load 0.5m Clearance

Wheel Path

Wheel Path 0.5m Clearance



Junction Rivers Wind Farm

Site Access #6 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber

SA6-4



Location: -34.881195, 143.678350

Design in general accordance with Austroads Guide to Road Design Part 4 - Figure 7.4

Junction Rivers Wind Farm

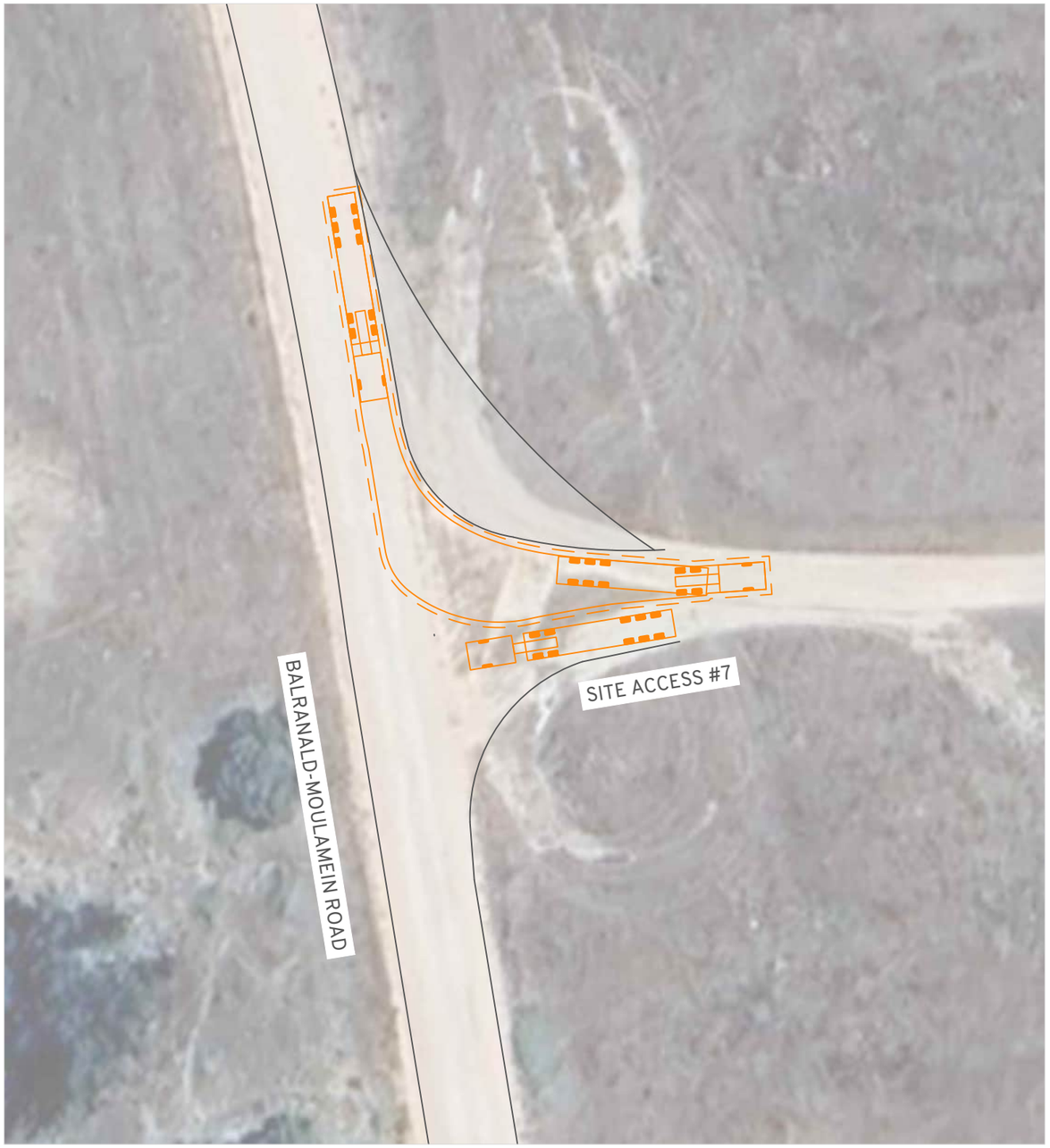
Site Access #7 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

Amber

SA7-1



Entry Manoeuvre



Exit Manoeuvre

Location: -34.881195, 143.678350

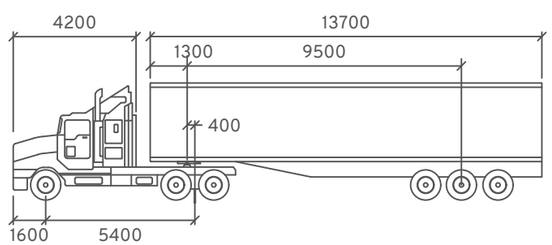
Vehicle Envelope

500mm Clearance

Reverse Manoeuvre

Min. Design Speed 15km/h

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	: 70.0

Junction Rivers Wind Farm

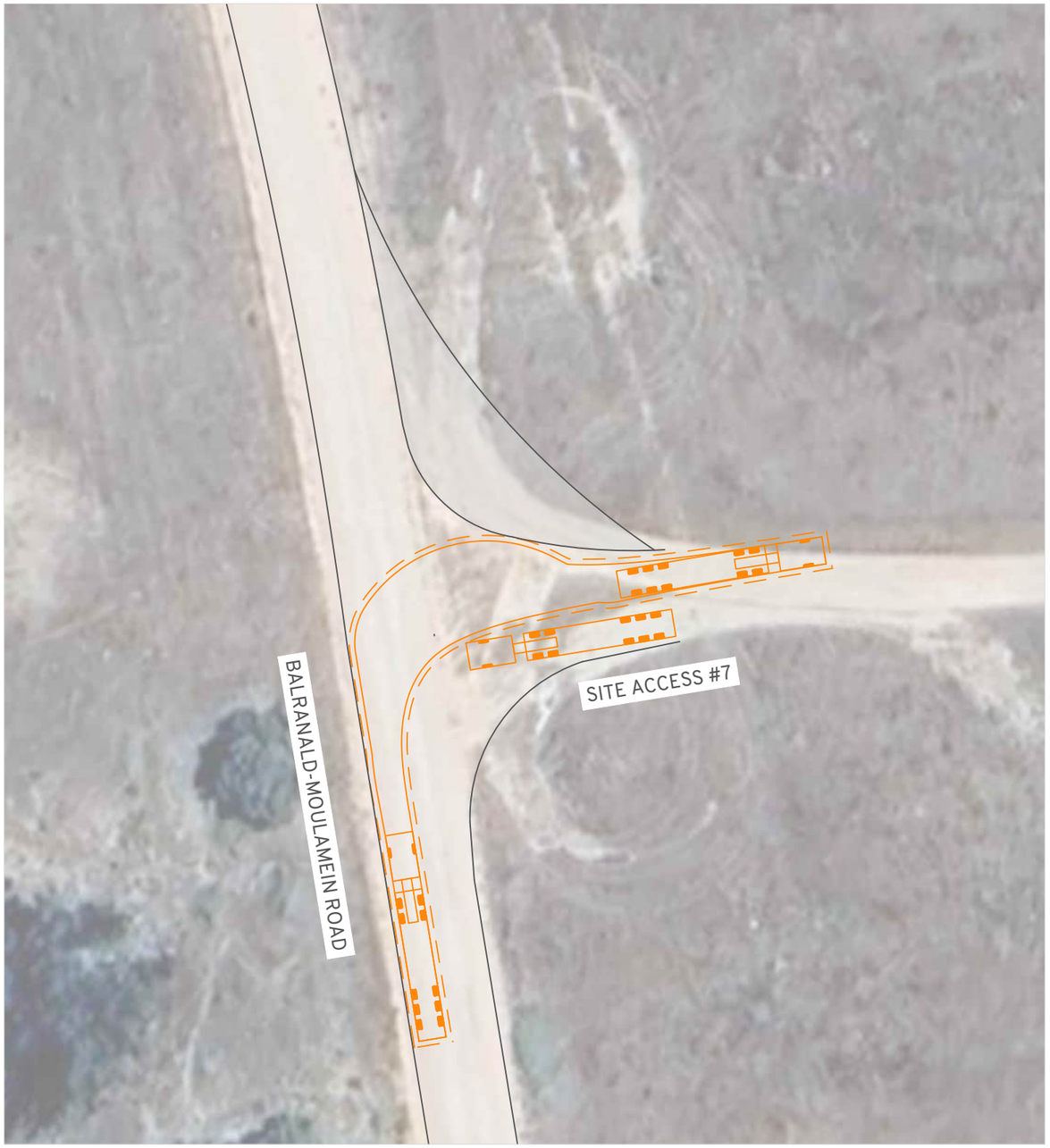
Site Access #7 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

Amber

SA7-2



Entry Manoeuvre



Exit Manoeuvre

Location: -34.881195, 143.678350

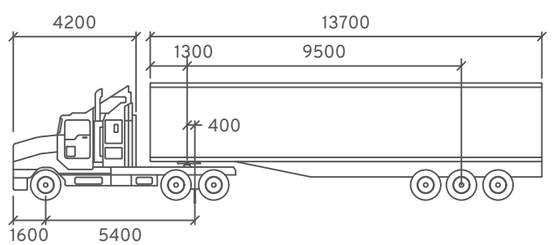
Vehicle Envelope

500mm Clearance

Reverse Manoeuvre

Min. Design Speed 15km/h

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	: 70.0

Junction Rivers Wind Farm

Site Access #7 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

Amber

SA7-3



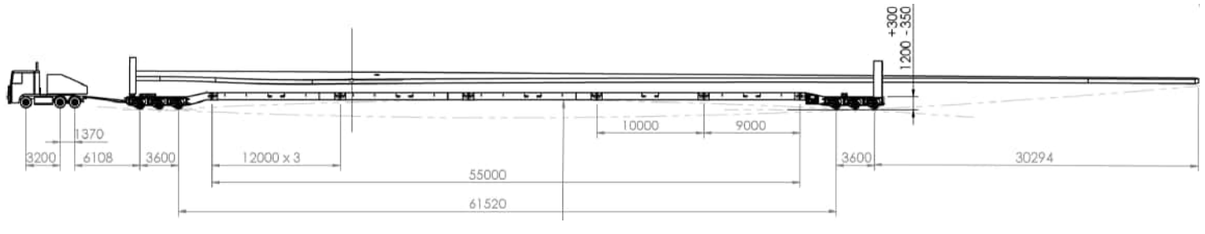
Location: -34.881195, 143.678350

Vehicle/Load Envelope

Vehicle/Load 0.5m Clearance

Wheel Path

Wheel Path 0.5m Clearance



Junction Rivers Wind Farm

Site Access #7 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber

SA7-4



Location: -34.908861, 143.689586

Design in general accordance with Austroads Guide to Road Design Part 4 - Figure 7.4

Junction Rivers Wind Farm

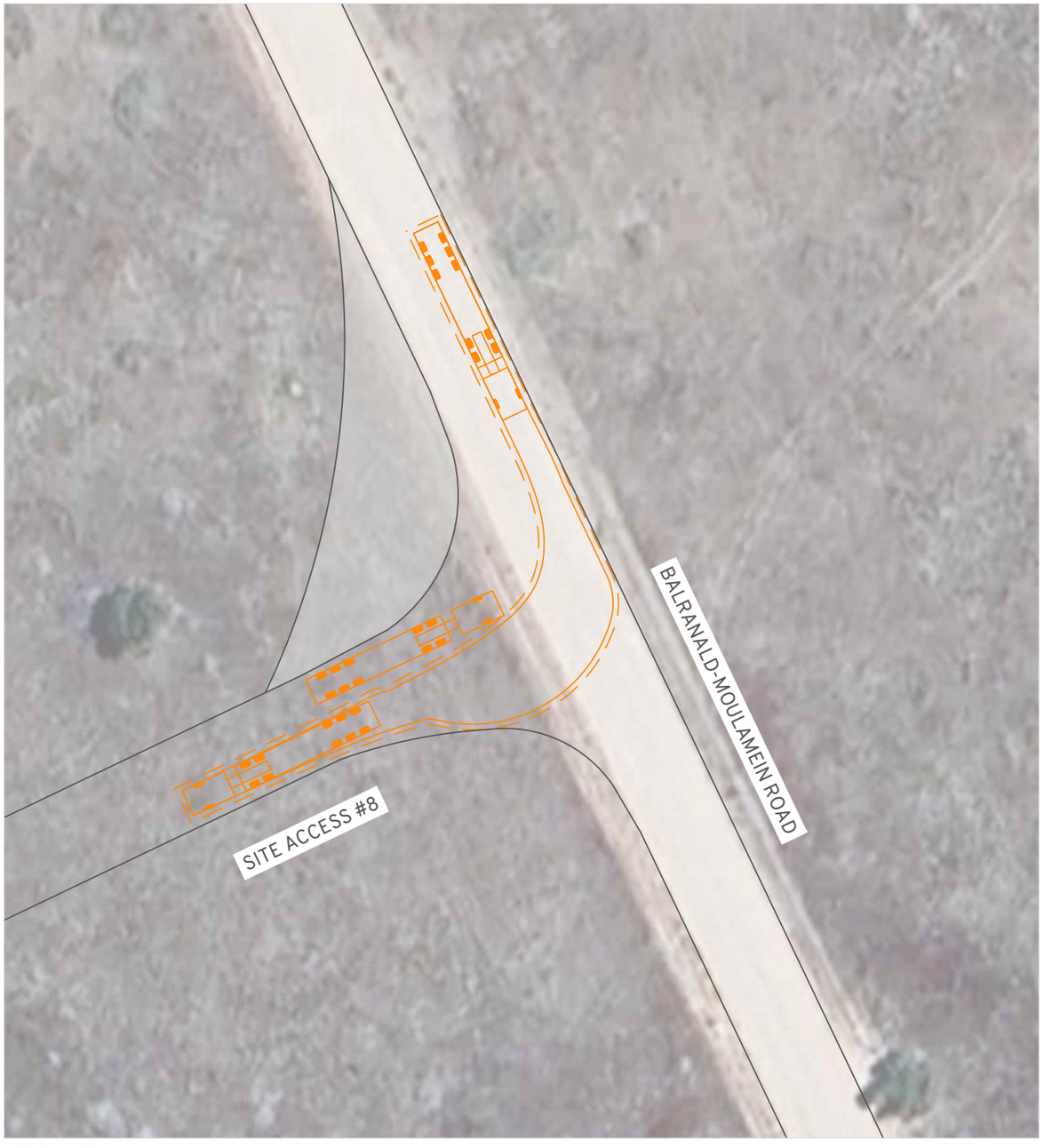
Site Access #8 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

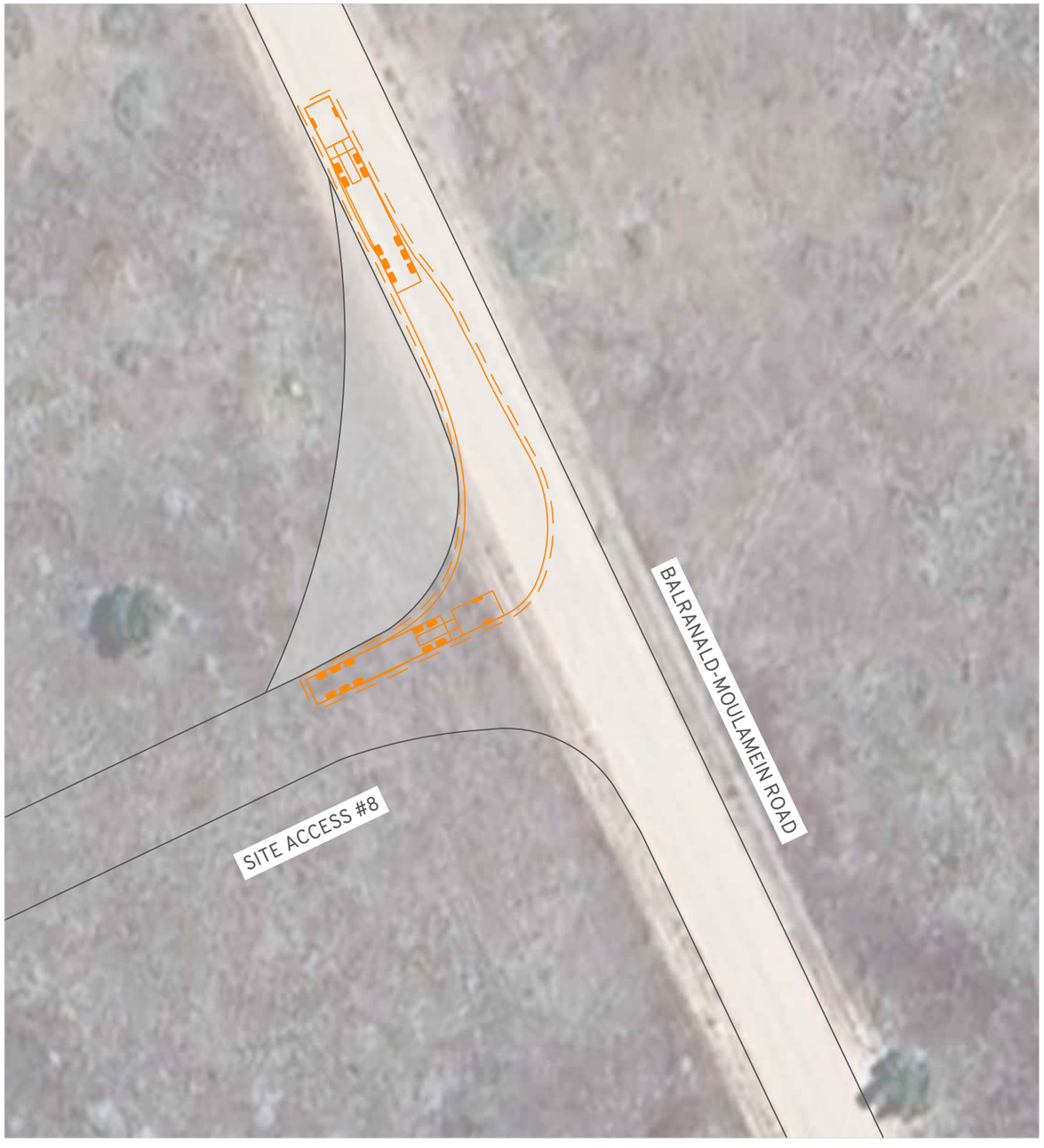
Amber

SA8-1



Entry Manoeuvre

Location: -34.908861, 143.689586



Exit Manoeuvre

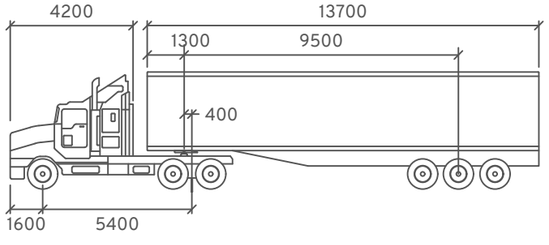
Vehicle Envelope

500mm Clearance

Reverse Manoeuvre

Min. Design Speed 15km/h

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	: 70.0

Junction Rivers Wind Farm

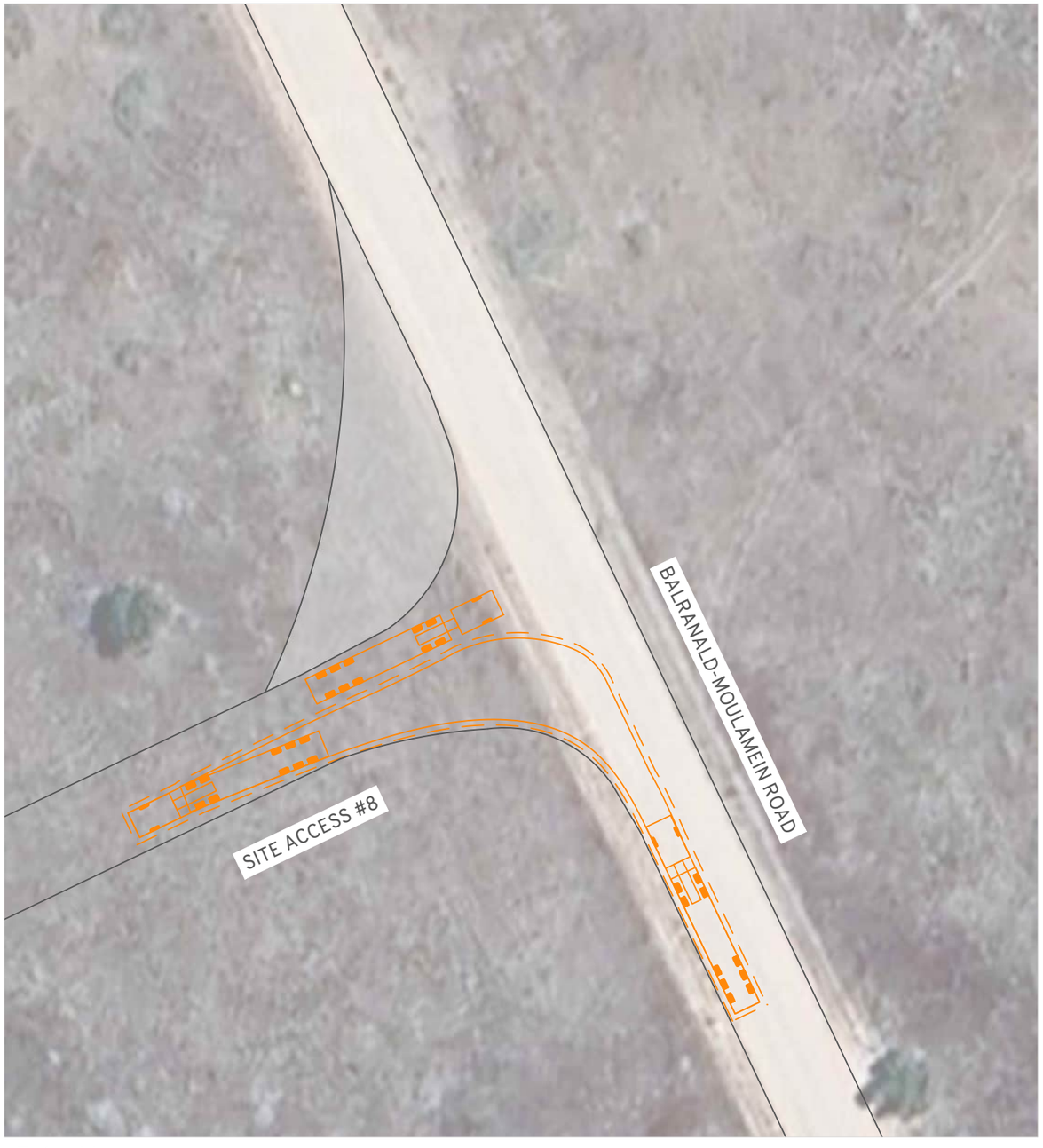
Site Access #8 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

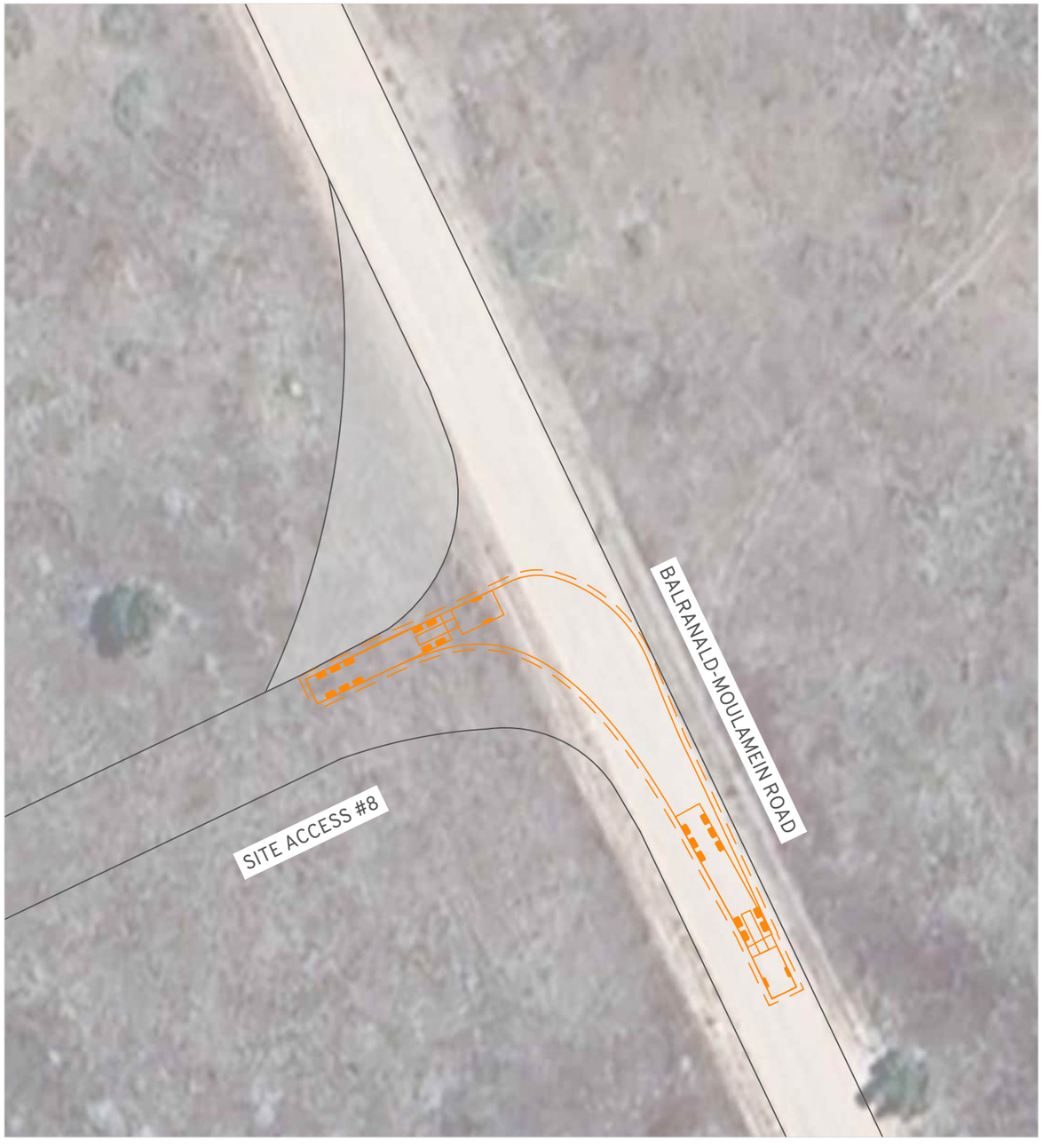
Amber

SA8-2



Entry Manoeuvre

Location: -34.908861, 143.689586



Exit Manoeuvre

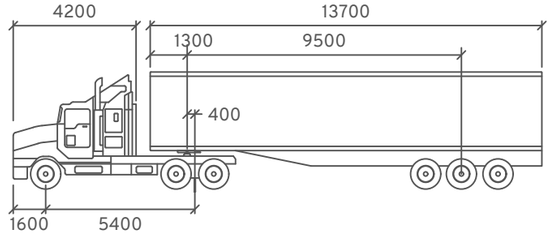
Vehicle Envelope

500mm Clearance

Reverse Manoeuvre

Min. Design Speed 15km/h

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	: 70.0

Junction Rivers Wind Farm

Site Access #8 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:500

Amber

SA8-3

SITE ACCESS #8

BALRANALD-MOULAMEIN ROAD

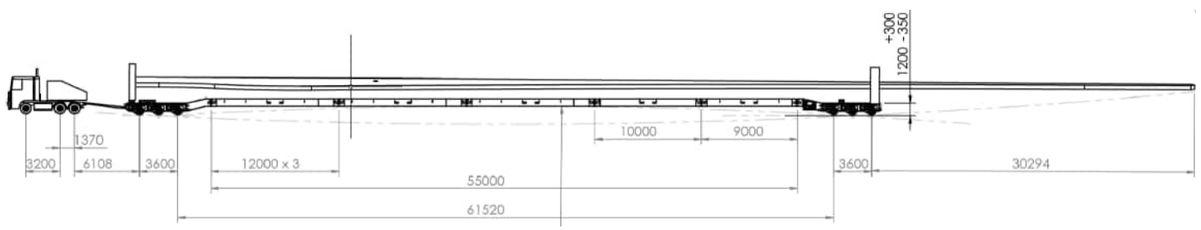
Location: -34.908861, 143.689586

Vehicle/Load Envelope

Vehicle/Load 0.5m Clearance

Wheel Path

Wheel Path 0.5m Clearance



Junction Rivers Wind Farm

Site Access #8 on Balranald-Moulamein Road

Strategic Design

DRAWN: OM
DATE: 28/04/2025
DWG NO: 218 SD54G
SCALE at A3: 1:750

Amber

SA8-4



ACCESS TRAFFIC
CONSULTING

TRAFFIC IMPACT ASSESSMENTS | SITE FEASIBILITY STUDIES | INTERSECTION ANALYSIS
ROAD SAFETY AUDITS | ROAD SAFETY INVESTIGATIONS | PAVEMENT IMPACT ASSESSMENTS
TRANSPORT ROUTE ASSESSMENTS | TRANSPORT PLANNING | ACCESS MANAGEMENT STATEGIES
PEER REVIEWS | PARKING FACILITY DESIGN | SERVICE FACILITY DESIGN