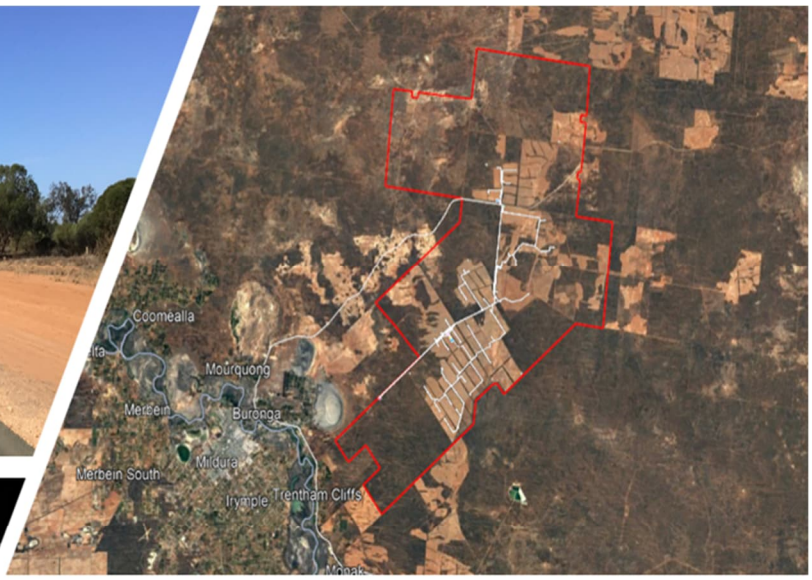
Appendix 12

TRAFFIC AND TRANSPORT
IMPACT ASSESSMENT

ACCESS TRAFFIC
CONSULTING



Mallee Wind Farm

DRAFT Traffic and Transport Impact Assessment

September 2024

Prepared for Umwelt (Australia) Pty Ltd

Quality Information

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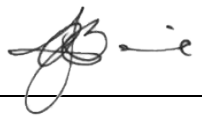
C	25/09/2024	Final – Minor Revisions	Andrew Barrie Principal Traffic Engineer	

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Executive Summary

Access Traffic Consulting was commissioned by Umwelt (Australia) Pty Ltd (Umwelt) on behalf of Spark Renewables Pty Limited (Spark Renewables) to undertake a traffic and transport impact assessment for the proposed Mallee Wind Farm (the Project), which is to be located approximately 16 kilometres (km) north-east of Buronga in the Murray region of south-western NSW within the Wentworth Local Government Area (LGA) and 17 km north-east of Mildura, Victoria (VIC).

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 decommissioning of a wind farm with up to 76 wind turbine generators (WTGs), a single grid scale 100 megawatts (MW) / 200-megawatt hour (MWh) Battery Energy Storage System (BESS), ancillary infrastructure and temporary facilities associated with construction of the Project. The Project design incorporates up to 76 WTGs, with a maximum blade-tip height of 280 m above ground level, and an installed capacity of up to 402 MW.

This traffic and transport impact assessment was carried out to determine the level of potential impacts of the construction, operations and decommissioning phase 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 Wentworth Shire Council (WSC) 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, operation and decommissioning phases of the Project are 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 traffic management / mitigation measures and road network upgrade works as part of the Project to maximise the safety and operational performance of the external road network:

- Implementation of a number of traffic management strategies for the Project, including a community information and awareness program, driver code of conduct and on-site road safety mitigation measures (such as on-site speed limits, dust suppression measures, access track condition inspection and maintenance program).
- Preparation of a detailed Traffic Management Plan (TMP) for the Project outlining proposed management measures and processes to minimise the impact of the Project on the external road network, including the management of the required Oversize Overmass (OSOM) haulage operation.
- Provision of minor works along the Sturt Highway at Buronga and Euston to facilitate the OSOM movements associated with the Project comprising 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**).
- Provision of upgrade works to the Silver City Highway / Arumpo Road intersection to provide a channelised right (CHR) treatment, generally in accordance with Figure 7.3 (rural CHR) of Part 4A of Austroads *Guide to Road Design*.
- Provision of suitable site access intersection configurations at Site Access 1 & 2 on Arumpo Road, providing basic left (BAL) and right (BAR) turn treatments and provision for additional hardstand areas as required to accommodate the required OSOM heavy vehicle movements. It is proposed that these

site access intersections are provided generally in accordance with Figure 8.2 (rural BAL) and Figure 7.1 (rural BAR) of Part 4A of Austroads *Guide to Road Design*.

- Completion of pre and post construction phase dilapidation inspections on the relevant sections of Corbett Avenue, Modica Crescent and River Drive in Buronga used by the water transport vehicles for the Project.

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 Transport Route Assessment, **Appendix A**) demonstrates the compliance of the Project with Part 8 of the NSW Environmental Planning and Assessment Regulation (2021), as outlined in the traffic and transport items of the Project's Secretary's Environmental Assessment Requirements (SEARs).

1.0 Introduction & Project Overview

1.1 Project Background

Spark Renewables Pty Limited (Spark Renewables) proposes to develop the Mallee Wind Farm (the Project) generate renewable wind energy and supply to the National Electricity Market (NEM). The Project will also contribute to reducing greenhouse gas (GHG) emissions associated with energy generation and provide significant economic benefits to the Murray region of New South Wales (NSW).

The Project is located approximately 16 kilometres (km) north east of Buronga in the Murray region of south western NSW within the Wentworth Local Government Area (LGA) and 17 km north east of Mildura, (Vic). It will include the installation, operation, maintenance and decommissioning of up to 76 wind turbine generators (WTGs), a single grid scale 100 megawatts (MW) / 200 megawatt hour (MWh) Battery Energy Storage System (BESS), ancillary infrastructure and temporary facilities associated with construction of the Project. The Project design incorporates up to 76 WTGs, with a maximum blade-tip height of 280 metres (m) above ground level, and an installed capacity of up to 402 MW.

Access Traffic Consulting (ATC) has been engaged to prepare this Traffic and Transport Impact Assessment to support the Environmental Impact Statement (EIS) for the Project.

1.2 Project Overview

1.2.1 Project Location and Context

The Project is located in the Murray region of south western NSW, within the South West Renewable Energy Zone (South West REZ). The Project is located approximately 16 km north east of Buronga, NSW (population 6,511), 17 km north east of Mildura, VIC (population 32,738) and 40 km east of Wentworth, NSW (population 1,305) (ABS, 2021). Smaller localities of Mallee, Red Cliffs and Trentham Cliffs are located to the south and south west of the Project.

The Project Area encompasses approximately 57,330.31 hectares (ha) of predominantly cropping and grazing land and adjoins the Mallee Cliffs National Park, which is located directly south and south east. The Project Area is primarily zoned as RU1 Primary Production with some small pockets of C2 Environmental Conservation under the Wentworth Local Environment Plan (LEP) 2011. There is no C2 zoned land within the Disturbance Footprint and no Project infrastructure will be sited within C2 land. The Project's local context is presented in **Figure 1**.

1.2.2 Key Project Features

The key components of the Project include:

- Up to 76 (three (3) blade) WTGs, with a maximum blade-tip height of 280 m above ground.
- A single grid-scale 100 MW / 200 megawatt hour (MWh) BESS.
- Permanent ancillary infrastructure including internal roads, hardstands, main and collector substations, switchyards, operations and maintenance facilities, underground and overhead electricity transmission lines and poles, telecommunications facilities and utility services, permanent meteorological masts and water storage tanks.
- Temporary facilities used for the construction, repowering and/or decommissioning of the Project, including but not limited to the temporary workforce accommodation (TWA) camp (if required), site offices, amenities, construction compounds and laydown areas (including stockpiling and materials storage areas), concrete or asphalt batching plants, minor 'work front' construction access roads, environmental management and monitoring and signage and temporary meteorological masts.
- Off-site road works, involving upgrades to the proposed local transport route and establishment of site access points to facilitate delivery of WTG components to the Project Area as described in this report.

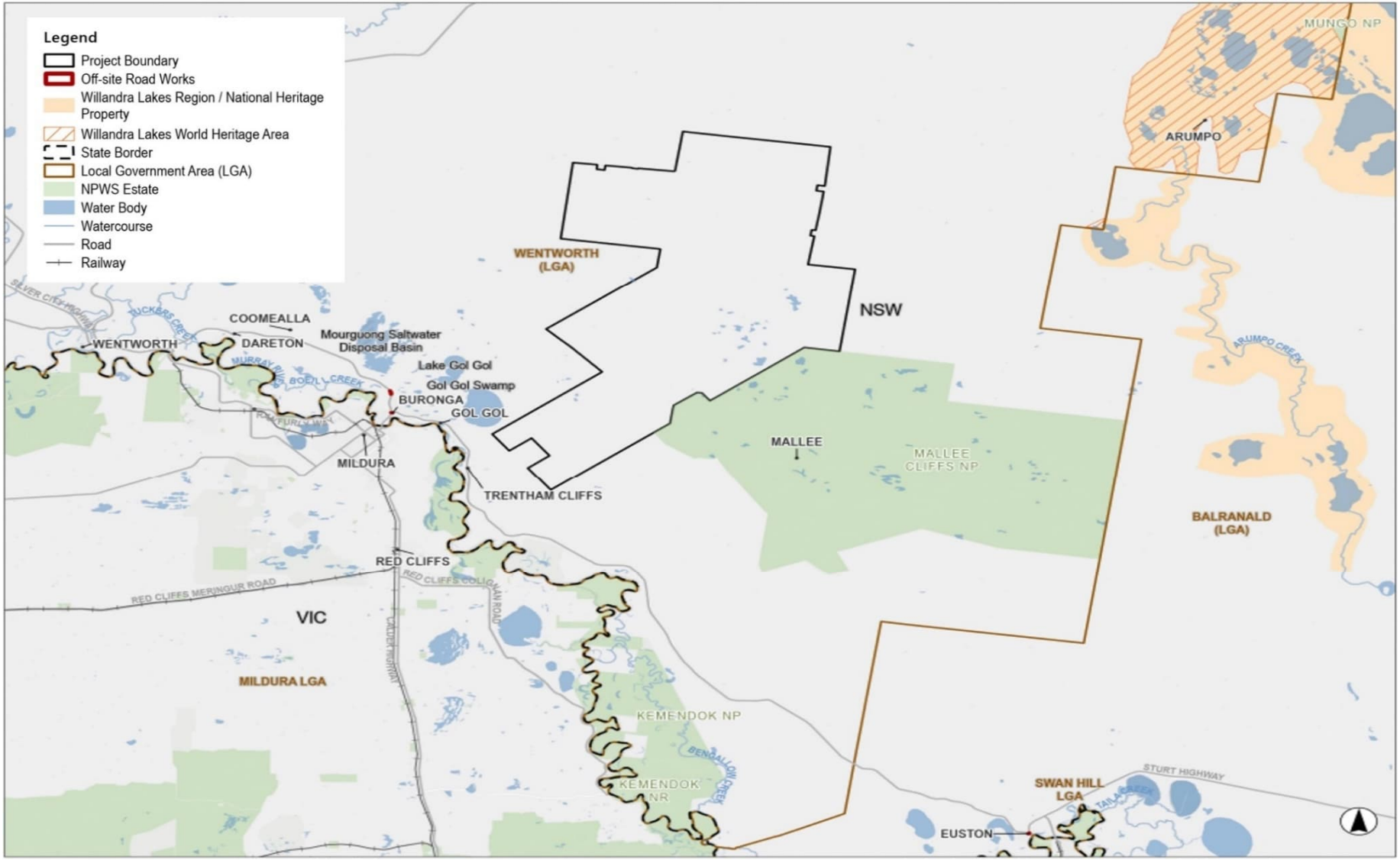


Figure 1 Site Locality - Mallee Wind Farm **[Source: Umwelt]**

1.2.3 Project Phasing

The Project comprises of four phases, pre-construction minor works, construction, operation and decommissioning. The proposed activities for each phase of the Project are outlined in **Table 1** below:

Table 1 Project Phases and Associated Activities

Project phase	Proposed Activities
Pre-construction Minor Works	• Surveys. • Off-site road works, involving upgrades to the proposed local transport route and establishment of site access points. • Building/ road dilapidation surveys. • Geotechnical investigative drilling and excavation of test pits and bore holes. • Minor clearing of native vegetation. • Establishment of temporary site office and compounds. • Installation of environmental impact mitigation measures, fencing, enabling works, meteorological masts. • Heritage artefact salvage, biodiversity investigations and pre-clearing surveys, inspections, specific habitat feature removal, and relocation. • Intersection and road upgrades on the public road network. • Establishment of Project access points, minor access roads and minor adjustments to services/ utilities signage, etc. • Minor clearing of native vegetation to facilitate the minor works described above.
Construction Works	Includes all physical works within the Disturbance Footprint to enable the operation, including, but not limited to the construction and installation of: • WTGs. • Compounds. • TWA facility. • Electrical network lines. • Battery storage. • Construction of ancillary infrastructure. Establishment or construction of any temporary facilities which are not already established as part of the pre-construction minor works.
Operation and Maintenance	• Ongoing operation, monitoring (on-site and remote monitoring) and maintenance of all Project infrastructure and land within the Disturbance Footprint during the operational lifespan of the Project. • Replacement of major components , such as WTG blades, as required (including the use of cranes and ancillary equipment).
Decommissioning	• Includes all physical works required for the dismantling and transportation of Project infrastructure and rehabilitation of the Project Area. • If not required for ongoing farming/ fire access purposes, internal access tracks would be removed.

1.3 Assessment Scope

This traffic and transport impact assessment (TTIA) was carried out to determine the level of potential impacts of the construction, operations and decommissioning phase 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 Wentworth Shire Council (WSC) 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 NSW Environmental Planning and Assessment Regulation (2021), as outlined in the traffic and transport items of the NSW Planning Secretary's Environmental Assessment Requirements (SEARs) provided for the Project (refer **Table 1** of **Section 1.3.1** below).

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 WTG 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 other relevant State Significant Development (SSD) 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 are formulated to address the potential traffic and transport impacts of the Project.

1.4 Assessment Requirements

1.4.1 State Environmental Assessment Requirements

The SEARs are a set of planning, environmental social and economic considerations that the EIS must address. The SEARs for the Project were issued on 17 February 2023 (SSD-53293710) with a summary of the specific requirements relating to traffic and transport provided in **Table 2**. It is noted that Supplementary SEARs were also received however are not relevant to this TTIA.

1.4.2 Transport for New South Wales Agency Advice

In addition to the main SEARS for the Project, further input regarding the Project was received on 31 January 2023 (SSD-53293710), from TfNSW with a summary of the specific assessment requirements provided in **Table 3.**

Table 2 Transport SEARs Items

SEARS Items		Reference / Response
i)	An assessment of the construction, operational and decommissioning traffic impacts of the development on the local and State Road network.	The assessment contained within this report (refer **Section 0**) includes an evaluation of the traffic impacts of the construction, operational and decommissioning phases of the Project on the relevant sections of the external road network expected to be utilised by traffic generated by the Project.
ii)	Provide details of the peak and average traffic volumes (including light, heavy and over-mass and over-dimensional vehicles / heavy vehicles requiring escort and construction worker transportation) and transport and haulage routes during construction, operation and decommissioning, including traffic associated with sourcing raw materials (water, sand and gravel).	Estimates of the Project traffic volumes have been provided in **Section 5.0** of this report, with additional Project traffic calculations also provided for reference in **Appendix G**.
iii)	An assessment of the potential traffic impacts of the project on road network function including intersection performance, site access arrangements, site access and haulage routes, and road safety, including school bus routes and school zones.	A summary of the results of the assessment of the impacts of the Project can be seen in **Section 0** of this report, and are noted to include assessments of the construction, operations and decommissioning phases of the Project as requested.
iv)	An assessment of the capacity of the existing road network to accommodate the type and volume of traffic generated by the project (including over-mass / over-dimensional traffic haulage routes from port) during construction, operation and decommissioning.	An assessment of the potential impact of the Project (construction, operations and decommissioning phase) on the road link capacity is provided in **Section 6.4** of this report. Further to this, it is noted that further traffic management measures and processes are proposed to be provided in a subsequent Traffic Management Plan for the Project, expected to be developed as part of subsequent detailed design phases of the Project.
v)	An assessment of the likely transport impacts to the site access and haulage routes, site access point, any rail safety issues, any Crown Land particularly in relation to the capacity and conditions of the roads and use of rail level crossings (and rail safety assessment if required), and impacts to rail under bridges and overbridges.	An assessment of the transport impacts to the Project Area access and haulage routes is provided in **Section 0** of this report, noting further details of haulage route assessment completed for Project are provided in the Preliminary Transport Route Assessment by Rex J Andrews, included for reference as **Appendix A**. There is no existing rail infrastructure within the Local Transport Route. Any modifications to the road network between Port of Newcastle and Sturt Highway/ Carey Street roundabout at Euston would be undertaken by separate planning assessment and approvals. This includes any further negotiation and approval from the relevant rail authority. Refer to **Section 3.3.4** for details of Travelling Stock Reserves (TSRs) in vicinity of site and **Section 6.8** for assessment of impacts of Project on TSRs.
vi)	A cumulative impact assessment of traffic from nearby developments.	As requested, further assessment of the cumulative traffic impacts of the Project with those from identified SSD Projects in the vicinity of the Project Area, with details of the outcomes of this assessment included in the results summarised in **Section 0** of this report.

SEARS Items		Reference / Response
		Further to this, **Section 5.5** of the report identifies the review undertaken to establish the other renewable energy projects in the vicinity of the Project Area that are likely to be constructed concurrently with the Project.
vii)	Provide details of measures to mitigate and / or manage potential impacts including a schedule of all required road upgrades (including resulting from over mass / over dimensional traffic haulage routes), road maintenance contributions, and any other traffic control measures, developed in consultation with the relevant road and / or rail authority.	Schedule of measures to mitigate and manage the identified impacts of Project are provided in **Section 7.0** of this report.

Table 3 TfNSW SEARs Input Items

SEARS Items		Reference / Response
1.	To ensure that TfNSW's key interests are addressed, TfNSW requests that any future application be submitted with an Environmental Impact Assessment (EIA) containing a Traffic Impact Assessment (TIA), prepared by a suitably qualified person/s in accordance with the Austroads Guide to Traffic Management Part 12, Australian Standards and any complementary TfNSW Supplements, and Roads and Maritime Guide to Traffic Generating Developments. The TIA should contain information listed in Attachment A: Traffic Impact Assessment (TIA). The purpose of the TIA is to address the impact of traffic generation on the public road network and measures employed to ensure traffic efficiency and road safety during construction, operation and decommissioning of the project. The requested TIA should be tailored to the scope of the proposed development and include, but not be limited to, the following:	
	Detailed plans identifying the proposed location of any: • Project-related infrastructure within and outside of the project boundary. • Transmission line infrastructure, or any other project-related structures, within a road reserve. Include demarcation of local and classified road reserves. • If the access point for the transmission line work is via a classified road the TIA will be required to include an assessment of the proposed traffic generation lights, heavy, OSOM at the AM/PM peaks for this component of the project, identify the design vehicle, provide the distribution splits for the vehicle types, provide an assessment of the turn warrants as per Figure 3.25 of Austroads Guide to Traffic Management Part 6. • Permanent or temporary connection/access to classified roads. • The Scoping Report identifies that ancillary infrastructure and temporary facilities are to be provided on-site including (but not limited to) concrete batching facilities & provision for an accommodation camp.	Please refer to **Section 4.0** for details regarding the proposed site layout and the associated Project infrastructure. Please refer to **Section 4.4** for details of the proposed site access arrangements.

	SEARS Items	Reference / Response
	The TIA should identify: – Concrete batching facility - The source for input materials and quantify the traffic generation associated with the haulage of the source materials. Where the location of source materials is not yet known, worst case scenarios for traffic distribution of those materials to and from the development site are to be addressed. – Accommodation camp option - Details of any proposed camp, including but not limited to location of the camp, the maximum accommodation capacity, the work schedules relevant to staff turnover at the camp, the transport options available (Light Vehicles, Shuttle Buses, carpooling etc) and traffic generation volumes of workers arriving / departing the camp, transport route/s between project and camp sites, any staff pick up locations external to the project & camp sites, peak shift change details, any services required to support the accommodation camp and what traffic will those support services will generate.	
	Transport Routes – all vehicles: • Identify the return routes for Light Vehicles, Heavy Vehicles & OSOM movements. • Details of the road geometry and alignment along the identified transport route/s (for all vehicle types), including existing formations, crossings, intersection treatments and any identified hazards. This should further include: – Safe Intersection Sight Distance at the site access and nearby intersections and any constraint to achieving the required sight distance for the posted speed limit. – An assessment of turn treatment warrants in accordance with the Austroads Guide to Traffic Management Part 6 and Austroads Guide to Road Design Part 4A for intersections along the identified transport route/s, identifying the existence of the minimum basic turn treatments and addressing the need for any warranted higher order treatments. – Swept path analysis demonstrating the largest design vehicle entering and leaving the development, and moving in each direction through key intersections along the proposed transport route/s.	Please refer to the Preliminary Transport Route Assessment undertaken for the Project (**Appendix A**) to identify the proposed OSOM transport routes. Also refer to **Section 4.3** of this report which identifies the anticipated key transport routes for the Project. Details of assessments of SISD at the key intersection and site access locations are provided in **Section 3.3.2.1** and **Section 4.4.2** of this report. Requested turn warrant assessment is provided in **Section 6.3.1.1** of this report. Please refer to the Preliminary Transport Route Assessment undertaken for the Project (**Appendix A**) for the relevant swept paths of the largest Project vehicle.
	Transport Routes - Heavy Vehicle and OSOM: • National Heavy Vehicle Regulator (NHVR) approved routes identified on the	Please refer to the Preliminary Transport Route Assessment undertaken for the Project (**Appendix A**).

	SEARS Items	Reference / Response
	Restricted Access Maps (RAV MAP) are to be utilised for the heavy vehicle routes for the proposed development. • Identify all OSOM permit / approval requirements by all relevant NSW and interstate agencies, along the identified OSOM route/s. • Detail the number of OSOM movements, the intended time for OSOM movements to occur, strategies to manage the movements and identify the location of pull-over bays / rest areas along the OSOM routes.	Further details of the expected OSOM movement volumes are identified in **Section 5.1.1** of this report.
	Cumulative impacts: • Identify and assess the implications of any road and rail projects that will potentially be occurring simultaneously with the scheduling of the OSOM movements along the proposed OSOM routes. • Identify and assess the any large scale or traffic generating projects within close proximity to the subject Project Area, transport route/s and site accesses. • Identify and projects that will have overlapping construction periods and assess the cumulative traffic impacts with emphasis on the following: – A map demonstrating the locations of all proposed and existing large-scale projects (both renewables and non-renewables) within proximity and along the transport route/s of the proposed wind farm. – The cumulative impacts from traffic generated from the construction workforces in terms of the origin destination routes, access, AM/PM peaks where there is overlap with other projects. – The cumulative impacts of heavy vehicle movements in terms of AM/PM peaks and routes where there is an overlap with other projects. • Cumulative impacts and consideration in relation to the timing of movements of OSOMs where other projects will be utilising the same routes as proposed for this development. – • Further address, the proposed mineral sands mine referred to in the Scoping Report as being located within the subject Project Area and across adjacent properties. Information about this proposed development remains unclear at this time, and further details are required, in particular, but not limited to, the exact location (in relation proposed wind farm), the scale of the proposed development, the worst-case scenario traffic volumes (addressing both concurrent construction and operational activities), the site access points, and	Please refer to **Section 5.5** of this report which identifies the adjacent developments which are required to be incorporated into the cumulative assessment for this Project. Additionally, further details of the assessment of the cumulative traffic impacts are included within **Section 6.3** & **Section 6.4** of this report.

	SEARS Items	Reference / Response
	any other potential cumulative impacts. • Further consideration should be given to identifying and analysing the cumulative impacts of concurrent accommodation (and transport) requirements of the project's workforce and workers from other projects (both renewables and non-renewables).	
	Project schedule: • Hours and days of work, number of shifts and start and end times. • Identify the (approximate) project's targeted construction commencement date/s. • Phases and stages of the project, including construction, operation and decommissioning.	Please refer to **Section 4.2** of this report which provides the details of the expected schedule for the Project.
	Traffic volumes: • Existing background traffic. • Project-related traffic for each phase or stage of the project. • Projected cumulative traffic at commencement of operation, and a 10-year horizon post commencement.	Please refer to **Section 3.4, Section 5.4** and **Section 5.5** of this report which outlines the details of the existing background, Project traffic and cumulative traffic volumes for the Project.
	Traffic characteristics: • Number and ratio of heavy vehicles to light vehicles. • Peak times for existing traffic. • Peak times for project-related traffic including commuter periods. • Proposed hours for transportation and haulage. • Interactions between existing and project-related traffic.	Please refer to **Section 5.0** of this report which outlines the expected traffic characteristics of the Project.
	The origins, destinations and routes for: • Commuter (employee and contractor) light vehicles and pool vehicles (including shuttle buses). • Heavy (haulage) vehicles. • Over size and over mass (OSOM) vehicles.	Please refer to **Section 4.3** of this report which outlines the expected transport routes for the Project.

	SEARS Items	Reference / Response
	• Identify the necessary road network infrastructure and access upgrades required to cater for and mitigate the impact of project related traffic on both the local and classified road network for the development (for instance, road widening, hardstand areas, pullover bays, site access upgrades, intersection treatments etc). In this regard, a strategic design drawing/s should be submitted with the SSD application for any identified road infrastructure and access upgrades at the project area entrance or to facilitate the OSOM movements. It should be noted that any identified road infrastructure upgrades will need to be to the satisfaction of TfNSW and Council. Works must be appropriately designed in accordance with Austroads Guide to Road Design for the existing posted speed limit, including provision of Safe Intersection Sight Distance (SISD).	Please refer to **Section 7.0** which identify the proposed mitigation measures and upgrade works to the external road network that are recommended to be provided as part of the Project respectively. Please also refer to **Section 4.6** which identifies the management measures and route works required to accommodate the proposed OSOM haulage operations for the Project. Further details of concept intersection and site access upgrade works proposed are also included in **Appendix E** and **Appendix F.**
	Road safety assessment of key haulage route/s. • Where road safety concerns are identified at a specific location along the proposed haulage routes, TfNSW suggests that the TIA be supported by a targeted Road Safety Audit undertaken by suitably qualified persons in accordance with the Austroads Guidelines.	Please refer to **Section 6.6** for further details of the road safety assessment of the key haulage routes for the Project.
	• A review of crash data along the identified transport route/s for the most recent 5 year reporting period and an assessment of road safety along the proposed transport route/s considering the safe systems principles adopted under Future Transport 2056.	Please refer to **Section 3.7** of this report for further details of the review undertaken of the recent crash data on the road sections forming the proposed transport routes for the Project.
	• Consideration of the local climate conditions that may affect road safety during the life of the project (e.g. fog, wet and dry weather, icy road conditions).	No specific local climate conditions were noted that would affect road safety (more than for existing operation of network) during the life of the Project.
	• The layout of the internal road network, parking facilities and infrastructure.	The proposed layout of the internal site road/access track network can be seen in **Figure 18** within **Section 4.1** of this report. No specific details are provided regarding the proposed parking facilities for the Project; however it is expected that they will be provided in accordance with the requirements of all relevant standards, guidelines and policies. In addition, due to the large area of land available within the Disturbance Footprint for the required 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

SEARS Items		Reference / Response
		will lead to an overspill of parking or vehicle queuing at the Project Area accesses that would lead to negative impacts to the operation of the surrounding road network.
	• Impact on rail corridors and level crossings along the transport route/s detailing any proposed interface treatments, where applicable.	No specific rail crossings were identified on the Local Transport Route or key sections of the road network in the vicinity of the Project Area. Notwithstanding this, a number of rail crossings were identified along the proposed OSOM transport routes for the Project. Any modifications or treatments to the road network between Port of Newcastle and Sturt Highway/ Carey Street roundabout at Euston would be undertaken by separate planning assessment and approvals. This includes any further negotiation and approval from the relevant rail authority.
	• Impact on public transport (public and school bus routes) and consideration for alternative transport modes such as carpooling and shuttle buses during construction.	Please refer to **Section 0** & **Section 6.9** of this report which details the assessment of the impact of the Project on the operation of the public transport and active transport network in the vicinity of the Project.
	• Identification and assessment of potential environmental impacts of the project, such as blasting, lighting, visual, noise, dust and drainage on the function and integrity of all affected public roads.	There is no blasting proposed as part of the Project. Assessment of the Project's impacts to lighting, visual, noise, dust and drainage are considered in other technical reports provided as part of the Project EIS.
	• Controls for transport and use of any dangerous goods in accordance with State Environmental Planning Policy No. 33 – Hazardous and Offensive Development, the Australian Dangerous Goods Code and AS4452 Storage and Handling of Toxic Substances.	Further details of controls proposed to be provided once confirmed as part of the detailed TMP for the Project and the OSOM haulage operations to be completed as part of future phases of Project delivery process. Transport of hazardous and dangerous goods is also addressed as part of the Preliminary Hazard Assessment appended to the EIS.
	• A draft Traffic Management Plan (TMP) that could be implemented following approval of the EIS, in consultation with relevant Councils and TfNSW. The TMP is to address the construction, operation and decommission phases of the proposed development and be prepared and implemented in accordance with Australian Standard 1742.3 and the Work Health and Safety Regulation 2017. • The TMP would need to identify strategies to manage the impacts of project related traffic, including any community consultation measures for peak haulage periods | OSOM movements. The developer should consider the need to consult widely (i.e. outside the development's local government area), as the cumulative impacts of OSOM haulage, particularly blades, are acutely felt by the local communities in the townships along Transport for NSW 6 OFFICIAL the route. Identification of the relevant townships likely to be affected and any consultation	A Project specific TMP will be prepared by the contractor prior to the commencement of construction works for the Project. The production of the TMP at this later stage is considered more appropriate as the contractor will have more up to date and detailed information regarding their proposed construction methodologies, expected vehicle numbers and required traffic management measures and procedures, with a summary of the anticipated inclusions of the TMP provided in **Section 7.1.2** of this report. The Project specific TMP will include at minimum the requirements as outlined by TfNSW. Please refer to the sample Drive Code of Conduct prepared for the Project in **Appendix L**.

	SEARS Items	Reference / Response
	undertaken with those communities should be included in the TMP. The TMP would need to identify strategies to manage the impacts of project related traffic, and propose a Driver Code of Conduct for haulage operations which should include, but not be limited to: – OSOM transportation details, including but not limited to, requirements for permits, pilot vehicles, identification of route/s, pull-over bays, processes and approvals for contraflow / traffic control to manage restricted OSOM vehicle movements etc. – Where applicable, further considerations to address cumulative peak traffic activity along the proposed transport route/s, in particular proposing relevant safety procedures for drivers during any identified peak traffic periods. – A Driver Code of Conduct (DCoC) for haulage / transport operations which addresses, but not limited to: ▪ Map of primary transport route/s (Light Vehicle, Heavy Vehicle & OSOM) highlighting critical locations. ▪ Any proposed temporary measures such a Traffic Guidance Scheme (TGS) ▪ Any proposed workforce travel restrictions to mitigation traffic impacts. ▪ Identification of local bus operations, including maps and consultation with local bus operators. ▪ Safety initiatives for haulage through residential areas and/or school zones. ▪ An induction process for vehicle operators and regular toolbox meetings. ▪ A public and company/contractor complaint resolution and disciplinary procedure. ▪ Procedures for transport in adverse weather conditions. ▪ Community consultation measures for peak haulage periods. ▪ Fatigue Management. ▪ Appendices of documentation relevant to external contractors and employee responsibilities, where applicable to the TMP and DCoC inclusions.	

SEARS Items		Reference / Response
2.	In addition to the requested TIA, due to the significant scope of the transport logistics for OSOM transit, a concept level route analysis is required to be provided with the SSD application based on high-level 3D swept path analysis to generally indicate locations where civil works are likely to be required. The route analysis is to include at a minimum the following:	
	• Identify the OSOM route(s) within a route survey that highlights any key pinch points along all identified route/s vertically, horizontally and laterally and assessing the load limits. A pinch point assessment for all routes is required and must identify the measures to mitigate the risks, including any potential civil works required to safely accommodate the OSOM vehicles. This is to further include any section of the route/s (from Port to site) inclusive of interstate ports.	Please refer to the Preliminary Transport Route Assessment undertaken for the Project (**Appendix A**) for further details of the proposed OSOM transport routes, pinch points and required mitigation measures.
	• The logistics assessment is to highlight each at-risk road structures that the haulage route crosses including bridges, traffic signals, signage, major culverts, and minor culverts that may not meet the desirable cover to cater for proposed axle loads.	Please refer to the Preliminary Transport Route Assessment undertaken for the Project (**Appendix A**).
	• Emergency and pull-over bay locations for the OSOM vehicles or identification of any long haulage segments of the route where overtaking cannot be achieved.	Please refer to the Preliminary Transport Route Assessment undertaken for the Project (**Appendix A**).
	• Identify (if known) proposed OSOM movements within the construction period, if night travel is proposed and measures to mitigate night travel and cumulative impacts associated with moving of the OSOMs from port to place with any other OSOMs expected to move at a coinciding time with the Mallee Wind Farm and along the same route.	Please refer to the Preliminary Transport Route Assessment undertaken for the Project (**Appendix A**).
	• Identify any projects whether public or private that could have implications for moving OSOMs along the nominated routes.	Please refer to the Preliminary Transport Route Assessment undertaken for the Project (**Appendix A**).
	• The design vehicle templates used with the swept path analysis software are also requested for TfNSW to review the performance within the software. Provide the maximum parameters of the materials to be moved: - Identify OSOM vehicles proposed to be used for the project. - Maximum blade length. - Maximum blade overhang length. - Minimum overhang heights above the road surface. - Wheelbase dimensions.	Please refer to the Preliminary Transport Route Assessment undertaken for the Project (**Appendix A**).

	SEARS Items	Reference / Response
	- Minimum mid-wheelbase height clearance. - Maximum load widths. - Maximum load heights (clearance to overhead obstructions such as structures, utilities and vegetation). - Maximum trailer articulation angle(s). - Axle loads and axle group loads in terms of both tonnes and Equivalent Standard Axles. • It is advised that GPS coordinates should be provided for the OSOM routes.	

1.4.3 Response to SEARs

This TTIA has been prepared in response to the items identified above in **Table 2** and **Table 3** above, and aims to provide additional information and clarification to the assessment undertaken, in particular regarding the expected traffic and transport impacts of the Project on the state and local government-controlled road networks.

Further information regarding the WTG 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 TMP is proposed to be undertaken as part of the detailed design phases of the Project once the detailed design and configuration of the WTG 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 WTG component transport route from a structure load limits / restrictions perspective. This is due to the fact that the vehicle and load configurations for the WTG 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 TTIA is based on the Port of Newcastle being assessed for OSOM transport requirements as per the Preliminary Route Assessment Report provided in **Appendix A**, and as reflected in the OSOM Transport Route defined in the EIS and **Section 4.3** of this report. Alternate port options are not contemplated in this assessment, or the broader EIS. Accordingly, the preferred Port of Newcastle option is the basis of the State Significant Development Application (SSDA) and Project approval being sought by Spark Renewables.
- Relevant sections of the TTIA are based on the inputs considered within the Preliminary Route Assessment Report provided in **Appendix A**, importantly this includes an 85 m blade length. Whilst the EIS and associated technical studies have provided a precautionary assessment and considered the maximum WTG dimensions (e.g. 280 m tip height, 200 m blade diameter (incl. nacelle)) this TTIA is limited to the assessment of an 85 m blade. Accordingly, the 85 m blade (and associated offsite disturbance) is the basis of the SSDA and Project approval being sought by Spark Renewables.
- Whilst sections of this TTIA discuss the broader road network and OSOM Transport Route, only the Local Transport Route (as defined in the EIS and **Section 4.3** of this report) is assessed by the EIS and associated technical studies. Accordingly, impacts associated with WTG and ancillary infrastructure and the offsite disturbance areas associated with the Local Transport Route are the basis of the SSDA and Project approval being sought by Spark Renewables. It is understood that impacts of any works on the OSOM Transport Route are not assessed by the EIS. Subsequently, they are not included in the SSDA and would be subject to a separate approvals process.

2.0 Strategic Context and Legislation

2.1 State Legislation

2.1.1 Environmental Planning and Assessment Act 1979 (EP&A Act)

The NSW Environmental Planning and Assessment Act (1979) (EP&A Act) and NSW Environmental Planning and Assessment Regulation 2021 establish the framework for development assessments in NSW. The EP&A Act and the Regulation include provisions to ensure that the potential environmental impacts of a development are considered in the decision-making process prior to proceeding to construction.

The Project will require development consent under Part 4 of the EP&A Act. Being development for the purpose of electricity generation with an estimated development cost of more than $30 million, the Project is declared to be SSD under the provisions of State Environmental Planning Policy (Planning Systems) 2021.

Under Section 4.12(8) of the EP&A Act, the application is to be accompanied by an EIS prepared by or on behalf of the applicant in the form prescribed by the Regulations. This assessment forms part of the EIS in order to comply with the SEARs and assess the traffic and transport impacts of the Project in accordance with relevant Government legislation, plans, policies and guidelines.

2.1.2 Roads Act 1993

The NSW Roads Act 1993 sets out the rights of members of the public to pass along public roads and the rights of persons who own land adjoining a public road to have access to the public road. In addition, the Act provides guidance on the classification of roads and establishes the procedures for the opening and closing of a public road.

Consent under Section 138 of the Roads Act 1993 is required from the relevant road authority for any work undertaken on or over a public road, including work associated with the connection of a new road (whether public or private) to a public road. It is noted that in addition to consent from the relevant road authority, consent must also be obtained from Transport for NSW (TfNSW) with respect to a classified road under the Act. However, if the works form part of a SSD which has been granted planning approval, then consent under Section 138 cannot be refused if it is necessary for carrying out the Project under the provisions of Section 4.42 of the EP&A Act.

2.2 Regulatory Policies / Relevant Guidelines

2.2.1 Future Transport Strategy 2056

The Future Transport Strategy 2056 is a 40-year strategy that guides transport investment to deliver customer mobility for Sydney and regional NSW. It sets out a vision, strategic directions and customer outcomes with a focus on harnessing advances in technology and innovation to create and maintain a world-class, safe, efficient and reliable transport system.

The Future Transport Strategy 2056 outlines the following six guiding principles which aim to positively impact the economy, communities and environment of NSW:

- Customer focused – Customers' experiences and their end-to-end journeys are seamless, interactive and personalised, supported by technology and data.
- Successful places – The liveability, amenity and economic success of communities and places are enhanced by transport.
- A strong economy – In 2056, the transport system powers NSW's $1.3 trillion economy and enables economic activity across the State.

- Safety performance – Every customer enjoys safe travel, regardless of transport mode or location, across a high-performing, integrated and efficient network.
- Accessible services – Transport enables everyone to get the most out of life, wherever they live and whatever their age, ability or personal circumstances.
- Sustainability – The transport system is economically, environmentally and socially sustainable, operationally resilient, affordable for customers and supports emissions reductions.

The Project seeks to support appropriate integration of land use in accordance with the Future Transport Strategy 2056. In addition, the Project seeks to support objectives of the strategy by maintaining the safety and efficiency of the transport network for all road users during the Project.

2.2.2 2026 Road Safety Action Plan

The 2026 Road Safety Action Plan (TfNSW, 2021) recognises the importance of reducing road trauma on NSW roads and sets out targeted actions to halve deaths and reduce serious injuries by 30% on NSW roads by 2030. The 2026 Road Safety Action Plan seeks to increase road safety through five (5) focus areas including:

- Creating safer country roads and urban places.
- Enhancing road safety in local communities.
- Increasing the safety of light vehicles, heavy vehicles and protective equipment.
- Making safer choices on our roads.
- Ensuring the safety of vulnerable and other at-risk road users.

The Project seeks to support the objectives of the 2026 Road Safety Action Plan by ensuring road safety is prioritised at all times during the construction, operation and decommissioning phases of the Project.

2.2.3 EIS Guidelines – Roads and Related Facilities

The EIS Guidelines – Roads and Related Facilities (Department of Urban Affairs and Planning, 1996) outlines the factors to be considered when preparing the traffic and transport component of an EIS. The key factors identified in the guide for roads and related facilities include:

- Strategic planning context.
- Traffic issues.
- Community issues, including noise and visual impacts.
- Air and water quality issues.

The EIS Guidelines – Roads and Related Facilities also outlines commitments to the ongoing management of the Project, including monitoring. The Guidelines have been used to guide the structure and development of this assessment.

2.2.4 NSW Planning Guidelines for Walking and Cycling

The NSW Planning Guidelines for Walking and Cycling (Department of Infrastructure, Planning and Natural Resources, 2004) aim to assist land-use planners and related professionals to improve consideration of walking and cycling in their network. It is anticipated that improving practice in planning for walking and cycling will create more opportunities for people to live in places with easy walking and cycling access to urban services and public transport. The Guidelines outline the city-scale design principles that assist the creation of walkable and cyclable cities and neighbourhoods as well as methods to achieve this including Transport Management and Accessibility Plans and Transport Access Guides.

The NSW Planning Guidelines for Walking and Cycling have not been used in this assessment as there are no formal pedestrian or cycling facilities in the vicinity of the Project (discussed further in **Section 3.3.5**).

2.2.5 Guide to Traffic Generating Developments

The Guide to Traffic Generating Developments (Version 2.2) (Roads and Traffic Authority, 2002) provides guidance on a number of matters related to the traffic impacts of land use developments, notably matters relating to traffic generation. The Guide provides information regarding traffic issues for those submitting Development Applications, including methods for conducting traffic impact studies and compiling traffic impact statements.

The Guide to Traffic Generating Developments has been used to guide the development of this assessment.

2.2.6 Austroads Guide to Traffic Management Part 3: Traffic Studies and Analysis

The Guide to Traffic Management Part 3: Traffic Studies and Analysis (Austroads, 2017) is concerned with the collection and analysis of traffic data for the purpose of traffic management and traffic control within a network. It serves as a means to ensure some degree of consistency in conducting traffic studies and surveys. It provides guidance on the different types of traffic studies and surveys that can be undertaken, their use and application, and methods for traffic data collection and analysis.

The Guide to Traffic Management Part 3: Traffic Studies and Analysis has been used to guide the structure and development of this assessment.

2.2.7 Austroads Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments

The Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments (Austroads, 2020a) is concerned with identifying and managing the impacts on the road system arising from land use developments. It provides guidance for planners and engineers associated with the design, development and management of a variety of land use developments. The aim is to ensure consistency in the assessment and treatment of traffic impacts, including addressing the needs of all road users and the effect upon the broader community.

The Guide to Traffic Management Part 12: Integrated Transport Assessments has been used to guide the structure and development of this assessment.

2.2.8 Roads and Maritime Supplements to Austroads Guides

The Supplements to Austroads Guides (Roads and Maritime Services, 2013) were produced to support the Austroads Guides and address specific issues concerning the design, construction, maintenance, operation and safety of road network issues in NSW.

The Supplements to Austroads Guides have been used to guide the structure and development of this traffic and transport impact assessment.

3.0 Existing Conditions

3.1 Land Use and Zoning

As previously identified, the Project Area encompasses approximately 57,330.31 hectares (ha) of predominantly cropping and grazing land and adjoins the Mallee Cliffs National Park, which is located directly south and south east.

As shown in **Figure 2** below, the Project Area is primarily zoned as RU1 Primary Production within the Wentworth Local Environment Plan (LEP) 2011, noting that the site also includes a number of small areas that are zoned as C2 Environmental Conservation. There is no C2 zoned land within the Disturbance Footprint and no Project infrastructure will be cited within C2 land.

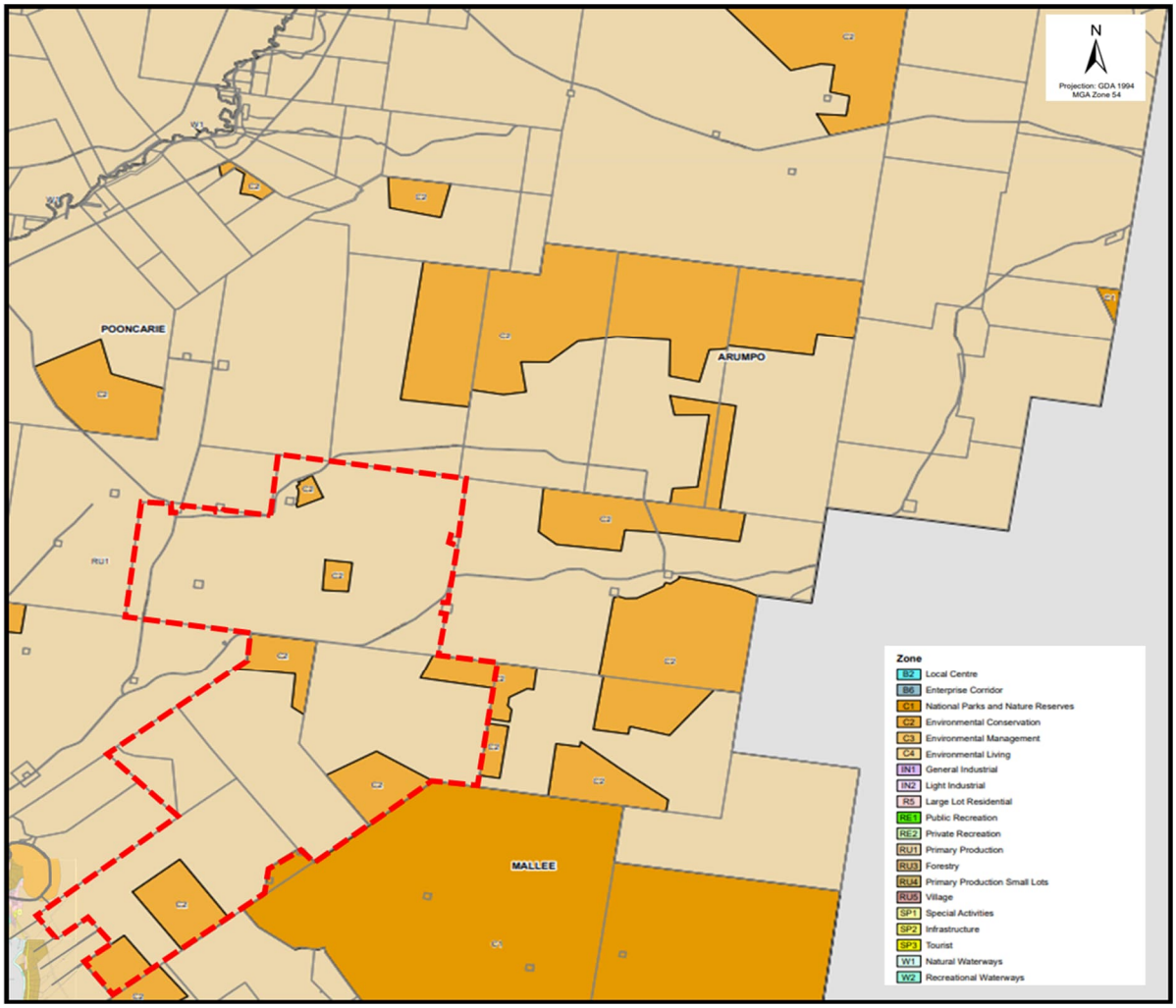


Figure 2 Project Area Land Use Zoning **[Source: NSW Planning Portal]**

3.2 Adjacent Land Use / Approvals

The adjacent land located south and south-east of the Project Area, Mallee Cliffs National Park, is zoned C1 National Parks and Nature Reserves as shown in **Figure 2** above.

The South-West Renewable Energy Zone (REZ) is relatively undeveloped, but there is substantial commercial interest in the area, such that there are several other large scale renewable energy and other SSD developments in the vicinity of the Project, most at the early stages of the planning and approvals pathway.

They include, but are not limited to Mallee Solar Farm, Euston Wind Farm, Koorakee Energy Park, Gol Gol Solar Farm, Gol Gol Wind Farm, Gol Gol Battery Energy Storage System, Project EnergyConnect (NSW – Eastern Section), Euston Mineral Sands and Buronga Landfill Expansion. Other new renewable energy projects in the South-West REZ are also anticipated to be established in the future.

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 SSD projects 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 5.5** of this report.

3.3 Surrounding Road Network Details

3.3.1 Road Links

Based on the expected transport routes for the construction, operations and decommissioning phases of the Project (refer **Section 4.3**) an OSOM Transport Route and Local Transport Route has been defined.

The OSOM Transport Route will be utilised by heavy vehicles including OSOM between the Port of Newcastle and the Project Area. This is further described in **Section 4.3** and the Preliminary Transport Route Assessment prepared by Rex J Andrews in **Appendix A**.

The Local Transport Route comprises the final 110 km of the OSOM Transport Route between Euston and the Project Area. This will be utilised by heavy vehicles including OSOM as well as light vehicles associated with the Project.

The critical road links in terms of the potential impacts of the Project were determined to be associated with the Local Transport Route including sections of the state-controlled sections of the Sturt Highway (Mildura to Hay), Silver City Highway (Sturt Highway to Wentworth) and Arumpo Road (Silver City Highway to proposed Site Access points) as shown in **Figure 3.**

All the other road links identified were noted as comprising existing approved heavy vehicles routes or forming part of the OSOM Transport Route, noting that any required modifications to the road network between the Port of Newcastle and the Sturt Highway/ Carey Street roundabout at Euston would be undertaken by separate planning assessment and approvals.

The Project is not anticipated to have a significant, ongoing impact on the operation of the road links forming the Transport Route as these movements are associated with existing approved routes or related to OSOM and thus temporary and expected to travel out of hours and under full escort.

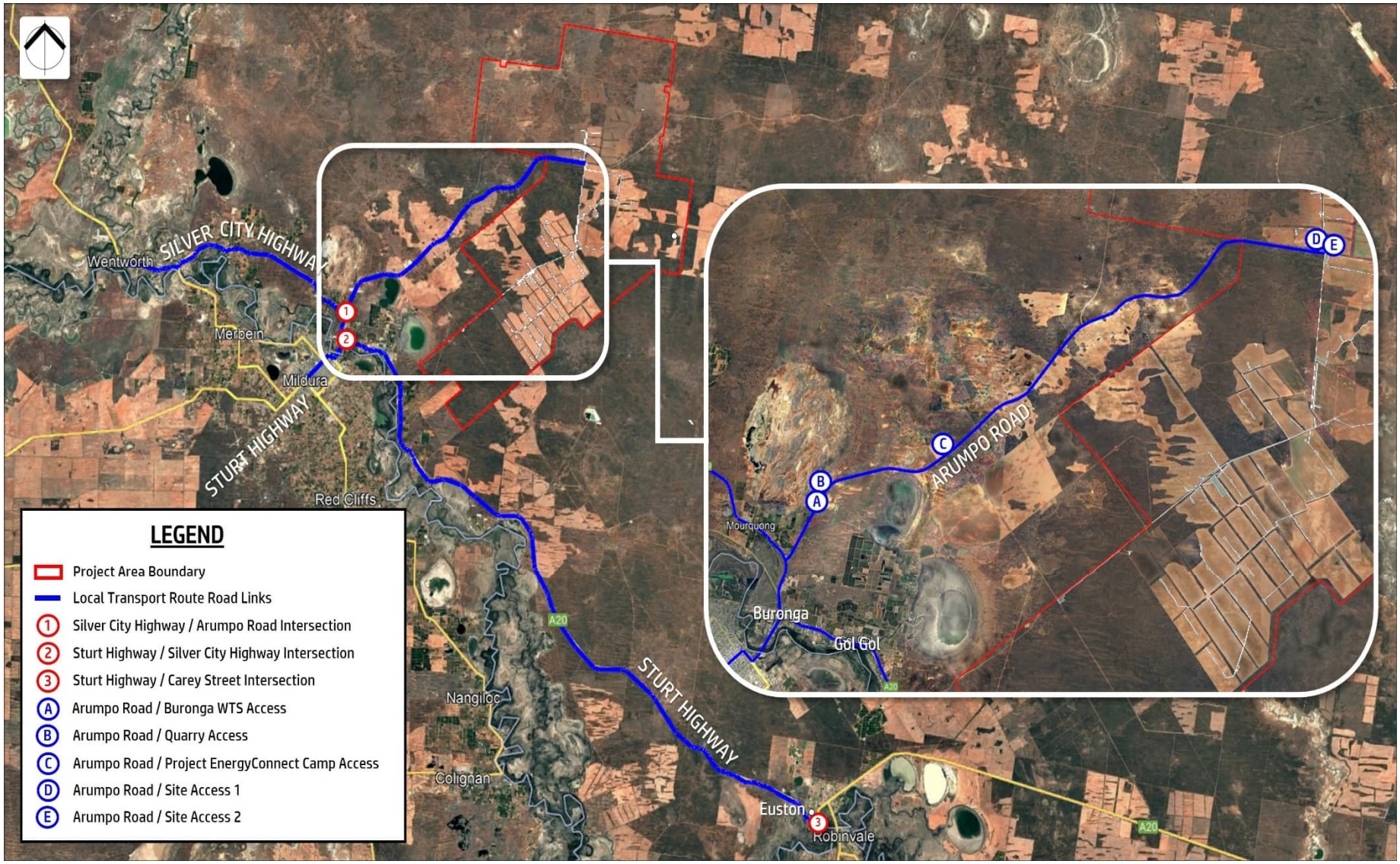


Figure 3 Surrounding Road Network – Relevant Road Links and Intersections

3.3.1.1 Sturt Highway (A20)

The relevant section of the Sturt Highway is between the locations of Hay and Mildura, with the 10.3 km section between Mildura and Gol Gol being a critical section used by Project traffic. This section of the link is expected to be utilised by Project traffic related to material / equipment delivery (Mildura to Silver City Highway) with this section and the eastern section to Gol Gol also expected to be utilised for Project staff movements. The broader length of the Sturt Highway east to Hay and beyond is expected to be utilised as part of the OSOM Transport Route catering for the OSOM vehicle movements for the Project.

The critical section of the Sturt Highway (Mildura to Gol Gol) is currently operating as a 60km/hr urban arterial road, with a two-way, two-lane cross section (refer **Figure 4**). Further to the east the configuration of the link changes to a high speed (100km/hr) two-way, two-lane rural highway (refer **Figure 5)**.

Figure 4 Sturt Highway (A20) – Urban Low Speed Configuration

Figure 5 Sturt Highway (A20) – Rural High Speed Configuration

3.3.1.1 Silver City Highway (B79)

The section of the Silver City Highway relevant to the Project has been identified as the 30.4 km section spanning between the Sturt Highway at Buronga and the regional township of Wentworth. In particular the section of the Silver City Highway between the Sturt Highway and Arumpo Road is expected to be utilised for material and equipment delivery movements for the Project, while the full length is also anticipated to be utilised for Project staff movements.

The key section of this link between the Sturt Highway and Arumpo Road currently operates as a semi-rural arterial road, providing both a lower speed (60m/hr) two-way, four lane undivided carriageway (refer **Figure 6**) and a higher speed (100 km/hr) two-way, two-lane road cross section (refer **Figure 7**). This high speed rural cross section is then generally retained through to Wentworth.

Figure 6 Silver City Highway (B79) – Urban Low Speed Configuration

Figure 7 Silver City Highway (B79) – Rural High Speed Configuration

3.3.1.1 Arumpo Road

Based on the expected transport routes for the Project, the section of Arumpo Road relevant to the Project is the 32.6 km length between the Silver City Highway and the proposed site access to the Project Area, which is anticipated to be utilised by OSOM, heavy and light vehicles including Project staff, material / equipment delivery and OSOM WTG transport vehicle movements.

The Project Area is proposed to be accessed at the following locations:

- Access Point 1 will provide access to the Project Area north of Arumpo Road, including the TWA facility and car park.
- Access Point 2 will provide access to the Project Area south of Arumpo Road.

The existing cross section of Arumpo Road is fairly consistent along the relevant length, with the road currently operating as a high speed (80-100 km/h), two-way, two lane rural highway cross section with a varying sealed road width of 7.0-8.0m, as shown in **Figure 8** and **Figure 9** below.

It is also noted that Wentworth Shire Council is currently undertaking upgrade works to Arumpo Road, with these works including the extension of the current seal extents, as well as road widening / shoulder sealing works (up to 8 m) on a short section between the Silver City Highway and the Project Area.

Figure 8 Arumpo Road – Southern Section

Figure 9 Arumpo Road – Northern Section

3.3.2 Intersections

In terms of the traffic impact assessment for the Project, the key intersection on the Local Transport Route was identified to be the intersection of Silver City Highway / Arumpo Road with the indicative location of this intersection shown in **Figure 3** above and further details of the current configuration of the intersection provided below.

All other intersections on the external road network were noted to primarily only be utilised by WTG component transport vehicles or in accordance with existing approved heavy vehicle routes. 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.

3.3.2.1 Silver City Highway / Arumpo Road

The existing configuration of the Silver City Highway / Arumpo Road intersection currently operates as a three-way, priority controlled (give way) intersection, with the Silver City Highway approaches having priority as the major road and Arumpo Road forming the minor side road approach to the intersection.

Typically, one lane in each direction is provided on each approach to the intersection, with an additional auxiliary left turn lane and auxiliary right turn lane provided on the Silver City Highway at the intersection to accommodate left and right turn movements into Arumpo Road, as shown in **Figure 10** below.

Figure 10 Existing Silver City Highway / Arumpo Road Intersection **[Source: Google Earth Pro]**

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 the 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 4**.

Table 4 Intersection Sight Distance Requirements

Sight Distance Type	Adopted Parameters	Required Sight Distance (m)		Observed Sight Distance (m)
		Light Vehicles (Car)	Trucks	All Vehicles
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	ASD met >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**	**SISD met >317 m**
Minimum Gap Sight Distance (MGSD)	Critical Acceptance Gap - Right Turn from Three Lane / Two Way - t_a = 6.5 sec	198.5 m	MGSD met	>198.5 m

A site inspection was also undertaken to establish the currently available sight distances to/from the intersection on all approaches. Based on this inspection, it was observed that suitable approach site distance (>241m – Truck ASD) was available along Arumpo Road to the intersection, while the currently

available sight distances to/from the intersection to the north (towards Wentworth – refer **Figure 11**) and south (towards Buronga - refer **Figure 12**) exceeded the requirements for safe intersection sight distance (SISD >300m light vehicles / >317m heavy vehicles).

Figure 11 Looking North along Silver City Highway

Figure 12 Looking South along Silver City Highway

3.3.3 Public Transport Network

Based on available information it is understood that the primary public transport operations in the vicinity of the Project Area are the weekday services that run along the Sturt Highway and Silver City Highway as part of bus services between Mildura and the regional townships of Wentworth, Dareton, Buronga and Gol Gol.

Based on the route timetables available, the following bus services on the relevant sections of the Sturt Highway and Silver City Highway:

- Route 950 & 951 (Mildura – Wentworth) – 4 times per day (Monday-Friday).
- Route 953 & 954 (Mildura – Gol Gol) – 2 times per day (Monday-Friday).
- Route 955 & 956 (Dareton Loop) – 2 times per day (Monday-Friday).

In addition to the regional services identified above, a number of school bus services were also identified along the relevant sections of the Sturt Highway and Silver City Highway, although no school bus route was identified on Arumpo Road, for schools including Coomealla High School, Buronga Public School, Dareton Public School and Gol Gol Public School.

From the timetables available for the school and public bus services it was noted that the bus movements on the road network are shown to occur outside of what is expected to be the peak hours for Project traffic movements.

3.3.4 Travelling Stock Reserve Network

Based on the available mapping from the NSW Government (refer **Figure 13**), it is noted that there are no travelling stock reserves (TSR) located along the lengths of the relevant roads for the Project, nor are any areas located within the Project Area.

Notwithstanding this, it is noted that two small areas of Category 4 TSR are located adjacent to the Project Area, which as per the NSW Government's *Travelling Stock Reserves State-Wide Plan of Management* are identified to be stock watering places that are rarely, if ever used for travelling stock or emergency management, but are important, valued and used for other reasons such as biodiversity conservation or First Nations People's heritage.

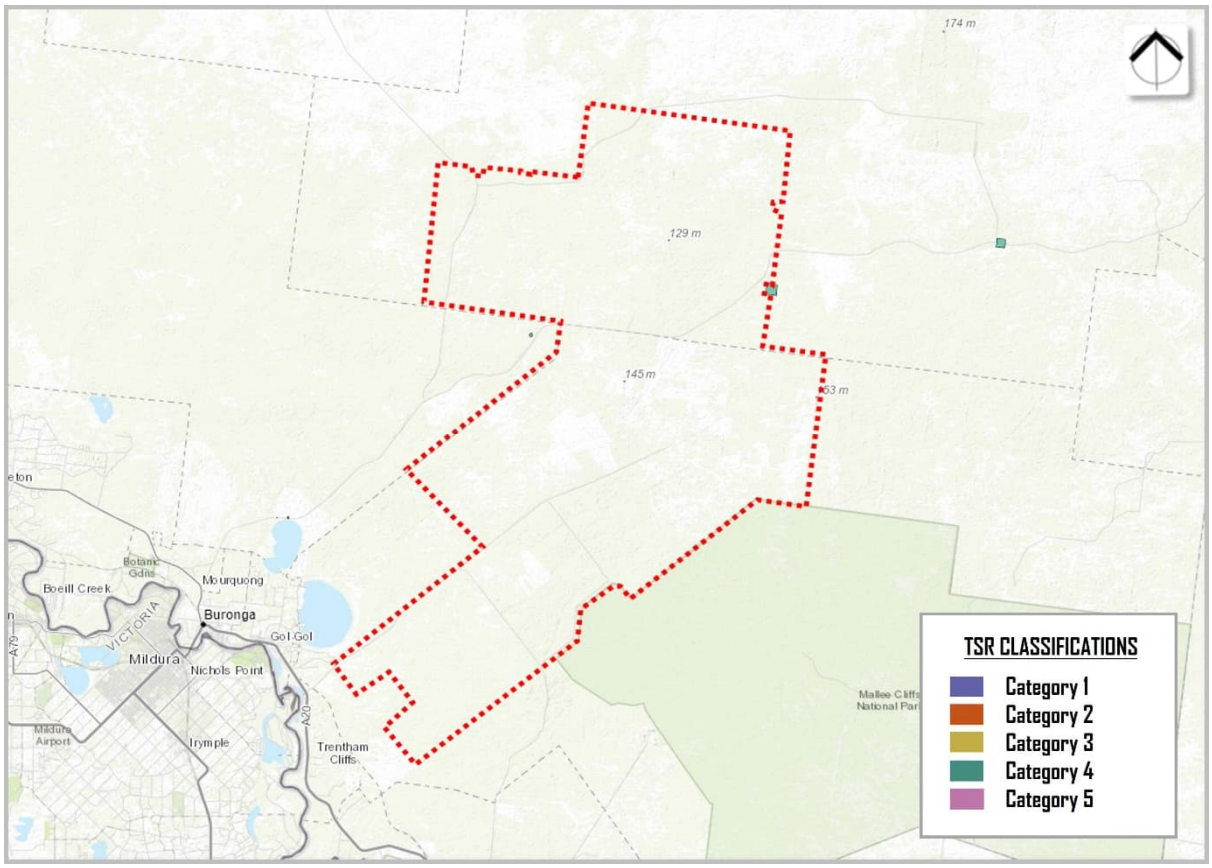


Figure 13 Travelling Stock Reserve Locations [Source: NSW Government]

3.3.5 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.

3.4 Existing Traffic Volumes

3.4.1 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 Traffic Volume Viewer, while an estimate of the daily volumes on the sections of the Silver City Highway and Arumpo Road were established from 24-hour volumes recorded during a completed count at the Silver City Highway / Arumpo Road intersection (22 July 2024).

A conservative background growth of 2% per annum (compound) was then applied to the identified baseline year volumes to establish forecasts of the current (2024) volumes on the link (refer **Table 5**), as well as the expected background volumes at future design horizons for the Project (i.e. peak construction (2027) and the operations (2039 – 10 years from start of operations) and decommissioning (2059) design horizons.

Table 5 Current (2024) External Road Network AADT Traffic Volumes

Seg. ID	Road Segment Description	Base Data Year	Base Year AADT				10 Yr. GR %	Current (2024) AADT Estimate			
			Gaz	% HV	A-Gaz	% HV		Gaz		A-Gaz	
								Total	HV	Total	HV
Silver City Highway (B79)											
98286	Sturt Highway to Corbett Avenue	2010	2,893	11.75%	2,940	11.31%	2.0%	3,817	449	3,879	439
-	Corbett Avenue to Arumpo Road	2024	1,838	14.04%	1,771	16.09%	2.0%	1,838	258	1,771	285
-	Arumpo Road to Wentworth	2024	1,211	12.14%	1,208	14.40%	2.0%	1,211	147	1,208	174
Sturt Highway (A20)											
98063	Mildura to River Drive	2007	5,961	10.80%	5,905	10.96%	2.0%	8,347	902	8,268	906
98063	River Drive to Silver City Highway	2007	5,961	10.80%	5,905	10.96%	2.0%	8,347	902	8,268	906
-	Silver City Highway to Gol Gol	2010	2,730	10.80%	2,730	10.96%	2.0%	3,602	850	3,602	854
98064	Gol Gol to Hay	2007	1,011	27.00%	1,028	27.43%	2.0%	1,416	382	1,439	395
Arumpo Road											
-	Silver City Highway to Landfill Access	2024	708	20.48%	644	22.52%	2.0%	708	145	644	145
-	Landfill Access to Quarry Access	2024	708	20.48%	644	22.52%	2.0%	708	145	644	145
-	Quarry Access to PEC Camp	2024	708	20.48%	644	22.52%	2.0%	708	145	644	145
98156	PEC Camp to Access Point 1	2010	191	27.32%	181	33.82%	2.0%	252	69	239	81
98156	Access Point 1 to Access Point 2	2010	191	27.32%	181	33.82%	2.0%	252	69	239	81

Note: Gaz = Gazettal Direction or direction of travel, % HV = Percentage Heavy Vehicles, A-Gaz = Against Gazettal Direction or against direction of travel and AADT = Annual Average Daily Traffic

3.4.2 Intersection Volumes

Turning movement counts were undertaken at the Silver City Highway / Arumpo Road intersection on Monday, 22 July 2024, with the counts undertaken for the full 24 hour period to record the existing traffic conditions at the intersection for both the expected Project peaks (6-7 am & 6-7 pm – being the peak periods of traffic generation from the Project during construction) as well as the identified peak periods of traffic volumes at the intersection (7:15-8:15 am & 3:45-4:45pm) as identified in the count undertaken.

The resultant peak hour volumes at the intersection are summarised in **Figure 14** (Project peak) and **Figure 15** (network peak), with the raw intersection count data for provided for reference in **Appendix B**.

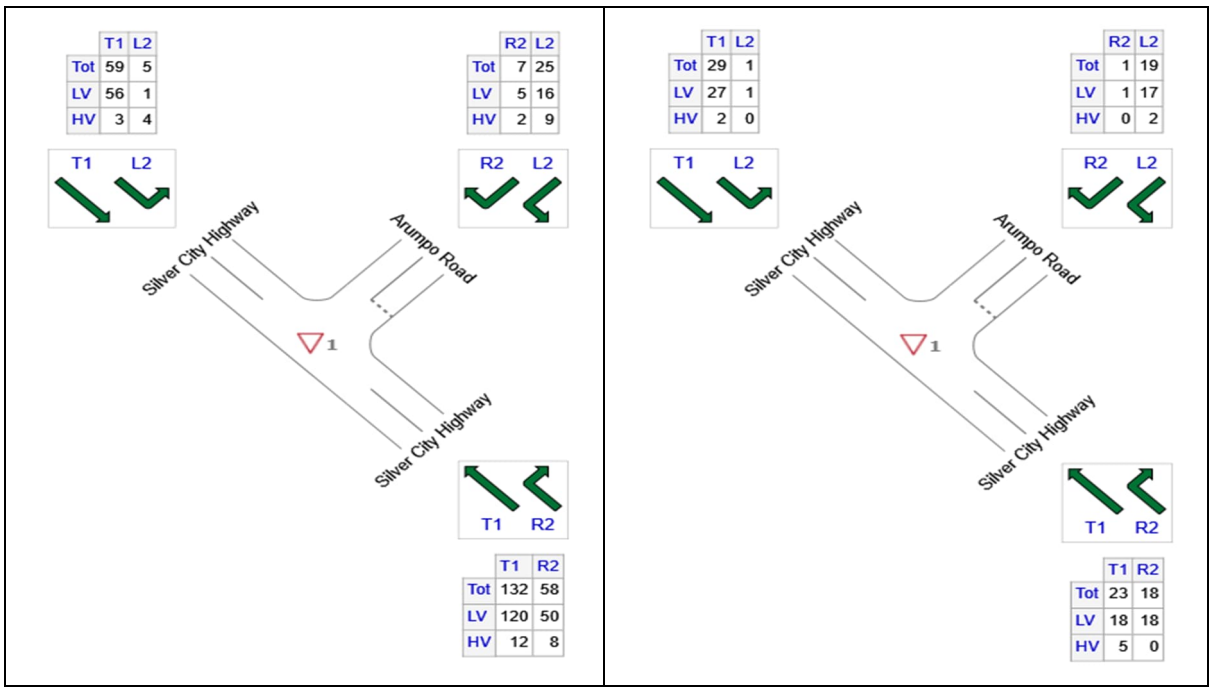


Figure 14 Existing (2024) Peak Hour (Project) Traffic Volumes, Silver City Highway / Arumpo Road Intersection

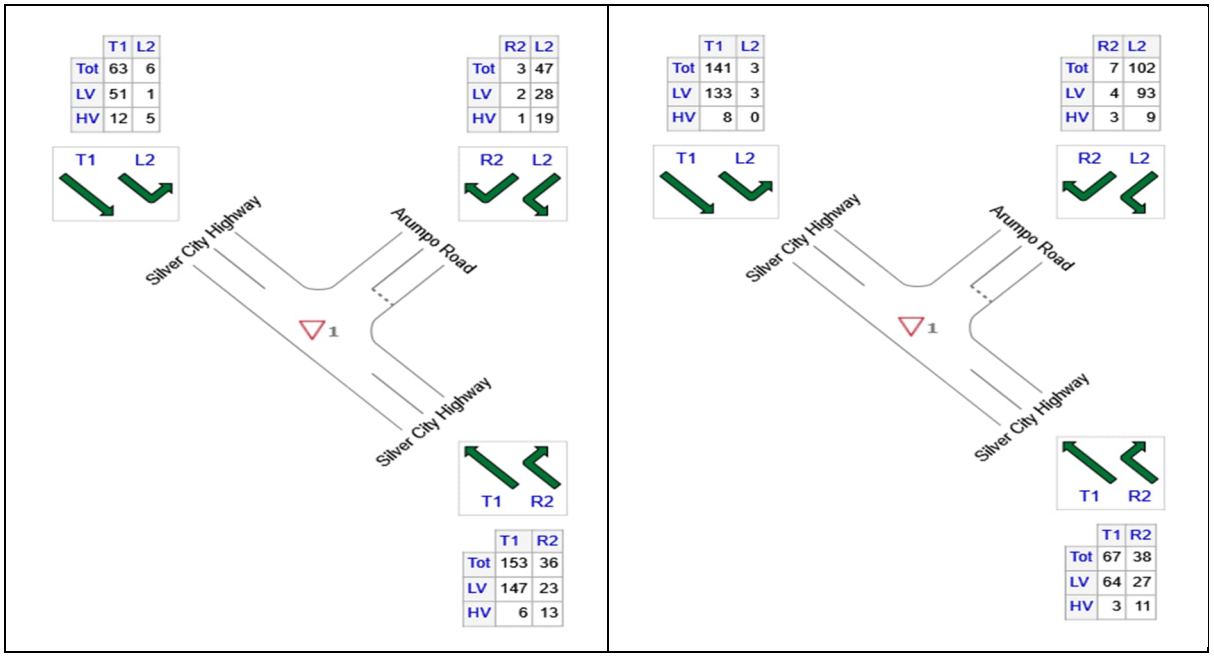


Figure 15 Existing (2024) Peak Hour (Project) Traffic Volumes, Silver City Highway / Arumpo Road Intersection

3.5 Existing Intersection and Network Performance

3.5.1 Road Links

Based on the road link volumes forecast in **Table 5** above, it is expected that the existing configurations of the relevant external road links will have adequate capacity to cater for the current 2024 volume forecasts, considering the generally accepted capacities of two-lane (approx. 12,000-15,000 vehicles per day - vpd) and four-lane rural highway sections (30,000vpd) – Sturt Highway & Silver City River Highway), four lane urban arterial road (40,000vpd) – Sturt Highway (Mildura) and regional rural roads (sealed approx. 1,500-3,000vpd – Arumpo 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 WTG 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 10vpd including 3 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 transport routes.

3.5.2 Intersections

3.5.2.1 Performance Metrics

To understand the current operational performance of the Silver City Highway / Arumpo Road, 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 5.4.10 of Austroads *Guide to Traffic Management Part 12: Integrated Transport Assessments for Development (2020)* and Section 4.2.2 of RTA's (now TfNSW) *Guide to Traffic Generating Developments (2002)* .

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) – 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.

3.5.2.2 Intersection Assessment

An assessment of the current operational performance of the key Silver City Highway / Arumpo Road intersection has been undertaken, based upon the current (2024) AM peak and PM peak period volumes identified in **Figure 14** (Project peak) to **Figure 15** (Network peak) above.

The results of these analyses are summarised in **Table 7** below, with the detailed results provided for reference in **Appendix C**. These results revealed that the existing configuration of the intersection is expected to operate satisfactorily under the current (2024) 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 all well within the acceptable limits of operation for priority-controlled intersections (as identified above) for all scenarios assessed.

Table 7 SIDRA Results – Silver City Highway / Arumpo Road Intersection (Existing Intersection Configuration)

Analysis Scenario	Intersection Degree of Saturation	Level of Service**	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 ***
Silver City Highway / Arumpo Road Intersection				
2024 AM Peak (Project)	0.059	LOS A	11.0	2.0
2024 PM Peak (Project)	0.016	LOS A	8.2	0.4
2024 AM Peak (Network)	0.058	LOS A	11.5	2.0
2024 PM Peak (Network)	0.104	LOS A	12.0	3.0

** LOS and Average Delay values identified are for worst movement at the intersection, not the overall intersection.

3.6 Existing Vehicular Access

Currently vehicular access to the Project Area is gained via two existing, gated property access locations on Arumpo Road. Access Point 1 is located on the left hand side of Arumpo Road, approximately 32.40 km along the link (north-east) from the Silver City Highway, with the configuration of the existing property access shown further in **Figure 16**. Access Point 2 provides access to the larger southern extent of the Project Area and is located on the right hand side of Arumpo Road (north-eastbound), approximately 32.60 km from the Silver City Highway, with the current configuration of this property access shown in **Figure 17**.

Figure 16 Existing Site Access Location – Access Point 1

Figure 17 Existing Site Access Location – Access Point 2

3.7 Existing Road Safety Conditions

A review of the road crash history on the relevant sections of the external road network in the vicinity of the Project Area (in particular the intersection of Silver City Highway / Arumpo Road and the section of Arumpo Road from the Silver City Highway to the Project Area) was undertaken using the interactive crash statistic data available from the TfNSW Centre for Road Safety database for the period between 2018-2022.

The results of this search identified two (2) recorded crashes within the relevant sections of the network, including one (1) at the Silver City Highway / Arumpo Road intersection and one (1) on the relevant length of Arumpo Road, with a summary of the details of the recorded 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
Silver City Highway / Arumpo Road Intersection					
1227055	2020	Minor / Other Injury	Single Vehicle	66	Object on Road
Arumpo Road					
1185986	2018	Non-Casualty (Towaway)	Single Vehicle	88	Out of Control on Bend

Based on the relatively low number (2) 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.

4.0 Project Details

4.1 Project Layout

As shown in **Figure 18**, the Project includes up to 76 wind turbines generators (WTGs) and associated infrastructure, with further details included for reference in **Appendix D.**

As identified in the proposed layout, vehicular access to the Project Area is proposed via two (2) separate site access locations off Arumpo Road.

The Project layout also identifies a number of internal site facilities, including one (1) BESS compound, One (1) collector substation and associated switchyard, one (1) switchyard, one (1) O&M facility. Temporary facilities also include one (1) TWA facility, three (3) laydown areas and five (5) construction compounds including two (2) in the southern portion and two (2) in the norther portion and one (1) additional compound in the north which will become the permanent O&M facility.

A summary of the key elements of each stage of the Project provided in **Table 9** below.

Table 9 Key Site Elements - Mallee Wind Farm

Element	Access Point 1	Access Point 2
WTGs	8	68
Site Accesses – Arumpo Road	1 (SA1)	1 (SA2)
Length of Internal Access Tracks	10,121 m	100,390 m
Substations / Switching Stations	0	3
Battery Energy Storage Systems	0	1
Turbine Construction Hardstand Areas	8	68
Construction Compounds	1	2
TWA Facility	1	0
Laydown Areas	0	3
Batch Plant Areas	0	1
Operational and Maintenance Facility Areas	0	1
Permanent Meteorological Masts	2	5
Length of Underground Electrical Reticulation	10,121 m	100,390 m
Length of Overhead Transmission Line	0 m	17,721m

4.2 Project Details

Information regarding the proposed construction activities, day to day operations and potential decommissioning works for the Project has been provided by the proponent (Spark Renewables). This information has been utilised as the basis for the traffic assessment of the Project, with further details for the construction, operations and decommissioning phases provided in the following sections.

4.2.1 Construction Phase

Based on the provided information it is understood that construction works for the Project will commence within one year of Project approval, with works conservatively assumed to start in 2026. Currently the works are forecast to be undertaken over a 36 month period, with works to be completed in Q4 2028, with the peak construction anticipated to occur over Q1 to Q3 2027.

The Project has an estimated operational life of 30 years after which it may be decommissioned or repowered.

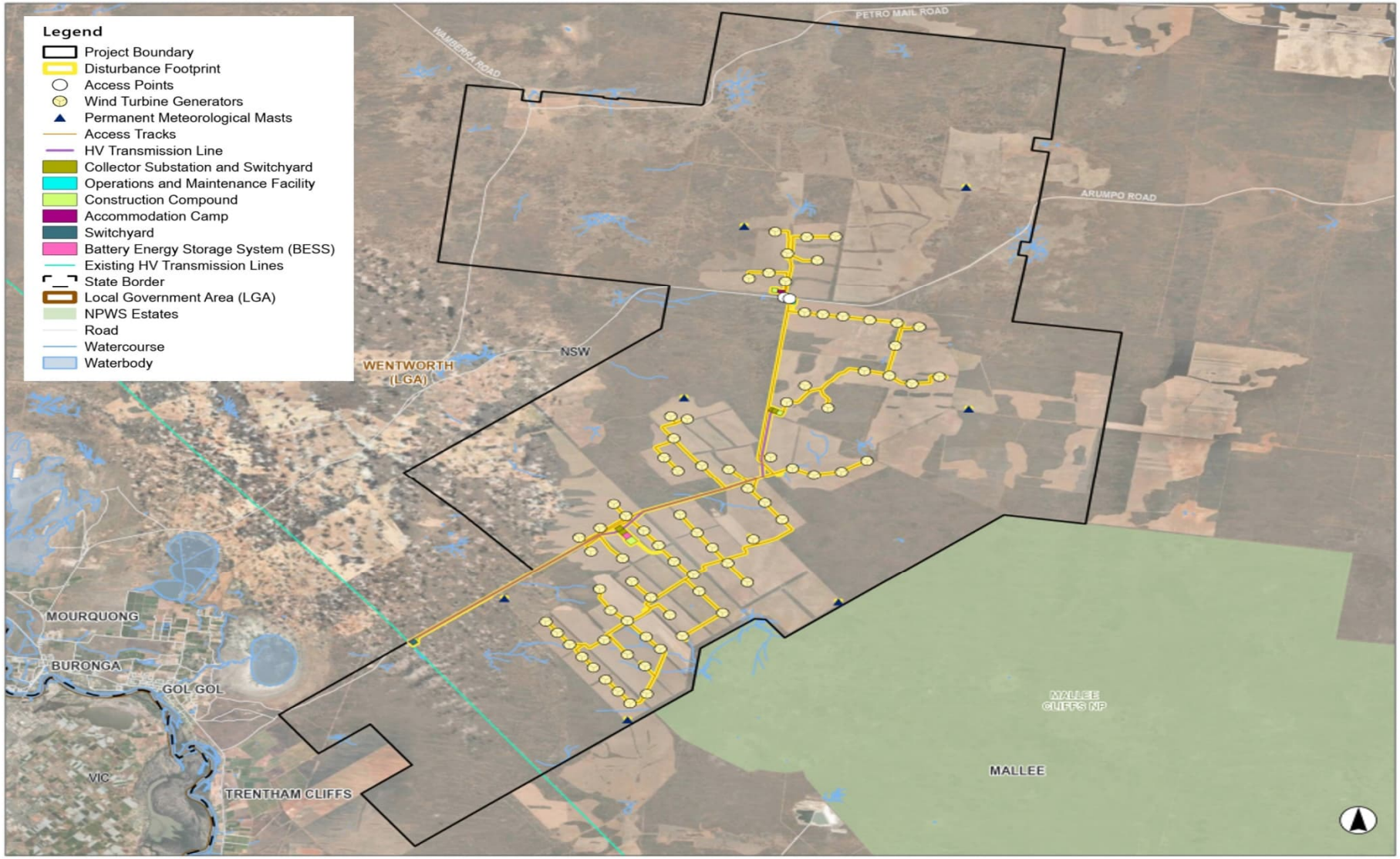


Figure 18 Mallee Wind Farm – Conceptual Project Layout **[Source: Umwelt / Spark Renewables]**

It is also understood that the proposed hours of the construction for the Project will typically be 11 hours per day Monday to Friday (7am to 6pm), with an additional five (5) hours on Saturdays (8am to 1pm). This equates to approximately six (6) working days per week and 24 working days per month. Works may be undertaken outside of these hours for activities such as concrete pours, in-ground electrical works and WTG installations.

Preliminary details of the proposed construction phase activities have been provided by Spark Renewables, with a high-level summary of the key construction tasks, the likely order of completion and anticipated timeframes for the Project provided in **Table 10** overpage.

4.2.2 Operations Phase

As identified above, it is anticipated that the Project will have an operational life of approximately 30 years after which it may be decommissioned or re-powered (subject to relevant approvals), with the operations phases of the Project to commence upon completion of the relevant construction works.

Furthermore, it has been advised that the wind farm is proposed to be operated by a workforce of up to 30 staff, with limited numbers of heavy vehicles anticipated to access the Project Area during operations, including periodic maintenance (monthly) and routine service/refuse collection vehicles (approx. 1 per week) anticipated to travel to/from the Project Area.

4.2.3 Decommissioning Phase

At the end of the operational life of the Project infrastructure (approx. 30 years) decommissioning works may be undertaken to remove the WTGs 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 WTGs 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 Spark Renewables it is understood that any potential future decommissioning works are likely 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).

Notwithstanding this, it should be noted that after 30 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 a repowering to be subject to a subsequent, separate project approval process.

Table 10 Indicative Project Construction Schedule – Mallee Wind Farm **[Source: Spark Renewables]**

TASK ID	TASK	DURATION (MONTHS)	MONTH
			Jan-26 Feb-26 Mar-26 Apr-26 May-26 Jun-26 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 Jan-28 Feb-28 Mar-28 Apr-28 May-28 Jun-28 Jul-28 Aug-28 Sep-28 Oct-28 Nov-28 Dec-28
			Q1 2026 Q2 2026 Q3 2026 Q4 2026 Q1 2027 Q2 2027 Q3 2027 Q4 2027 Q1 2028 Q2 2028 Q3 2028 Q4 2028
			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 31 32 33 34 35 36
A	Site Mobilisation and Compound Establishment	6	1 2 3 4 5 6
B	Internal Access Road and Hardstand Construction	12	1 2 3 4 5 6 7 8 9 10 11 12
C	Wind Turbine Foundation Construction	12	1 2 3 4 5 6 7 8 9 10 11 12
D	WTG Components Delivery to Site	14	1 2 3 4 5 6 7 8 9 10 11 12 13 14
E	WTG Installation	16	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
F	Electrical Trenching and Cabling	16	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
G	WTG Commissioning and Testing	16	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
H	Substation and Electrical Connection Construction	6	1 2 3 4 5 6
I	Operational Infrastructure	3	1 2
J	BESS Infrastructure	6	1 2 3 4 5 6
K	Decommission Temporary Structures and Demobilisation	1	1

4.3 Project Transport Routes

4.3.1 Construction Phase

Based on preliminary details provided by Spark Renewables, the following transport routes have been identified for traffic associated with the Project, as indicatively shown in **Figure 19** and **Figure 20** (OSOM transport routes) and **Figure 21** (General construction transport routes):

- The construction workforce is assumed to commute daily to/from the Project Area from either the onsite TWA via Access Point 1 or from the nearby townships of Mildura (including Buronga and Gol Gol) and Wentworth. It is anticipated that approximately 75% of the required construction phase workforce (up to 300 staff) will be accommodated on site, while the remaining 25% will be staff commuting to/from Mildura, Buronga, Gol Gol and Wentworth and are expected to travel to/from the Project Area via the Sturt Highway, Silver City Highway and Arumpo Road.
- 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 generally sourced from the nearby regional centre of Mildura, travelling to/from the Project Area via the Sturt Highway, Silver City Highway and Arumpo Road.
- Quarry materials (road gravels, sand, aggregates) are proposed to be generally sourced and transported to the Project Area from local quarry operations via Arumpo Road. It is noted that any transport routes used by quarry operators would have been assessed and approved as part of the development consent for quarry operations.
- Site water requirements are also proposed to be gained from two (2) local water supply points, with the raw water requirements to be obtained from a supply point on River Drive, Buronga, while the potable water requirements are to be obtained from a supply point on Modica Crescent, Buronga. From these supply points, the water is proposed to be transported to the Project Area using semi-trailer water tankers via the Sturt Highway (raw water only), Modica Crescent, Corbett Avenue (potable water only), Silver City Highway and Arumpo Road.
- Significant WTG components and specialist equipment will be imported from overseas and shipped to the Port of Newcastle, before being transported by road to the Project Area via transport routes utilising both state and local government controlled roads, as shown in **Figure 19** and **Figure 20**.

  A preliminary OSOM transport route assessment for the Project has been undertaken by Rex J Andrews Transport (refer **Appendix A**), with the following transport routes for the transportation of WTG components from the Port of Newcastle to the Project Area identified, as outlined in **Table 11:**

Table 11 Preliminary WTG Component Transport Routes

Route 1: Blades & Components <5.0m Loaded Height	Route 2: High Load Route. Max Loaded Height 5.9m
Distance: 1,203 km	**Distance: 1,324 km**
Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, M1, NorthConnex tunnel, M2, M7, M5, Hume Highway, Sturt Highway, Silver City Highway, Arumpo Road.	Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Golden Highway, Denman Road, Bengalla Road, Wybong Road, Golden Highway, Boothenba Road, Troy Bridge Road, Bunglegumbie Road, Mitchell Highway, Manildra Street, Derribing Avenue, Algalah Street, Tomingley Road, Newell Highway, Thomas Street, Moulden Street, Henry Parkes Way, Westlime Road, Hartigan Avenue, Newell Highway, Compton Road, Showground Road, Newell Highway, Sturt Highway, Sturt Highway, Silver City Highway, Arumpo Road.

Figure 19 Project Construction Phase Transport Route 1: Blades and Components <5.0m Loaded Height **[Source: Rex J Andrews]**

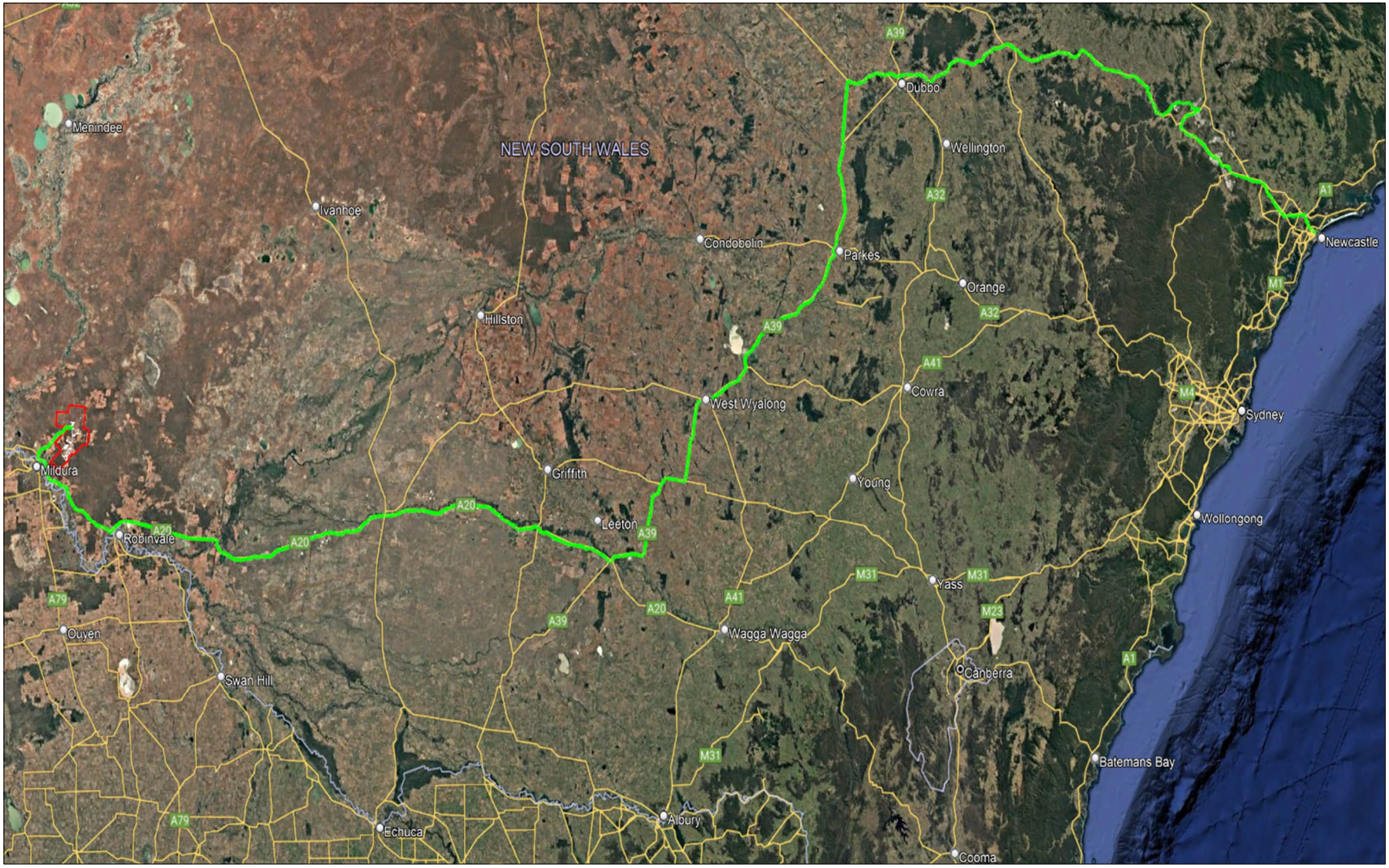


Figure 20 Project Construction Phase Transport Route 2: High Load Route. Maximum Loaded Height 5.9m **[Source: Rex J Andrews]**

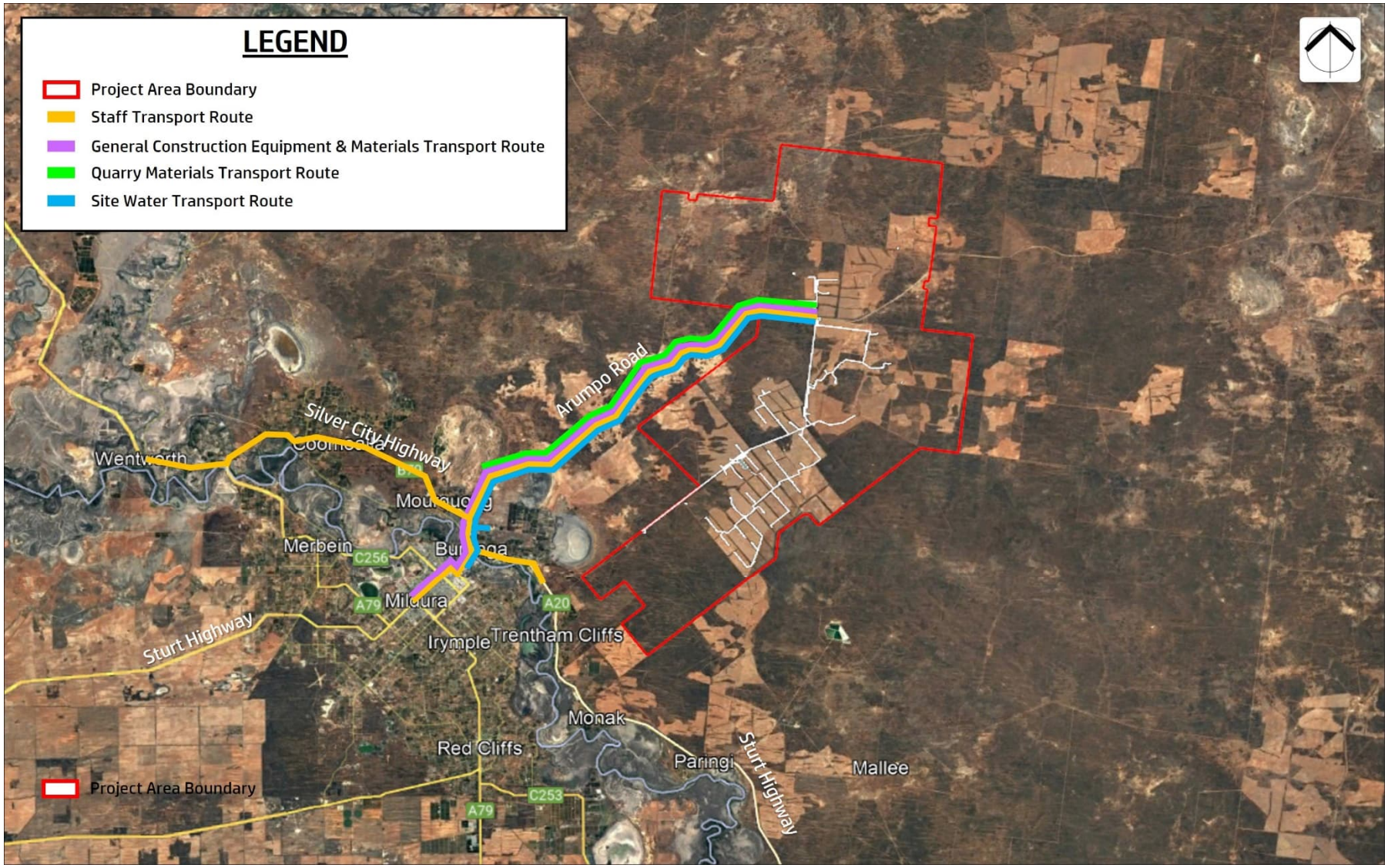


Figure 21 Project Transport Routes (General Construction Traffic) **[Source: Google Earth Pro]**

4.3.2 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. up to 30 staff) who are expected to reside locally and commute daily to/from the Project Area (likely in Mildura).
- 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 one (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 Mildura and travel to the Project Area via the Sturt Highway, Silver City Highway and Arumpo Road.

4.3.3 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 either an onsite TWA or the nearby townships of Mildura (including Buronga and Gol Gol) and Wentworth, with the local staff commuting via the Sturt and Silver City Highway and Arumpo Road.
- Plant and equipment required for decommissioning (bulk earthworks plant, prefabricated buildings and other general materials) are proposed to be sourced from Mildura, travelling to/from the Project Area via the Sturt Highway, Silver City Highway and Arumpo Road.
- Quarry materials (road gravels, sand, aggregates) are proposed to be sourced and transported to the Project Area from local quarry operations to the south-west of the Project Area via Arumpo Road. It is noted that any transport routes used by quarry operators would have been assessed and approved as part of the development consent for quarry operations.
- Site water requirements are also proposed to be gained from two local water supply points, with the raw water requirements to be obtained from a supply point on River Drive, Buronga, while the potable water requirements are to be obtained from a supply point on Modica Crescent, Buronga. From these supply points, the water is proposed to be transported to the Project Area using semi-trailer water tankers via the Sturt Highway (raw water only), Modica Crescent, Corbett Avenue (potable water only), Silver City Highway and Arumpo Road.
- The WTGs are expected to be dismantled, removed and transported to nearby metal recycling facilities, which are expected to be located in Mildura.

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

4.4 Site Access Arrangements

Based on the indicative Project layout (refer **Figure 18**) and the Project transport routes identified above, the key access arrangements (to enable the Project traffic to travel to/from the Project Area) will include the use of Arumpo Road (via the Silver City Highway), with direct vehicular access to the site via the two (2) proposed site access locations on Arumpo Road.

To enable suitable access for Project traffic, it is recommended that external upgrade works be provided at the Silver City Highway / Arumpo Road intersection, as well as the proposed site access points.

The indicative location of these external access upgrade works is shown further in **Figure 22** below, with further details of the upgrade works provided in the following sections.

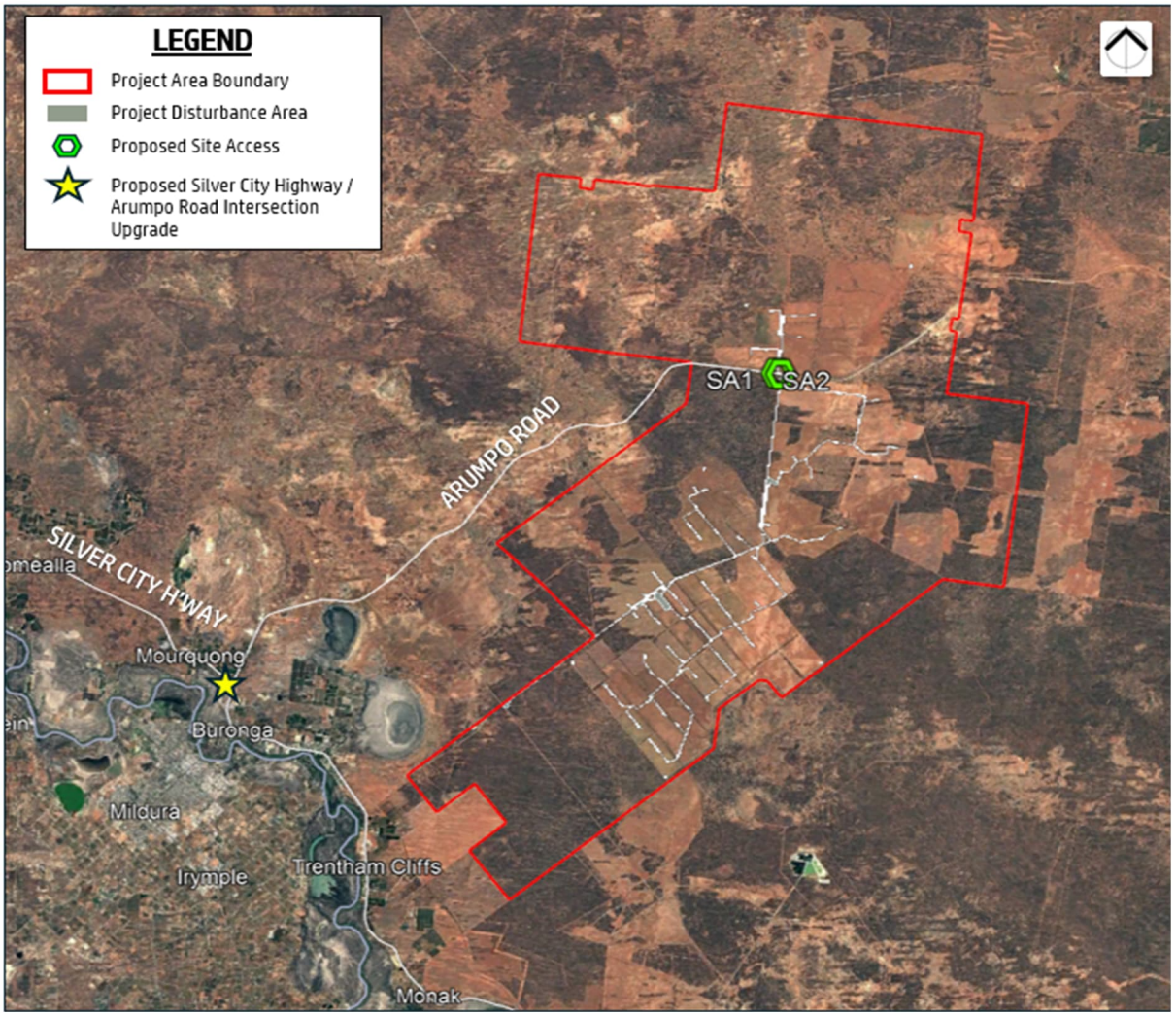


Figure 22 Mallee Wind Farm – External Access Upgrade Works Locations **[Source: Google Earth Pro]**

4.4.1 Silver City Highway / Arumpo Intersection

As previously identified, the existing configuration of Silver City Highway / Arumpo Road intersection operates as a three-way priority controlled (give way) intersection, with existing auxiliary left (AUL) and right (AUR) no turn treatments currently provided. Further to this, site observations have identified that suitable sight distances are available to/from the intersection in both directions, as outlined in **Section 3.3.2.1** above.

Notwithstanding this, based on the forecast increase in turning volumes at this intersection as a result of the proposed Project, and the completed turn warrant assessment for the intersection in **Section 5.3.1.1**, it is recommended that the right turn treatment on the southern Silver City Highway approach to the intersection be upgraded to provide a full channelised right (CHR) turn treatment.

Further to this, that the existing AUL left turn treatment at the intersection is noted to be in excess of the required left turn treatment requirements basic left (BAL), based on the completed turn warrant assessment and intersection capacity assessment (refer **Section 6.3.1** below).

The proposed CHR upgrade works are to be provided generally in accordance with Figure 7.3 (rural CHR) of Part 4A of Austroads *Guide to Road Design*, adopting a design speed of 110km/h, with a concept design layout for the proposed works included for reference in **Appendix E.**

4.4.2 Site Access Locations & Configurations

As shown in **Figure 22** above, the proposal identifies the provision of two (2) direct vehicular access points to the Project Area from Arumpo Road, located approximately 32.4 km (LHS - Access Point 1) and 32.6km (RHS Access Point 2) from the intersection of the Silver City Highway / Arumpo Road.

Both of the proposed access points for the Project are proposed a the location of an existing property access, with the current configurations of the accesses to be upgraded as part of the external road upgrade works for the Project to provide rural access intersection configurations, including the provision of rural BAL and rural basic right (BAR) intersection treatments generally in accordance with Figure 8.2 (rural BAL) and Figure 7.1 (rural BAR) of Part 4A of Austroads *Guide to Road Design,* with a concept design layout for the proposed works included for reference in **Appendix F.**

Based on site observations, adequate sight distance (Safe Intersection Sight Distance – approximately 300 m car / 317 m truck for 110 km/hr design speed / 2.5 sec R_T / d=0.36) was noted to be available to/from both the proposed site access intersection locations, as highlighted in **Figure 23** to **Figure 26.**

Figure 23 Available Sight Distances West on Arumpo Road from SA1 (Access Point 1)

Figure 24 Available Sight Distances East on Arumpo Road from SA1 (Access Point 1)

Figure 25 Available Sight Distances West on Arumpo Road from SA2 (Access Point 2

Figure 26 Available Sight Distances East on Arumpo Road from SA2 (Access Point 2)

In addition to the access intersection works, the transport route assessment undertaken (refer **Appendix A**) has also identified that additional hardstand areas will be required at both the proposed site access locations to accommodate the swept paths of the OSOM WTG component transport vehicles.

The indicative extents of these additional hardstand areas are shown in **Figure 27**and **Figure 28** for Site Access Point 1 and 2 respectively, with the exact extents to be confirmed in subsequent detailed design phases of the Project once the final configuration of the WTG components and associated transport vehicles are confirmed.

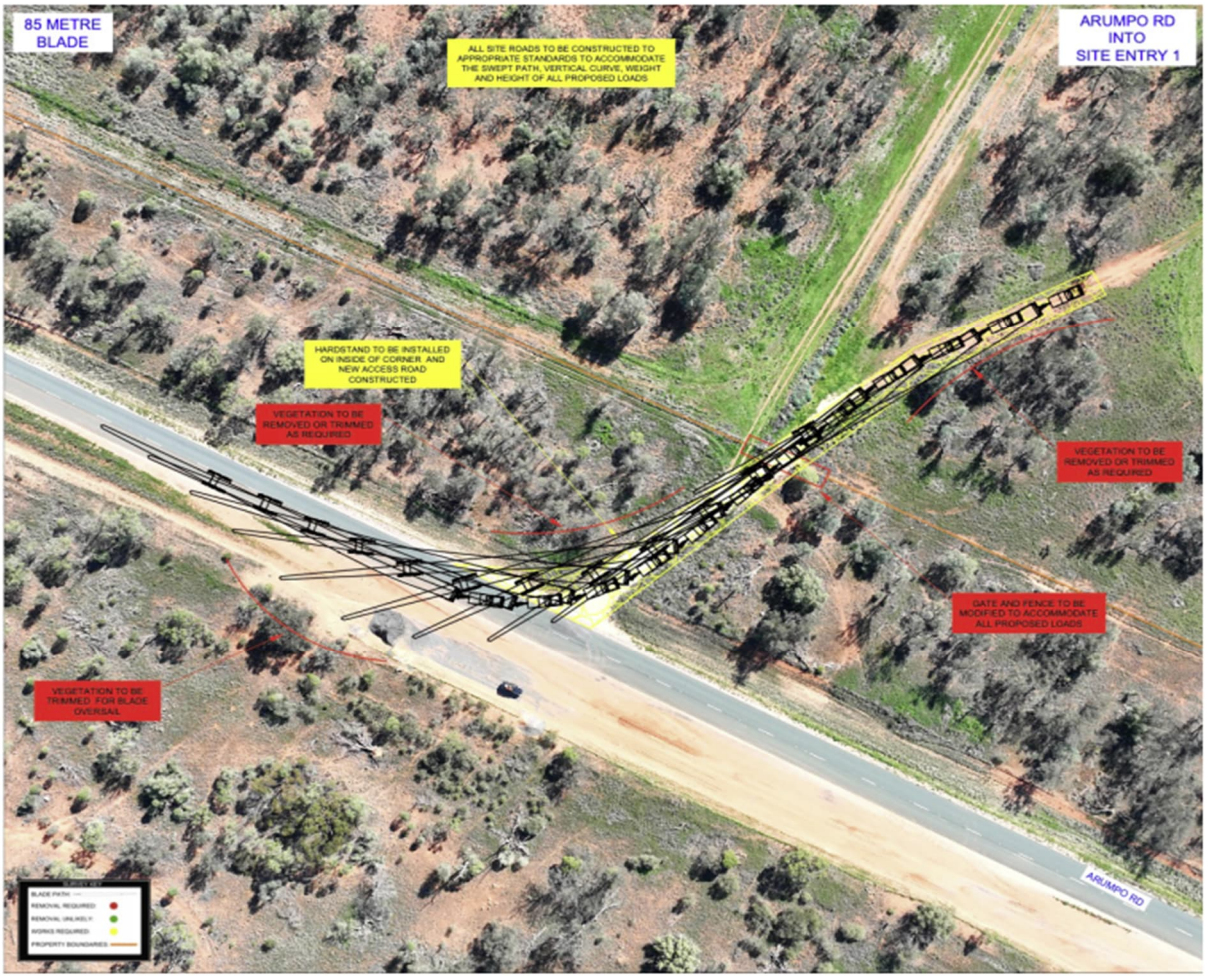


Figure 27 Additional OSOM Route Works – Access Point 1 / Arumpo Road Intersection [Source: Rex J Andrews]

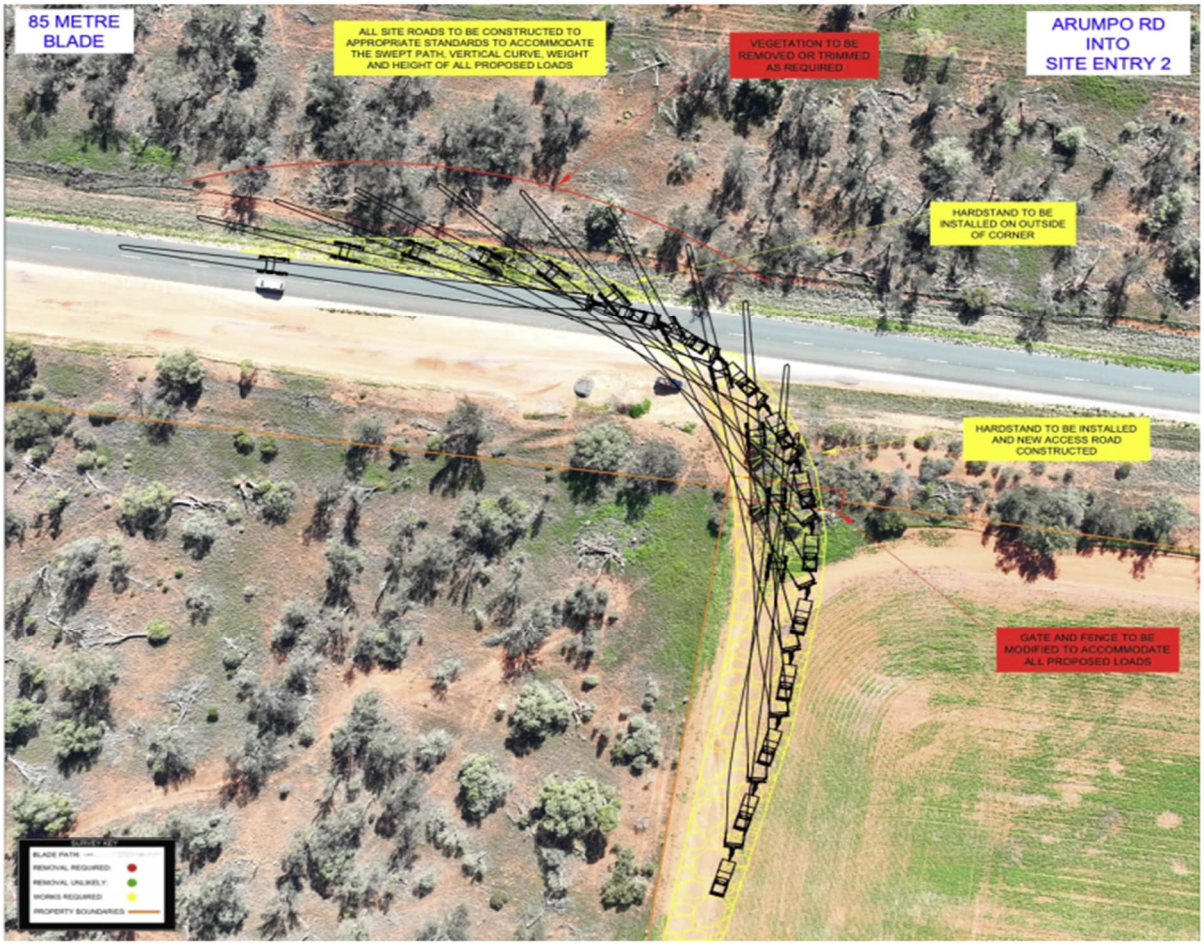


Figure 28 Additional OSOM Route Works – Access Point 2 / Arumpo Road Intersection [Source: Rex J Andrews]

4.5 Internal Site Facilities

As previously identified, the conceptual layout for the Project (refer **Figure 18** above and overall Project Area layout in **Appendix D**) includes a series of internal access tracks throughout the Project Area which provide vehicular access between the external road network and the WTG 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 110 km of access tracks, with a summary of the intended design criteria for the internal tracks provided below:

- The internal access tracks will typically between 6-8 m in width (minimum width of 6 m).
- 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.

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 18** above.

4.5.1 On Site Vehicle Parking

Further to this, whilst not currently shown on the conceptual layout it is understood that the suitable parking facilities for the Project will be provided adjacent to the main on-site compound areas including the TWA, construction compounds and O&M Facility. The exact configuration of these parking facilities will be determined as part of the subsequent detailed design phase of the Project, noting that all facilities will be provided in accordance with the requirements of all relevant standards, guidelines and policies.

Due to the large area of land available within the Disturbance Footprint for the required internal facilities (including the construction site office and parking facilities), and the current setbacks of the site compounds from the external road network (Arumpo Road), 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.

4.6 OSOM Transport Route Upgrades

An OSOM transport route assessment (refer **Appendix A**) has been separately undertaken for the Project by Rex J Andrews Transport to assess route options and potential adjustments to the road network to accommodate the proposed OSOM movements including transport of WTG components.

The assessment identified two separate routes to the Project Area from the Port of Newcastle, including one for the transport of blades and components under 5.0m, and a high load route for components up to 5.9m high (loaded). A summary of the identified OSOM transport routes is provided in **Table 11** above.

In addition to identifying the proposed transport routes, the assessment also highlighted a number of specific locations or pinch points along the two transport routes where additional works are expected to be required to accommodate the swept paths and vehicle clearance envelopes of the proposed OSOM vehicles. 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 while 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, other pinch points will require more significant route upgrade works, with a summary of the identified works for the two WTG component transport routes provided in **Table 12** and **Table 13**.

Any modifications to the road network between the Port of Newcastle and Euston will be assessed via separate planning approvals. Modifications and works between Euston and the Project Area are assessed within the EIS for the Project and are considered in the EIS.

Table 12 WTG Component Transport Route 1 – Route Modification Works Summary [Source: Rex J Andrews]

KM Index	Location	Section of Road	Procedure	Comments
0.00	Newcastle Port - Mayfield (NSW)	Mayfield #4 berth onto Selwyn Street	Moderate right-hand turn	Hardstand will need to be added to the left entry and exit of the corner. The existing culvert will need to be extended. Some signs will need to be relocated and or made removable and some fence and gate will need to be relocated.
1.3	Mayfield (NSW)	Selwyn Street onto Industrial Drive via George Street	Right hand turn	The first right hand turn through George Street will need a sign made removable and a disused pole on the overhang removed. On the inside of the corner hardstand will need to be added, a sign made removable.

KM Index	Location	Section of Road	Procedure	Comments
4.9	Mayfield (NSW)	Industrial Drive under traffic signals	Travel directly ahead	The blades will need to cross to the incorrect side of the intersection 200 metres prior, before crossing back over to the correct side 120 metres to the north of the intersection. A light pole on the inside of the corner will need to be made removable, and two signs will need to be made removable or relocated.
5.5	Mayfeild West (NSW)	Industrial Drive onto Maitland Road	Right hand turn	Two signs will need to be made removable or relocated. Traffic islands to be trafficable.
18.4	Beresfield (NSW)	John Renshaw Drive onto the M1	Left hand bend	1 x light poles to be removed or relocated on the outside of corner for tail swing. Signs to be relocated/removed.
614.6	Wagga Wagga (NSW)	Sturt Highway	Second Exit on Round-about	Sign to be removed in the middle of the roundabout. Roundabout made trafficable.
617.3	Wagga Wagga (NSW))	Sturt Highway	Second Exit on Round-about	Sign to be removed in the middle of the roundabout. Hardstand to be installed on roundabout and roundabout made trafficable.
618.4	Wagga Wagga (NSW)	Sturt Highway	Second Exit on Round-about	The truck will need to cut across the centre of the roundabout. The existing pavement is ok to drive on without any extra work. 2x signs to be removed in the middle of the roundabout.
618.75	Wagga Wagga (NSW)	Sturt Highway under rail overpass	Travel under rail overpass	Detailed vertical curve assessment required to determine whether blade loads can travel under the rail bridge and maintain clearance, as well as maintaining tip clearance to the ground on entry and the bridge on exit while travelling through the dip.
621.5	Wagga Wagga (NSW)	Sturt Highway	Second exit on Round-about	Signs to be removed in the middle of the roundabout. Roundabout made trafficable.
711.0	Gillenbah (NSW)	Sturt Highway	Left hand turn	Several signs to be relocated or made removable. Traffic island to be made trafficable.
882.0	Hay South (NSW)	Sturt Highway Roundabout at Cobb Highway GPS Link	Load to cross to incorrect side of road and use bypass through roundabout.	Hardstand bypass installed through roundabout parallel with existing easement. Vegetation to be removed or trimmed. Several signs relocated or made removable.
1012.0	Balranald (NSW)	Sturt Highway at McCabe St	Left Hand Turn	Light poles and vegetation to be removed on outside of corner. Hardstand to be installed and kerb made trafficable. Median strips to be removed and replaced with painted lines and made trafficable.

KM Index	Location	Section of Road	Procedure	Comments
1092.0	Euston (NSW)	Sturt Highway roundabout at Carey St	Right hand turn using incorrect side of roundabout	Traffic islands on entry and exit to be made trafficable. Hardstand to be installed on outside of corner. 1x light pole to be removed or relocated and multiple signs relocated or made removable. Vegetation to be trimmed. **Considered in the Project EIS.**
1168.0	Buronga (NSW)	Sturt Highway roundabout onto Silver City Highway	Right hand turn using either option	Major modifications required. Islands to be made trafficable, power and light pole to be relocated out of swept path. Multiple signs relocated. **Considered in the Project EIS.**
1171.0	Buronga (NSW)	Silver City Highway onto Arumpo Road	Right hand turn	Several signs to be relocated or made removable on inside corner of turn. *Note: Further intersection upgrade works are also proposed at this intersection – refer **Section 4.4.1** above.* **Considered in the Project EIS.**
1202.8	Arumpo (NSW)	Arumpo Rd into Access Point 1	Left hand turn	Hardstand to be installed on inside of corner. Vegetation to be removed or trimmed. Gate and fence to be modified. All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads. **Considered in the Project EIS.**
1203.0	Arumpo (NSW)	Arumpo Rd into Access Point 2	Right hand turn	Hardstand to be installed on inside and outside of corner. Vegetation to be removed or trimmed. Gate and fence to be modified. All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads. **Considered in the Project EIS.**

Table 13 WTG Component Transport Route 2 – Route Modification Works Summary [Source: Rex J Andrews]

KM Index	Location	Section of Road	Procedure	Comments
1324.0	Arumpo (NSW)	Arumpo Rd into Access Point 1	Left hand turn	All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads.
1324.0	Arumpo (NSW)	Arumpo Rd into Access Point 2	Right hand turn	All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads.

5.0 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. The expected traffic generation and distribution during all three of these phases of the Project is discussed in the sections below.

5.1 Construction Phase

As identified above, the construction phase of the Project is currently proposed to commence in 2026. The construction works are forecast to be undertaken over a 36 month period, with works to be completed in Q4 2028. Based on the expected schedule and timings of the construction activities on site, the period of peak construction on site is anticipated to occur over Q1 to Q3 2027 (refer **Table 10** above).

The main traffic generating activities occurring within the 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.

5.1.1 OSOM Movements

As previously identified, the components for the 76 WTGs within the Project Area will be imported from overseas, shipped to Port of Newcastle, before being transported by road to the Project Area. Based on information provided by Spark Renewables, it is understood that each of the WTGs will likely consist of up 13 main WTG components depending on the configuration adopted, including 3 blade pieces, hub, nacelle and drivetrain components, and up to seven (7) tower sections.

Additional ancillary WTG components (such as cooler tops and other assembly components) and meteorological masts for the Project are also anticipated to be delivered to site from Port of Newcastle utilising standard semi-trailer vehicles.

An average of two (2) light escort vehicles will accompany each over dimension WTG component to site.

Based on these numbers, the proposed WTG component transport traffic volumes for the Project were established, as summarised below:

- 3,122 vehicles total from Port of Newcastle, including:
  - 1,976 light vehicle escorts.
  - 988 WTG component transport vehicles.
  - 152 ancillary WTG component transport vehicles (semi-trailers).
  - Six (6) meteorological mast transport vehicles.

Based on the identified 14-month timeframe for the WTG component transport task (see **Table 10**), and an assumed six (6) day a week haulage operation, this would equate to approximately 18 WTG components per week or a maximum of three (3) components per day.

Combined with the assumed two (2) light escort vehicles per component and an additional semi-trailer vehicle for the WTG ancillary components, the maximum daily vehicles on the network from the WTG component transport operations would be in the order of 10 vehicles (including 3 OSOM WTG component transport vehicles / 10 light vehicle escorts / 1-2 ancillary WTG component semi-trailers).

Further to this, it is noted that as various routes have been identified for the different WTG 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.

5.1.2 Materials and Equipment Delivery Movements

Spark Renewables has provided preliminary information and assumptions regarding the quantity of construction materials and equipment required for the Project based on early engagement with key contract partners and the quantities required by previous projects. 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.

- Gravel materials for internal access roads, infrastructure areas and cable trench sand and concrete aggregates are likely to be imported from external quarry sources via Arumpo Road to the south-west of the Project Area, with no internal sources currently identified within the Project Area. It is noted transport routes associated with quarry operations would have been assessed and approved as part of the development consent for quarry operations.
- Construction water requirements have conservatively been assumed to be imported from external supply points (both raw and potable water) in Buronga.
- Concrete is to be sourced from the on-site batch plant facility located within the southern portion of the Project Area, with the associated raw materials (cement / aggregate / sand etc.) to be imported from either Mildura (cement) or the quarry sources on Arumpo Road.
- Other miscellaneous site equipment (site buildings etc.) and materials, including diesel fuel and steel reinforcement etc. are expected to be imported from external sources in Mildura or the surrounding area.
- Waste from the Project Area is proposed to be removed and transported to management facilities in surrounding LGAs including the Buronga Landfill on Arumpo Road.

A calculated breakdown of the Project generated traffic movements by construction task, is summarised in **Table 14**, while the detailed calculations completed in order to convert operational / construction information into vehicle movements are included for reference in **Appendix G**.

Table 14 Summary of Total Project Material / Equipment Delivery Movement Volumes – Construction Phase

Task	Duration	Total Vehicles	Type of Vehicles	Max Vehicles per Day (Avg)
Phase A – Site Mobilisation & Compound Establishment	6 months	3,871 vehicles (external). (including one (1) low loader from Mildura and 3,870 truck & dog combinations via Arumpo Road)	Low Loader Truck and Dog Combination	27 vehicles / day (external)
Phase B – Internal Access Road & Hardstand Construction	12 months	13,711 vehicles (external). (including 20 low loaders from Mildura, 2,678 water tankers from Buronga and 11,013 truck & dog combinations via Arumpo Road)	Low Loader Water Tanker Truck and Dog Combination	48 vehicles / day (external)
Phase C – WTG Foundation Construction	12 months	4,021 vehicles (external) (including 152 low loaders & 1,142 truck & trailers from Mildura, 380 water tankers from Buronga and 2,347 truck & dog combinations via Arumpo Road)	Low Loader Water Tanker Truck and Dog Combination	14 vehicles / day (external)

Task	Duration	Total Vehicles	Type of Vehicles	Max Vehicles per Day (Avg)
Phase D – WTG Component Delivery to Site	14 months	3,122 vehicles total (including 1,976 light vehicle escorts)	Special Transport Vehicles (Permit) Semi-Trailer Escorts (light vehicle)	Ten (10) vehicles / day (external)
Phase E – WTG Installation	16 months 1 week (for transport task)	12 vehicles required for crane delivery.	Special Transport Vehicles (Permit) Crane	Two (2) vehicles / day (external)
Phase F – Electrical Trenching & Cabling	16 months	2,868 vehicles (external) (including 67 low loaders, 89 semi-trailers, 20 truck & trailers from Mildura, seven (7) water tankers from Buronga and 2,685 truck & dog combinations via Arumpo Road)	Semi-Trailer Low Loader Water Tanker Truck and Dog Combination	Eight (8) vehicles / day (external)
Phase G – WTG Commissioning & Testing	16 months	16 vehicles (external) (including 6 semi-trailers from Newcastle, 4 truck & trailers from Mildura, 2 water tankers from Buronga and 4 truck & dog combinations via Arumpo Road)	Semi-Trailer Water Tanker Truck and Dog Combination	One (1) vehicle / day (external)
Phase H – Substation & Electrical Connection Construction	6 months	6,874 vehicles (external) (including 14 OSOM transport vehicles from Newcastle and 6,860 truck & dog combinations via Arumpo Road)	Special Transport Vehicles (Permit) Truck and Dog Combination	48 vehicles / day (external)
Phase I – Operational Infrastructure	3 months	564 vehicles (external) (including 21 truck & trailers from Mildura, seven (7) water tankers from Buronga and 536 truck & dog combinations via Arumpo Road)	Water Tanker Truck and Dog Combination	Eight (8) vehicles / day (external)
Phase J – BESS Construction	6 months	1,261 vehicles (external) (including 398 semi-trailers and five (5) OSOM transport vehicles from Newcastle and 858 truck & dog combinations via Arumpo Road)	Special Transport Vehicles (Permit) Semi-Trailer Truck and Dog Combination	Nine (9) vehicles / day (external)
Phase K– Decommission Temporary Structures & Demobilisation (construction phase)	1 month	100 vehicles (external) (including 100 semi-trailers from Mildura)	Semi-Trailer	Five (5) vehicles / day (external)
Other – Site Water (Does not include	36 months	4,442 vehicles (external) (including 1,112 raw water & 3,330 potable water tankers from Buronga)	Water Trucks	Six (6) vehicles / day (external)

Task	Duration	Total Vehicles	Type of Vehicles	Max Vehicles per Day (Avg)
internal water truck movements)				
Other – Fuel	36 months	1,112 vehicles (external) (including 1,112 fuel tankers from Mildura)	Fuel Tanker	Two (2) vehicles / day (external)
Other – Waste Removal	36 months	234 vehicles (external) (including 234 semi-trailers from Buronga Landfill)	Semi-Trailer	One (1) vehicle / day (external)

5.1.3 Construction Staff Movements

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

- Maximum (peak) construction workforce will comprise approximately 400 staff, while outside of the peak construction period the daily staff numbers associated with the Project are expected to be significantly less (i.e. average 200 staff).
- Of the overall staff, 75% (300 staff) are anticipated to utilise the proposed temporary workers accommodation (TWA) facility within the Project Area, with the remaining 25% (100 staff) expected to commute daily to/from adjacent the adjacent residential areas of Mildura , Buronga , Gol Gol and Wentworth
- Construction staff commuting from the local residential areas are expected to travel using private vehicles (light vehicles and 4WDs), with an average capacity of 1 staff member per vehicle.
- Construction staff being accommodated in the TWA facility are expected to travel to/from the Project Area via Access Point 1 in a mix of private vehicles (10%) and minibuses (90%), with an average capacity of 1 staff member per private vehicle and 20 staff per minibus expected.

Based on these general staff assumptions, the expected staff numbers and associated vehicle movements were established **Table 15** summarises the expected number of staff by construction task and by month and **Table 16** converts the estimated staff numbers to anticipated vehicle movement numbers.

5.2 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 number of local workers (up to 30 staff) who are expected to reside locally to the Project Area and commute daily (most likely to/from Mildura).

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.

Table 15 Forecast Staff Numbers During Construction

ID	TASK	MONTH																																				
		Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	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	Jan-28	Feb-28	Mar-28	Apr-28	May-28	Jun-28	Jul-28	Aug-28	Sep-28	Oct-28	Nov-28	Dec-28
		Q1 2026			Q2 2026			Q3 2026			Q4 2026			Q1 2027			Q2 2027			Q3 2027			Q4 2027			Q1 2028			Q2 2028			Q3 2028			Q4 2028		
		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	31	32	33	34	35	36
A	Site Mobilisation & Compound Establishment		24	30	33	33	30	24																													
B	Internal Access Road & Hardstand Construction				64	75	84	91	95	97	97	95	91	84	75	64																					
C	Wind Turbine Foundation Construction										64	75	84	94	95	97	97	95	91	84	75	64															
D	WTG Components Delivery to Site													22	25	28	30	31	33	33	33	33	31	30	28	25	22										
E	WTG Installation															63	71	79	85	90	94	96	97	97	96	94	90	85	79	71	63						
F	Electrical Trenching & Cabling												53	60	66	71	75	78	81	82	82	81	78	75	71	66	60	53									
G	WTG Commissioning & Testing																			25	29	32	34	36	38	39	39	39	39	38	36	34	32	29	25		
H	Substation & Electrical Connection Construction													47	58	64	64	58	47																		
I	Operational Infrastructure																							30	30												
J	BESS Infrastructure						71	89	98	98	89	71																									
K	Decommission Temporary Structures & Demobilisation																																		39		
M	Construction Management	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
	Total Daily Staff Numbers	13	37	43	110	121	198	217	206	208	263	254	241	320	332	400	350	354	350	327	326	319	253	281	276	237	224	190	131	122	112	47	45	42	38	52	13

Table 16 Forecast Daily Construction Staff Vehicle Volumes

				MONTH																																		
				Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	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	Jan-28	Feb-28	Mar-28	Apr-28	May-28	Jun-28	Jul-28	Aug-28	Sep-28	Oct-28	Nov-28	Dec-28
				Q1 2026			Q2 2026			Q3 2026			Q4 2026			Q1 2027			Q2 2027			Q3 2027			Q4 2027			Q1 2028			Q2 2028			Q3 2028			Q4 2028		
				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	31	32	33	34	35	36
Total Staff Vehicle Numbers				13	37	43	110	121	198	217	206	208	263	254	241	320	332	400	350	354	350	327	326	319	253	281	276	237	224	190	131	122	112	47	45	42	38	52	52
Local Staff DIDO	**Vehicle**	25% **Capacity**	**Utilisation by Staff**	*3*	*9*	*11*	*28*	*30*	*50*	*54*	*52*	*52*	*66*	*64*	*60*	*80*	*83*	*100*	*88*	*89*	*88*	*82*	*82*	*80*	*63*	*70*	*69*	*59*	*56*	*48*	*33*	*31*	*28*	*12*	*11*	*11*	*10*	*13*	*13*
Required Vehicle Movements (1-Way)	LV (Mildura)	1	80%	3	8	9	22	25	40	44	42	42	53	51	49	64	67	80	70	71	70	66	66	64	51	57	56	48	45	38	27	25	23	10	9	9	8	11	11
	LV (Buronga)	1	5%	1	1	1	2	2	3	3	3	3	4	4	4	4	5	5	5	5	5	5	5	4	4	4	4	3	3	3	2	2	2	1	1	1	1	1	1
	LV (Gol Gol)	1	10%	1	1	2	3	4	5	6	6	6	7	7	7	8	9	10	9	9	9	9	9	8	7	8	7	6	6	5	4	4	3	2	2	2	1	2	2
	LV (Wentworth)	1	5%	1	1	1	2	2	3	3	3	3	4	4	4	4	5	5	5	5	5	5	5	4	4	4	4	3	3	3	2	2	2	1	1	1	1	1	1
Total Daily DIDO Staff Vehicle Movements				**6**	**11**	**13**	**29**	**33**	**51**	**56**	**54**	**54**	**68**	**66**	**64**	**80**	**86**	**100**	**89**	**90**	**89**	**85**	**85**	**80**	**66**	**73**	**71**	**60**	**57**	**49**	**35**	**33**	**30**	**14**	**13**	**13**	**11**	**15**	**15**
Total Daily DIDO Staff Vehicle Movements to Access Point 1				*1*	*2*	*2*	*4*	*4*	*6*	*6*	*6*	*6*	*8*	*7*	*7*	*9*	*10*	*11*	*10*	*10*	*10*	*9*	*9*	*9*	*7*	*8*	*8*	*7*	*6*	*6*	*4*	*4*	*4*	*2*	*2*	*2*	*2*	*2*	*2*
Total Daily DIDO Staff Vehicle Movements to Access Point 2				*6*	*10*	*12*	*26*	*30*	*46*	*51*	*49*	*49*	*61*	*60*	*58*	*72*	*77*	*90*	*80*	*81*	*80*	*77*	*77*	*72*	*60*	*66*	*64*	*54*	*51*	*44*	*32*	*30*	*27*	*13*	*12*	*12*	*10*	*14*	*14*
Non-LocalStaff	**Vehicle**	75% **Capacity**	**Utilisation by Staff**	*10*	*28*	*32*	*83*	*91*	*149*	*163*	*155*	*156*	*197*	*191*	*181*	*240*	*249*	*300*	*263*	*266*	*263*	*245*	*245*	*239*	*190*	*211*	*207*	*178*	*168*	*143*	*98*	*92*	*84*	*35*	*34*	*32*	*29*	*39*	*39*
Required Vehicle Movements (1-Way)	Mini Bus (TWA to Access Point 1)	20	9%	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	LV (TWA to Access Point 1)	1	1%	1	1	1	1	1	2	2	2	2	3	3	2	3	3	4	3	3	3	3	3	3	2	3	3	2	2	2	2	1	1	1	1	1	1	1	1
	Mini Bus (TWA to Access Point 2)	20	81%	1	2	2	4	4	6	7	7	7	8	8	8	10	11	13	11	11	11	10	10	10	8	9	9	8	7	6	4	4	4	2	2	2	2	2	2
	LV (TWA to Access Point1)	1	9%	1	3	3	8	9	14	15	14	14	18	18	17	22	23	27	24	24	24	22	22	22	17	19	19	16	16	13	9	9	8	4	4	3	3	4	4
Total Daily TWA to Access Point 1 Staff Vehicle Movements				*2*	*2*	*2*	*2*	*2*	*3*	*3*	*3*	*3*	*4*	*4*	*3*	*5*	*5*	*6*	*5*	*5*	*5*	*5*	*5*	*5*	*3*	*4*	*4*	*3*	*3*	*3*	*3*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*
Total Daily TWA to Access Point 2 Staff Vehicle Movements				*2*	*5*	*5*	*12*	*13*	*20*	*22*	*21*	*21*	*26*	*26*	*25*	*32*	*34*	*40*	*35*	*35*	*35*	*32*	*32*	*32*	*25*	*28*	*28*	*24*	*23*	*19*	*13*	*13*	*12*	*6*	*6*	*5*	*5*	*6*	*6*
Total Daily TWA to Project Area Staff Vehicle Movements				**4**	**7**	**7**	**14**	**15**	**23**	**25**	**24**	**24**	**30**	**30**	**28**	**37**	**39**	**46**	**40**	**40**	**40**	**37**	**37**	**37**	**28**	**32**	**32**	**27**	**26**	**22**	**16**	**15**	**14**	**8**	**8**	**7**	**7**	**8**	**8**

5.3 Decommissioning Phase

As previously identified, based on information provided by Spark Renewables 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, any potential decommissioning works are likely to occur in more than 30 years, meaning that 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.

5.4 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.

5.4.1 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, Silver City Highway and Arumpo 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 G**.

A summary of the calculated construction, operations and decommissioning Project traffic volumes on the identified road links is provided in **Table 17**, noting:

- The peak construction phase Project volumes are experienced during the construction period where Phase B (internal access roads and hardstands), Phase C (WTG foundations), Phase D (WTG delivery), Phase E (WTG installation), Phase F (electrical trenching and cabling) and Phase H (substations and electrical connections) (refer **Table 10** & **Table 15**) are being completed simultaneously with typical site water, fuel, waste management and peak construction staff movements on the network.
- The operations phase Project volumes are based on the potential maximum volumes for staff movements on each section of the link (maximum 30 staff), noting that these staff are assumed to commute to/from the Project Area daily from Mildura, with a maximum of 1 HV movement to/from the Project Area also anticipated.
- The decommissioning phase Project volumes are conservatively assumed to be 70% of the calculated maximum peak construction phase volumes for the Project.

Table 17 Project Traffic Volumes on External Road Network Links

Road Segment	Segment ID	Maximum Daily Project Traffic Volumes								
		Peak Construction			Operations			Decommissioning		
		Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
Silver City Highway (B79)										
Sturt Highway to Corbett Avenue	98286	127	127	254	31	31	62	89	89	178
Corbett Avenue to Arumpo Road	-	132	132	264	31	31	62	92	92	185
Arumpo Road to Wentworth	-	5	5	10	0	0	0	4	4	7
Sturt Highway (A20)										
Mildura to River Drive	98063	90	90	180	31	31	62	63	63	127
River Drive to Silver City Highway	98063	101	101	202	31	31	62	71	71	143
Silver City Highway to Gol Gol	-	21	21	42	0	0	0	15	15	29
Gol Gol to Hay	98064	11	11	22	0	0	0	8	8	15
Arumpo Road										
Silver City Highway to Landfill Access	-	137	137	274	31	31	62	96	96	192
Landfill Access to Quarry Access	-	138	138	276	31	31	62	97	97	194
Quarry Access to PEC Camp	-	238	238	476	31	31	62	167	167	334
PEC Camp to Access Point 1	98156	238	238	476	31	31	62	167	167	334
Access Point 1 to Access Point 2	98156	237	237	474	31	31	62	166	166	332
River Drive (WSC)										
Sturt Highway to Raw Water Supply Point	WSC	12	12	24	0	0	0	9	9	18
Corbett Avenue (WSC)										
Silver City Highway to Modica Crescent East	WSC	7	7	14	0	0	0	5	5	10
Modica Crescent (WSC)										
Corbett Avenue West to Corbett Avenue East	WSC	7	7	14	0	0	0	5	5	10

Note: Gaz = Gazettal Direction or direction of travel, % HV = Percentage Heavy Vehicles, A-Gaz = Against Gazettal Direction or against direction of travel and AADT = Annual Average Daily Traffic

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 OSOM movements from the Port of Newcastle to the Project Area during construction.

However, these OSOM 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 OSOM transport route is in the order of 10vpd (including 3 OSOM transport vehicles and 6 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.

5.4.2 Intersections

Based on the information provided by Spark Renewables 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 intersection of the Silver City Highway / Arumpo Road.

As noted above, the AM and PM periods of peak Project traffic generation (6-7 am & 6-7 pm) and the identified network peak ((7:15-8:15 am & 3:45-4:45pm) 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 resultant traffic volumes at the intersection for the construction, operations and decommissioning phases of the Project are outlined in **Figure 29** to **Figure 34** (both Project and Network peaks), with further detailed traffic volume calculations provided for reference in **Appendix H**.

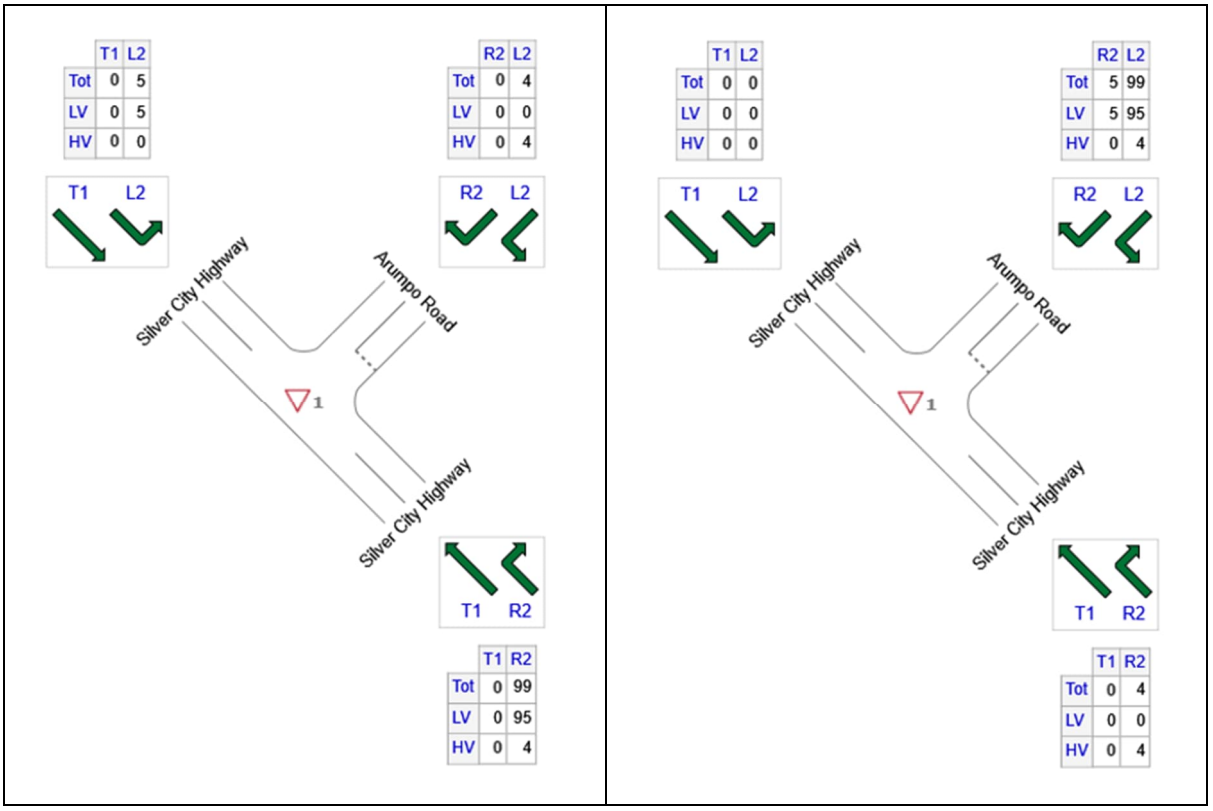


Figure 29 Construction AM & PM Peak (Project) Traffic Volumes, Silver City Highway / Arumpo Road

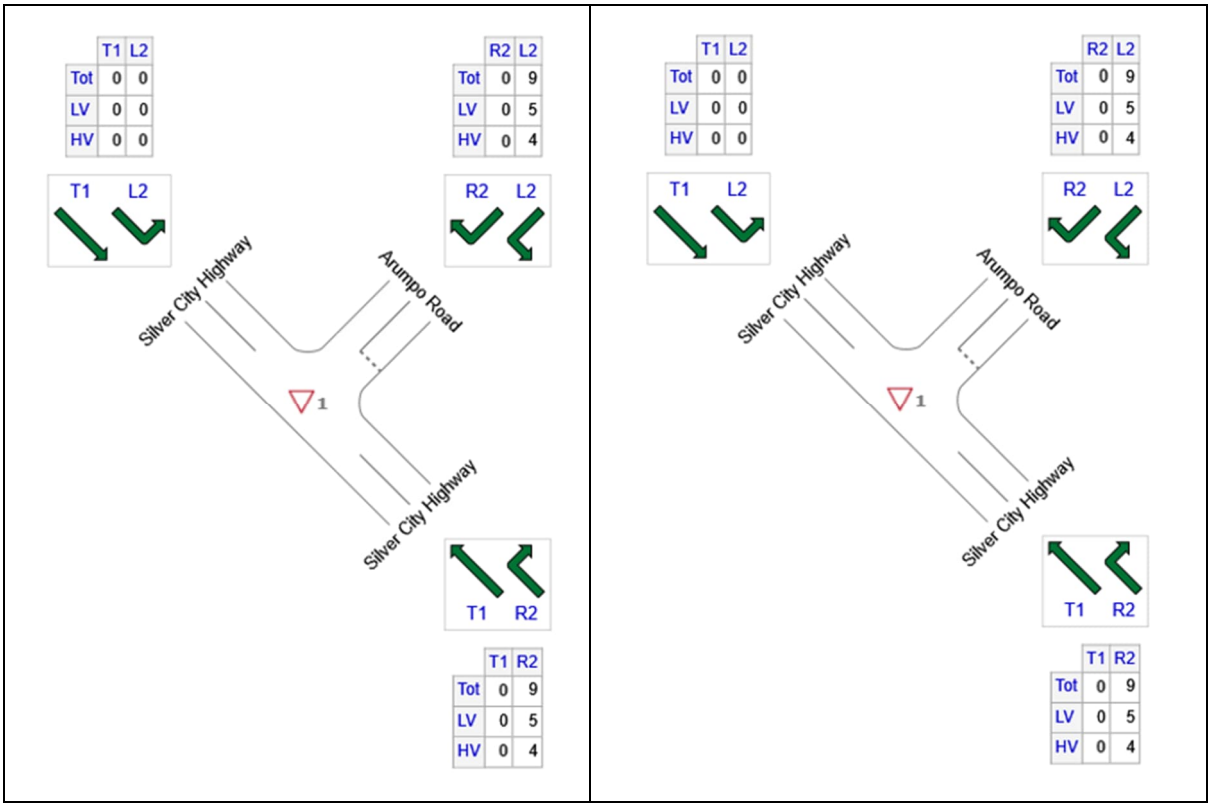


Figure 30 Construction AM & PM Peak (Network) Traffic Volumes, Silver City Highway / Arumpo Road

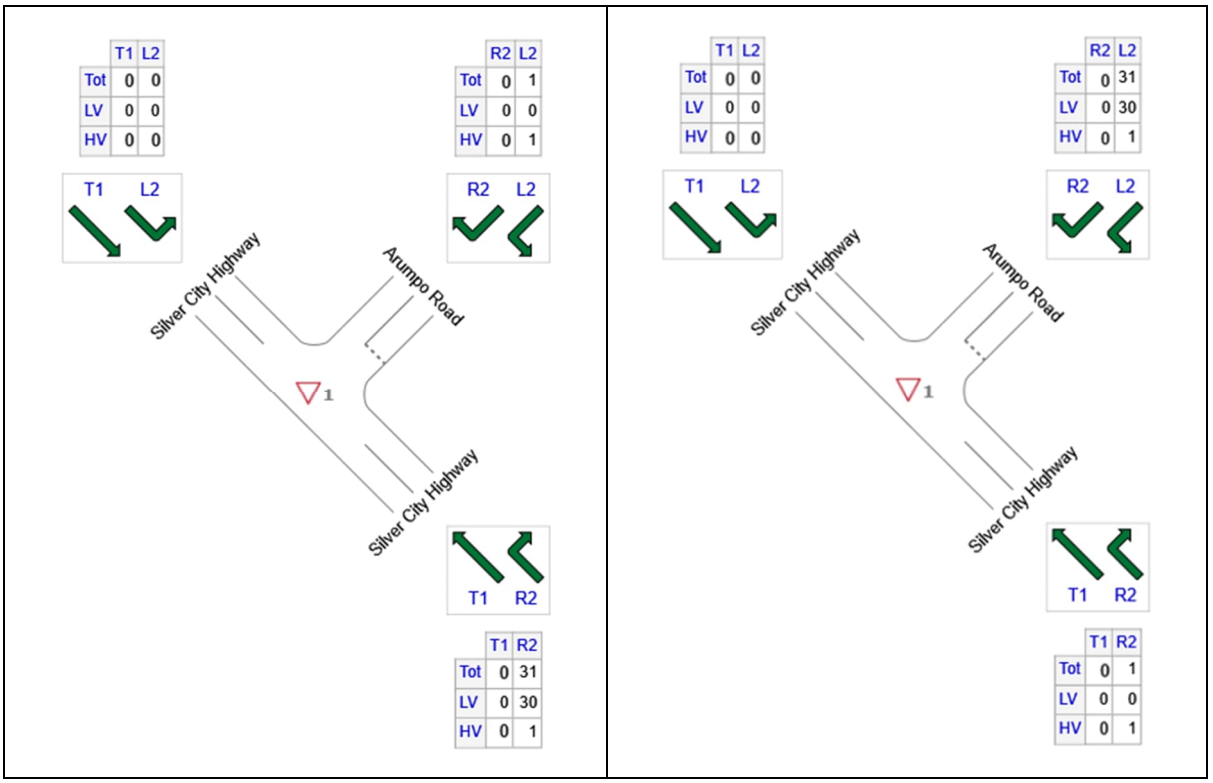


Figure 31 Operations AM & PM Peak (Project) Traffic Volumes, Silver City Highway / Arumpo Road

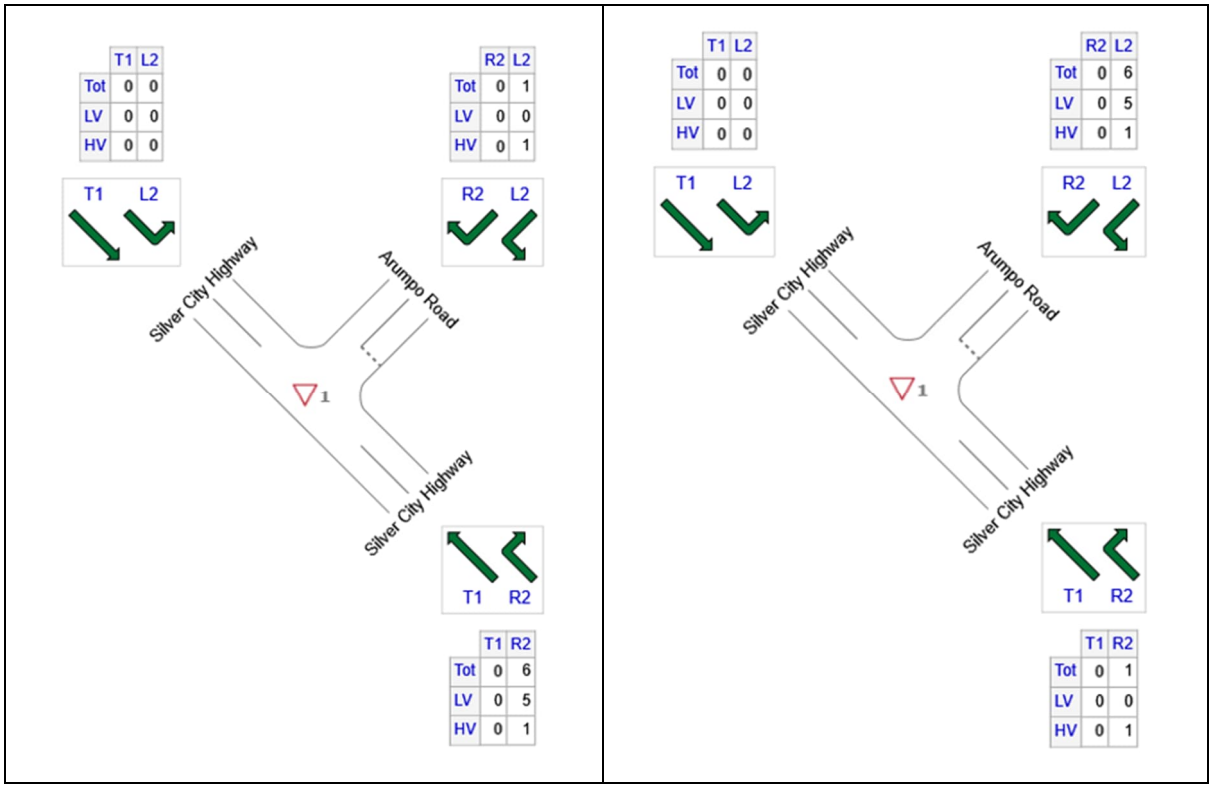


Figure 32 Operations AM & PM Peak (Network) Traffic Volumes, Silver City Highway / Arumpo Road

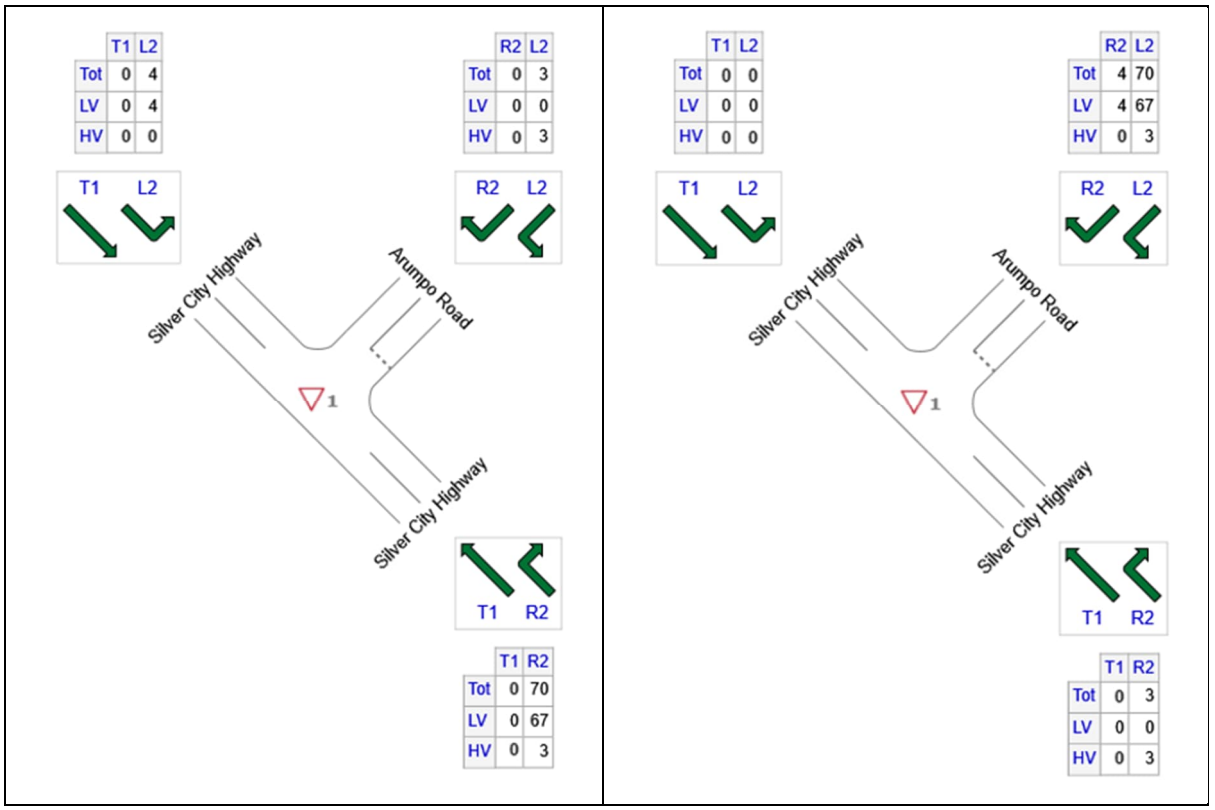


Figure 33 Decommissioning AM & PM Peak (Project) Traffic Volumes, Silver City Highway / Arumpo Road

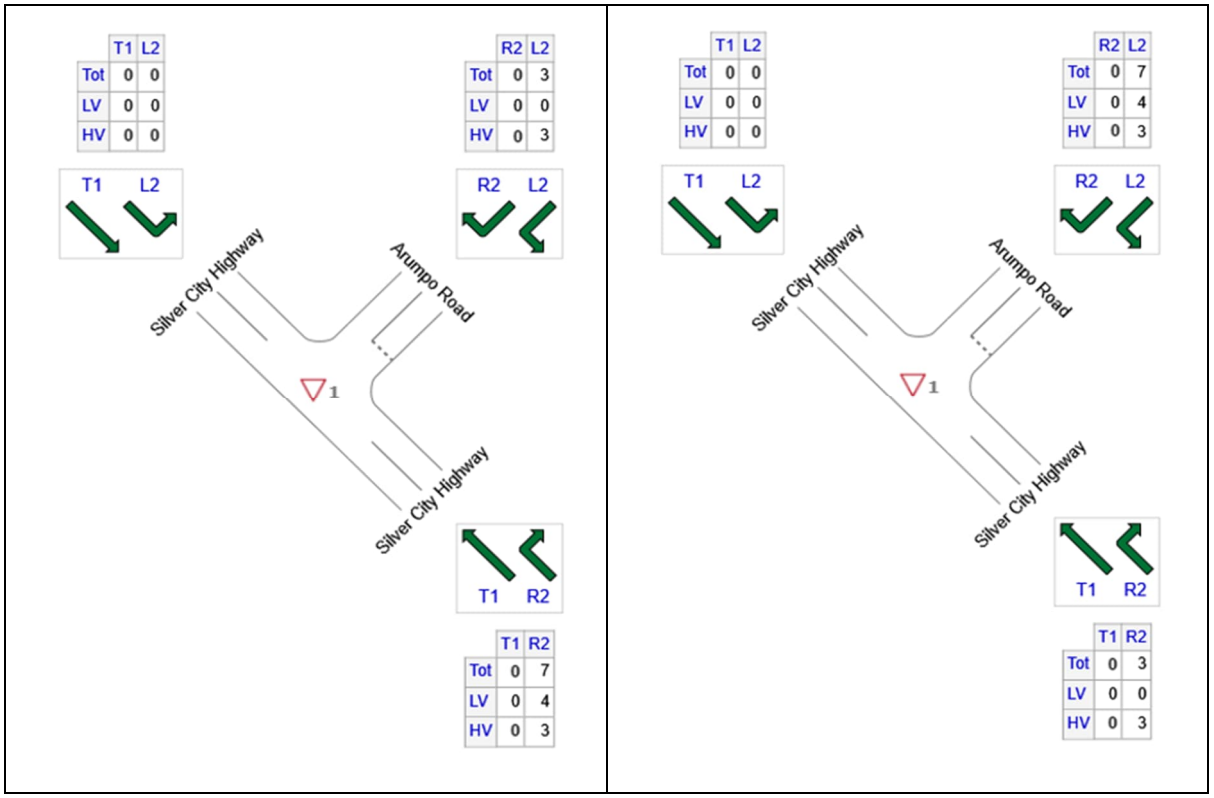


Figure 34 Decommissioning AM & PM Peak (Network) Traffic Volumes, Silver City Highway / Arumpo Road

5.5 Cumulative Project Traffic Volumes

As identified in the Project SEARs , 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.

A review of the known projects in the vicinity of the Project Area (as shown in **Figure 35**) 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 18**.

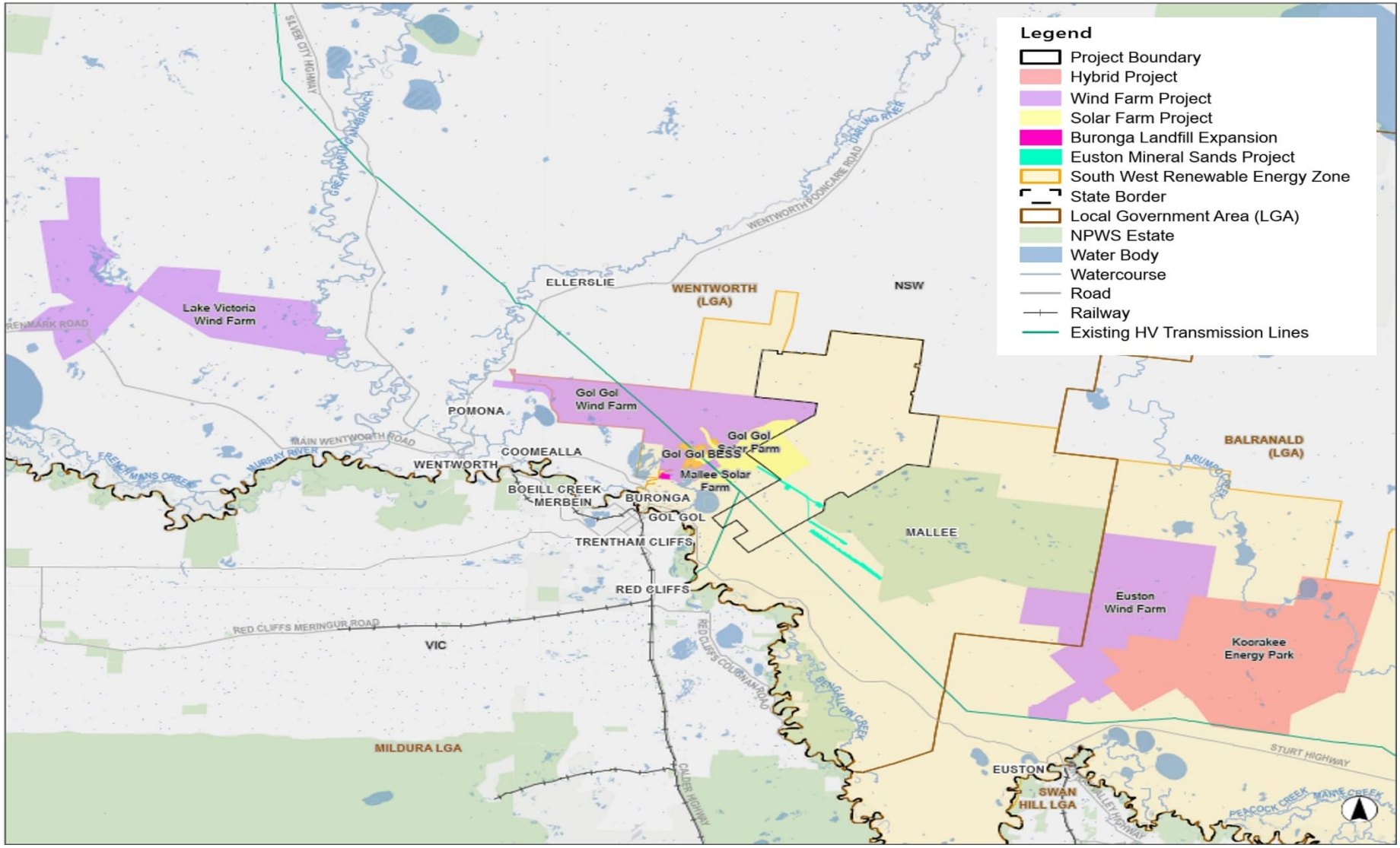


Figure 35 Adjacent External Projects for Cumulative Impact Assessment **[Source: Umwelt]**

Table 18 Cumulative Project Traffic Review Summary

ID	Project	Location	Status & Timeframes	Required for Cumulative Assessment	Review Comments
A	Euston Mineral Sands Project	Wentworth Shire LGA	Prepare EIS	**Yes**	**Relevant Project Details** • Located to the south of the site, with access primarily gained via Sturt Highway. • Expected construction timeframe of 18 months from commencement. • Construction staff 250-350 FTE. • Operational life approx. 12 years. • Operations staff 150-250 FTE. • Operations phase haulage to be 6-10 vpd and travel west on the Sturt Highway into Victoria. • Staff to be sourced from local area, primarily from Euston, Buronga, Gol Gol and Mildura. • Accommodation camp proposed for Project either on site or in proximity to Euston. **Cumulative Assessment Review Comments** • Construction phase expected to be concurrent with that of proposed Mallee Wind Farm. • Allowance for movements for up to 175 staff (approx. 50% of peak construction staff) between Mildura and the proposed access point on the Sturt Highway east of Gol Gol, noting that the remaining staff are expected to be located in either the accommodation camp or Euston. This equates to approx. 400 vpd (200 vpd each direction) on the sections of the Sturt Highway between Mildura and the proposed Euston Mineral Sands Project access. • Traffic from the Euston Mineral Sands Project is expected to be contained to the Sturt Highway and as such not anticipated to lead to any increases in volumes along Arumpo Road or at the key Silver City Highway / Arumpo Road intersection.
B	Mallee Solar Farm	Wentworth Shire LGA	Prepare EIS	**Yes**	**Relevant Project Details** • Located to the west of the site, with access primarily gained via Arumpo Road. • Expected construction timeframe of 24-36 months, with commencement proposed for early 2026. • Construction staff approx. 300 FTE. • Operational life approx. 25-35 years. • Operations staff 10 FTE. • Staff to be sourced from local area, primarily from surrounding towns such as Mildura. • Potential for on-site accommodation camp to be investigated.

ID	Project	Location	Status & Timeframes	Required for Cumulative Assessment	Review Comments
					Cumulative Assessment Review Comments • Construction phase expected to be concurrent with that of proposed Mallee Wind Farm. • Project expected to contribute traffic to similar sections of Sturt Highway, Silver City Highway and Arumpo Road as Mallee Wind Farm, noting that traffic from Mallee Solar Farm not anticipated to utilised Arumpo Road north of the current Project EnergyConnect TWA. • Project expected to contribute movements to key Silver City Highway / Arumpo Road intersection. • No traffic volume estimates are currently available for the Mallee Solar Farm project. Therefore estimate of the daily and peak hour traffic movements for the Mallee Solar Farm have been established based on the ratio of construction staff to that for Mallee Wind Farm (i.e. 300 FTE / 400 FTE – 75%). • As such the road link volumes and intersection volumes during the construction phase of the Mallee Solar Farm are estimated to be approx. 75% of those identified for the Mallee Wind Farm in **Section 5.1** above.
C	Gol Gol Solar Farm	Wentworth Shire LGA	SEARs requested	**Yes**	**Relevant Project Details** • Located to the west of the site, with access primarily gained via Arumpo Road. • Expected construction timeframe of 24-36 months & Construction staff approx. 200 FTE. • Operational life approx. 25-35 years & Operations staff 4 FTE. • Staff to be sourced from local area, including Wentworth, Dareton, Buronga, Gol Gol and Mildura. • Potential for on-site accommodation camp to be investigated. **Cumulative Assessment Review Comments** • Construction phase expected to be concurrent with that of proposed Mallee Wind Farm. • Project expected to contribute traffic to similar sections of Sturt Highway, Silver City Highway and Arumpo Road as Mallee Wind Farm, noting that traffic from Gol Gol Solar Farm not anticipated to utilised Arumpo Road north of the current Project EnergyConnect TWA. • Project expected to contribute movements to key Silver City Highway / Arumpo Road intersection. • No traffic volume estimates are currently available for the Gol Gol Solar Farm project. Therefore estimate of the daily and peak hour traffic movements for the Gol Gol Solar Farm have been established based on the ratio of construction staff to that for Mallee Wind Farm (i.e. 200 FTE / 400 FTE – 50%). • As such the road link volumes and intersection volumes during the construction phase of the Gol Gol Solar Farm are estimated to be approx. 50% of those identified for the Mallee Wind Farm in **Section 5.1** above.

ID	Project	Location	Status & Timeframes	Required for Cumulative Assessment	Review Comments
D	Gol Gol Wind Farm	Wentworth Shire LGA	SEARs requested	**No**	**Relevant Project Details** • Located to the west of the site, with access primarily gained via Arumpo Road. • Expected construction timeframe of 24-36 months, with commencement proposed in late 2028. • Construction staff approx. 300-400 FTE. • Operational life approx. 25-35 years & Operations staff 10-15 FTE. • Staff to be sourced from local area, including Wentworth, Dareton, Buronga, Gol Gol and Mildura. **Cumulative Assessment Review Comments** • Based on proposed timing of Gol Gol Wind Farm (start construction late 2028) it is not anticipated that there will be significant overlap with the peak construction period for the Mallee Wind Farm Project.
E	Gol Gol BESS	Wentworth Shire LGA	SEARs requested	**Yes**	**Relevant Project Details** • Located to the west of the site, with access primarily gained via Arumpo Road. • Expected construction timeframe of 12-24 months, with construction timeframe aiming to align with completion of Buronga substation upgrade. • Construction staff approx. 150 FTE. • Operational life approx. 30 years & Operations staff 10-15 FTE. • Staff to be sourced from local area, including Wentworth, Dareton, Buronga, Gol Gol and Mildura. • Potential for on-site accommodation camp to be investigated. **Cumulative Assessment Traffic Volumes** • Construction phase expected to be concurrent with that of proposed Mallee Wind Farm. • Project expected to contribute traffic to similar sections of Sturt Highway, Silver City Highway and Arumpo Road as Mallee Wind Farm, noting that traffic from Gol Gol Solar Farm not anticipated to utilised Arumpo Road north of the current Project EnergyConnect TWA. • Project expected to contribute movements to key Silver City Highway / Arumpo Road intersection. • No traffic volume estimates are currently available for project. Therefore estimate of the daily and peak hour traffic movements for the Gol Gol BESS have been established based on the ratio of construction staff to that for Mallee Wind Farm (i.e. 150 FTE / 400 FTE – 37.5%). • As such the road link volumes and intersection volumes during the construction phase of the Gol Gol BESS are estimated to be approx. 37.5% of those identified for the Mallee Wind Farm in **Section 5.1** above.

ID	Project	Location	Status & Timeframes	Required for Cumulative Assessment	Review Comments
F	Project Energy Connect (NSW - Eastern Section)	Various LGAs	Under construction, not yet operational. Projected for completion in late 2024	**No**	**Relevant Project Details** • Currently under construction, including Buronga Substation facility and powerline alignment. • Located to the west of the site, with access primarily gained via Arumpo Road. • Currently utilises Accommodation Camp on Arumpo Road. • Only minor vehicle movements anticipated after completion of construction. **Cumulative Assessment Traffic Volumes** • Expected that construction works will be completed prior to commencement of construction works for the Mallee Wind Farm Project.
G	Buronga Landfill Expansion	Wentworth Shire LGA	Approved, operational with expansion construction yet to commence (anticipated late 2024)	**Yes**	**Relevant Project Details** • Located to the west of the site, with access primarily gained via Arumpo Road. • Staged expansion works with initial construction works to be completed in late 2024 / early 2025. • Works to extend operational life by 38 years to 2062. • Operations staff 10 FTE. **Cumulative Assessment Traffic Volumes** • Expected that operation of expanded landfill will occur concurrently with peak construction of Mallee Wind Farm. • Project expected to contribute traffic to similar sections of Sturt Highway, Silver City Highway and Arumpo Road as Mallee Wind Farm, noting that traffic from Buronga Landfill not anticipated to utilised Arumpo Road north of its access. • Project expected to contribute movements to key Silver City Highway / Arumpo Road intersection. • TTIA for Project identified expansion will increase traffic by 107 vpd on Arumpo Road, 10 vpd on Silver City Highway North of Arumpo Road, 97 vpd to south of Arumpo Road and 83 vpd on Sturt Highway to Mildura. • Additional peak hour volumes at Silver City Highway / Arumpo Road intersection assumed to be 10% of daily volumes identified above.

ID	Project	Location	Status & Timeframes	Required for Cumulative Assessment	Review Comments
H	Euston Wind Farm	Balranald Shire LGA Wentworth Shire LGA	Prepare EIS	**Yes**	**Relevant Project Details** • Located to the south-east of the site, with access primarily gained via Sturt Highway east of Euston. • Expected construction timeframe of 18-24 months from commencement in Q2 2025. • Construction staff 250 FTE. • Operational life approx. 30-35 years & Operations staff 15 FTE. • Staff to be sourced from local area, primarily from Euston, Robinvale, Buronga, Gol Gol and Mildura. **Cumulative Assessment Traffic Volumes** • Based on location of Euston Wind Farm, majority of staff expected to be accommodated in Euston area. • Notwithstanding this, an allowance for movements for up to 50 staff between Mildura and the proposed access point on the Sturt Highway east of Euston has been made. This equates to approx. 100 vpd (50 vpd each direction) on the sections of the Sturt Highway between Mildura and the proposed Euston Wind Farm access. • Traffic from the Euston Wind Farm is expected to be contained to the Sturt Highway and is not anticipated to utilise Arumpo Road or key Silver City Highway / Arumpo Road intersection.
I	Koorakee Energy Park	Balranald Shire LGA	Prepare EIS	**Yes**	**Relevant Project Details** • Located to the south-east of the site, with access primarily gained via Sturt Highway. • Expected construction timeframe of 24-36 months from commencement late 2025. • Construction staff 300-400 FTE. • Operational life approx. 30 years & Operations staff 10-15 FTE. • Staff to be sourced from local area, primarily from Euston, Robinvale, Balranald and Mildura. • Potential for on-site accommodation camp to be investigated. **Cumulative Assessment Traffic Volumes** • Based on location of Koorakee Energy Park, majority staff expected to be accommodated in Euston area. • Notwithstanding this, an allowance for movements for up to 50 staff between Mildura and the proposed access point on the Sturt Highway east of Euston. This equates to approx. 100 vpd (50 vpd each direction) on the sections of the Sturt Highway between Mildura and the proposed Koorakee Energy Park access. • Traffic from the Euston Wind Farm is expected to be contained to the Sturt Highway and is not anticipated to utilise Arumpo Road or key Silver City Highway / Arumpo Road intersection.

ID	Project	Location	Status & Timeframes	Required for Cumulative Assessment	Review Comments
J	Lake Victoria Wind Farm	Wentworth Shire LGA	Prepare EIS	**No**	**Relevant Project Details** • Located to the north-west of the site (past Wentworth), with primary access from via Silver City Highway. • Expected construction timeframe of 24-36 months, to commence in 2028. • Construction staff 375 FTE. • Operational life approx. 30 years. • On-site Accommodation Camp proposed. **Cumulative Assessment Traffic Volumes** • Based on the proposed timing of Lake Victoria Wind Farm (construction 2028) it is not anticipated that there will be overlap with the peak construction period for the Mallee Wind Farm project. • Furthermore, based on location of Lake Victoria Wind Farm, there is not anticipated to be any use of Arumpo Road.

As shown by this review, a number of projects in the region were identified to likely have overlapping periods of construction or operation with the Project, and are likely to lead to increases in traffic volumes on the critical sections of either the Sturt Highway, Silver City Highway or Arumpo Road. The identified projects included:

- Euston Mineral Sands Project.
- Mallee Solar Farm.
- Gol Gol Solar Farm.
- Gol Gol Battery Energy Storage System.
- Buronga Landfill Expansion.
- Euston Wind Farm.
- Koorakee Energy Park.

In regard to the OSOM movements associated with the other wind farm projects identified (Gol Gol Wind Farm, Euston Wind Farm & Koorakee Energy Park), it is expected that some of the required OSOM movements will also originate from the Port of Newcastle 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 OSOM 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.

5.5.1 Summary of External Project Traffic Volumes for Cumulative Assessment

Based on the volumes for the individual projects identified above, the combined external traffic volumes on the relevant sections of the external road network were identified, with a summary of the additional daily volumes on the identified road links (refer **Table 19**) and peak hour volumes (both Project and Network peaks) at the critical Silver City Highway / Arumpo Road intersection provided in **Figure 36** and **Figure 37** respectively.

Table 19 External Project Traffic Volumes on Road Network Links

Road Segment	External Project Cumulative Traffic Volumes																				
	Euston Mineral Sands			Mallee Solar Farm			Gol Gol Energy Hub**			Buronga Landfill Expansion			Euston Wind Farm			Koorakee Energy Park			Total External Project		
	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
Silver City Highway (B79)																					
Sturt Highway to Corbett Avenue	0	0	0	95	95	191	111	111	222	97	97	194	0	0	0	0	0	0	**303**	**303**	**607**
Corbett Avenue to Arumpo Road	0	0	0	99	99	198	116	116	231	97	97	194	0	0	0	0	0	0	**312**	**312**	**623**
Arumpo Road to Wentworth	0	0	0	4	4	8	4	4	9	10	10	20	0	0	0	0	0	0	**18**	**18**	**36**
Sturt Highway (A20)																					
Mildura to River Drive	175	175	350	68	68	135	79	79	158	83	83	166	50	50	100	50	50	100	**504**	**504**	**1,009**
River Drive to Silver City Highway	175	175	350	76	76	152	88	88	177	83	83	166	50	50	100	50	50	100	**522**	**522**	**1,044**
Silver City Highway to Gol Gol	175	175	350	16	16	32	18	18	37	14	14	28	50	50	100	50	50	100	**323**	**323**	**646**
Gol Gol to Hay	175	175	350	8	8	17	10	10	19	0	0	0	50	50	100	50	50	100	**293**	**293**	**586**
Arumpo Road (431)																					
Silver City Highway to Landfill Access	0	0	0	103	103	206	120	120	240	107	107	214	0	0	0	0	0	0	**330**	**330**	**659**
Landfill Access to Quarry Access	0	0	0	104	104	207	121	121	242	0	0	0	0	0	0	0	0	0	**224**	**224**	**449**
Quarry Access to PEC Camp	0	0	0	179	179	357	208	208	417	0	0	0	0	0	0	0	0	0	**387**	**387**	**774**
PEC Camp to Access Point 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**
Access Point 1 to Access Point 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	**0**

Note: Gaz = Gazettal Direction or direction of travel, % HV = Percentage Heavy Vehicles, A-Gaz = Against Gazettal Direction or against direction of travel and AADT = Annual Average Daily Traffic

** Gol Gol Energy Hub volumes include combined forecast project volumes from the proposed Gol Gol Solar Farm and BESS developments.

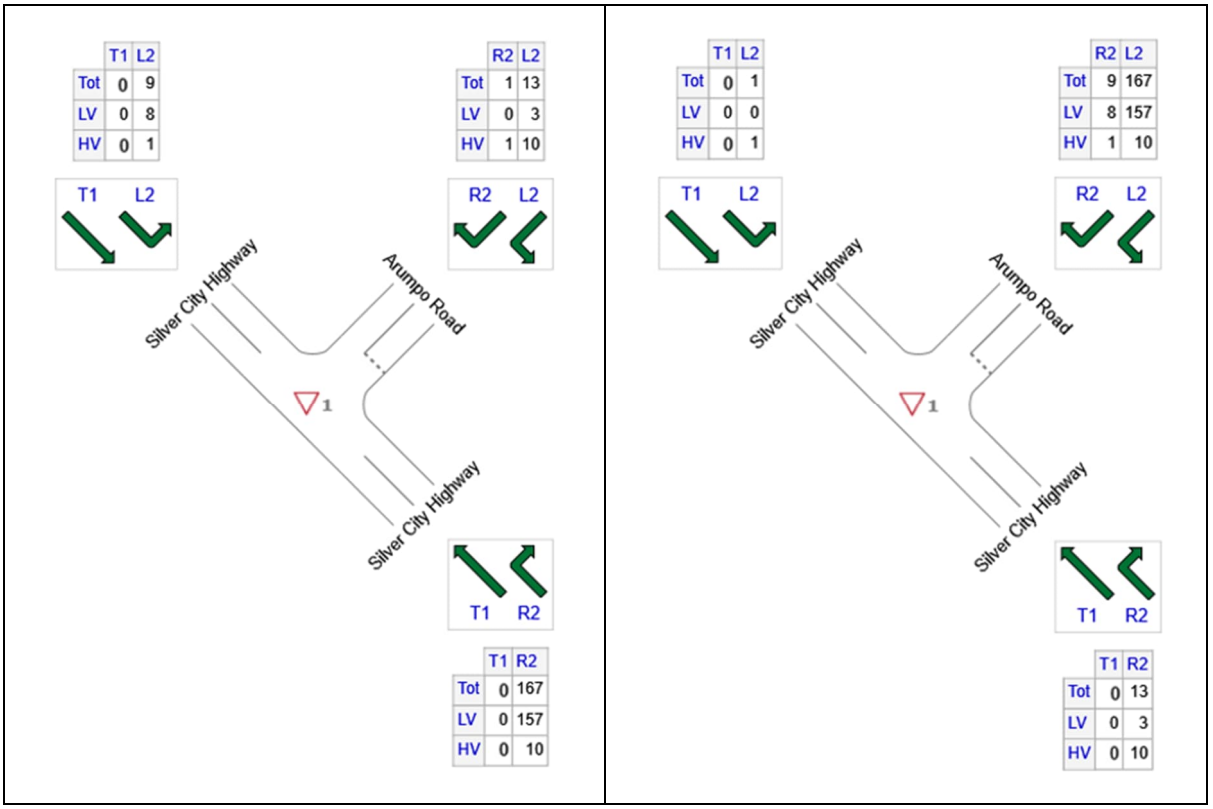


Figure 36 External Project Peak Hour Traffic Volumes, Silver City Highway / Arumpo Road Intersection

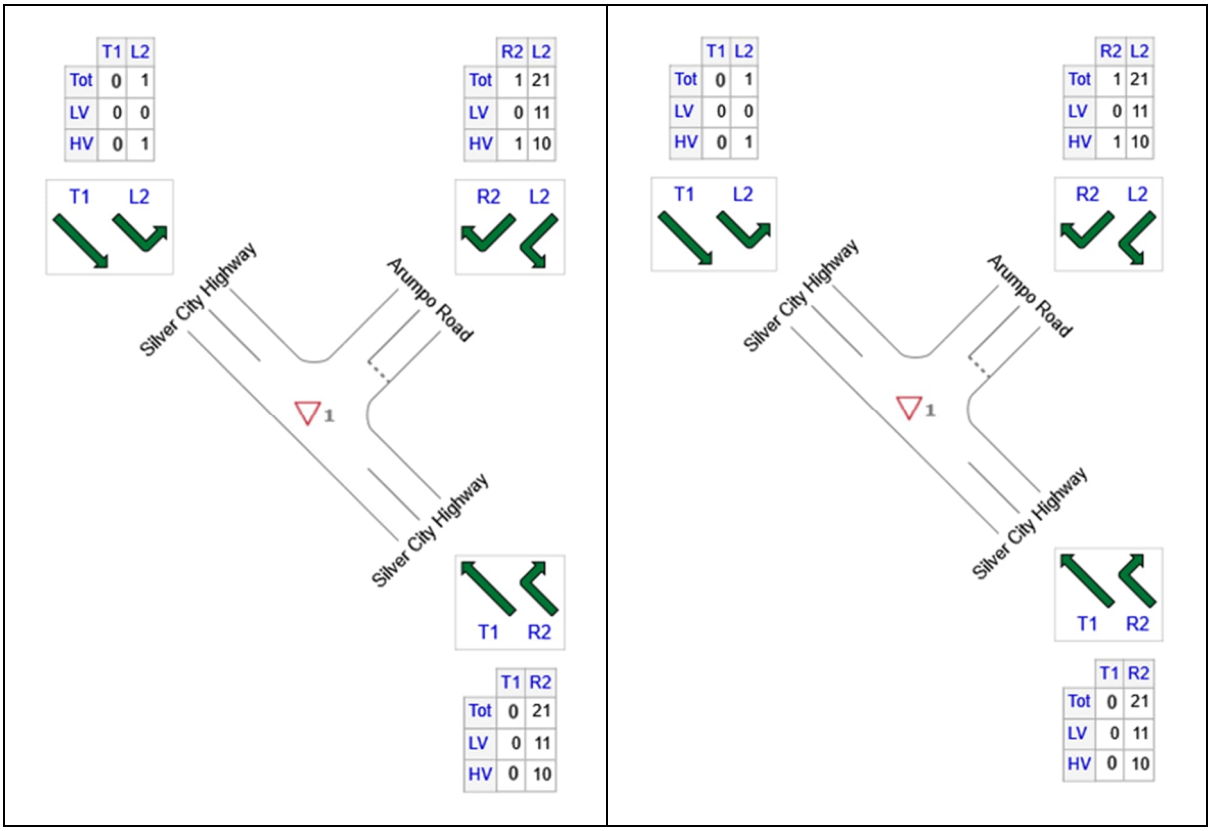


Figure 37 External Network Peak Hour Traffic Volumes, Silver City Highway / Arumpo Road Intersection

6.0 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 (in particular the Local Transport Route comprising relevant sections of the Sturt Highway, Silver City Highway and Arumpo Road), the key intersection of Silver City Highway / Arumpo Road and the two proposed site access points off Arumpo Road.

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

6.1 With and Without Project Traffic Volumes

6.1.1 Road Link Volumes

As identified above, the peak traffic generation for the Project is expected to occur during the peak period for construction, with a summary of the forecast Project volumes during this period, as well as the subsequent operations phase (10-year design horizon from end of construction – 2039) and decommissioning phase (2059) identified in **Table 17** above.

Based on these forecast Project volumes, the forecast traffic volumes on the relevant sections of the external 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 (i.e. operations – 10-year design horizon 2039 and decommissioning 30-year Project life – 2059), with summaries of the resultant daily road link traffic volumes during the peak construction, operations and decommissioning phases of the Project summarised in **Table 20**.

Further road link volumes were then also identified for the required cumulative assessment incorporating combined volumes from the Project as well as other state significant developments in the vicinity of the Project (refer **Table 19** of **Section 5.5.1** above), with this assessment only completed for the critical peak construction period. These additional cumulative assessment daily link volume forecasts are also summarised in **Table 20**.

Table 20 Forecast Road Link Traffic Volumes – Pre and Project Traffic Scenarios

Road Segment	Seg. ID	Daily Traffic Volumes																			
		Background 2027			Peak Construction 2027			Cumulative Construction 2027			Background 2039			Operations 2039			Background 2059			Decommissioning 2059		
		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
Silver City Highway (B79)																					
Sturt Highway to Corbett Avenue	98286	4,051	4,117	8,168	4,178	4,244	8,422	4,481	4,547	9,028	5,138	5,221	10,359	5,169	5,252	10,421	7,634	7,758	15,392	7,723	7,847	15,570
Corbett Avenue to Arumpo Road	-	1,951	1,879	3,830	2,083	2,011	4,094	2,394	2,323	4,717	2,474	2,384	4,857	2,505	2,415	4,919	3,676	3,542	7,218	3,768	3,634	7,402
Arumpo Road to Wentworth	-	1,285	1,282	2,567	1,290	1,287	2,577	1,308	1,305	2,613	1,630	1,626	3,256	1,630	1,626	3,256	2,422	2,416	4,838	2,425	2,419	4,845
Sturt Highway (A20)																					
Mildura to River Drive	98063	8,858	8,775	17,632	8,948	8,865	17,812	9,452	9,369	18,821	11,234	11,128	22,362	11,265	11,159	22,424	16,693	16,536	33,229	16,756	16,599	33,355
River Drive to Silver City Highway	98063	8,858	8,775	17,632	8,959	8,876	17,834	9,481	9,398	18,879	11,234	11,128	22,362	11,265	11,159	22,424	16,693	16,536	33,229	16,763	16,607	33,370
Silver City Highway to Gol Gol	-	3,823	3,823	7,645	3,844	3,844	7,687	4,167	4,167	8,334	4,848	4,848	9,696	4,848	4,848	9,696	7,204	7,204	14,408	7,219	7,219	14,437
Gol Gol to Hay	98064	1,502	1,528	3,030	1,513	1,539	3,052	1,806	1,831	3,638	1,905	1,937	3,843	1,905	1,937	3,843	2,831	2,879	5,710	2,839	2,886	5,725
Arumpo Road (431)																					
Silver City Highway to Landfill Access	-	751	683	1,435	888	820	1,709	1,218	1,150	2,368	953	867	1,820	984	898	1,882	1,416	1,288	2,704	1,512	1,384	2,896
Landfill Access to Quarry Access	-	751	683	1,435	889	821	1,711	1,114	1,046	2,159	953	867	1,820	984	898	1,882	1,416	1,288	2,704	1,513	1,385	2,897
Quarry Access to PEC Camp	-	751	683	1,435	989	921	1,911	1,376	1,308	2,684	953	867	1,820	984	898	1,882	1,416	1,288	2,704	1,583	1,455	3,037
PEC Camp to Access Point 1	98156	267	253	521	505	491	997	505	491	997	339	321	661	370	352	723	504	478	982	671	644	1,315
Access Point 1 to Access Point 2	98156	267	253	521	504	490	995	504	490	995	339	321	661	370	352	723	504	478	982	670	644	1,313

Note: Gaz = Gazettal Direction or direction of travel, % HV = Percentage Heavy Vehicles, A-Gaz = Against Gazettal Direction or against direction of travel and AADT = Annual Average Daily Traffic

6.1.2 Intersection Volumes

In addition to road link volumes, traffic volumes at the key intersection of Silver City Highway / Arumpo Road were established for the peak construction, operations and decommissioning phases of the Project. To establish these volumes, the Project volumes as identified in **Section 5.4.2** 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 **Figure 36** and **Figure 37** above included with the Project traffic.

The resulting turning volumes at the key Silver City Highway / Arumpo Road intersection for the relevant traffic scenarios for the Project are summarised in **Figure 38** to **Figure 45** below.

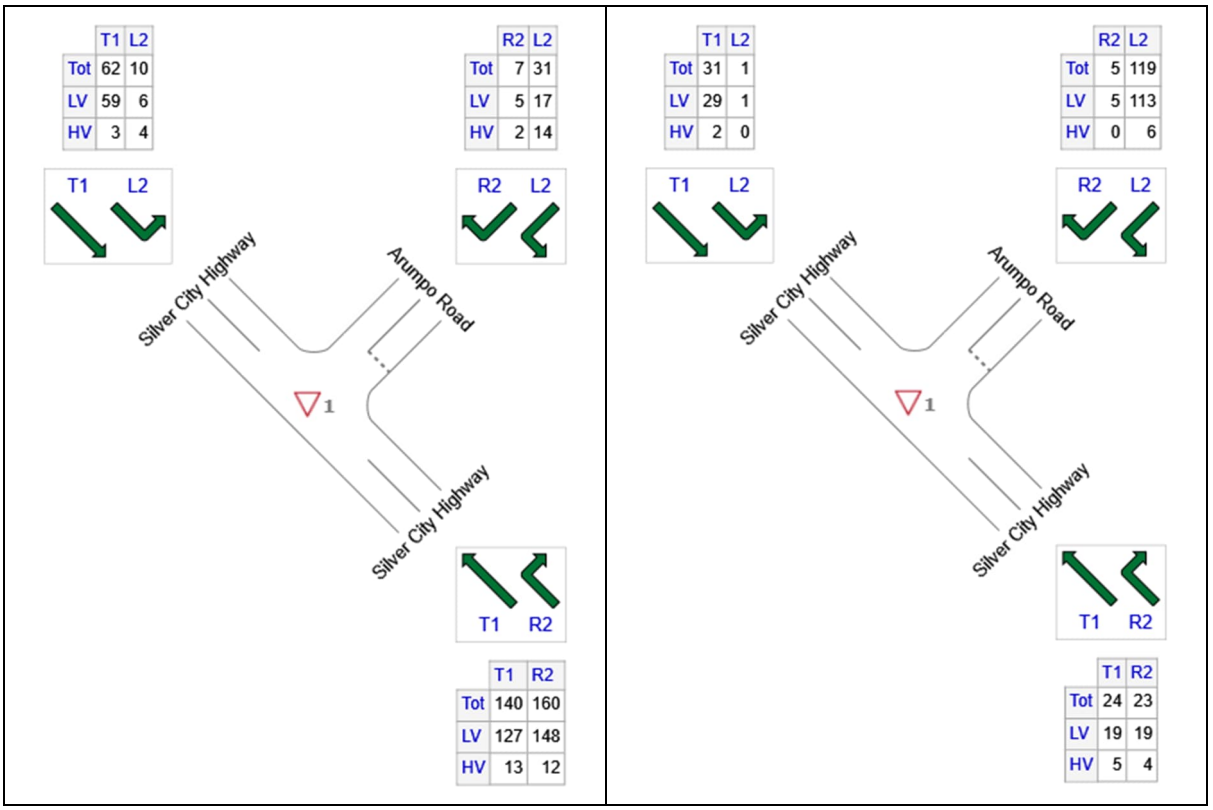


Figure 38 Peak Construction (2027) AM & PM (Project) Peak, Silver City Highway / Arumpo Road Intersection

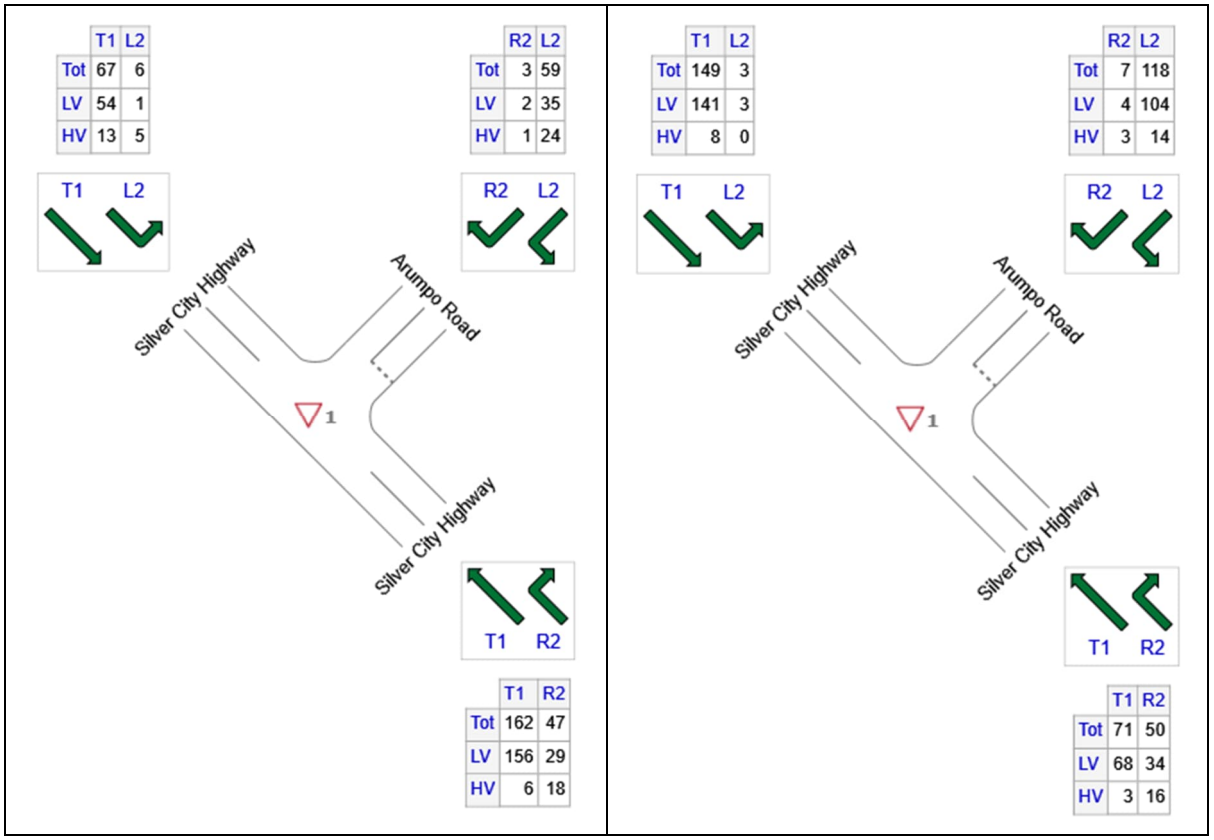


Figure 39 Peak Construction (2027) AM & PM (Network) Peak, Silver City Highway / Arumpo Road Intersection

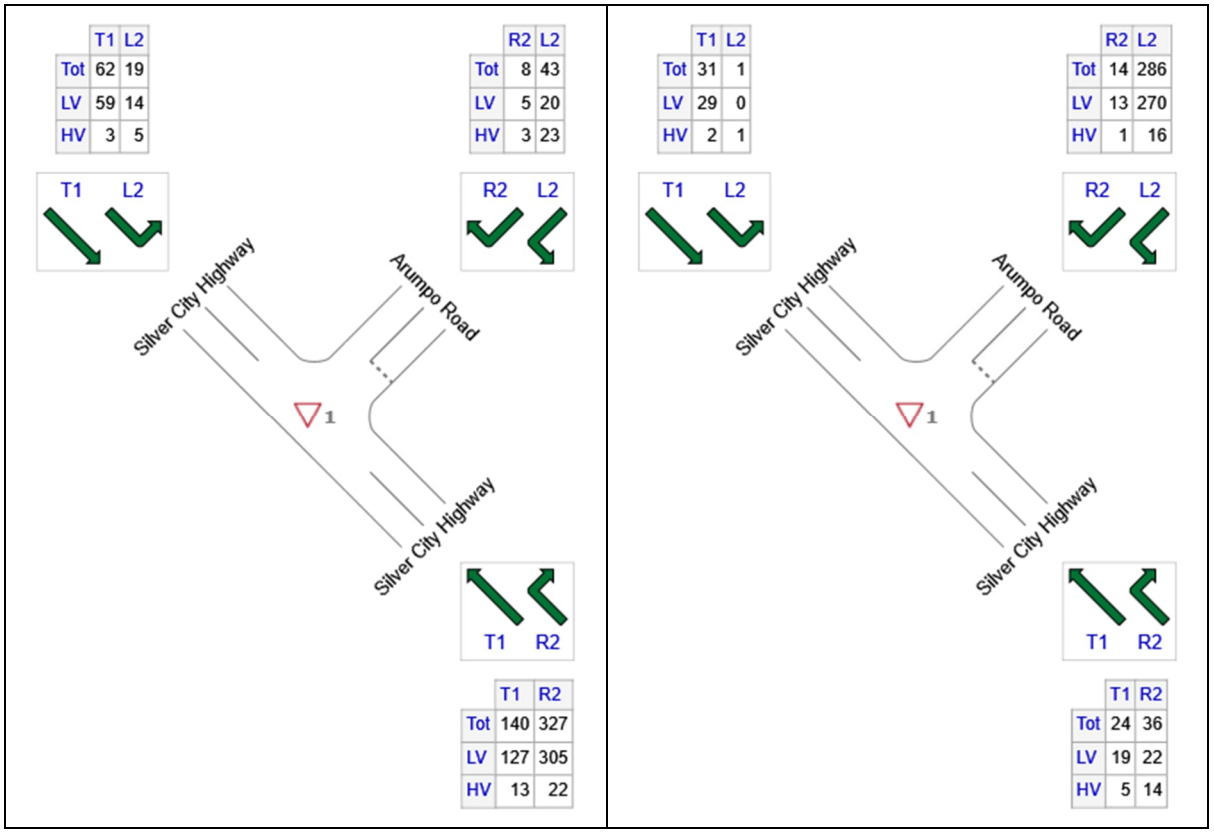


Figure 40 Cumulative Construction (2027) AM & PM (Project) Peak, Silver City Highway / Arumpo Road Intersection

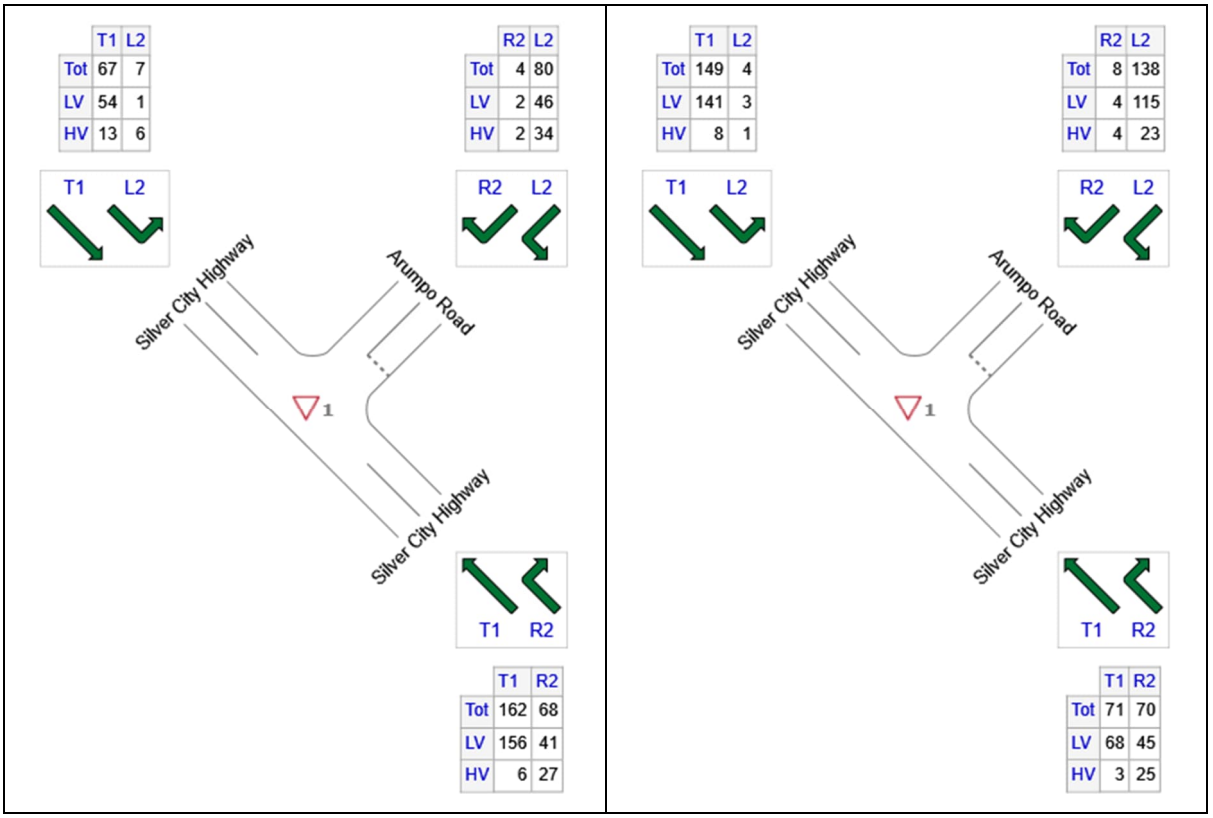


Figure 41 Cumulative Construction (2027) AM & PM (Network) Peak, Silver City Highway / Arumpo Road Intersection

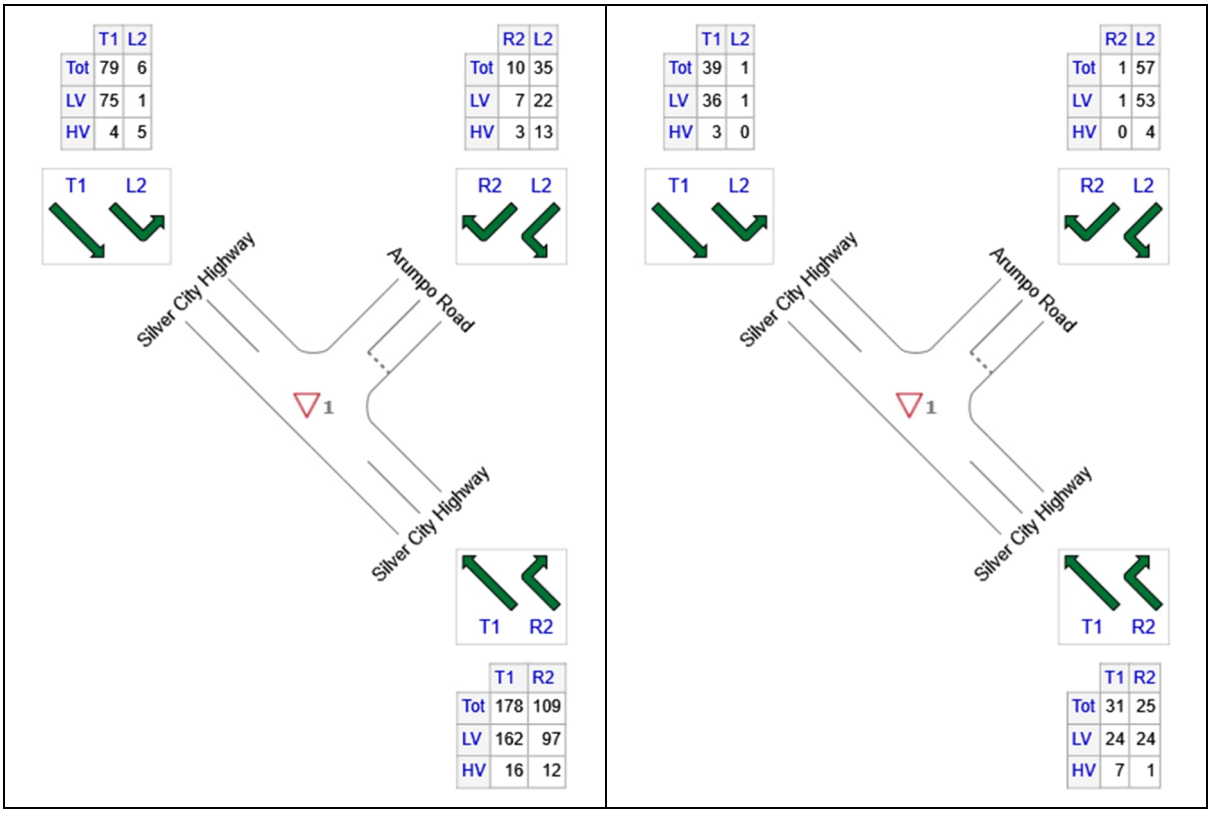


Figure 42 Operations (2039) AM & PM (Project) Peak, Silver City Highway / Arumpo Road Intersection

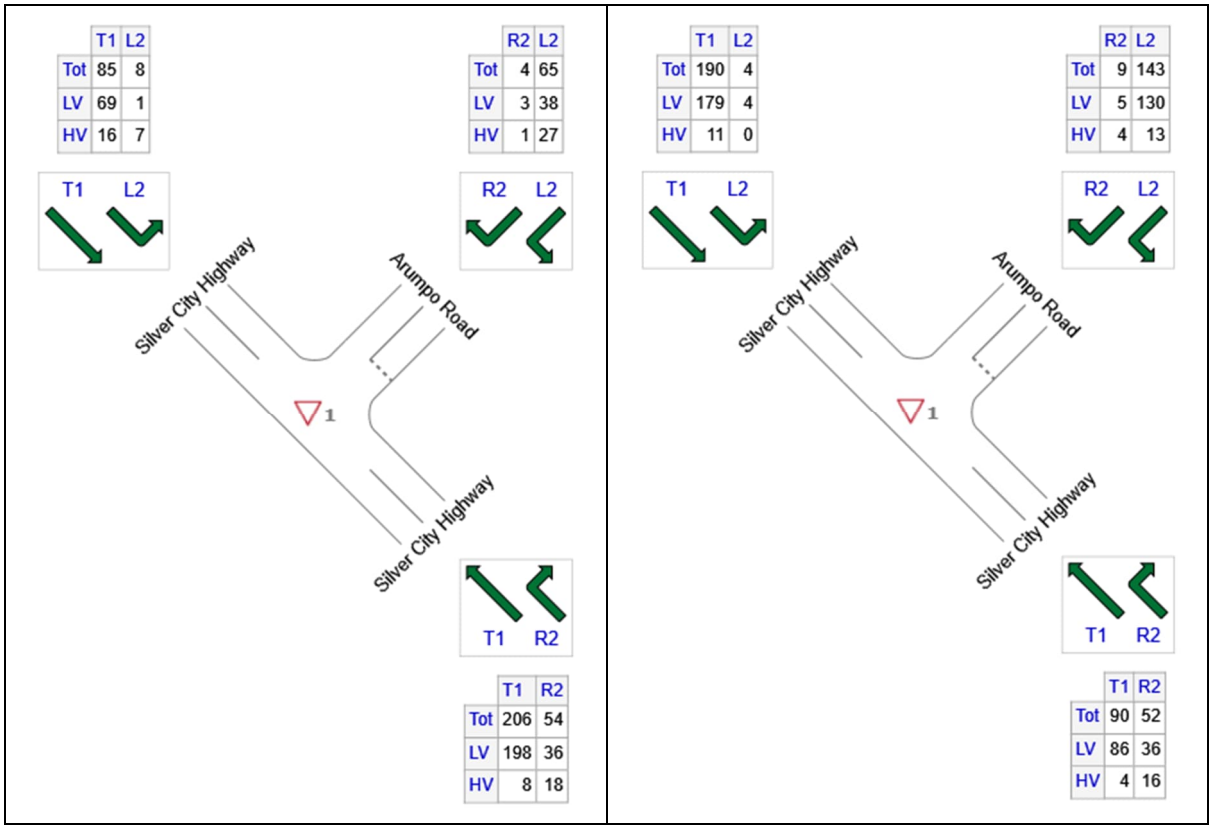


Figure 43 Operations (2039) AM & PM (Network) Peak, Silver City Highway / Arumpo Road Intersection

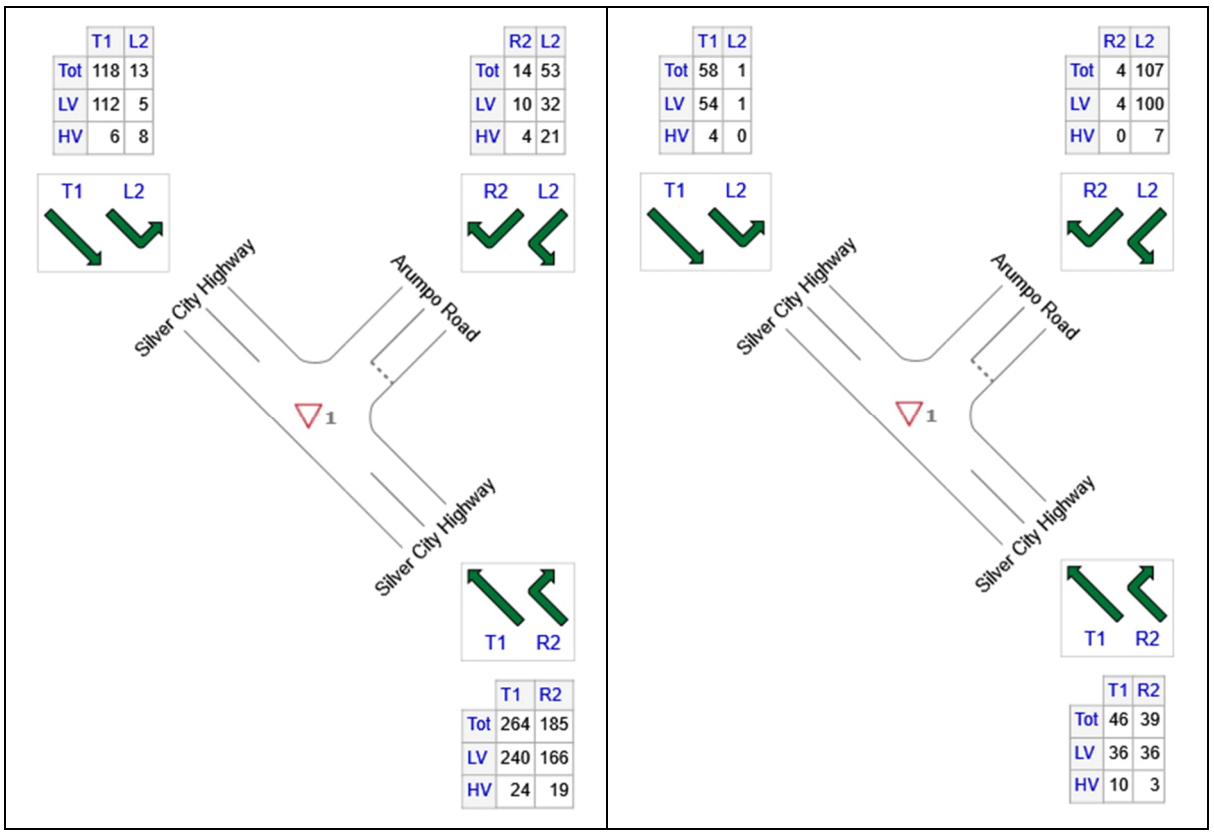


Figure 44 Decommissioning (2059) AM & PM (Project) Peak, Silver City Highway / Arumpo Road Intersection

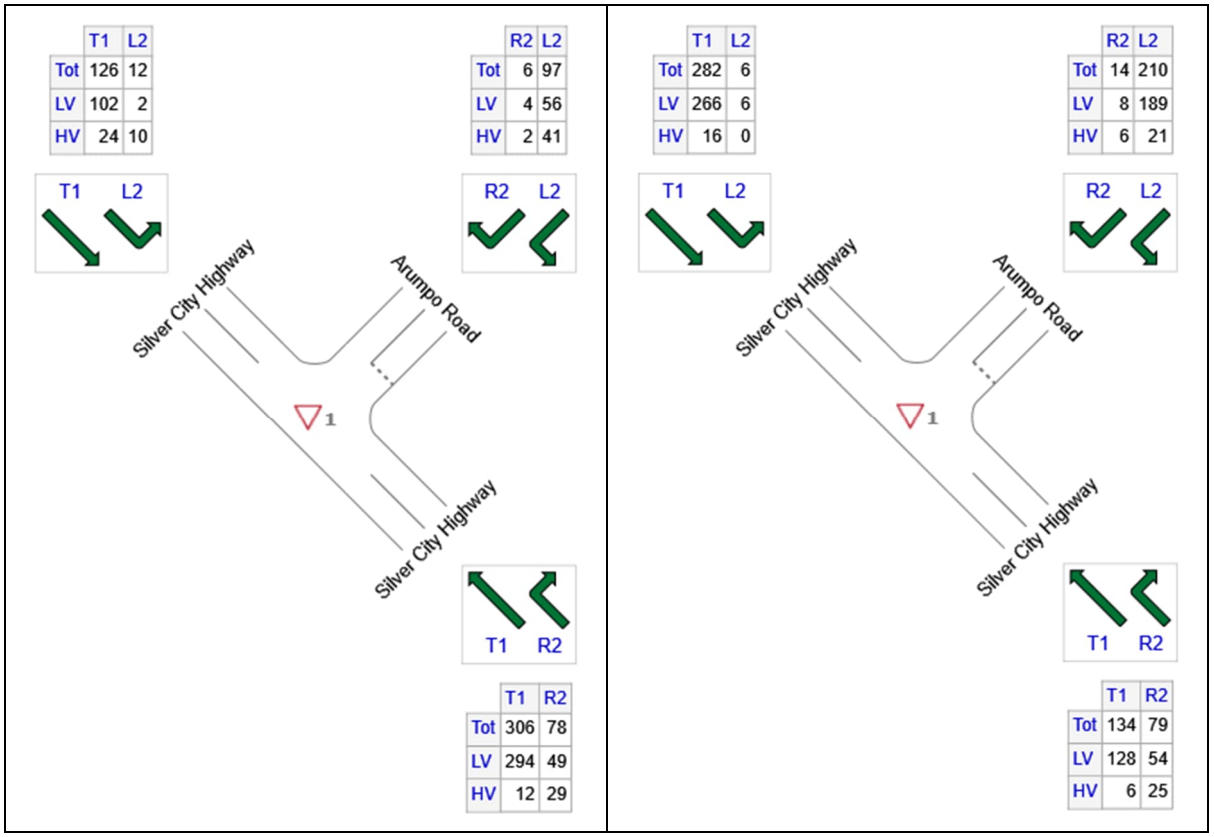


Figure 45 Decommissioning (2059) AM & PM (Network) Peak, Silver City Highway / Arumpo Road Intersection

6.2 Access and Frontage Impact Assessment and Mitigation

As identified in **Section 4.4.2** above, the Project proposal includes two (2) direct vehicular access points to the Project Area from Arumpo Road, located 32.4 km (Access Point 1) and 32.6 km (Access Point 2) from the intersection of the Silver City Highway / Arumpo Road.

Based on the low background volumes on Arumpo Road (approximately 500 vpd) in the vicinity of the proposed site access points, it is proposed that the accesses be provided as access intersections with basic left (BAL) and basic right (BAR) turn treatments, with these works to be provided generally in accordance with Figure 8.2 (rural BAL) and Figure 7.1 (rural BAR) of Part 4A of Austroads *Guide to Road Design*, adopting a design speed of 110km/h and a 26m B-Double design vehicle.

Further to this, based on the OSOM route assessment undertaken (refer **Appendix A**), additional hardstand areas are expected to be required at the proposed site access intersections on Arumpo Road to accommodate the swept paths of the OSOM WTG component transport vehicles (in particular the blade transport vehicles), with the preliminary extents of these additional hardstand areas shown in **Figure 27** and **Figure 28** above. Notwithstanding this, it is noted that the exact extents of these additional hardstand areas will need to be confirmed in subsequent detailed design phases of the Project, once the final configuration of the WTG components and associated transport vehicles are provided.

As identified in **Section 4.4.2** above, the on-site assessment of both proposed site access locations on Arumpo Road identified the provision of adequate sight distances in each direction of travel on Arumpo Road to/from each access location.

As such it is considered that the proposed site access arrangements will be suitable to cater for the expected traffic volumes from the Project.

6.3 Intersection Impact Assessment and Mitigation

6.3.1 Silver City Highway / Arumpo Road

6.3.1.1 Turn Warrant Assessment

An assessment has been undertaken to establish the appropriate turn treatments at existing Silver City Highway / Arumpo Road intersection. This assessment is based on the turn treatment warrants graph as per Figure 3.25(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 **Figure 38** to **Figure 45** above have been used as the basis of this assessment, with a summary of the resultant turn warrants from the assessment shown in **Table 21** below.

Further details of the turn warrant calculations for each of the identified traffic scenarios is also included for reference as **Appendix I.**

Table 21 Intersection Turn Warrants Assessment – Silver City Highway / Arumpo Road Intersection

Project Traffic Scenario	Recommended Turn Warrants	
	Left Turn Treatment	Right Turn Treatment
Peak Construction		
2027 AM Peak (Project)	BAL	**CHR**
2027 PM Peak (Project)	BAL	BAR
2027 AM Peak (Network)	BAL	CHRs
2027 PM Peak (Network)	BAL	CHRs
Peak Construction - Cumulative		
2027 AM Peak (Project)	BAL	**CHR**
2027 PM Peak (Project)	BAL	BAR
2027 AM Peak (Network)	BAL	CHRs
2027 PM Peak (Network)	BAL	CHRs
Project Operations (10-year Design Horizon from End of Construction)		
2039 AM Peak (Project)	BAL	**CHR**
2039 PM Peak (Project)	BAL	BAR
2039 AM Peak (Network)	BAL	**CHR**
2039 PM Peak (Network)	BAL	CHRs
Project Decommissioning		
2059 AM Peak (Project)	BAL	**CHR**
2059 PM Peak (Project)	BAL	BAR
2059 AM Peak (Network)	BAL	**CHR**
2059 PM Peak (Network)	BAL	**CHR**
Recommended Intersection Turn Treatments	**BAL**	**CHR**

As shown in **Table 21**, based on the forecast peak hour traffic volumes at the intersection during the critical periods of the construction, operations and decommissioning phases of the Project, it was shown that the required intersection treatments at the Silver City Highway / Arumpo Road intersection were a basic left (BAL) and a full channelised right (CHR) treatment.

Based on the existing, higher standard AUL left turn treatment and the proposed provision of an upgraded channelised CHR right turn treatment as part of the Project mitigation works, it is expected that the proposed Project configuration of the intersection will be adequate to cater for the additional traffic movements associated with the peak construction (including cumulative assessment), operations and decommissioning phases of the Project.

6.3.1.2 Intersection Capacity Assessment

SIDRA analysis was also undertaken to establish the operational performance of the proposed upgraded (CHR) configuration of the Silver City Highway / Arumpo Road intersection for the relevant traffic scenarios for the construction, operations and decommissioning phases of the Project, considering the AM and PM peak periods (both Project and Network) at the critical design horizons for each phase as outlined in **Section 4.0** above. A summary of the results of the completed analysis for the Silver City Highway / Arumpo Road intersection is provided in **Table 22**, with detailed SIDRA output summaries included for reference in **Appendix C**.

Table 22 SIDRA Results – Silver City Highway / Arumpo Road Intersection (Proposed Upgraded Configuration)

Analysis Scenario	Intersection Degree of Saturation	Level of Service**	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 ***
Peak Construction				
2027 AM Peak (Project)	0.124	LOS A	12.9	4.0
2027 PM Peak (Project)	0.099	LOS A	8.6	2.8
2027 AM Peak (Network)	0.084	LOS A	12.1	2.2
2027 PM Peak (Network)	0.122	LOS A	12.7	3.6
Peak Construction - Cumulative				
2027 AM Peak (Project)	0.255	LOS B	17.6	9.2
2027 PM Peak (Project)	0.242	LOS A	10.4	7.9
2027 AM Peak (Network)	0.087	LOS A	13.6	3.1
2027 PM Peak (Network)	0.147	LOS A	13.6	4.6
Project Operations (10-year Design Horizon from End of Construction)				
2039 AM Peak (Project)	0.096	LOS A	13.1	2.8
2039 PM Peak (Project)	0.047	LOS A	8.7	1.3
2039 AM Peak (Network)	0.107	LOS A	12.7	2.5
2039 PM Peak (Network)	0.155	LOS A	14.1	4.6
Project Decommissioning				
2059 AM Peak (Project)	0.155	LOS B	17.4	5.1
2059 PM Peak (Project)	0.092	LOS A	9.1	2.6
2059 AM Peak (Network)	0.159	LOS B	17.3	4.3
2059 PM Peak (Network)	0.264	LOS B	18.7	8.3

** LOS and Average Delay values identified are for worst movement at the intersection, not the overall intersection.

The results above indicate that the proposed upgraded (CHR / AUL) configuration of the Silver City Highway / Arumpo Road 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 upgraded configuration of the intersection will be adequate to cater for the additional traffic volumes generated by the peak construction, operations and decommissioning phases of the Project.

6.4 Road Link Capacity Assessment and Mitigation

In addition to the analysis of the proposed site accesses and the key intersection of Silver City Highway / Arumpo Road an assessment of the impact of the additional traffic generated by the various phases of the Project on the operation of the relevant road links within the external road network has also been completed.

This assessment identifies the expected increase in daily traffic volumes on the external road network during the critical peak construction, operations and decommissioning phases of the Project, and comments on the level of impact the forecast increase in traffic is anticipated to have on the operation of the identified road links.

While small numbers of Project traffic may utilise other roads in the vicinity of the Project Area, the assessment is generally focussed on the relevant sections of the Sturt Highway, Silver City Highway and Arumpo Road which form the Local Transport Route for the additional traffic anticipated to be 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 construction, operation and decommissioning phase traffic (refer **Table 20** above) from the Project is shown in **Table 23**, with further details of the calculations undertaken provided in **Appendix J**.

As can be seen by the results, the addition of the expected peak construction traffic is shown to lead to minor increases in daily traffic volumes on the relevant sections of the Sturt Highway and the Silver City Highway, with higher increases (between 20% to 80%) calculated on Arumpo Road.

The assessment of the operation phase traffic identified only minor increases on all sections of Sturt Highway, Silver City Highway and Arumpo Road, while the decommissioning phase traffic led to minor increases on Sturt Highway, Silver City Highway and the southern section of Arumpo Road, with the higher increases (30-35%) shown on Arumpo Road north of the PEC Camp Access.

Finally, the review of the cumulative construction phase scenario volumes identified larger increases >20% on all the section of the Sturt Highway between Corbett Avenue and Arumpo Road, as well as all sections of Arumpo Road, noting that the high percentage increases observed on Arumpo Road are generally as a result of the lower background volumes on this rural section of the road network.

Notwithstanding this, it is noted that with Project volumes identified for the various Project traffic scenarios in **Table 20** of **Section 6.1.1** above identify that the total volumes on the relevant sections of the identified roads were all still within their generally accepted capacities, based on their current configurations and road classifications as identified in **Section 3.5.1** above.

As such it can be considered that the existing configurations of the relevant sections of the Sturt Highway, the Silver City Highway and Arumpo Road will provide adequate capacity to cater for the additional traffic volumes generated by the Project.

Table 23 Road Link Daily Traffic Volume Comparison (Pre and Post Project)

Road Segment	Seg ID	% Increase in Daily Traffic from Background Traffic Volumes							
		Peak Construction 2027		Cumulative Construction 2027		Project Operations 2039		Decommissioning 2059	
		Gaz	A-Gaz	Gaz	A-Gaz	Gaz	A-Gaz	Gaz	A-Gaz
Silver City Highway (B79)									
Sturt Highway to Corbett Avenue	98286	3.2%	3.1%	11.8%	11.6%	1.0%	1.0%	1.2%	1.2%
Corbett Avenue to Arumpo Road	-	6.8%	7.1%	25.2%	26.2%	2.1%	2.1%	2.5%	2.6%
Arumpo Road to Wentworth	-	0.4%	0.4%	2.8%	2.8%	0.0%	0.0%	0.1%	0.1%
Sturt Highway (A20)									
Mildura to River Drive	98063	1.0%	1.0%	6.3%	6.3%	0.5%	0.5%	0.4%	0.4%
River Drive to Silver City Highway	98063	1.2%	1.2%	6.7%	6.7%	0.5%	0.5%	0.4%	0.4%
Silver City Highway to Gol Gol	-	0.5%	0.5%	7.0%	7.0%	0.0%	0.0%	0.2%	0.2%
Gol Gol to Hay	98064	0.7%	0.7%	15.7%	15.4%	0.0%	0.0%	0.3%	0.3%
Arumpo Road									
Silver City Highway to Landfill Access	-	18.4%	20.2%	70.3%	77.3%	5.4%	5.9%	6.8%	7.5%
Landfill Access to Quarry Access	-	18.5%	20.3%	60.1%	66.1%	5.4%	5.9%	6.9%	7.6%
Quarry Access to PEC Camp	-	31.8%	35.0%	103.4%	113.7%	5.4%	5.9%	11.8%	13.0%
PEC Camp to Access Point 1	98156	89.4%	94.3%	89.4%	94.3%	15.0%	15.9%	33.2%	35.0%
Access Point 1 to Access Point 2	98156	88.6%	93.5%	88.6%	93.5%	15.0%	15.9%	32.9%	34.7%

Note: Gaz = Gazettal Direction or direction of travel, A-Gaz = Against Gazettal Direction or against direction of travel .

6.4.1 WTG 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 OSOM transport routes during the construction phase.

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 10vpd, including 3 OSOM vehicles) will have a significant ongoing impact on the operation or capacity of the roads forming the proposed WTG component 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 WTG component 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.

6.5 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.

6.5.1 Construction Phase

The assessment of the potential pavement impact of the Project's 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 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 construction phase is the proposed duration of construction for the Project (36 months or 1,095 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 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 WTG 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 24** overpage, with further details of the Project pavement loading calculations undertaken included for reference in **Appendix K**.

The results in **Table 24** indicate that the heavy vehicle movements associated with the construction phase of the Project are expected to lead to a minor increase (<10%) in pavement loadings on the relevant sections of the major state-controlled links of the Sturt Highway and Silver City 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 relevant section of the Council-controlled Arumpo Road (between the Silver City Highway and the Project Area), noting that the larger increase in loading on the southern section of the link (Silver City Highway to Quarry Access) is limited to the northbound direction of travel, with the overall increase for the section of road below 10%.

Notwithstanding this, as the calculated increase in pavement loadings are expected to only occur over the identified construction period (36 months) of the Project, with negligible ongoing heavy vehicle movements (and therefore pavement loadings) during the proposed 30-year operations phase of the Project, it is not considered that the temporary increase in traffic on these roads during the construction phase will lead to a significant impact to the existing road pavements on the relevant sections of Arumpo Road.

Further to this, Arumpo Road is currently approved for use by large heavy vehicles (AB-Triples, Modular B-Triples), and as such the use of these roads by the 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.

In addition to the increase in traffic loading on the state-controlled links of the Sturt Highway, Silver City Highway and Arumpo Road, an increase in truck movements associated with the construction water supply for the Project was also identified on the Wentworth Shire Council controlled links of River Drive, Corbett Avenue and Modica Crescent.

As this increase in heavy vehicle movements is conservatively estimated as up to 12 vpd (River Drive) and 7 vpd (Corbett Avenue) during construction only, the existing road pavements of these roads are expected to be suitable to accommodate the minor increase in loading from the Project, in particular the industrial standard of both Corbett Avenue and Modica Crescent.

Notwithstanding this, it is recommended that pre and post construction phase dilapidation inspections be undertaken on the relevant sections of Corbett Avenue, Modica Crescent and River Drive in Buronga used by the water transport vehicles for the Project, with these inspections to be completed by representatives of the proponent and Wentworth Shire 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).

Table 24 Pavement Loading Comparison – Construction Phase

Road Segment	Segment ID	Background ESA			Project Construction Generated ESA			% Increase in ESAs		
		Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
Silver City Highway (B79)										
Sturt Highway to Corbett Avenue	98286	1,630,023	1,594,474	3,224,498	54,359	9,194	63,553	3.33%	0.58%	1.97%
Corbett Avenue to Arumpo Road	-	937,816	1,035,571	1,973,387	72,731	11,097	83,828	7.76%	1.07%	4.25%
Arumpo Road to Wentworth	-	534,279	632,171	1,166,450	0	0	0	0.00%	0.00%	0.00%
Sturt Highway (A20)										
Mildura to River Drive	98063	3,277,132	3,292,398	6,569,530	13,145	1,904	15,049	0.40%	0.06%	0.23%
River Drive to Silver City Highway	98063	3,277,132	3,292,398	6,569,530	31,830	3,837	35,667	0.97%	0.12%	0.54%
Silver City Highway to Gol Gol	-	3,088,115	3,102,500	6,190,615	5,357	22,530	27,887	0.17%	0.73%	0.45%
Gol Gol to Hay	98064	1,389,219	1,435,017	2,824,236	5,357	22,530	27,887	0.39%	1.57%	0.99%
Arumpo Road (431)										
Silver City Highway to Landfill Access	-	526,949	527,059	1,054,008	72,731	11,097	83,828	**13.80%**	2.11%	7.95%
Landfill Access to Quarry Access	-	526,949	527,059	1,054,008	72,850	12,250	85,100	**13.82%**	2.32%	8.07%
Quarry Access to PEC Camp	-	526,949	527,059	1,054,008	246,109	58,449	304,559	**46.70%**	**11.09%**	**28.90%**
PEC Camp to Access Point 1	98156	250,220	293,535	543,755	246,109	58,449	304,559	**98.36%**	**19.91%**	**56.01%**
Access Point 1 to Access Point 2	98156	250,220	293,535	543,755	207,057	50,708	257,765	**82.75%**	**17.27%**	**47.40%**

Note: Gaz = Gazettal Direction or direction of travel, A-Gaz = Against Gazettal Direction or against direction of travel and ESAs = Equivalent Standard Axles

6.5.2 OSOM Transport Routes

In terms of the expected pavement impact on the identified road sections forming the OSOM 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 WTG component transport vehicle movements during construction.

It is noted however that the identified WTG component transport routes also propose the use of lower order, local government-controlled road links in various local government authorities, particularly on the high load detour from the Port of Newcastle.

These lower order roads are likely to not have been designed to cater for larger heavy vehicles such as the proposed WTG transport vehicles and as such 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, noting that the impacts to the wider OSOM Transport Route will be addressed as part of a separate approval process

6.5.3 Operations Phase

As identified above, it is understood that the operations phase of the Project will only generate relatively low traffic volumes on the network (approx. 30 vpd each direction) 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.

6.5.4 Decommissioning Phase

As previously identified, based on information provided by Spark Renewables 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.

6.6 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 25.**

		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

In addition to the items identified in the risk assessment overpage, additional measures to minimise other road safety risks (including driver speeding and fatigue) are proposed to be implemented by the Project. These road safety measures include appropriate driver induction, training, safety measures and protocols, with the adopted measures to be detailed in a Construction Traffic Management Plan (CTMP) and Driver Code of Conduct for the Project. It is recommended that all construction personnel be required to adhere to the CTMP and Driver Code of Conduct, with the Driver Code of Conduct discussed further in **Section 7.1.3**.

Further to this, all OSOM vehicle movements are proposed to be managed under a Transport Management Plan (TMP) which will identify the potential impacts of OSOM vehicles on road safety and detail the relevant safety measures to be implemented, where required.

Finally, given the relatively low historic rate of crashes in the area, the majority of traffic movements occurring in daylight conditions and the opportunity to manage contributing factors such as fatigue and speeding, the construction phase of the Project is not expected to have a significant impact on road safety.

Table 25 Project Road Safety Assessment – Mallee 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 Silver City Highway / Arumpo Road 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**	**Upgrade works are proposed upgrade the existing AUR treatment to a CHR standard on the south-eastern Silver City Highway approach to the intersection.** Based on the provision of these upgrade works prior to the Project, the turn warrant assessment and detailed intersection analysis completed (refer **Section 6.3.1** above) identified that the proposed upgraded AUL (existing) / CHR intersection configuration was expected to operate within acceptable limits of operation for a priority-controlled intersection for all construction (including cumulative assessment), operations and decommissioning phase traffic scenarios for the Project. The provision of the channelised right turn lane is also expected to provide safer turn facilities at the intersection, reducing the potential of vehicle conflicts (in particular rear end accidents) associated with Project traffic at the intersection.	Unlikely	Hospitalisation / Fatality	**Medium**
2	All phases of the Project are also expected to lead to an increase in vehicle movements on the relevant sections of Sturt Highway, Silver City Highway and Arumpo Road. This increase in vehicle movements on these road sections has the potential to lead to an increase in vehicle conflicts.	Unlikely	Hospitalisation / Fatality	**Medium**	Unlikely	Hospitalisation / Fatality	**Medium**	As identified in **Section 6.4** 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, Silver City Highway and Arumpo Road, the traffic volumes during all Project traffic scenarios (including cumulative assessment) 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**

		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	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 /	**Medium**	Moderate	Medical Treatment /	**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.(refer Section 4.6** **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 /	**Medium**
4	All phases of the Project are also expected to lead to an increase in vehicle turning movements into the proposed site access points on Arumpo Road. This increase in turning movements has the potential to lead to an increase in vehicle conflicts at these locations on Arumpo Road.	Unlikely	Hospitalisation / Fatality	**Medium**	Moderate	Hospitalisation / Fatality	**Medium / High**	**Provision of site access intersections with standard BAL / BAR treatments at both proposed site access points. These intersections are to be provided generally in accordance with Figure 8.2 (rural BAL) and Figure 7.1 (rural BAR) of Part 4A of Austroads Guide to Road Design.** These proposed access works will provide a higher standard of access at the required points on Arumpo Road and be designed to cater for the expected vehicle types associated with the Project. This is expected to improve the safety and efficiency of vehicle movements into and out of the site.	Unlikely	Hospitalisation / Fatality	**Medium**

6.7 Public Transport Route Impacts

As identified in **Section 3.3.3** above, it is understood that the primary public transport operations in the vicinity of the Project Area include the weekday services that run along the Sturt Highway and Silver City Highway as part of bus services between Mildura and the regional townships of Wentworth, Dareton, Buronga and Gol Gol.

Based on the route timetables available, the following bus services on the relevant sections of the Sturt Highway and Silver City Highway:

- Route 950 & 951 (Mildura – Wentworth) – 4 times per day (Monday-Friday).
- Route 953 & 954 (Mildura – Gol Gol) – 2 times per day (Monday-Friday).
- Route 955 & 956 (Dareton Loop) – 2 times per day (Monday-Friday).

In addition to the regional services identified above, a number of school bus services were also identified along the relevant sections of the Sturt Highway and Silver City Highway, although no school bus route was identified on Arumpo Road, for schools including Coomealla High School, Buronga Public School, Dareton Public School and Gol Gol Public School.

From the timetables available for the school and public bus services it was noted that the bus movements on the road network are shown to occur outside of what is expected to be the peak hours (6:00-7:00 AM & 6:00-7:00PM) for Project traffic movements.

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 bus routes during the AM (7:30-9am) and PM (2:30-4:30pm) school bus periods, to minimise the potential for conflict with bus movements.

6.8 Travelling Stock Reserve Network Impacts

As previously identified in **Section 3.3.4** above, no TSRs are located along the lengths of the relevant roads for the Project, or within the proposed Project Area. Two small areas of Category 4 TSR are however located adjacent to the Project Area, with the areas defined as stock watering places that are rarely, if ever used for used for travelling stock or emergency management, but are important, valued and used for other reasons such as biodiversity conservation or First Nations People's heritage, as per the NSW Government's *Travelling Stock Reserves State-Wide Plan of Management*

Therefore, while the Project is anticipated to lead to increased traffic volumes on the road sections adjacent to the TSR areas, it is not anticipated that the Project will introduce any additional impediments to the access or use of the TSRs.

6.9 Active Transport Infrastructure Impacts

As outlined above, 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.

Furthermore, due to the location of the site, approximately 17 km to the north-east of the regional centre of Mildura, staff commuter movements to/from site using active transport modes such as walking or cycling are not considered feasible.

7.0 Mitigation Measures

The following section sets out suggested mitigation measures to manage and/or mitigate the traffic and transport related impacts associated with the Project.

7.1 Traffic Management Measures

7.1.1 Information and Communication

To improve the awareness of the local residents and community of the Project and the associated Project traffic, and assist in managing the potential traffic impacts, it is recommended that a community information and awareness program be implemented for the Project.

Undertaken prior to construction commencing and then at regular intervals during the construction period, a program of consultation should be initiated to ensure local residents are aware of construction traffic accessing the Project, and any specific traffic management issues or measures to be implemented. This program may include elements of the following as appropriate to the relevant phase of Project works:

- Press releases in local newspapers.
- Specific emails, newsletters and individual letter drops to neighbouring residents along the key transport routes for the Project (in particular Arumpo Road).
- Provision of a website providing details of the status of works and contact details for complaints or enquiries.
- Provide key contact personnel and contact details, including out of hours contact information to residents, schools, public activities and business operating alongside the local route.
- Neighbours of the wind farm will be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.

7.1.2 OSOM Road Authority Approvals & Traffic Management Plan

The proposed use of OSOM vehicles for the Project will require the obtainment of suitable permits from the National Heavy Vehicle Regulator (NHVR). This replaces the approvals that were previously granted from TfNSW and councils. Applications are to be submitted to the NHVR, which identify the proposed OSOM loads, vehicle combinations and transport routes.

In addition to the required permits, it is proposed that a detailed Traffic Management Plan (TMP) be developed for the Project as part of the Construction Traffic Management Plan (CTMP) or the decommissioning management plan that should be developed before construction or decommissioning commences.

This TMP will provide details of the management measures to be implemented to govern the required Oversized and over mass (OSOM) vehicle movements for the Project. This TMP should include, but not be limited to:

- Procedures for escorts of OSOM vehicles.
- Traffic control plans for temporary road closures to allow vehicles to cross to the other side of the carriageway where required.
- Safe work methods and strategies for working on roadways.
- Indicative OSOM haulage schedule, including dates and times for transporting loads.
- Location of suitable rest stops and vehicle layover areas along the proposed transport routes.
- Communication strategy to affected communities.
- Notification and consultation of key stakeholders including:

  - Police and emergency services
  - Local Councils along the route
  - Public and school bus operators that may be affected.
- Advertising in local newspaper and media releases.
- Contact details of foreman or project manager throughout operations to be shared with emergency services and road authorities.
- Timing of operations and measures to avoid commuter peaks and school peaks through populated areas where practicable.
- Consideration of cumulative impacts of other projects along the route, based on updated information that is available at that time.
- Identification of layby areas for driver breaks and co-ordination of OSOM on site arrivals.

7.1.3 Driver Code of Conduct

To assist in achieving safe outcomes during the construction phase of the Project, a Sample Driver Code of Conduct has been prepared and is included in **Appendix L**. The Driver Code of Conduct would be finalised prior to issue of the Construction Certificate.

The purpose of the Driver Code of Conduct is to minimise the impact of individual driver behaviours on all users of the public roads forming part of the site access routes. The Driver Code of Conduct outlines acceptable behaviour for all vehicle drivers in connection with the Project, including:

- General requirements (e.g. site induction requirements).
- Travelling speeds and safe driving practices, particularly through residential areas and school zones.
- Fatigue management.
- Adherence to designated transport routes and heavy vehicle noise.
- Public complaint resolution and penalties and disciplinary action.

Prior to involvement in the Project, vehicle drivers will be required to read the Driver Code of Conduct and acknowledge their compliance with it throughout their involvement in the Project. The expectations of the Driver Code of Conduct will be established in the Project induction and will be reiterated through pre-starts. Heavy vehicle haulage routes will be communicated to haulage contractors during the procurement stage and requirements of the Drivers Code of Conduct, route use and compliance included in their contracts.

The Driver Code of Conduct includes an element of fatigue management. This includes the requirements for drivers on the Project to manage their fatigue, be suitably rested and for operators of heavy vehicles to comply with the Chain of Responsibility legal requirements under the National Heavy Vehicle Law (Heavy Vehicle (Adoption of National Law) Act 2013). The fatigue management standards, including those outlined in the Chain of Responsibility, will be consistent with the standards outlined in the Fatigue Management Plan.

7.1.4 Emergency Access

The proposed site access points provide good access and egress around the site for emergency services. No additional emergency access points are expected to be required proposed.

7.1.5 On-Site Mitigation Measures

In addition to the external network, it is recommended that mitigation measures targeted at safety and reducing the impact of Project traffic also be implemented for the on-site, internal vehicle circulation facilities. Such measures could include:

- On-site speed limits / restrictions along internal access tracks.
- Appropriate dust suppression measures.
- Implementation of condition inspection and maintenance program for on-site access tracks to ensure safe for use by Project traffic.
- Completion of all loading and unloading movements to occur within the designated work areas. No access track area or external streets or roads are to be used for material storage at any time.
- Sufficient car parking is to be provided on-site to ensure vehicles do not park on the surrounding road network.
- All car parking and loading areas to be designed in accordance with the relevant Australian Standard (2890 series) and Council requirements.

7.1.6 Road Safety Considerations

Under the safe systems approach road safety is generally improved by focussing on Safe Roads, Safe People, Safe Vehicles and Speed Management. The safe systems approach is summarised in **Figure 47** below, with further details of the implementation of the approach detailed in the following sections.

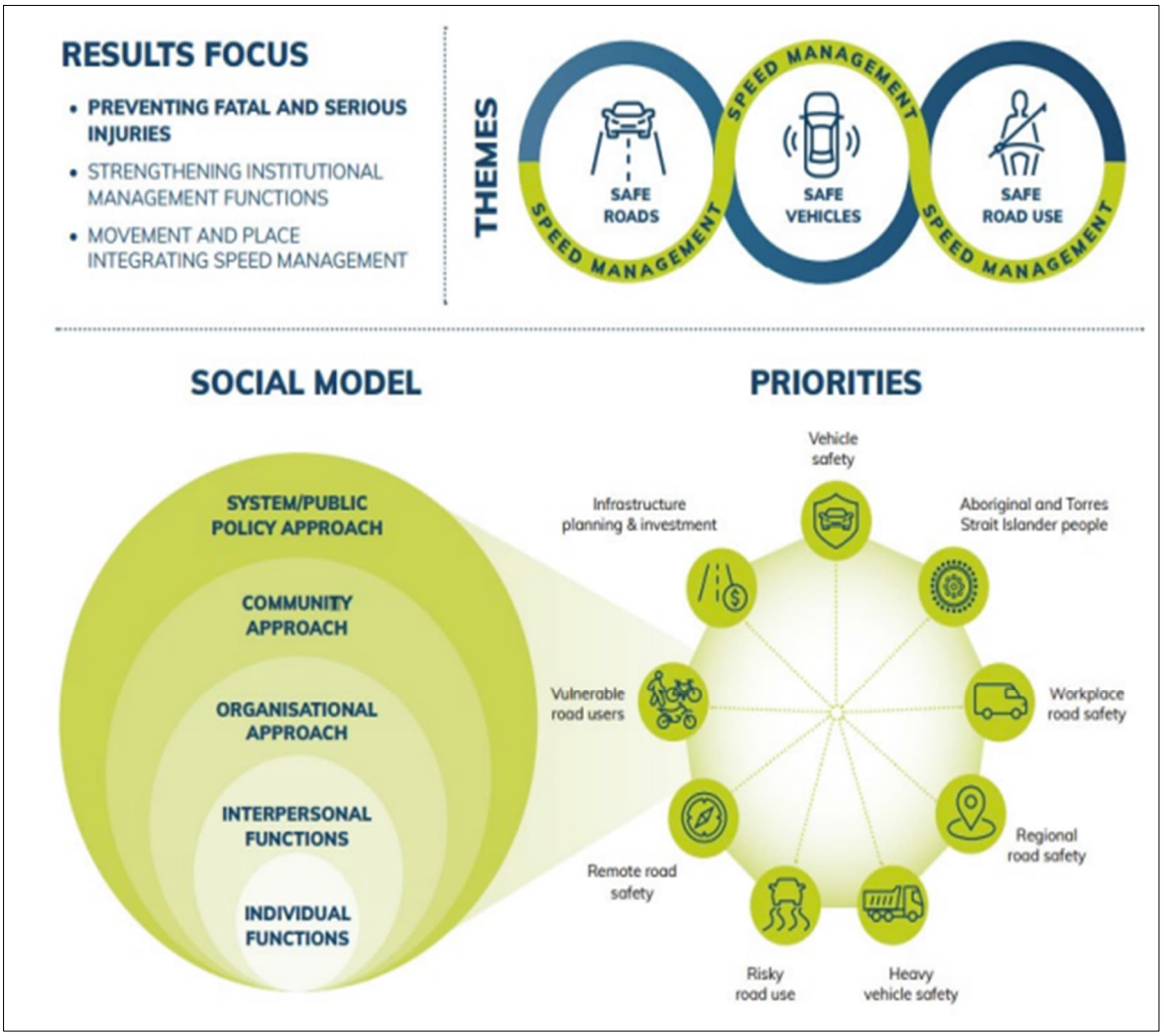


Figure 47 Safe Systems Approach Summary **[Source: National Road Safety Strategy 2021-30]**

7.1.6.1 Safe Vehicles

Contractors are to ensure that all vehicles used are road worthy and in good working condition with lights, brakes, tire pressure etc.

7.1.6.2 Safe Road Use

Safe Road Use can be achieved by education of workers and communicating policies of the work site. Worker site induction should include driver education of the local road conditions and an adoption of a "drivers code of conduct" (refer **Appendix L**).

This should include:

- Driving to the conditions on unsealed roads.
- Avoid speeding and other dangerous behaviour.
- Identification and communication of known road crash cluster locations.
- Identification and warning of when roads may be affected by black ice, road damage (potholes) and incidents.
- A drug and alcohol policy to reduce incidents of drunk and drug driving.
- Additional caution of wildlife when driving at dawn and dusk.
- Measures to reduce the risk of workers driving while tired.
- Training drivers to respect private property and farm gates.

The proposed use of shuttle bus services for off-site workers would reduce the number of workers driving from the site when tired, and the provision of these services for off-site workers will be investigated. However, as off-site workers (approximately 25% off total construction workforce) are likely be dispersed around the surrounding localities, it is likely that some workers will need to travel to site independently.

7.1.6.3 Safe Speeds

As part of managing the Project, workers would be required to drive to the conditions, respect speed limits, and abide by the Drivers Code of Conduct (refer **Appendix L**).

7.1.6.4 Sensitive Land Uses Considerations

It is recognised that the Project may have an impact on sensitive land uses such as schools and residential precincts within townships along the identified OSOM haulage and material delivery routes.

To minimise the impacts on schools it is recommended that temporary road closures for OSOM movements should be avoided during school peaks. To this end vehicle layovers should be identified along the proposed haulage routes to allow vehicles to wait until appropriate times for travel.

7.1.6.5 Adverse Weather Considerations

Speed reductions, use of fog lights during periods of low visibility, cessation of work and site shutdowns will be implemented as required during periods of adverse weather.

7.2 Road Network Upgrade and Mitigation Works

In addition to the traffic management measures and strategies above, the detailed traffic impact assessment undertaken identified the requirement for the provision of the following road network upgrade and mitigation works to offset the traffic and pavement impacts of the proposed Mallee Wind Farm Project, with a summary of the recommended works and associated delivery timeframes outlined in **Table 26**:

- Completion of minor works along the identified transport route to accommodate the swept paths of the OSOM WTG 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 WTG 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 Spark Renewables 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 OSOM haulage route upgrade works to the Sturt Highway / Carey Street roundabout in Euston. The proposed route upgrade works at this intersection are to include the provision of additional pavement hardstand area on the outside of the departure to the intersection, minor works to make the entry and exit traffic islands trafficable, the removal / relocation of 1x light pole on the approach to the intersection, works to make multiple signs removable and associated vegetation trimming to accommodate the swept path of the OSOM turbine transport vehicle.
- Provision of OSOM haulage route upgrade works to the Sturt Highway / Silver City Highway roundabout in Buronga. The proposed route upgrade works at this intersection are to include the provision of additional pavement hardstand area on the outside of the departure to the intersection, minor works to make the entry and exit traffic islands trafficable, the removal / relocation of 2x light poles and 1x power pole and works to make multiple signs removable to accommodate the swept path of the OSOM turbine transport vehicle.
- Provision of upgrade works to the Silver City Highway / Arumpo Road intersection to provide a channelised right (CHR) treatment, generally in accordance with Figure 7.3 (rural CHR) of Part 4A of Austroads *Guide to Road Design*.
- Provision of minor OSOM haulage route upgrade works to the Silver City Highway / Arumpo Road intersection in Buronga. The proposed route upgrade works at this intersection are to include works to make multiple signs removable to accommodate the swept path of the OSOM turbine transport vehicle.
- Provision of suitable site access intersection configurations at Site Access 1 & 2 on Arumpo Road, providing basic left (BAL) and right (BAR) turn treatments and provision for additional hardstand areas as required to accommodate the required OSOM heavy vehicle movements. It is proposed that these site access intersections are provided generally in accordance with Figure 8.2 (rural BAL) and Figure 7.1 (rural BAR) of Part 4A of Austroads *Guide to Road Design*.
- Completion of pre and post construction phase dilapidation inspections on the relevant sections of Corbett Avenue, Modica Crescent and River Drive in Buronga used by the water transport vehicles for the Project, with these inspections to be completed by representatives of the proponent and Wentworth Shire 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).

Table 26 External Road Network Upgrade and Mitigation Works Summary – Mallee Wind Farm

Road / Intersection	Treatment	Timing
Road Network Upgrade Works		
Various locations on OSOM transport routes	Various infrastructure relocation and hardstand construction works to accommodate vehicle paths of OSOM WTG component transport movements.	Prior to commencement of OSOM WTG component haulage operations.
Silver City Highway / Arumpo Road *(Considered in the Project EIS)*	Upgrade works to provide CHR turn treatment to intersection in accordance with relevant Austroads standards.	Prior to the commencement of construction works.
	Provision of minor OSOM haulage route upgrade works to the Silver City Highway / Arumpo Road intersection in Buronga to make multiple signs removable to accommodate the swept path of the OSOM turbine transport vehicle.	Prior to commencement of OSOM WTG component haulage operations.
Site Access 1 (LHS) Arumpo Road (Approx. Ch. 32.4 km) *(Considered in the Project EIS)*	Upgrade existing property access to rural BAL / BAR standard as per Figure 8.2 and 7.1 of Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections.	Prior to the commencement of construction works.
	Additional hardstand area at access to accommodate OSOM transport vehicle swept paths.	Prior to commencement of OSOM WTG component haulage operations.
Site Access 2 (RHS) Arumpo Road (Approx. Ch. 32.6 km) *(Considered in the Project EIS)*	Upgrade existing property access to rural BAL / BAR standard as per Figure 8.2 and 7.1 of Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections.	Prior to the commencement of construction works.
	Additional hardstand area at access to accommodate OSOM transport vehicle swept paths.	Prior to commencement of OSOM WTG component haulage operations.
Sturt Highway / Carey Street *(Considered in the Project EIS)*	Provision of route upgrade works to accommodate OSOM WTG component haulage operations. The upgrade works at this location are to include: - Additional pavement hardstand area on the outside of the departure to the intersection. - Minor works to make the entry and exit traffic islands trafficable. - Removal / relocation of 1x light pole on the approach to the intersection. - Works to make multiple signs removable. - Minor vegetation trimming.	Prior to commencement of OSOM WTG component haulage operations.

Road / Intersection	Treatment	Timing
Sturt Highway / Silver City Highway **(Considered in the Project EIS)**	Provision of route upgrade works to accommodate OSOM WTG component haulage operations. The upgrade works at this location are to include: - Additional pavement hardstand area on the outside of the departure to the intersection. - Minor works to make the entry and exit traffic islands trafficable. - Removal / relocation of 2x light poles. - Relocation of 1x power pole. - Works to make multiple signs removable.	Prior to commencement of OSOM WTG component haulage operations.
Road Network Mitigation Works		
Corbett Avenue ***(Silver City Highway to Modica Crescent (East))***	Completion of pre-construction road dilapidation inspection, including documentation of pre-construction condition.	Prior to the commencement of construction works.
Modica Crescent *(Full Length)* **River Drive *(Sturt Highway to Raw Water Supply Point)***	Completion of post construction road 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 construction works.

8.0 Conclusions and Recommendations

Based on the information provided above, it can be seen that conditional to the provision of the identified mitigation measures and road network upgrade works as part of the Project, the potential traffic impacts of the construction, operations and decommissioning phases of the Project can be 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 Transport Route Assessment, demonstrates the compliance of the Project with Part 8 of the NSW Environmental Planning and Assessment 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: MALLEE WINDFARM
EX PORT OF NEWCASTLE
BLADE SIZE: 85 METRE

15/05/2024 REV 01

Rev.	Date	Change	Responsible	Checked
00	07/08/23	Route Assessed	W Andrews	✓
00	15/11/23	Report Compiled	E Novak	✓
00	15/11/23	Report Completed	W Andrews	✓
01	15/05/24	Report Updated	E Novak	✓
01	15/05/24	Report Completed	W Andrews	✓

Index:

1.0 Introduction

Spark Renewables are in the early stages of investigating a potential windfarm as part of the Mallee Energy Hub in the Southwest Renewable Energy Zone in Southwestern NSW.
This study has been undertaken 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 the route and explains the Transport of Wind turbine equipment from Port of Newcastle to Mallee Windfarm by Rex J Andrews.
This study is based on a proposed 85 Metre blade with a hub height of up to 170 metres.

The route survey was undertaken on 07/08/2023.

2.0 Evaluation

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

(Mark below boxes with an X)

		1	2	3	4
A	Harbour		X		
B	Road Modification				X
C	Road Furnishings				X
D	Trees				X
E	Site Entrance				X
F	Bridge Calculations			X	
G	Traffic Control			X	

3.0 Project data

Date of latest Route Assessment: 07/08/2023
Survey undertaken by: (Rex J Andrews P/L)
Project Name: Mallee Windfarm
Location: Port Newcastle (NSW) to Arumpo (NSW)
Turbine types:

Up to 150 wind turbine generators with blades up to 85 metres in length and a hub height of 170 metres.

4.0 Transport Combinations (Examples)

TURBINE EXAMPLES:

Blades (85.0l x 4.4w x 3.2h x 32T)
Configuration. Prime mover with 3x8-3x8 Blade trailer
Overall dimensions: 97.0l x 4.5w x 5.2h x 95.5T

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 175T)
Configuration. Prime mover with 10x8-10x8 Beamset + 4 x Backup trucks
Overall dimensions: 120.0l x 6.5w x 5.4h x 324.5T + 4 x Backup trucks

Possible Transformer size (9.2l x 4.0 x 4.35 x 130T)
Configuration. Prime mover with 12x8 Platform trailer + 1 x Backup trucks
Overall dimensions: 45.0l x 4.3w x 5.4h x 222.5T

SWITCHROOM:

The largest switchroom size that is recommended for this site would be as follows.
Switchroom dimensions: 30.0l x 6.0w x 4.4h x 90.0T

5.0 Transport Drawing Examples (Possible Combinations)

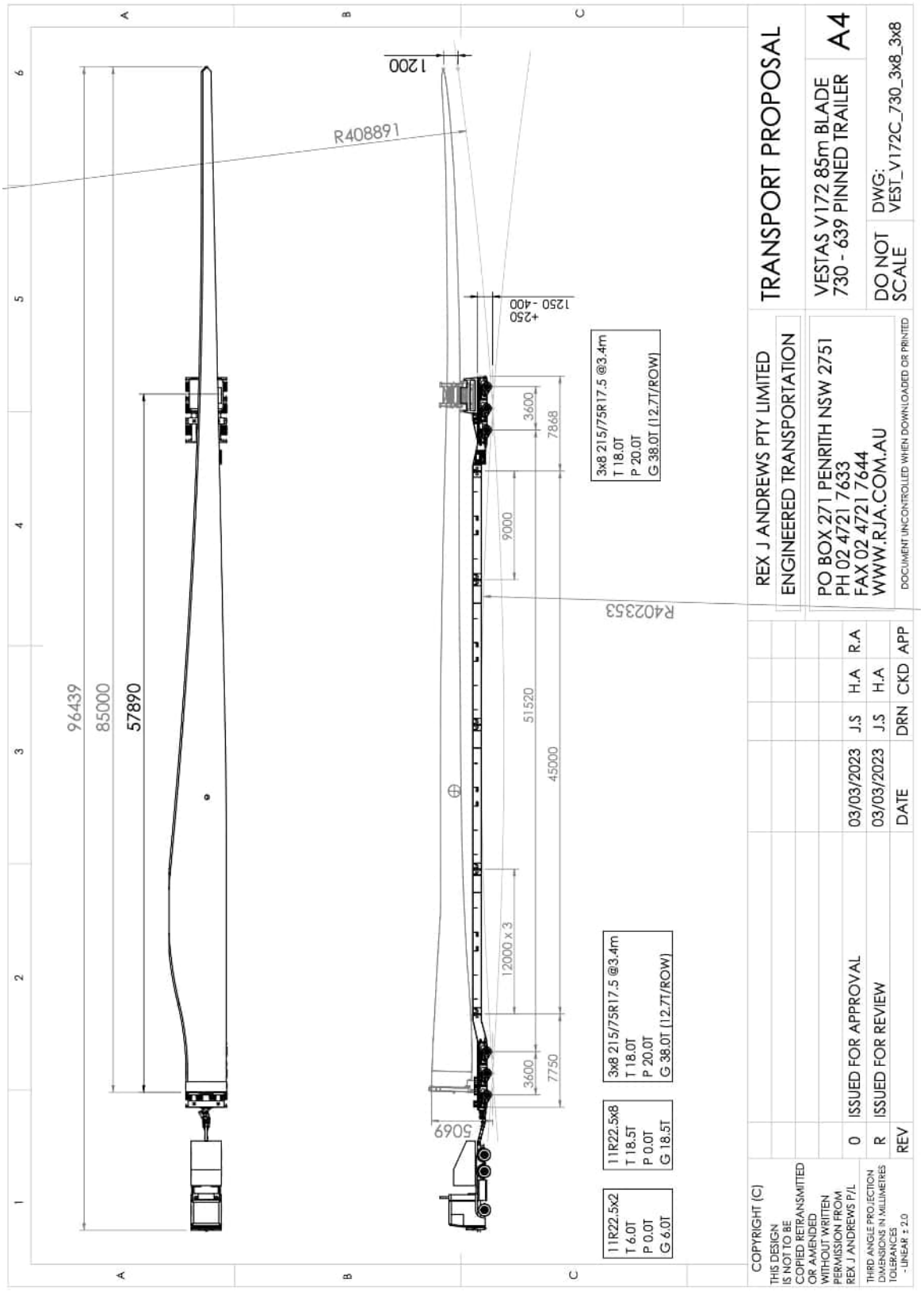


Figure 1 - Blade Diagram

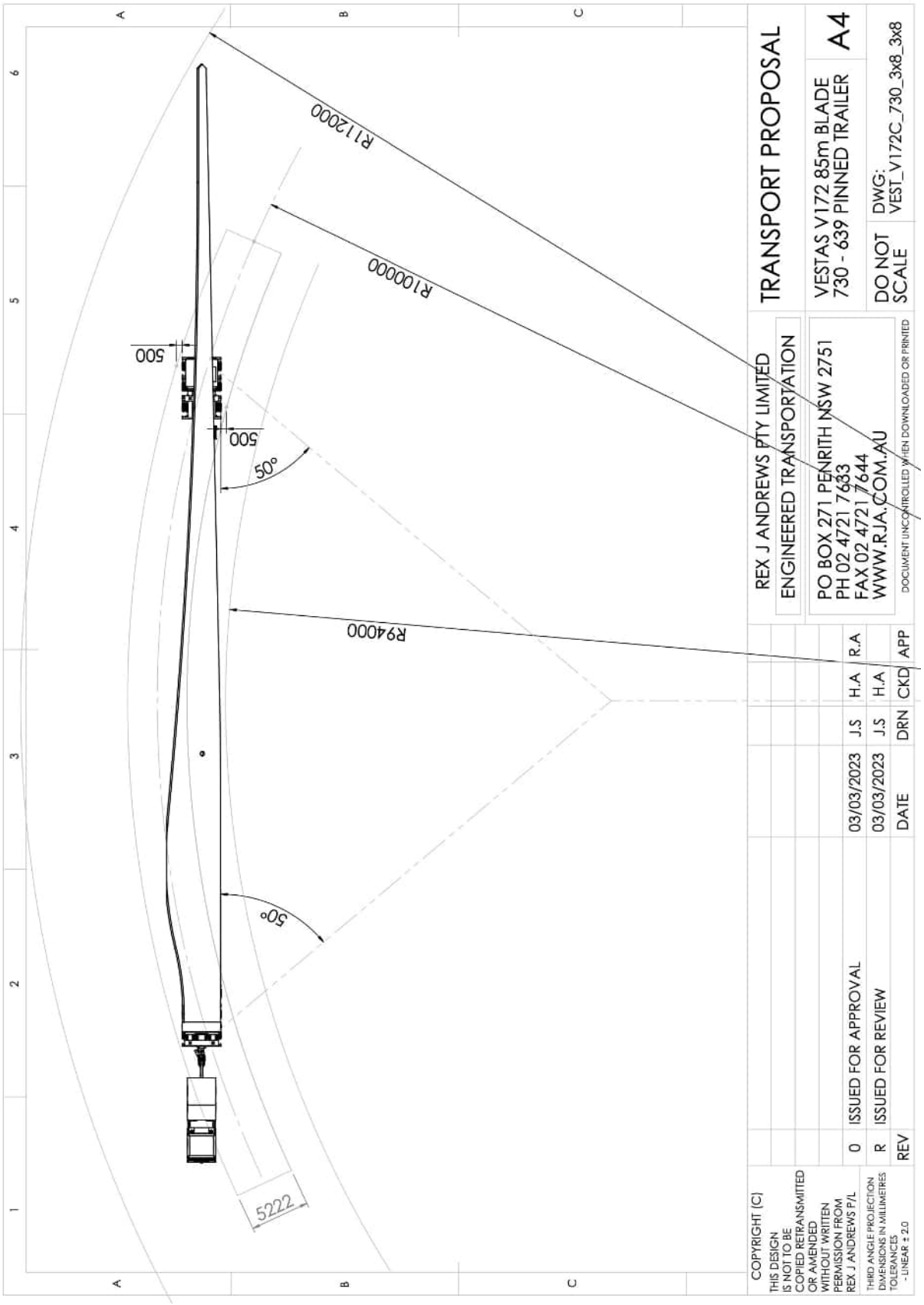


Figure 2 - Blade Diagram Swept Path

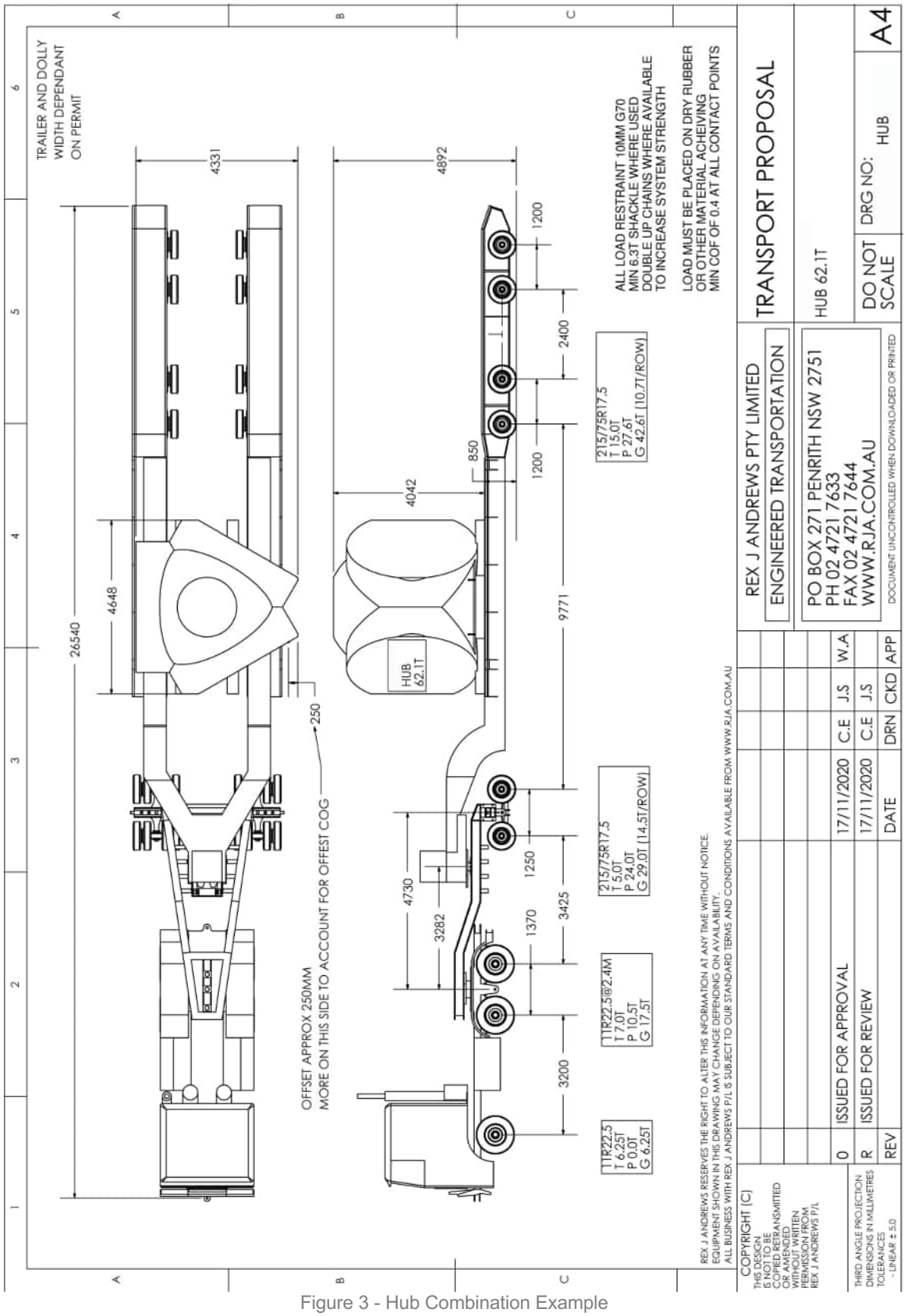


Figure 3 - Hub Combination Example

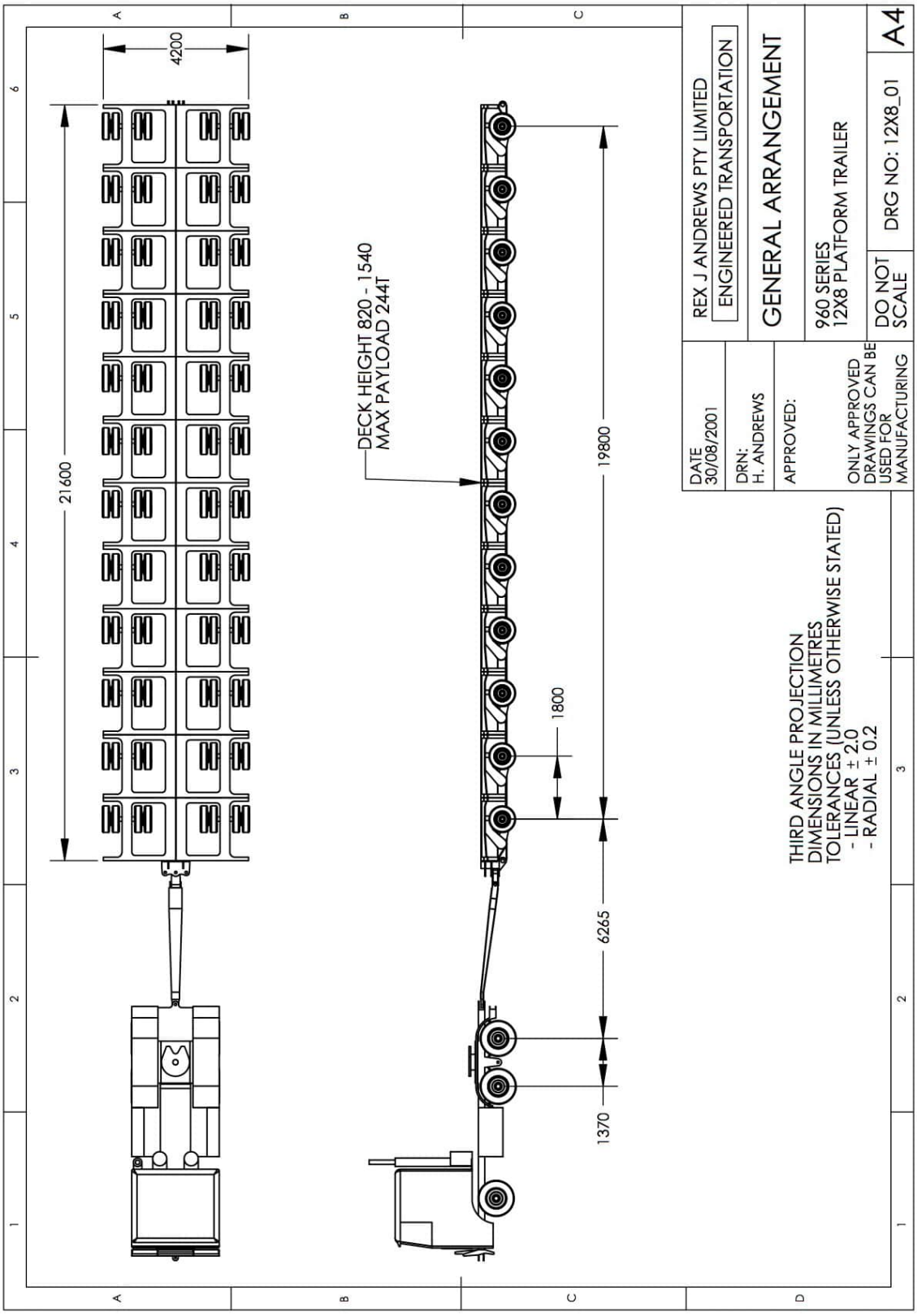


Figure 4 - Nacelle Combination Example

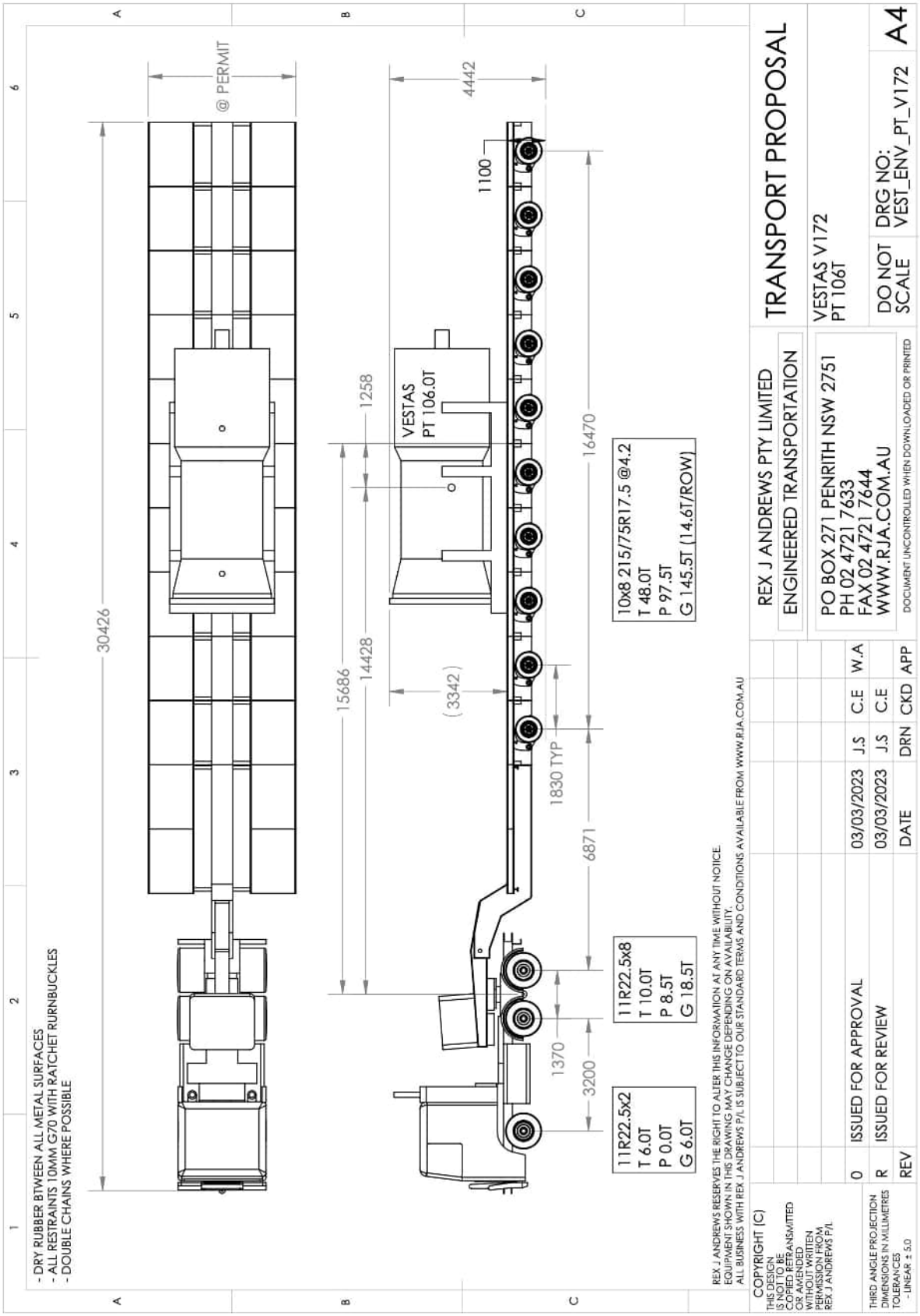


Figure 5 - Drivetrain Combination Example

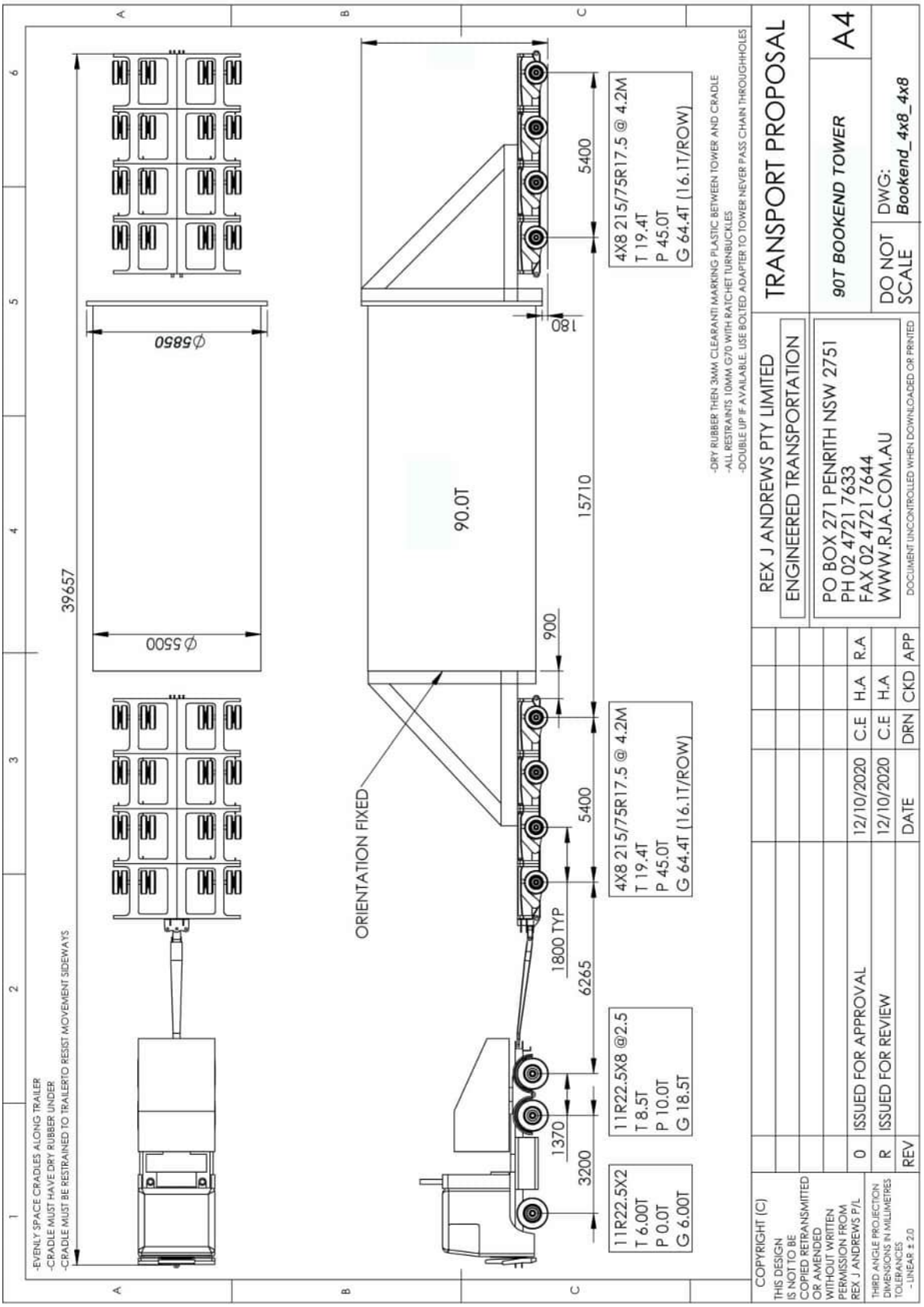


Figure 6 - Tower Trailer Bookend

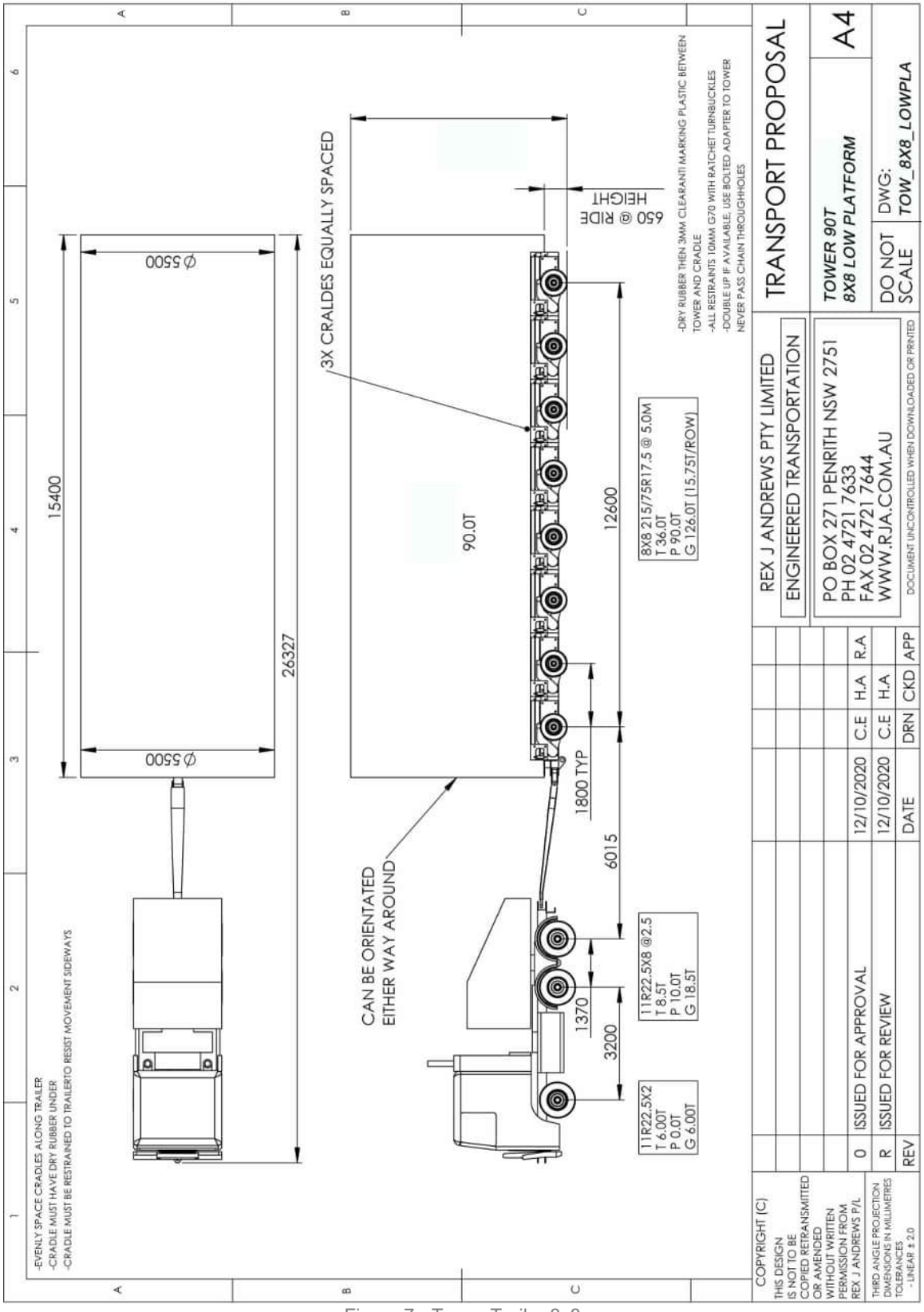


Figure 7 - Tower Trailer 8x8

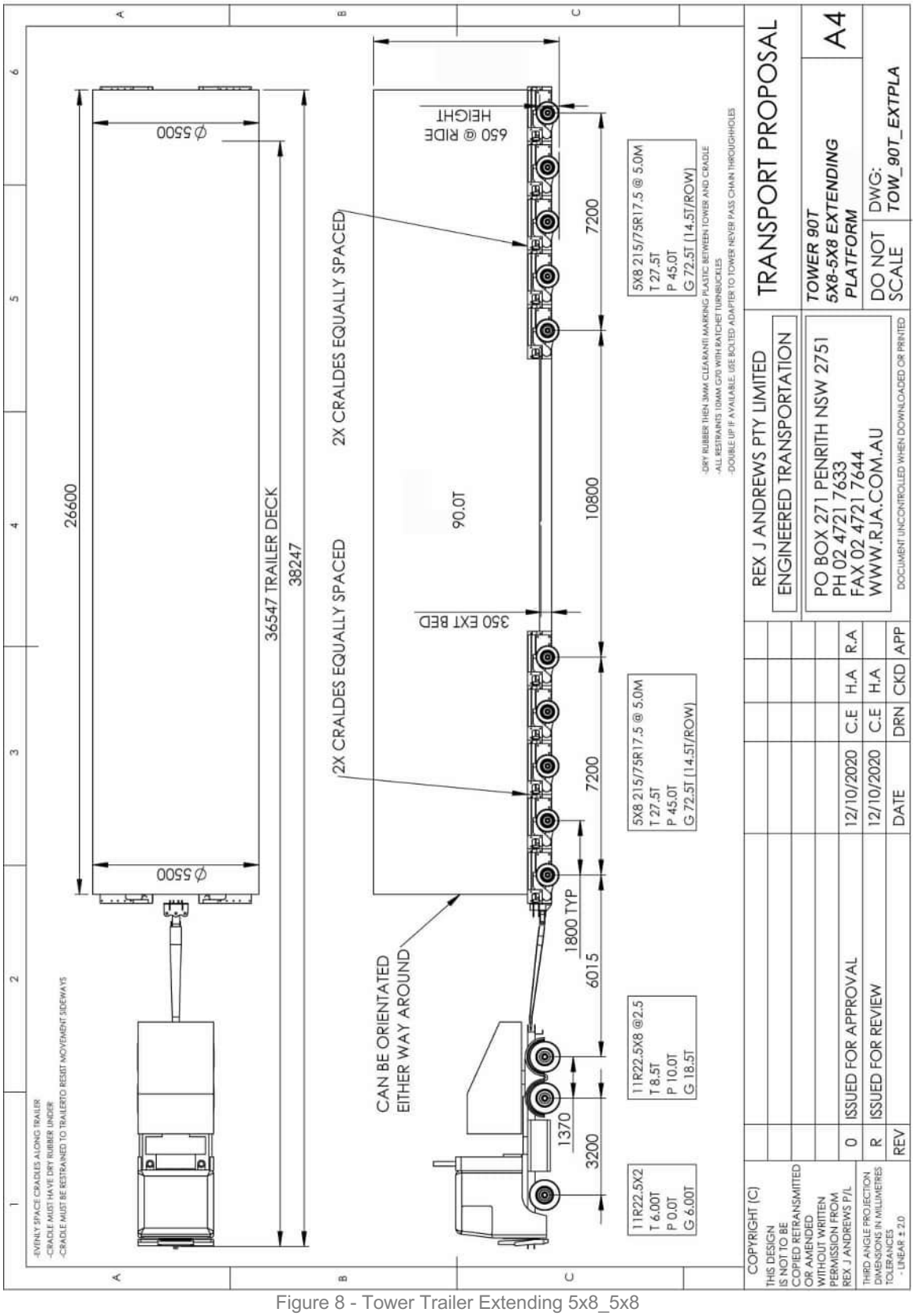


Figure 8 - Tower Trailer Extending 5x8_5x8

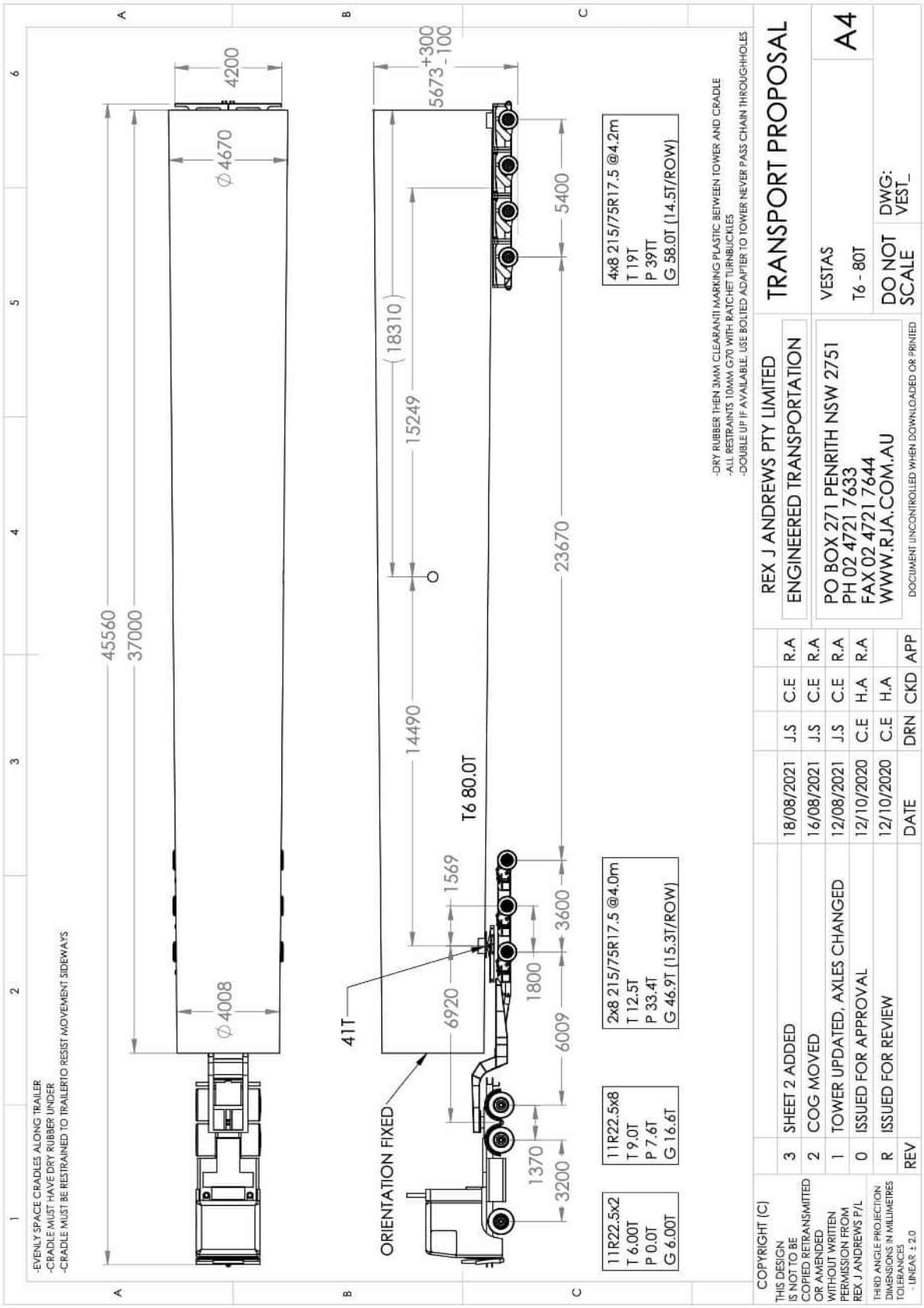


Figure 9 - Tower Trailer Dolly And Jinker

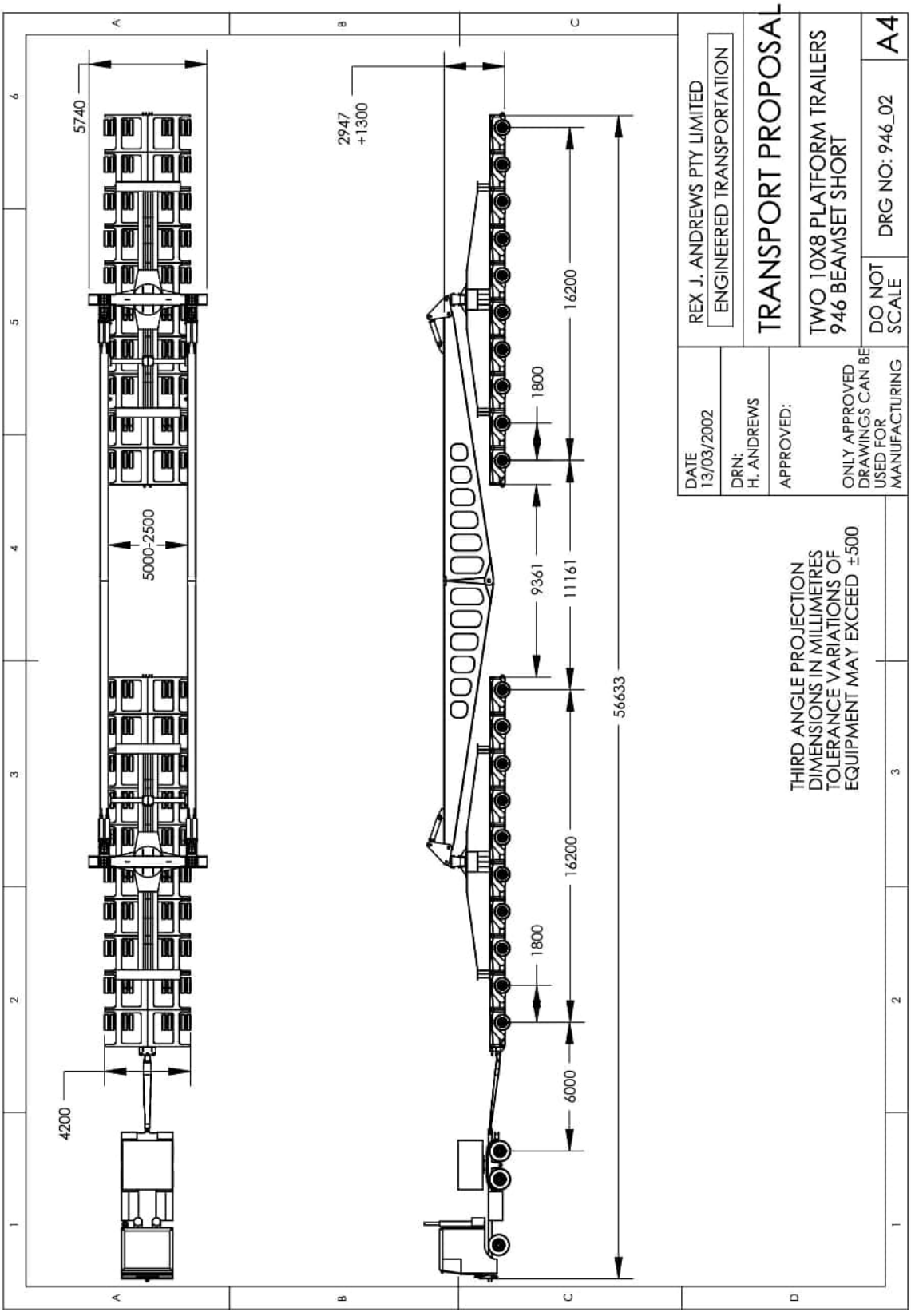


Figure 10 – 300MVA Transformer Trailer 10x8-10x8 Beamset

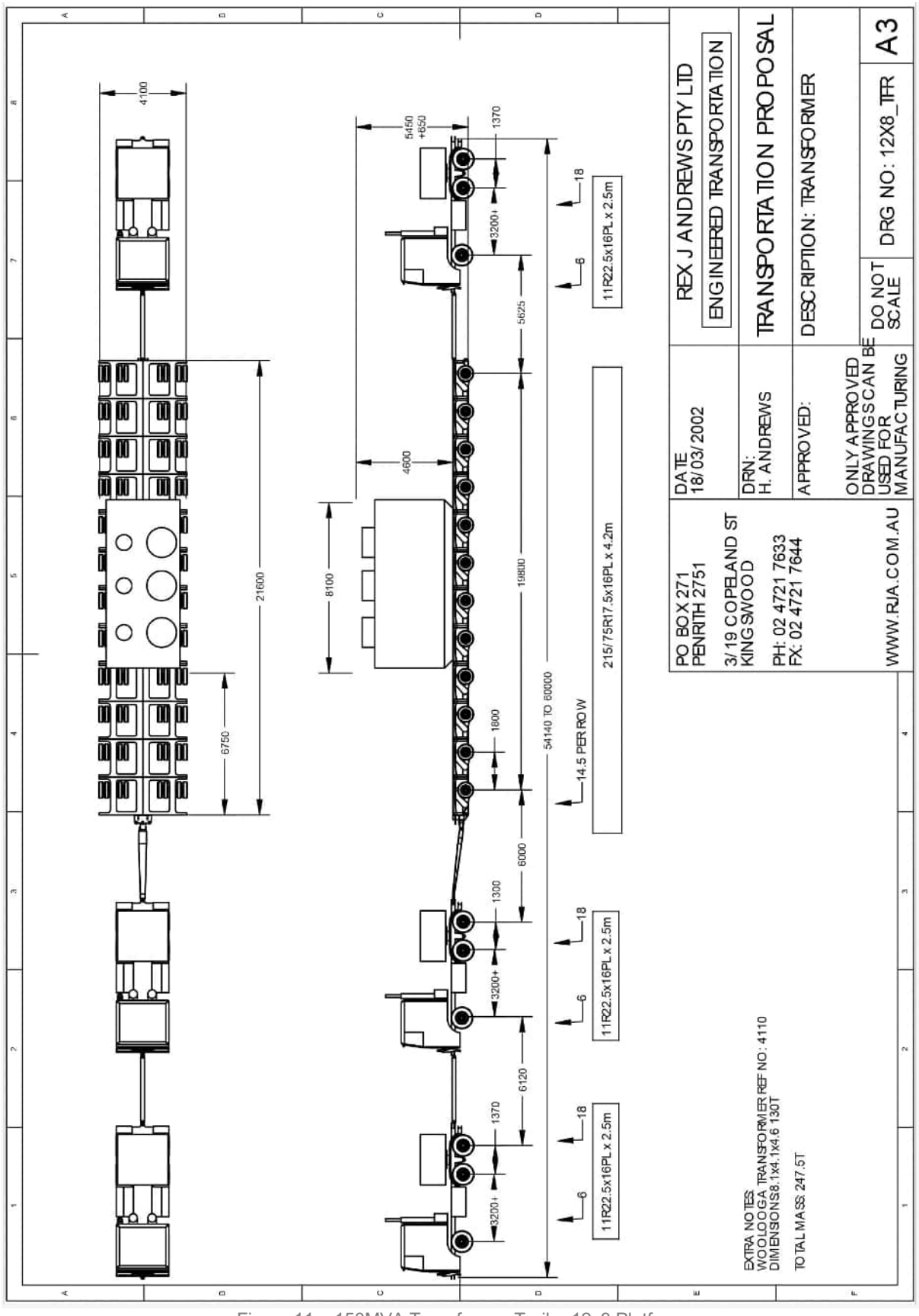


Figure 11 – 150MVA Transformer Trailer 12x8 Platform

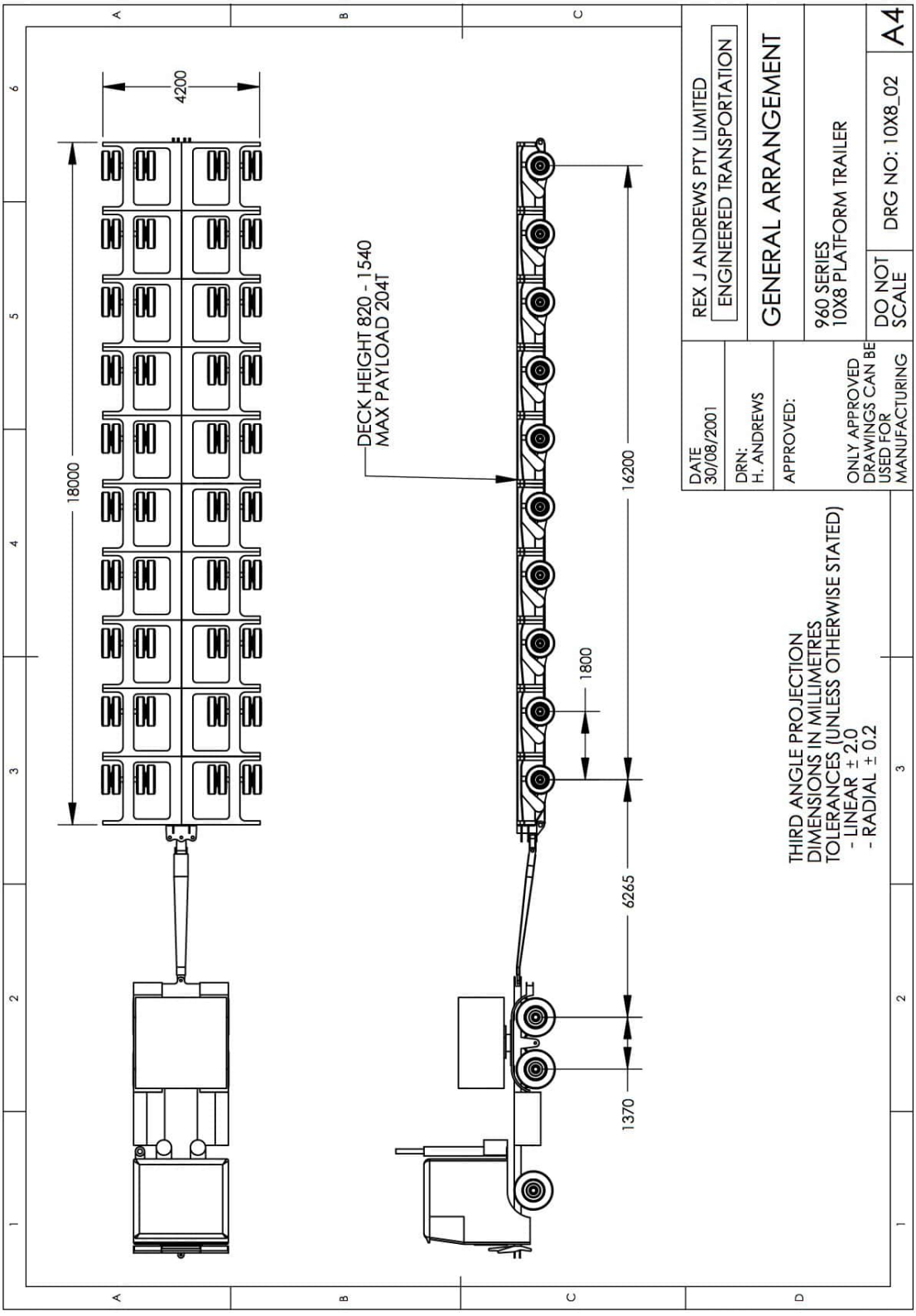


Figure 12 - Crane Trailer 10x8 Platform

6.0 Mallee Windfarm Site Location

The proposed Mallee Windfarm is located approximately 16 kilometres Notheast of Buronga, in southwest New South Wales. Access is via Arumpo Road. The Project Area is within the Southwest renewable energy zone in the Murray Region of New South Wales.

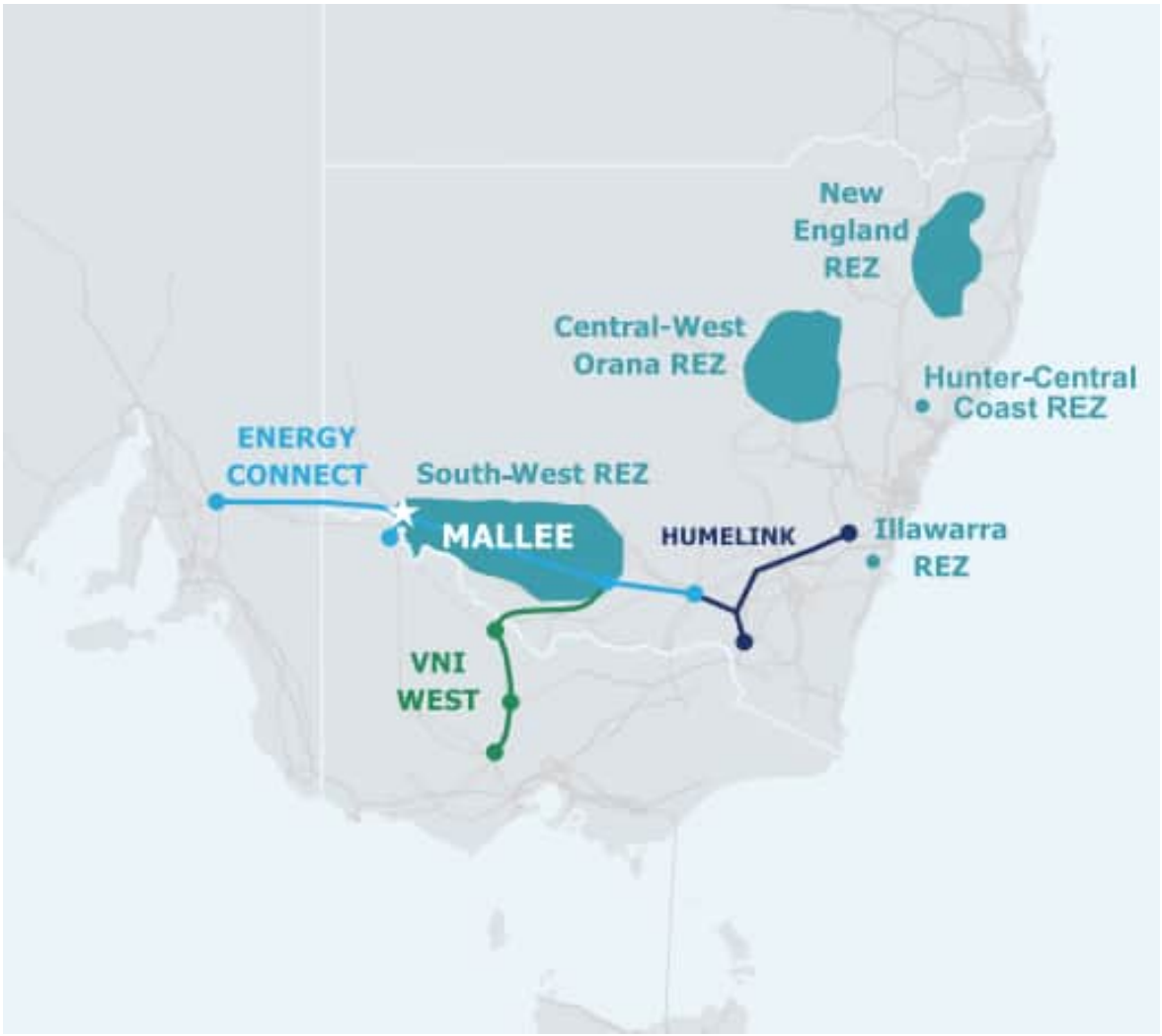


Figure 13 - Mallee Windfarm Location

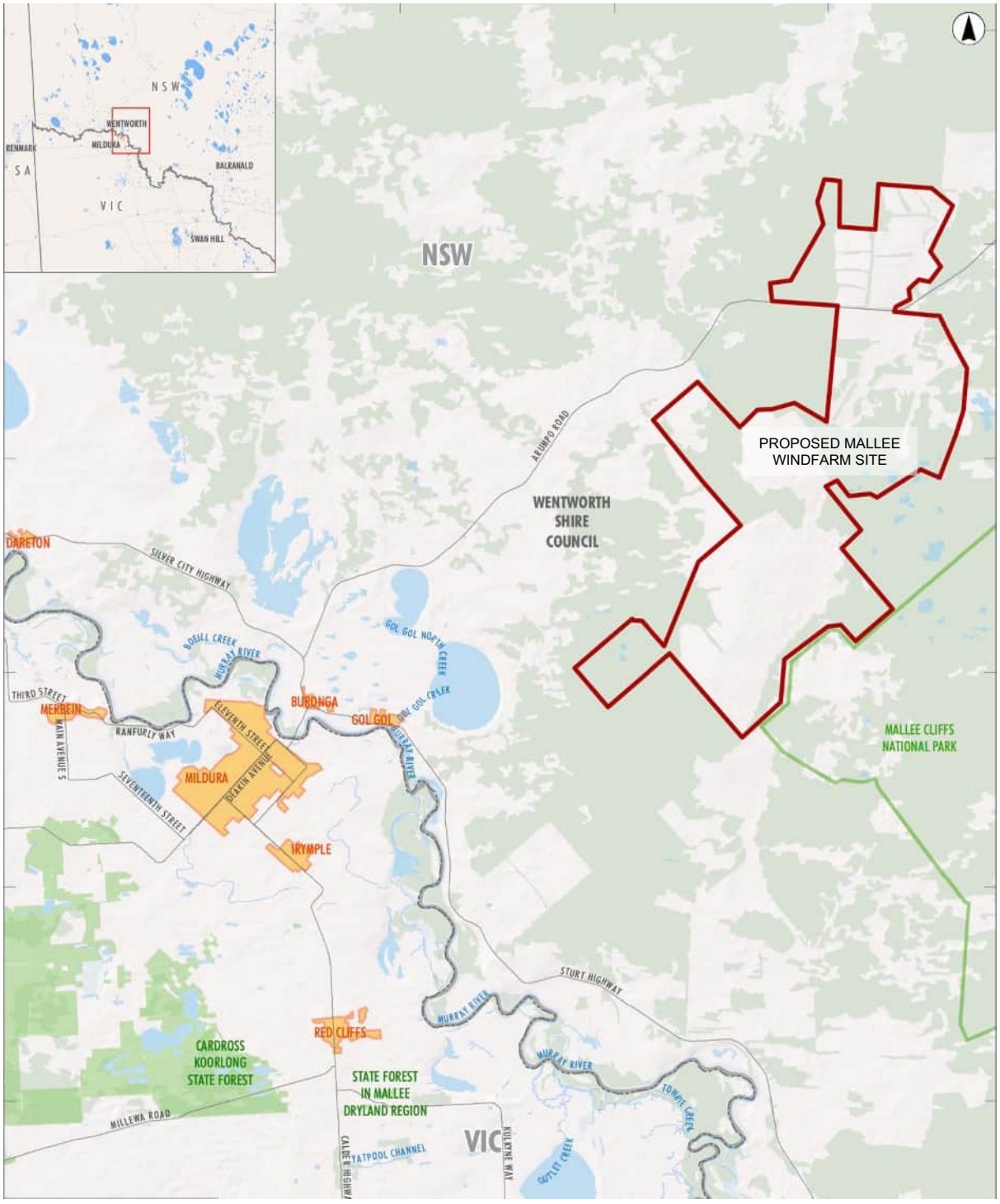


Figure 14 - Mallee Windfarm Site Layout

7.0 Port of Import.

The wind turbine equipment will be imported from various countries and will arrive on ships into the Port of Newcastle. The client may alternately source local towers. The ideal berth for these shipments is the Mayfield No.4 Berth. This facility has a hardstand storage area of roughly 100,000 s/q meters, adjacent to the berth. Access from the storage area to the public roads, is via a port operated road onto Selwyn Street. There will need to be a small amount of road modifications within the port.

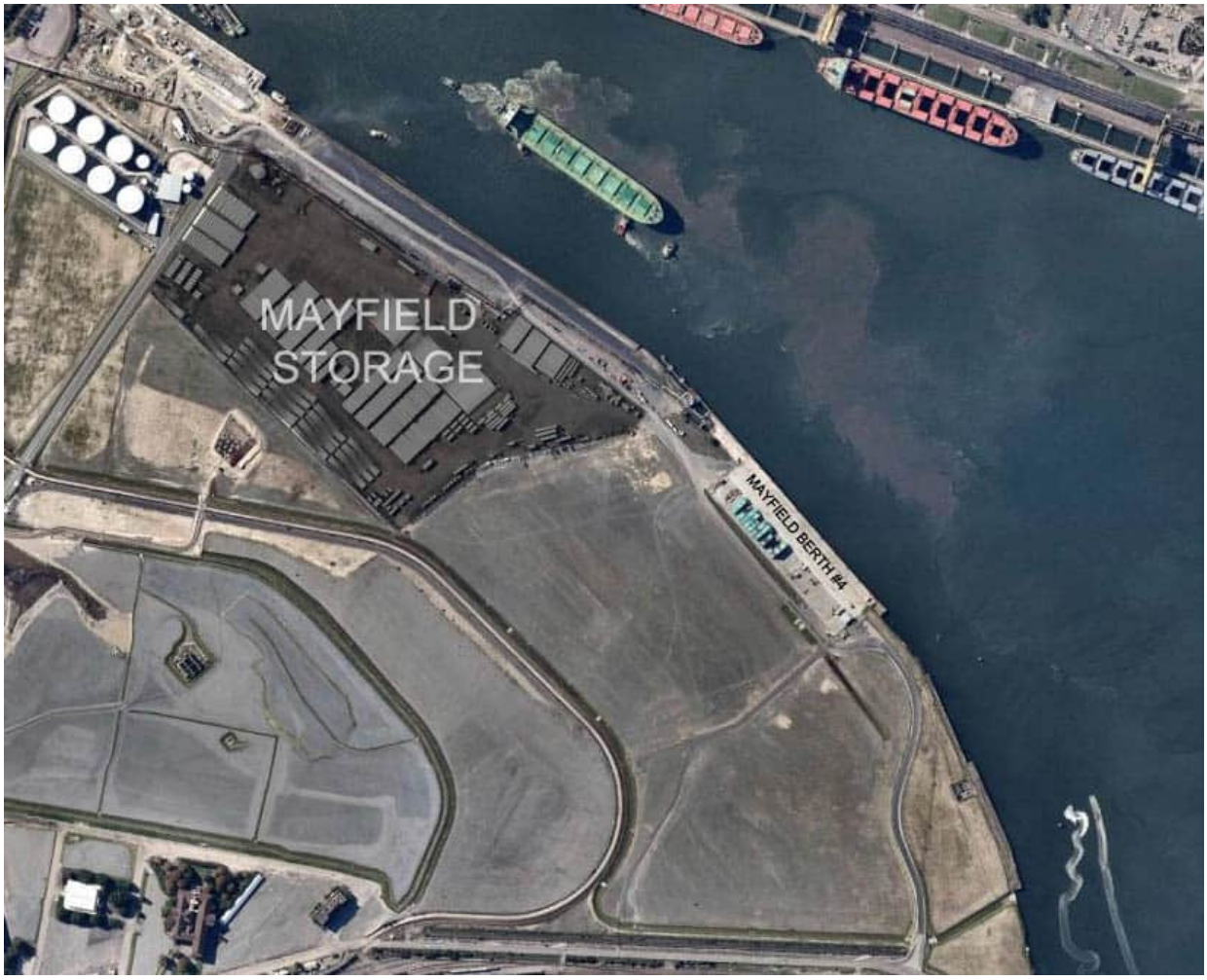


Figure 15 - Mayfield No. 4 Berth Overview

Figure 16 - Mayfield No. 4 Port Storage Area

8.0 Transport Summary

The study is based on the turbine components and imported towers entering Australia via the Port of Newcastle. The study details the likely routes for these components, and the constraints that they may encounter on the proposed routes.
Route survey 1 would be used as the option for the blades and components under 5.0m loaded Hight.
Route survey 2 is the option for all loads over 5.0m with a **maximum loaded height of 5.9m**

ROUTE SURVEY 1: Blades and components **under 5.0m** loaded height
DISTANCE: 1203 kilometres
GPS LINK: https://maps.app.goo.gl/j7SvWCZBS7QC1yYp7
ROUTE: Selwyn street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, M1, NorthConnex tunnel, M2, M7, M5, Hume Highway, Sturt Hwy, Silver City Hwy, Arumpo Road.

ROUTE SURVEY 2: High load route. **Maximum loaded height 5.9m**
DISTANCE: 1324 kilometres
GPS LINK: https://maps.app.goo.gl/8GzMtJr3pMLzkbww5
ROUTE: Selwyn street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Golden Highway, Denman Road, Bengalla Road, Wybong Road, Golden Highway, Boothenba Road,Troy Bridge Road, Bunglegumbie Road, Mitchell Highway, Manildra Street, Derribing Avenue, Algalah Street, Tomingley Road, Newell Highway, Thomas Street, Moulden Street, Henry Parkes Way, Westlime Road, Hartigan Avenue, Newell Highway, Compton Road, Showground Road, Newell Highway, Sturt Highway, Sturt Hwy, Silver City Hwy, Arumpo Road.

9.0 Route Survey 1: Blades And Components Under 5.0 m Loaded Height

DISTANCE: 1203 kilometres
GPS LINK: https://maps.app.goo.gl/j7SvWCZBS7QC1yYp7
ROUTE: Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, M1, NorthConnex tunnel, M2, M7, M5, Hume Highway, Sturt Hwy, Silver City Hwy, Arumpo Road.

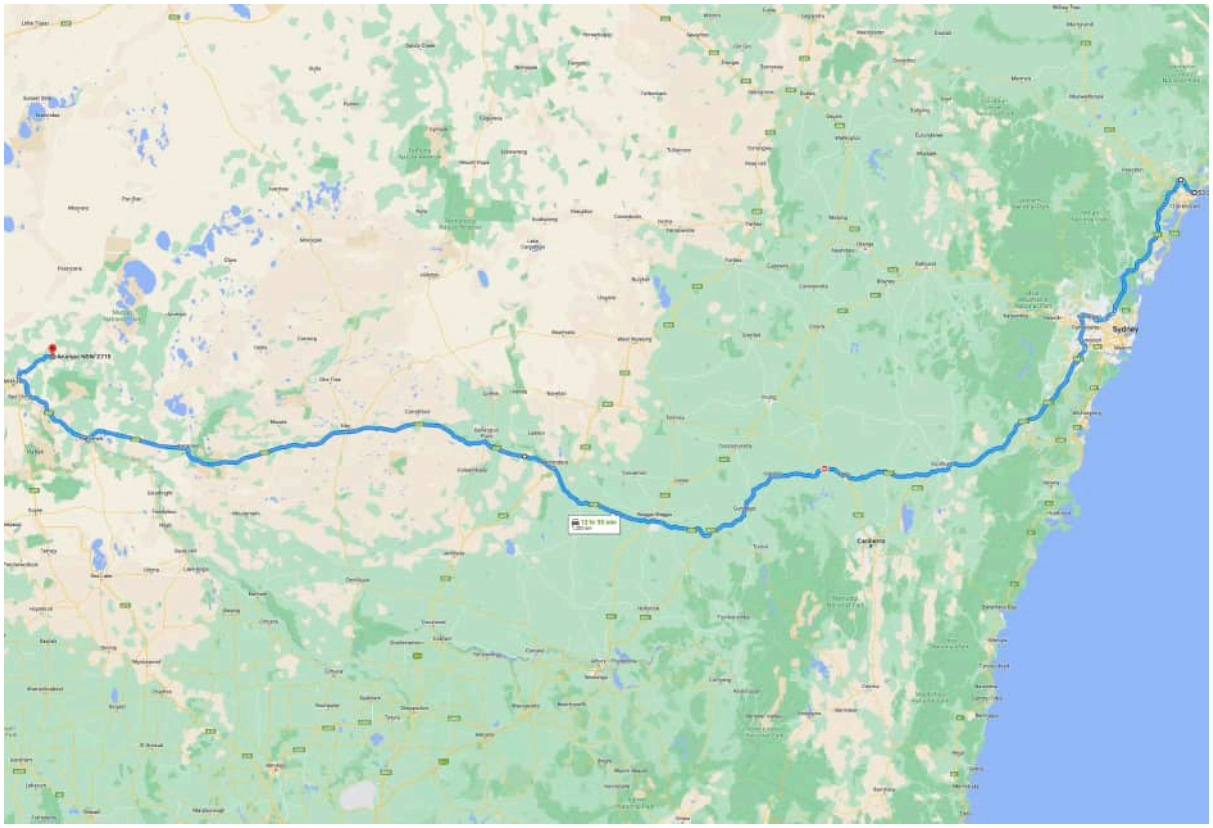


Figure 17 - Route 1

KEY	
MODIFICATIONS REQUIRED	
MINOR WORKS OR CAUTION	
PARKING	

KM index	Location	Section of road	Current clearance	Procedure	Comments
0.0	Mayfield	Mayfield #4 berth onto Selwyn Street https://goo.gl/maps/afLwPYKuNdm	Length: 70.0m Width: 8.0m	Moderate right hand turn	Hardstand will need to be added to the left entry and exit of the corner. The existing culvert will need to be extended. Some signs will need to be relocated and or made removable and some fence and gate will need to be relocated.
0.4	Mayfield	Selwyn Street rail crossing https://goo.gl/maps/864FhMSaF9P2	Width: 9.0m	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
1.3	Mayfield	Selwyn Street onto Industrial Drive via George Street https://goo.gl/maps/brPRAckLr572	Length: 70.0m Width: 8.0m	Right hand turn	The first right hand turn through George Street will need a sign made removable and a disused pole on the overhang removed. On the inside of the corner hardstand will need to be added, a sign made removable.
4.9	Mayfield	Industrial Drive under traffic signals https://goo.gl/maps/5DpD3b7KnT72	Clearance: Height: 5.4m	Travel directly ahead	The blades will need to cross to the incorrect side of the intersection 200 metres prior, before crossing back over to the correct side 120 metres to the north of the intersection. A light pole on the inside of the corner will need to be made removable, and two signs will need to be made removable or relocated.
5.5	Mayfield West	Industrial Drive onto Maitland Road https://goo.gl/maps/Kq49dhWG2gG2	Length: 70.0m Width: 8.0m	Right hand turn	Two signs will need to be made removable or relocated. Traffic islands to be trafficable.
14.8	Tarro	New England Highway/Maitland Rd https://goo.gl/maps/hkKqsZMfdVJncRdu6	Length: 100.0m Width: 12.0m	Left hand bend	Spotter to guide load through this section of road.
17.4	Tarro	New England Highway onto John Renshaw Drive https://goo.gl/maps/SRDr5JiqkBp	Length: 100.0m Width: 12.0m	Left hand merge	No problems with this section of road.
18.4	Beresfield	John Renshaw Drive onto the M1 https://goo.gl/maps/A34ihxCjM6wfRDdq6	Length: 80.0m Width: 8.0m	Left hand bend	1 x light poles to be removed or relocated on the outside of corner for tail swing. Signs to be relocated/removed.
113.0	Mt White	M1 Motorway under Mt White overpass https://goo.gl/maps/K3fPPe4fNx63xB3j7	Height clearances: Left Lane: 5.2m Centre Lane: 5.3m Right Lane: 5.4ms	Travel directly ahead	Loads that exceed 5.3 metres high are not to travel under this structure. Loads over 5.2 metres high are to travel under the bridge in the far-right lane, and at a speed of no more than 5 km's per hour. Spotter to guide load through this section of road.
122.0	Hawkesbury River	M1 Motorway https://goo.gl/maps/yDzjirEKLAbREE8B6	100.0 long x 6.0 wide	Merge to left	Large parking area
146.4	Wahroonga	M1 onto North Connex GPS link: https://goo.gl/maps/7TMrKXHJzJDzimqZ7	Height: 5.0m 120 metres	Right Hand Merge	Merge into right hand lane ready to enter North Connex Tunnel.

KM index	Location	Section of road	Current clearance	Procedure	Comments
155.9	West Pennant Hills	North Connex onto M2 GPS Link: https://goo.gl/maps/C6aAHGR54c4KbkeJ7	Height: 5.25m 120 metres	Right Hand Merge	Merge onto the M2 Motorway
167.0	Kings Park	M7 Motorway https://goo.gl/maps/T8WcbR9T84Zs7WpF7	100.0 long x 6.0 wide	Merge to left	Large parking area
201.0	Prestons	M7 Motorway onto M5 Motorway https://goo.gl/maps/FA2mF7PxZkxrRDTR9	Width: 10.0 metres	Travel directly ahead	No problems with this section of road.
229.0	Menangle	Hume Highway https://goo.gl/maps/KPMdLS1XuRWHrcyb6	200.0 long x 8.0 wide	Merge to left	Large parking area for towers and motors, no blades to enter this parking bay.
238.0	Wilton	Hume Highway under Farm access overpass https://goo.gl/maps/2ZsVqYJ9j9gPTGga9	Height clearances: Left Lane: 5.5m Centre Lane: 5.4m Right Lane: 5.3m	Travel directly ahead	Loads that exceed 5.3 metres high are not to travel under this structure. Loads over 5.2 metres high are to travel under the bridge in the left lane, and at a speed of no more than 5 km's per hour. Spotter to guide load through this section of road.
303.0	Sutton Forest	Hume Highway https://goo.gl/maps/uT1ubtSuawS2	150.0 long x 10.0 wide	Merge to left	Large parking area
352.0	Goulburn	Hume Highway https://goo.gl/maps/7HywRcjZiJy	180.0 long x 15.0 wide	Merge to left	Large parking area
380.0	Breadalbane	Hume Highway https://goo.gl/maps/UWjx3XndLejWG1UD9	140.0 long x 14.0 wide	Merge to left	Large parking area
453.0	Bowning	Hume Highway https://goo.gl/maps/vRMmSbJCke5d65PJ9	200 long x 8.0 wide	Merge to left	Large Parking area
456.0	Bowning	Hume Highway https://goo.gl/maps/XENMvuFeHCevVo8J6	80 long x 25 wide	Merge to left	Large parking area
510.0	Jugiong	Hume Highway https://goo.gl/maps/QzzfyAAnixQn3nwx8	140.0 long x 14.0 wide	Merge to left	Large parking area
573.70	Tarcutta	Hume Hwy onto Sturt Hwy GPS Link: https://goo.gl/maps/ruqNDSw5vanJDd4x5	200m long	Left Hand Merge	Merge left to left lane to exit Hume Hwy, follow road right onto overpass onto Sturt Hwy. No problems with this section of road.
614.6	Wagga Wagga	Sturt Hwy GPS Link: https://goo.gl/maps/7VDWUyW8KnUhCEdd7	80m long	Second Exit on Round-about	Sign to be removed in the middle of the roundabout. Roundabout made trafficable.
617.3	Wagga Wagga	Sturt Hwy GPS Link: https://goo.gl/maps/VeavHs6e4AiLaggDA	80m long	Second Exit on Round-about	Sign to be removed in the middle of the roundabout. Handstand to be installed on roundabout and roundabout made trafficable.
618.4	Wagga Wagga	Sturt Hwy GPS Link: https://goo.gl/maps/dBrte59BvHyvcGSr5	80m long	Second Exit on Round-about	The truck will need to cut across the centre of the roundabout. The existing pavement is ok to drive on without any extra work. 2x signs to be removed in the middle of the roundabout.
618.75	Wagga Wagga	Sturt Hwy under rail overpass GPS Link: https://goo.gl/maps/JPkJBAyzJuMAiHUz8	Height clearances: 5.25m	Travel under rail overpass	Detailed vertical curve assessment required to determine whether blade loads can travel under the rail bridge and maintain clearance, as well as maintaining tip clearance to the ground on entry and the bridge on exit while travelling through the dip.

KM index	Location	Section of road	Current clearance	Procedure	Comments
621.5	Wagga Wagga	Sturt Hwy GPS Link: https://goo.gl/maps/fx388veUAjbykjvPA	80m long	Second Exit on Round-about	Signs to be removed in the middle of the roundabout. Roundabout made trafficable.
711.0	Gillenbah	Sturt Hwy GPS Link: https://goo.gl/maps/C7qJ8ouDVdpcH5Rz7	80m long	Left Hand Turn	Several signs to be relocated or made removable. Traffic island to be made trafficable.
711.5	Gillenbah	Sturt Hwy GPS Link: https://goo.gl/maps/w4bRo2oaCsWADQcA7	100.0 metres long 5.0 metres wide	Merge to	Emergency parking
882.0	Hay South	Sturt Hwy Roundabout at Cobb Hwy GPS Link: https://maps.app.goo.gl/Sfn5kWiKvUXBYK5e9	50 metres	Load to cross to incorrect side of road and use bypass through roundabout.	Hardstand bypass installed through roundabout parallel with existing easement. Vegetation to be removed or trimmed. Several signs relocated or made removable.
1012	Balranald	Sturt Hwy at McCabe St GPS Link: https://maps.app.goo.gl/5VihDctLGuMVa4Dc7	70 metres	Left hand turn	Light poles and vegetation to be removed on outside of corner. Hardstand to be installed and kerb made trafficable. Median strips to be removed and replaced with painted lines and made trafficable.
1092	Euston	Sturt Hwy roundabout at Carey St GPS Link: https://maps.app.goo.gl/uufR6raWdwSyWMHK6	40 metres	Right hand turn using incorrect side of roundabout	Traffic islands on entry and exit to be made trafficable. Hardstand to be installed on outside of corner. 1 light pole to be removed or relocated and multiple signs relocated or made removable. Vegetation to be trimmed.
1168	Buronga	Sturt Hwy roundabout onto Silver City Hwy GPS Link: https://maps.app.goo.gl/qGczCY2sNeHvYeCE9	40 metres	Right hand turn using either option.	Major modifications required. Islands to be made trafficable, power and light pole to be relocated out of swept path. multiple signs relocated. An option to bypass Buronga is provided at the end of this section.
1171	Buronga	Silver City Hwy onto Arumpo Rd GPS Link: https://maps.app.goo.gl/B9eX3mgi1bs2eq9H6	50 metres	Right hand turn	Several signs relocated or made removable.
1202.8	Arumpo	Arumpo Rd into Site Entry # 1 GPS Link: https://maps.app.goo.gl/isnpFUM61dPrJdvP7	40 metres	Left hand turn	Hardstand to be installed on inside of corner. Vegetation to be removed or trimmed. Gate and fence to be modified. All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads.
1203	Arumpo	Arumpo Rd into Site Entry # 2 GPS Link: https://maps.app.goo.gl/iscWEaj036ECc2vE9	40 metres	Right hand turn	Hardstand to be installed on inside and outside of corner. Vegetation to be removed or trimmed. Gate and fence to be modified. All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads.

0.0 Km's: Mayfield No.4 onto Selwyn Street at Mayfield

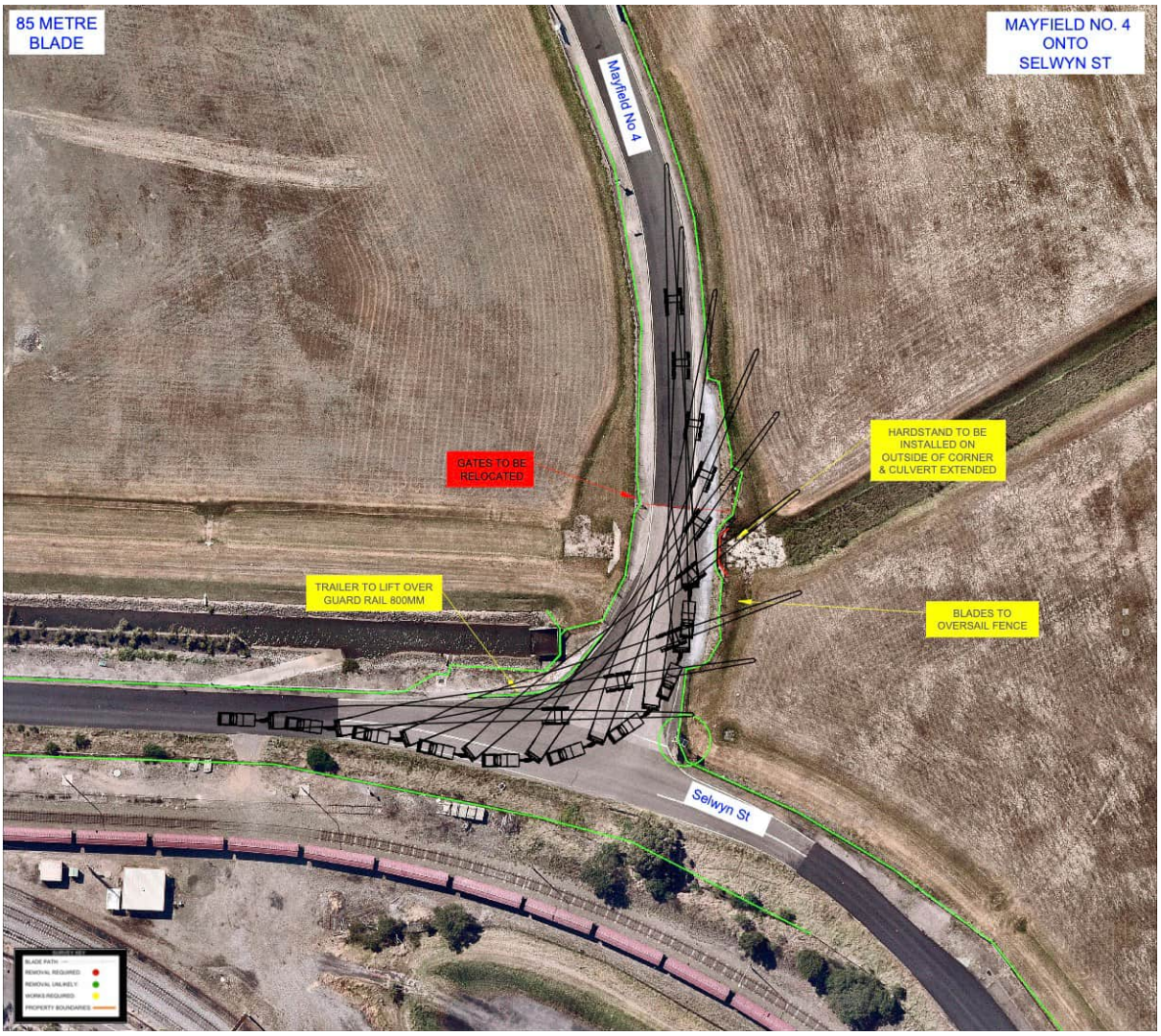


Figure 18 - Mayfield No.4 onto Selwyn Street at Mayfield

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/afLwPYKuNdm
PROCEDURE: Right hand turn.
ROAD MODIFICATIONS: Hardstand will need to be added to the left entry and exit of the corner. The existing culvert will need to be extended. Some signs will need to be relocated and or made removable and some fence and gate will need to be relocated.

0.4 Km's: Rail crossing over Selwyn Street at Mayfield

Figure 19 - Rail crossing over Selwyn Street at Mayfield

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/864FhMSaF9P2
PROCEDURE: Travel directly ahead over the crossing.
COMMENTS: Large width clearance and good ground clearance over this crossing. Police and escorts to control local traffic either side of the crossing. ARTC approval will need to be obtained to travel over this crossing. Likely to cross with caution, no escort required.
ROAD MODIFICATIONS: No works are required.

1.3 Km's: Selwyn Street onto Industrial Drive, via George Street at Mayfield

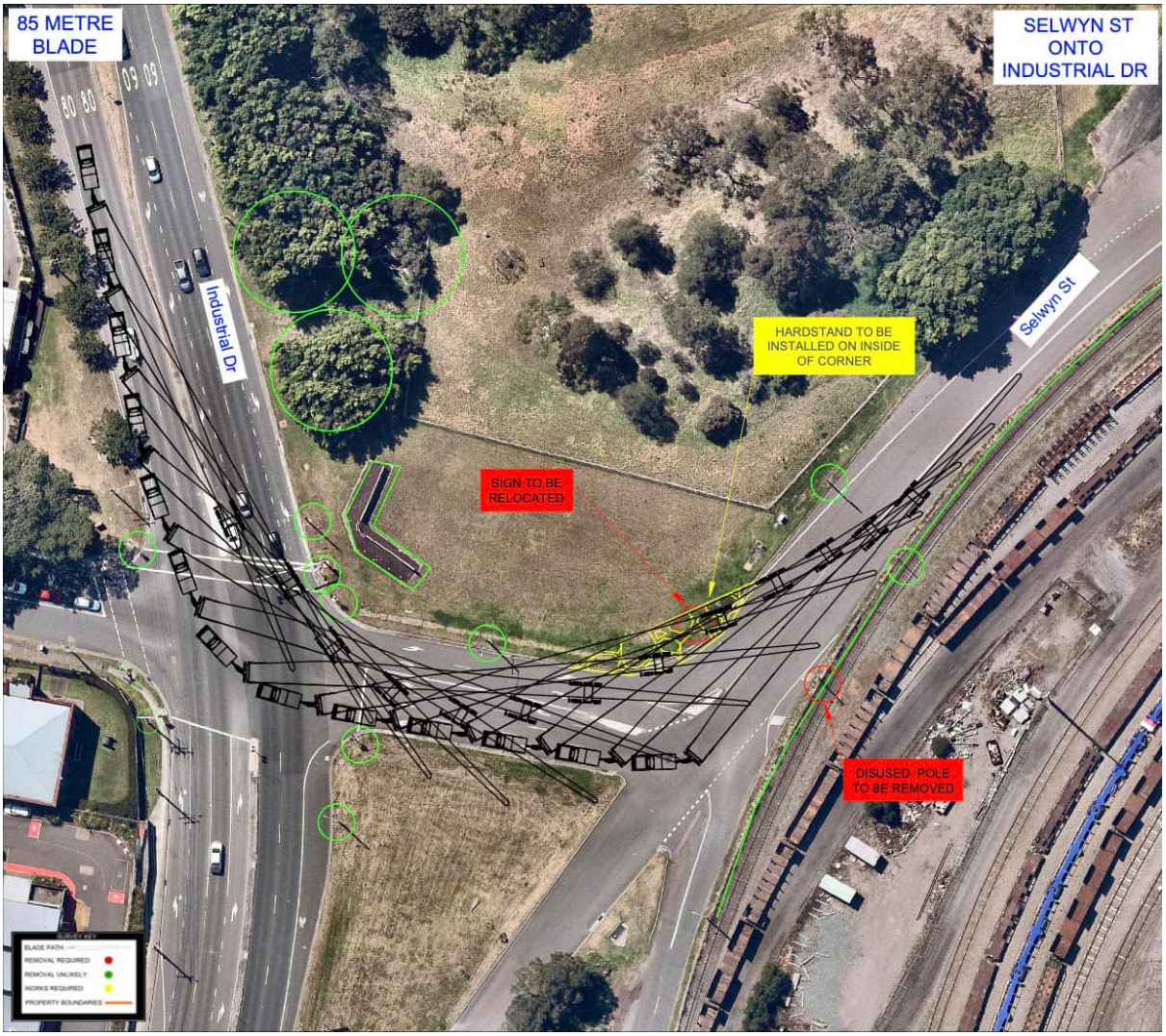


Figure 20 - Selwyn Street onto Industrial Drive

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/brPRAckLr572
PROCEDURE: Right hand turn from Selwyn Street through George Street and onto Industrial Drive. Entering Industrial Drive, the prime mover will cross from the correct side to the correct side with the trailer cutting the corner and travelling over the centre median strip.
ROAD MODIFICATIONS: The first right hand turn through George Street will need a sign made removable and a disused pole on the overhang removed. On the inside of the corner hardstand will need to be added, a sign made removable.

4.9 Km's: Standard overhanging Traffic signals Mayfield to Hunter Expressway

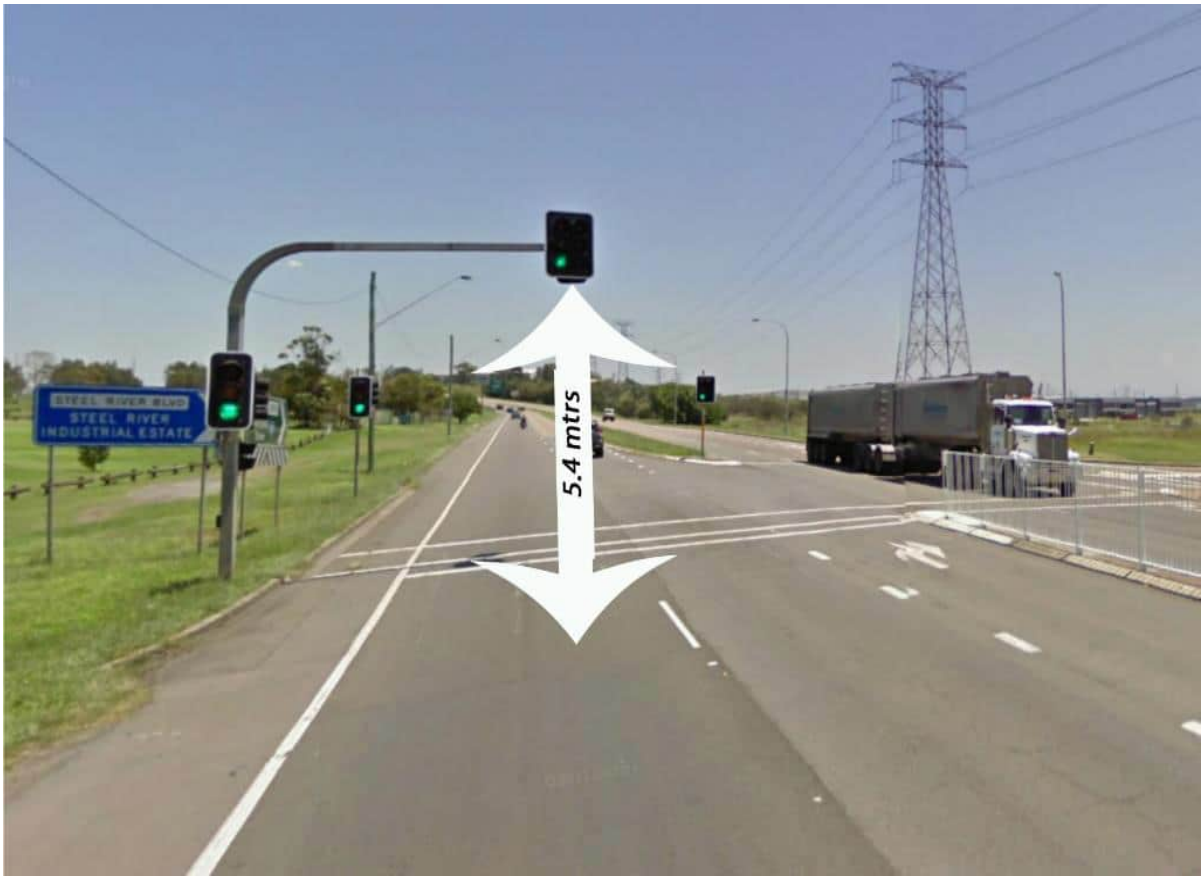


Figure 21 - Typical Traffic Signal Mayfield to Hunter Exp

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/5DpD3b7KnT72
PROCEDURE: Overhanging signals while travelling through the intersection.
COMMENTS: The lowest traffic signal on route has 5.4 metres clearance. This signal is on the corner of Steel River Blvd at Mayfield West. Loads with an overall height of 5.3 or higher, can avoid this signal by travelling in the centre lane. Loads to slow down while doing this manoeuvre. All other signals exceed 5.6 metres high on this section of road.
ROAD MODIFICATIONS: No works are required.

5.5 Km's: Industrial Drive onto Maitland Road at Mayfield West

Figure 22 - Industrial Drive onto Maitland Road

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/Kn49dhWG2qG2
PROCEDURE: Right hand turn from Industrial Drive onto Maitland Road. The blades will need to cross to the incorrect side of the intersection 200 metres prior, before crossing back over to the correct side 120 metres to the north of the intersection.
ROAD MODIFICATIONS: two signs will need to be made removable or relocated. Traffic islands to be trafficable.

14.8 Km's: New England Highway/Maitland Rd at Tarro.

Figure 23 - New England Highway/Maitland Rd at Tarro

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/hkKgsZMfdVJncRdu6
PROCEDURE: Left hand bend.
ROAD MODIFICATIONS: No works required. The blades will stay on the correct side of the road for the entirety.
Spotter to keep the driver informed throughout the procedure.

18.4 Km's: Intersection of John Renshaw Drive and M1 at Beresfield

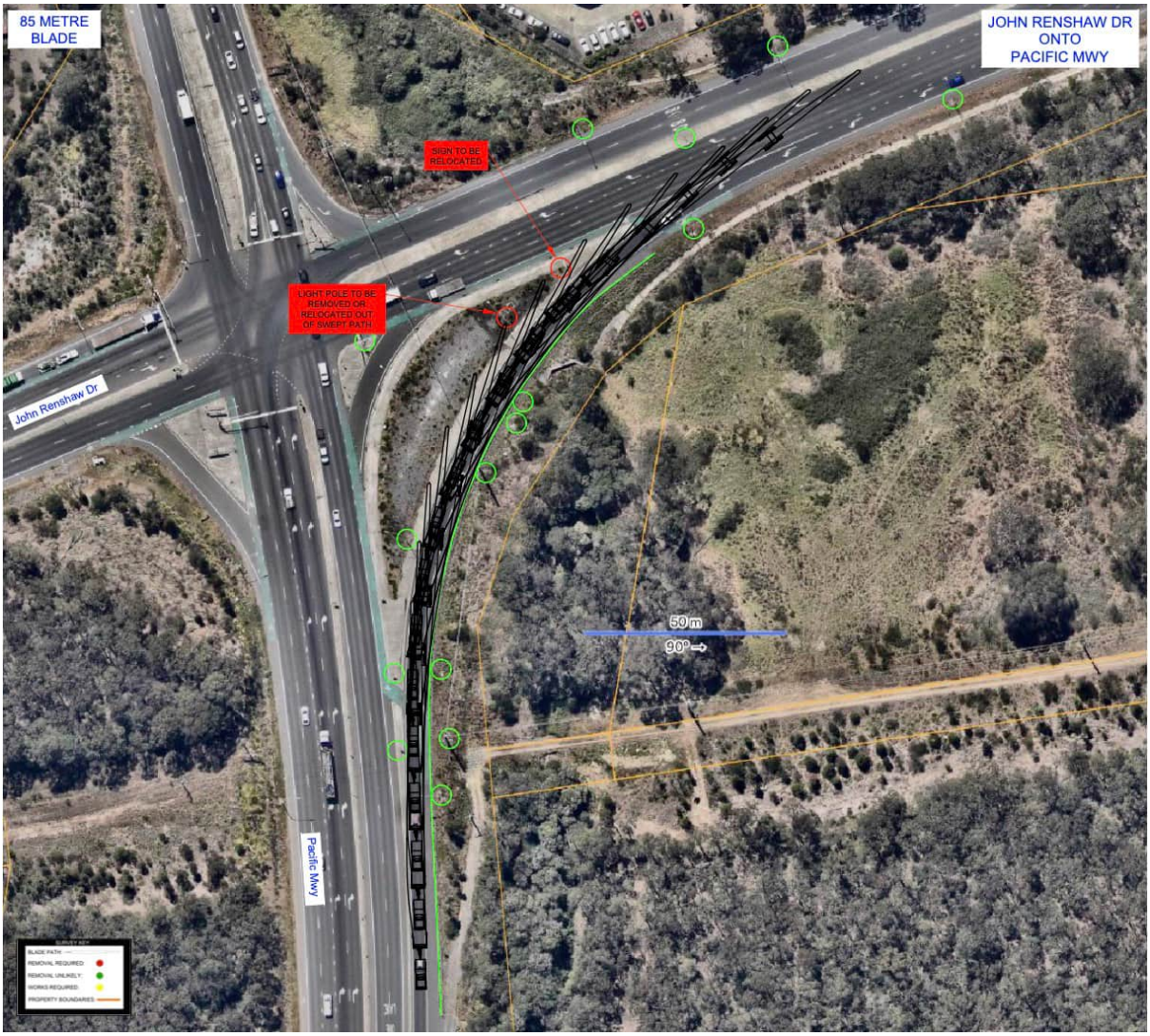
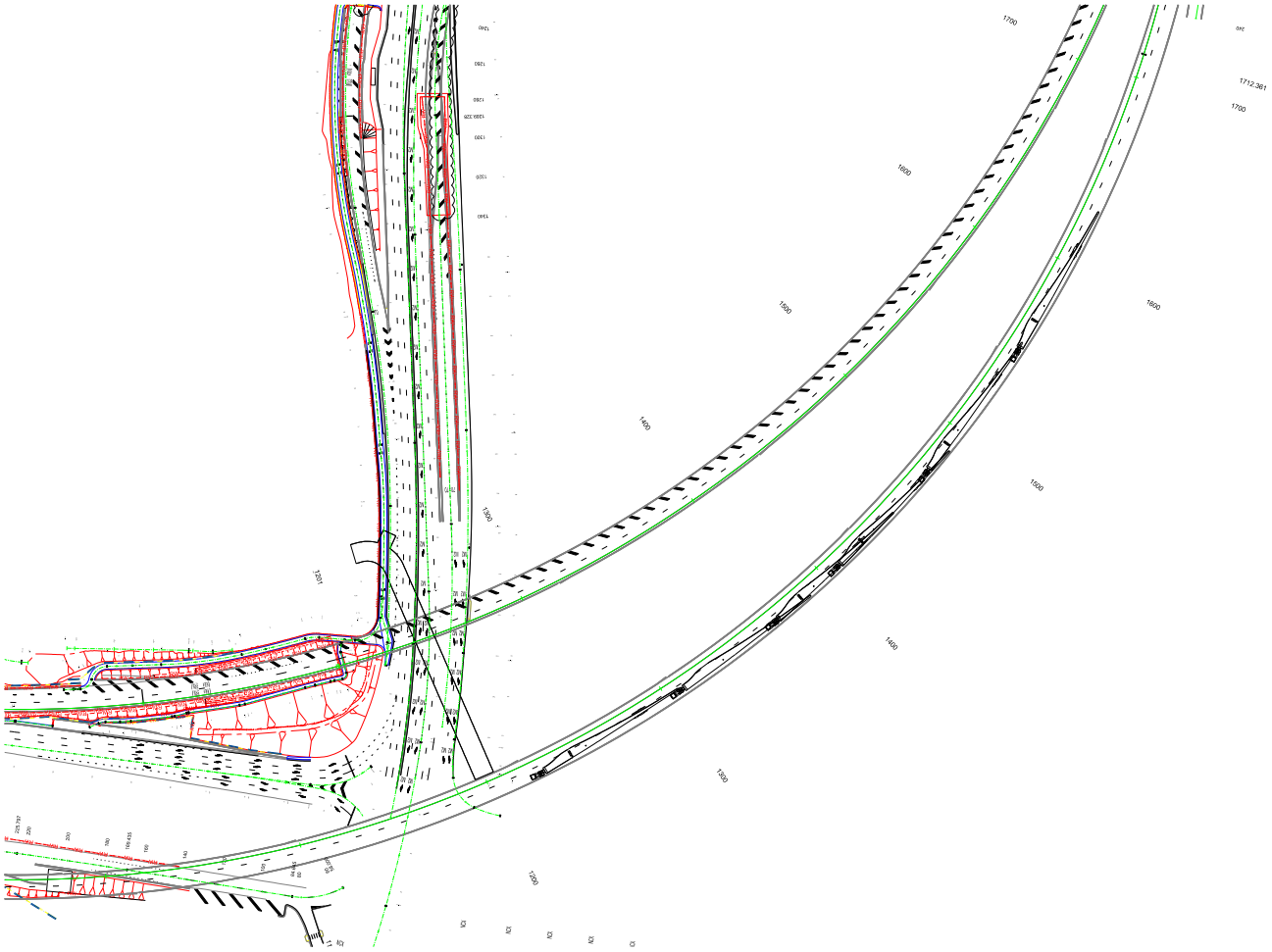


Figure 24 - John Renshaw Drive onto Pacific Mwy

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/A34ihxCjM5wfRDdq6
PROCEDURE: Left hand turn via slip lane.
ROAD MODIFICATIONS: 1 x light pole to be removed or relocated on the outside of corner for tail swing. Signs to be relocated/removed.

146.1 – 155.9 Km's: M1 Motorway onto M2 Motorway through the Northconnex tunnel.



GPS LINK FOR THIS LOCATION: https://goo.gl/maps/BZaXJ5V6CmT2Pt8v8
PROCEDURE: Travel through the Northconnex tunnel.
COMMENTS: The tunnel has very large radius corners that will be no issues for the blades. The tightest section is shown above.
Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warm all traffic. Maximum height of 5.0 metres.
ROAD MODIFICATIONS: No works are required.

614.6 Km's: 1st Roundabout on the Sturt Highway at Wagga Wagga

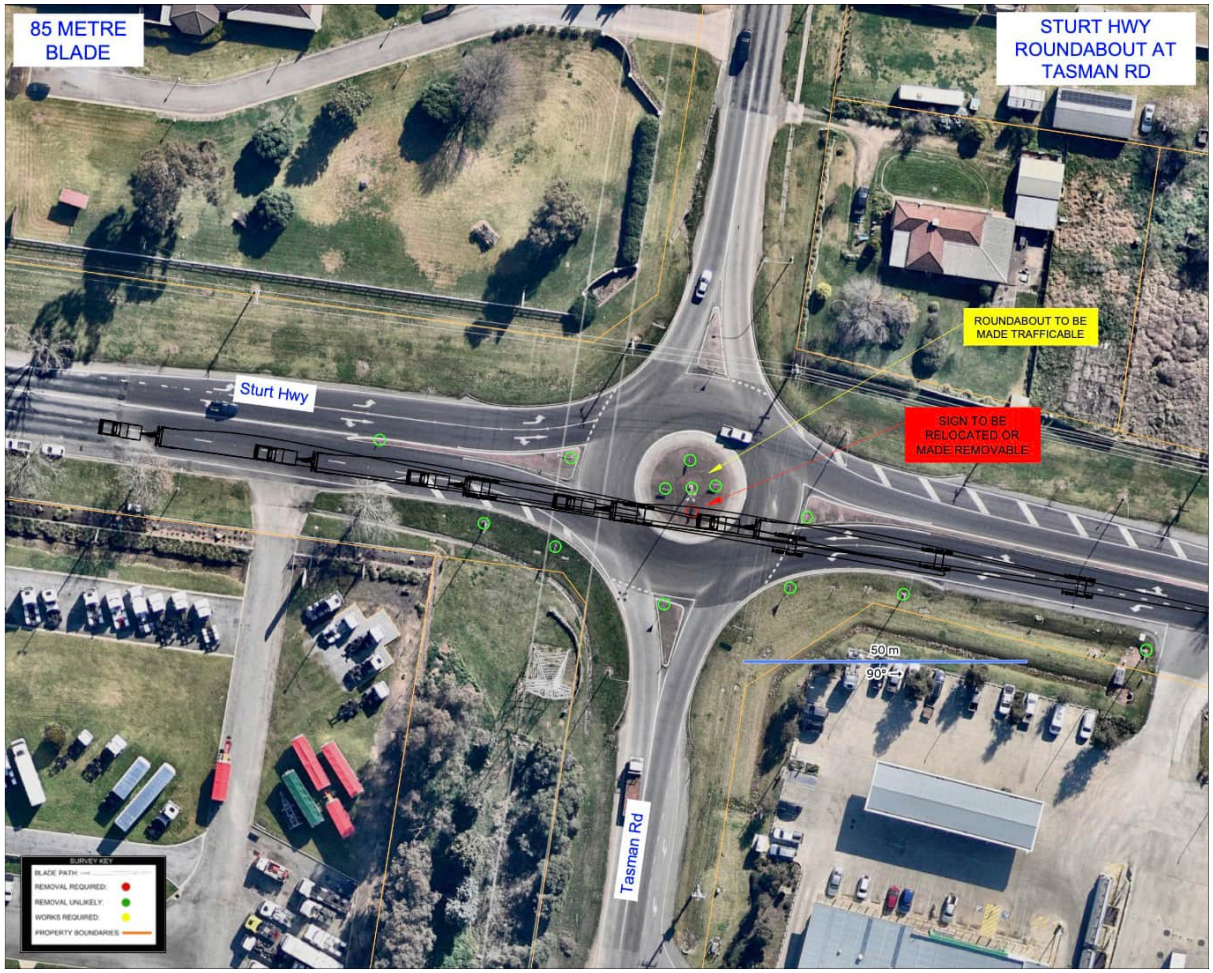


Figure 25 - Sturt Hwy Roundabout at Tasman Rd

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/7VDWUyW8KnUhCEdd7
PROCEDURE: Continue straight ahead. The truck will need to cut across the centre of the roundabout.
warm all traffic.
ROAD MODIFICATIONS: Sign to be removed in the middle of the roundabout. Roundabout made trafficable.

617.3 Km's: 2nd Roundabout on the Sturt Highway at Wagga Wagga

Figure 26 - Sturt Hwy Roundabout at Kooringal Rd

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/VeavHs6e4AjLagqDA
PROCEDURE: Continue straight ahead. The truck will need to cut across the centre of the roundabout.
ROAD MODIFICATIONS: Sign to be removed in the middle of the roundabout. Handstand to be installed on roundabout and roundabout made trafficable.

618.4 Km's: 3rd Roundabout on the Sturt Highway at Wagga Wagga

Figure 27 - Sturt Hwy Roundabout at Norton St

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/dBrte59BvHyvcGSr5
PROCEDURE: Continue straight ahead. The truck will need to cut across the centre of the roundabout.
ROAD MODIFICATIONS: Sign to be removed in the middle of the roundabout. Roundabout made trafficable.

618.75 Km's: Sturt Hwy under Edward St Rail Bridge

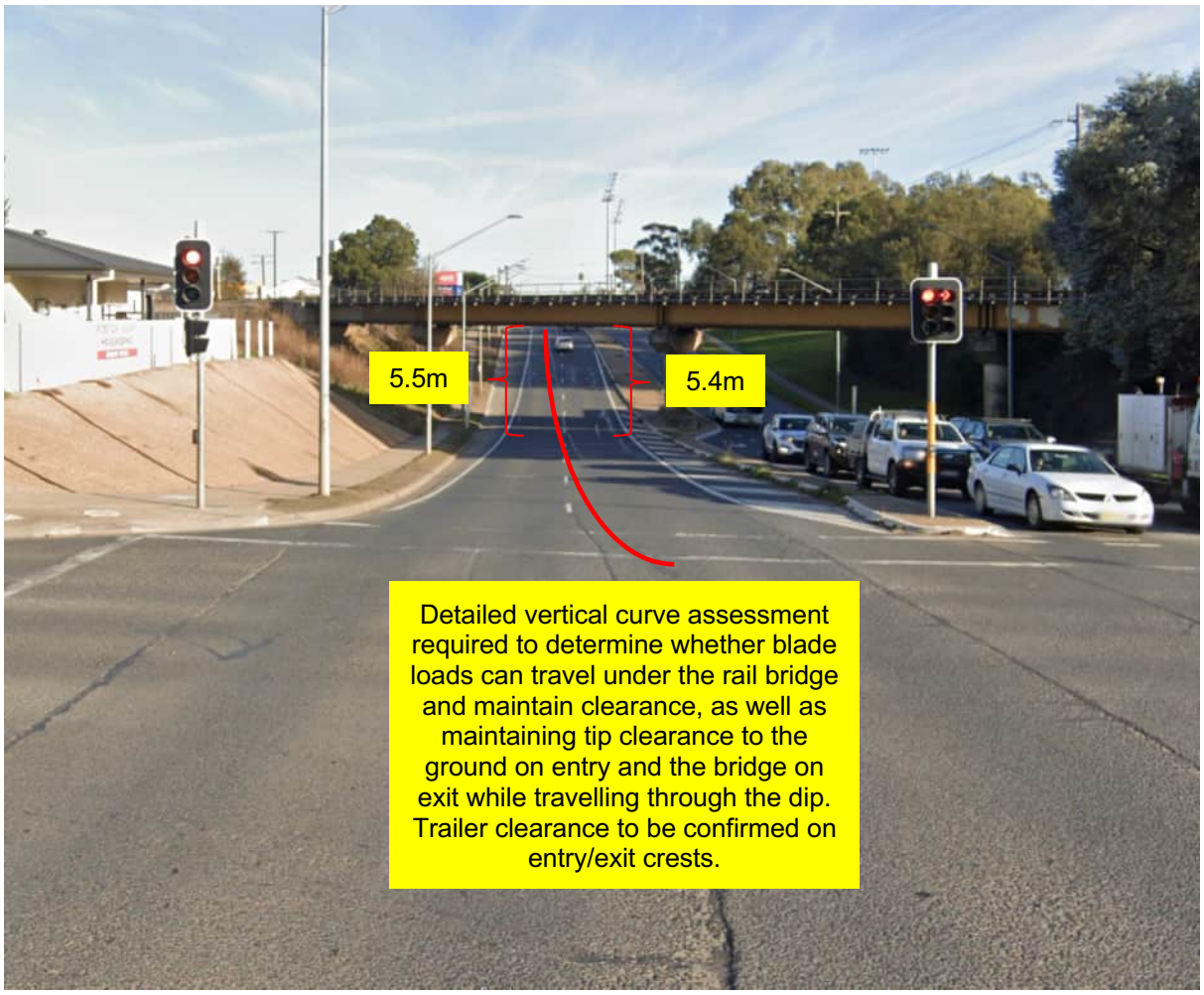


Figure 28 - Sturt Hwy under Edward St Rail Bridge

621.5 Km's: 4th Roundabout on the Sturt Highway at Wagga Wagga

Figure 29 - Sturt Hwy Roundabout at Pearson St

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/fx388veUAjbykiyPA
PROCEDURE: Continue straight ahead. The truck will need to cut across the centre of the roundabout.
ROAD MODIFICATIONS: Signs to be removed in the middle of the roundabout. Roundabout made trafficable.

711.0Km's: Left hand bend to stay on the Sturt Highway at Gillenbah

Figure 30 - Left hand bend on the Sturt Highway at Gillenbah

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/C7gJ8ouDVdpcH5Rz7
PROCEDURE: Left hand Turn. The truck will need to cross onto the wrong side of the road for about 100m by cutting across the medium strip.
ROAD MODIFICATIONS: Several signs to be relocated or made removable. Traffic island to be removed and replaced with paint to make trafficable.

882.0 Km's: Sturt Hwy Roundabout at Cobb Hwy South Hay

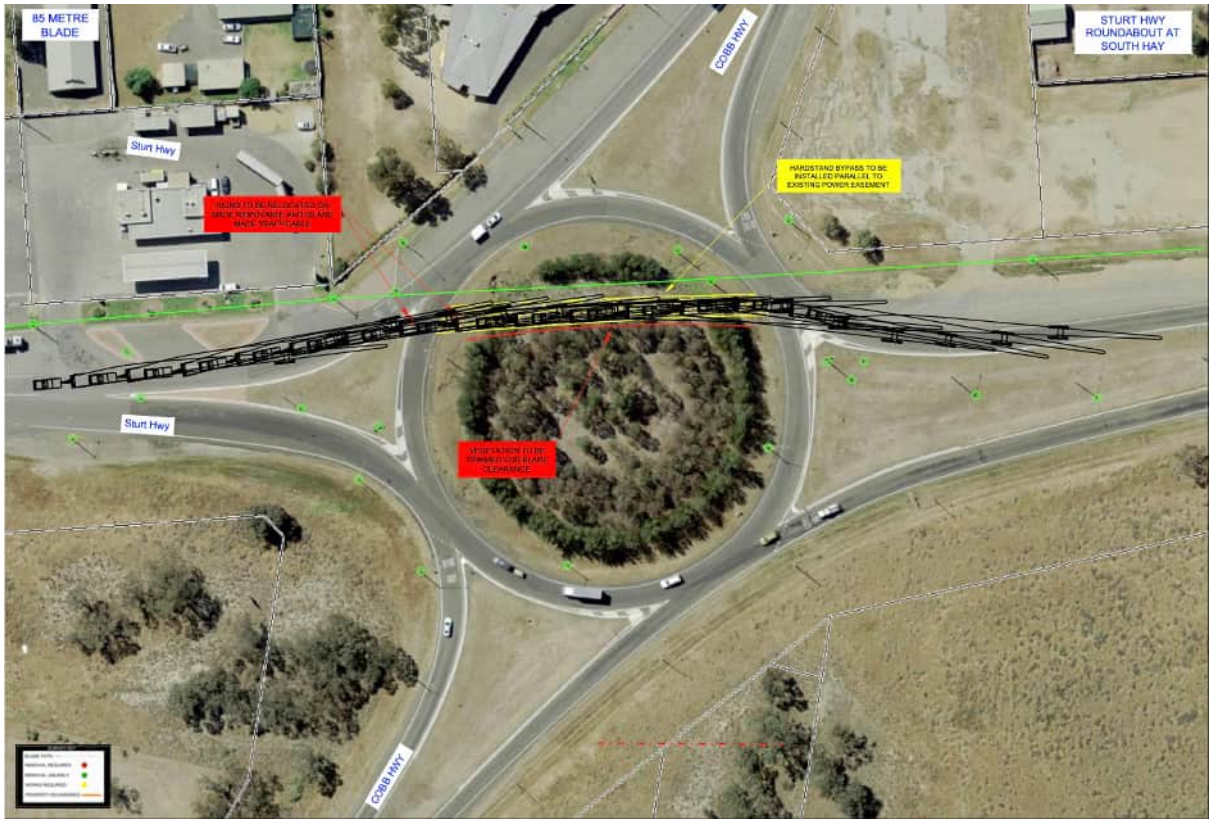


Figure 31 - Sturt Hwy Roundabout at Cobb Hwy

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/Sfn5kWiKvUXBYK5e9
PROCEDURE: Load to cross to incorrect side of road and use bypass through roundabout.
ROAD MODIFICATIONS: Hardstand bypass installed through roundabout parallel with existing easement. Vegetation to be removed or trimmed. Several signs relocated or made removable.

1012 Km's: Sturt Hwy at McCabe St Balranald

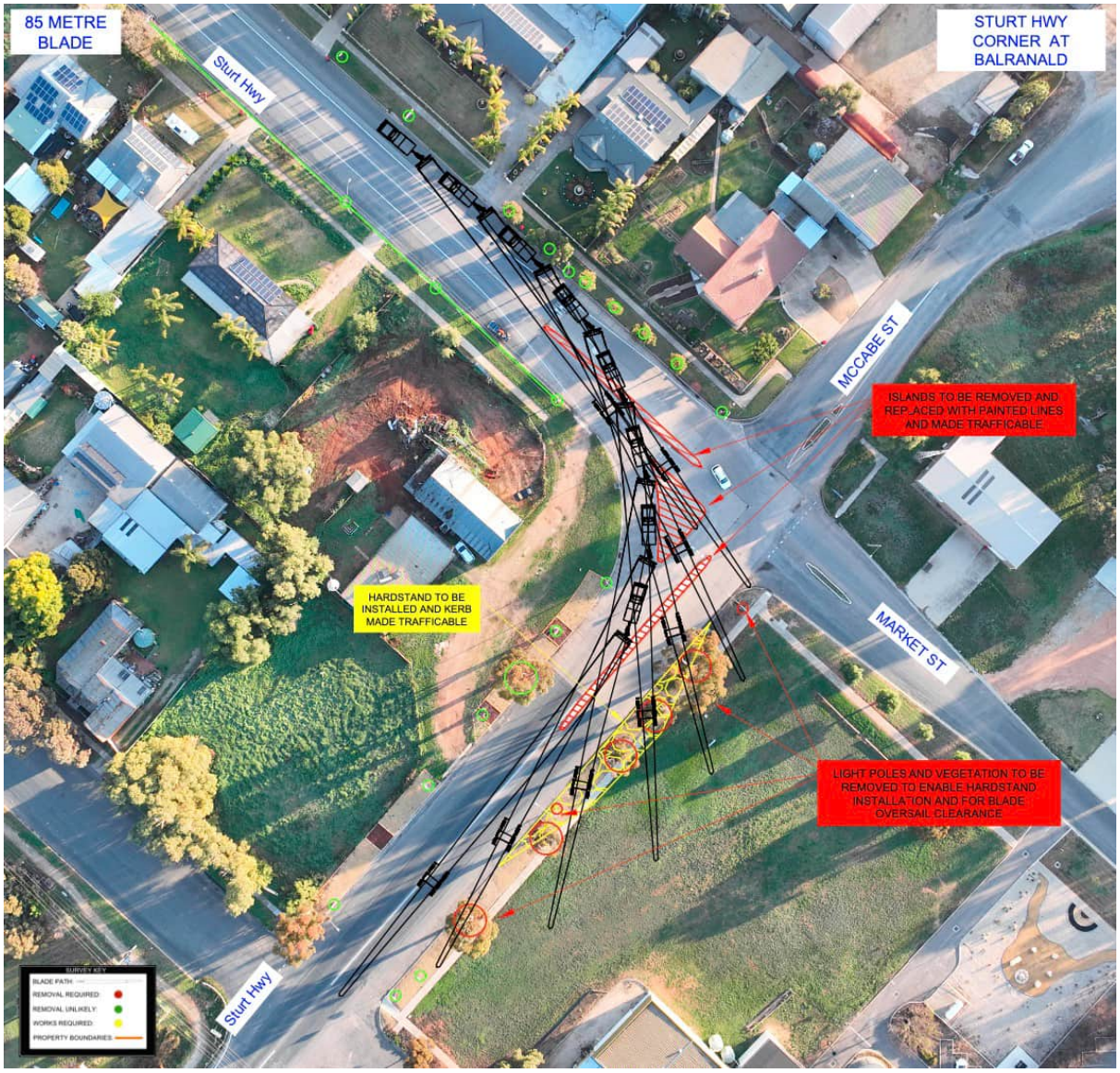


Figure 32 - Sturt Hwy at McCabe St

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/5VjhDcLGuMVa4Djo7
PROCEDURE: Left hand turn.
ROAD MODIFICATIONS: Light poles and vegetation to be removed on outside of corner. Hardstand to be installed and kerb made trafficable. Median strips to be removed and replaced with painted lines and made trafficable.

1092 Km's: Sturt Hwy Roundabout at Carey St

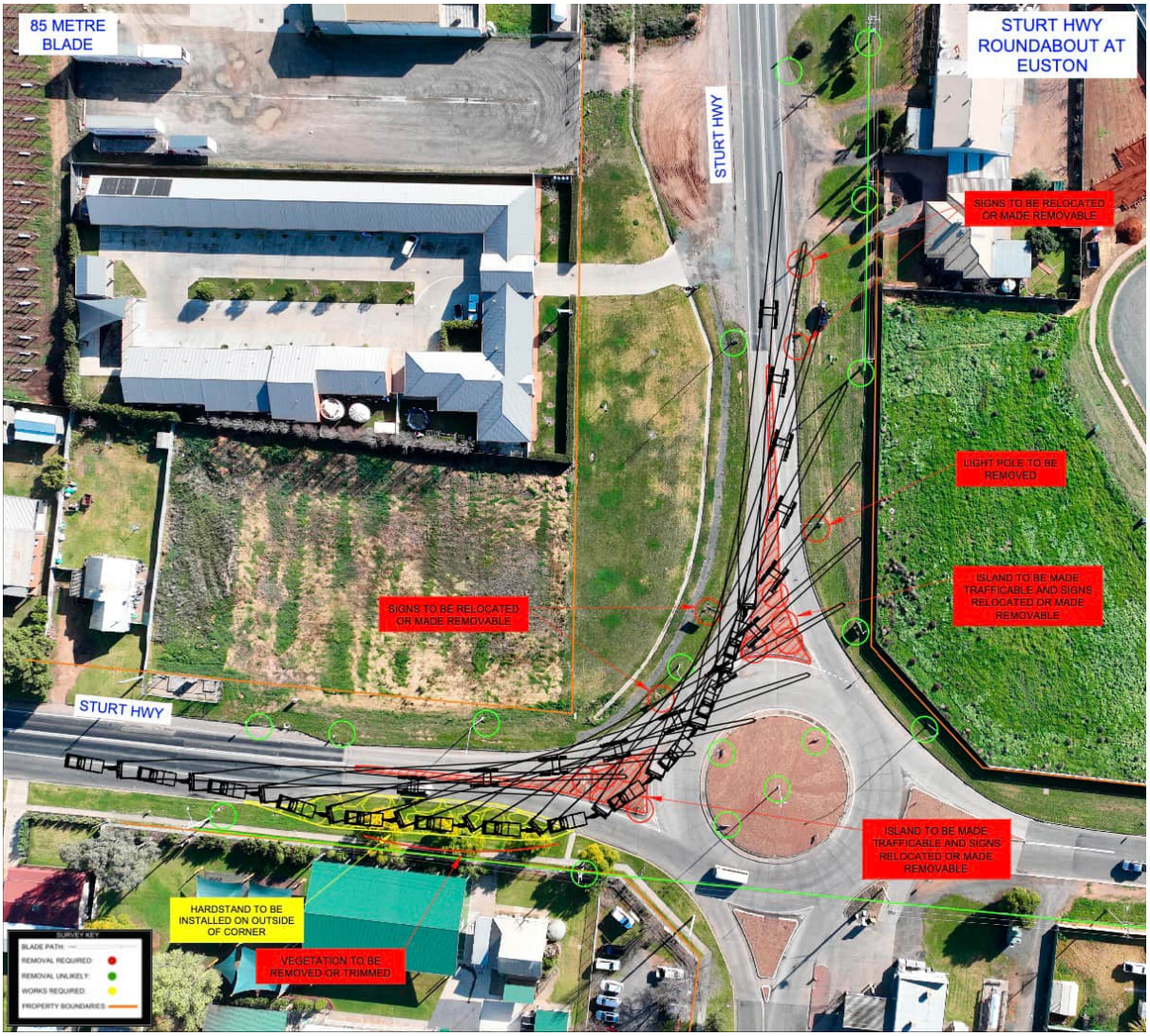


Figure 33 - Sturt Highway Roundabout at Carey St

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/uufR6raWdwSyWMHK6
PROCEDURE: Right hand turn using incorrect side of roundabout.
COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
ROAD MODIFICATIONS: Traffic islands on entry and exit to be made trafficable. Hardstand to be installed on outside of corner. 1 x light pole to be removed or relocated and multiple signs relocated or made removable. Vegetation to be trimmed.

1168 Km's: Sturt Hwy Roundabout onto Silver City Hwy

Figure 34 - Sturt Hwy Roundabout onto Silver City Hwy

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/qGczCY2sNeHvYeQE9
PROCEDURE: Right hand turn using either option as selected.
COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
ROAD MODIFICATIONS: Major modifications required. Isands to be made trafficable. Power and light poles to be relocated out of swept path. Multiple signs to be relocated or made removable. An option to bypass Buronga is provided at the end of this section.

1171 Km's: Silver City Hwy onto Arumpo Rd

Figure 35 – Silver City Hwy onto Arumpo Rd

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/B9eX3mgi1bs2eq9H6
PROCEDURE: Right hand turn.
COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
ROAD MODIFICATIONS: Several signs/delineators relocated or made removable.

1202.8 Km's: Arumpo Rd into Site Entry # 1

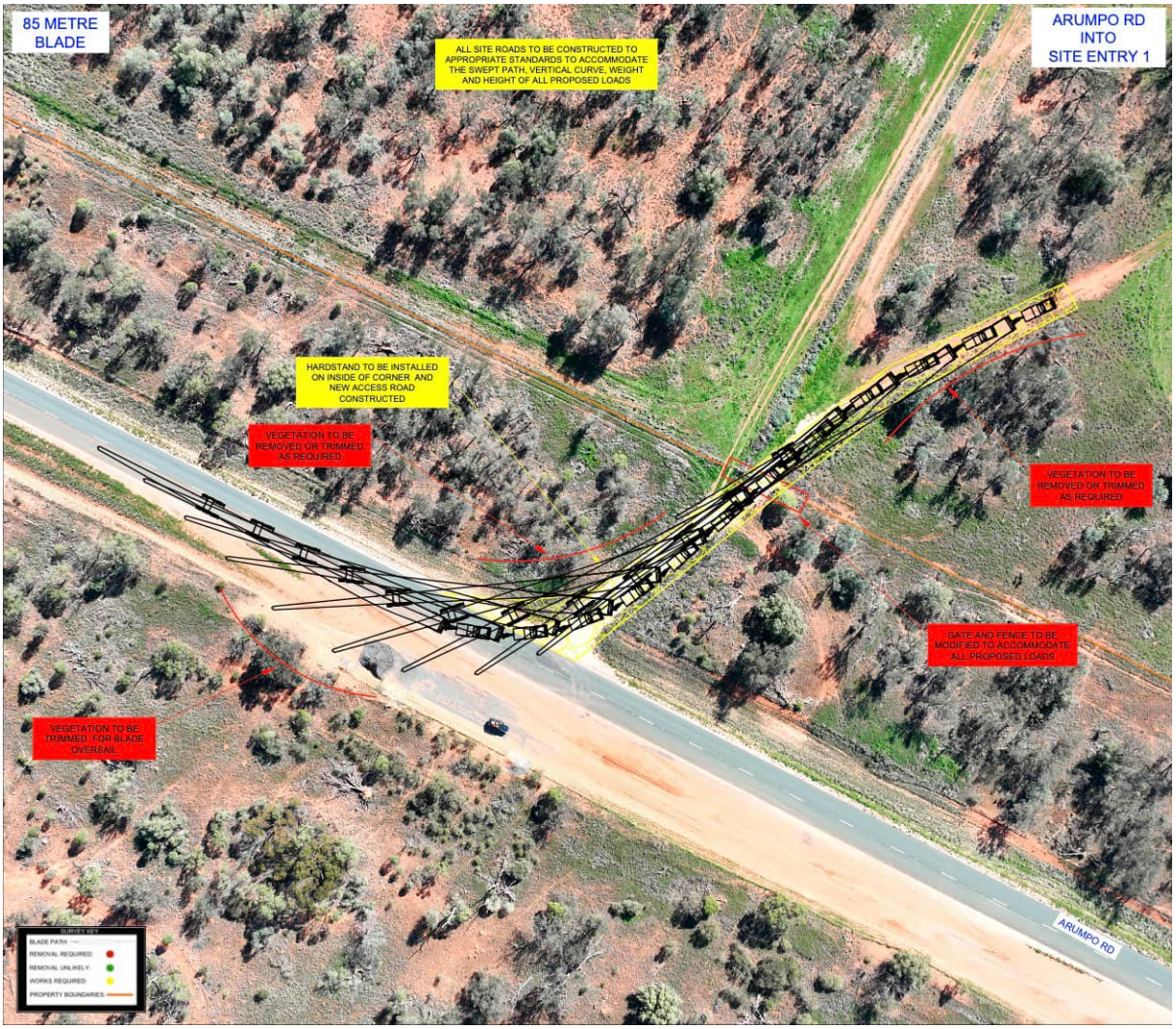


Figure 36 – Site Entry # 1

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/isnpFUM61dPrJdvP7
PROCEDURE: Left hand turn.
COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
ROAD MODIFICATIONS: Hardstand to be installed on inside of corner. Vegetation to be removed or trimmed. Gate and fence to be modified. All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads.

1203 Km's: Arumpo Rd into Site Entry # 2

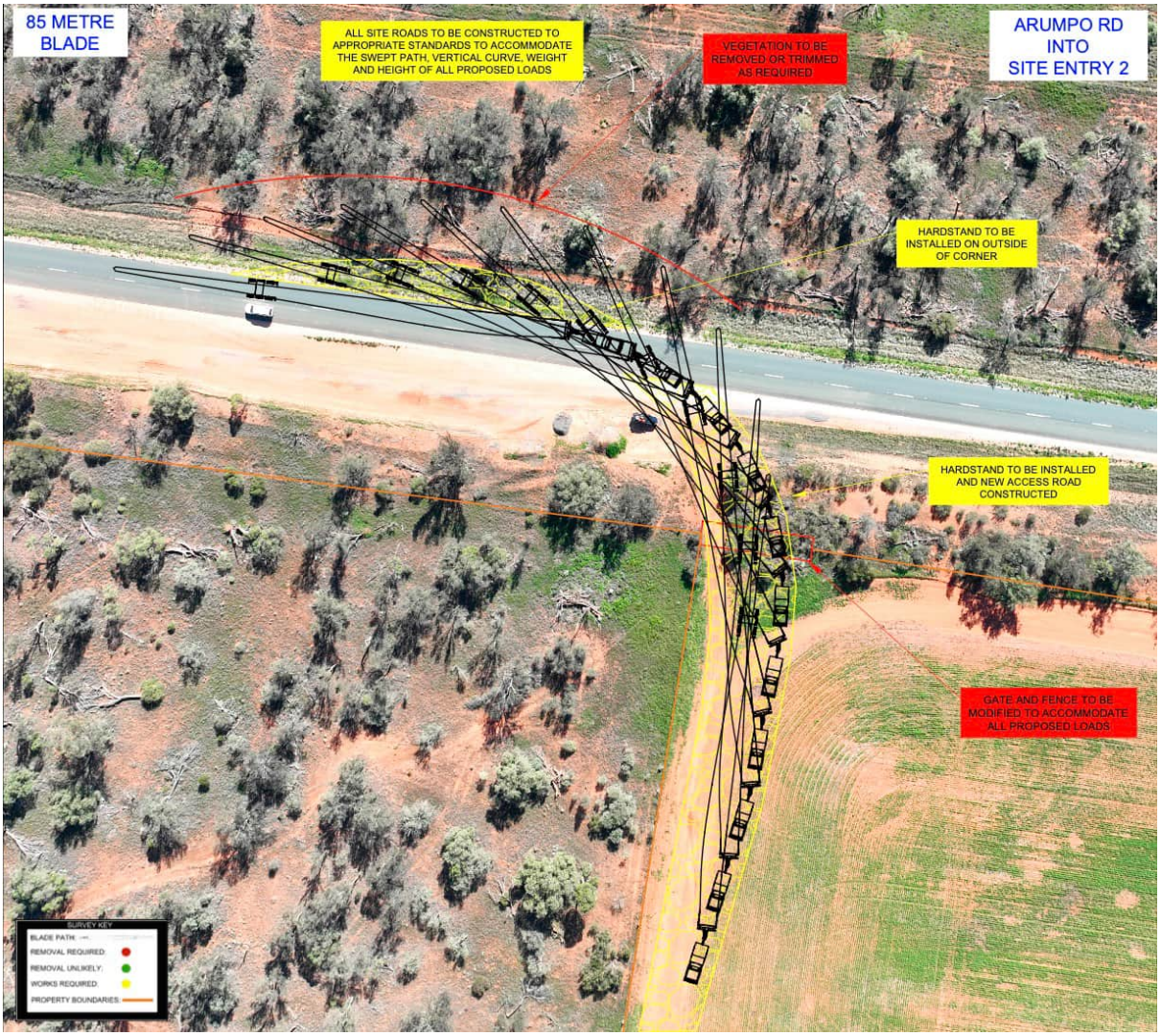


Figure 37 - Site Entry # 2

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/iscWEaj936ECc2vE9
PROCEDURE: Right hand turn.
COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
ROAD MODIFICATIONS: Hardstand to be installed on inside and outside of corner. Vegetation to be removed or trimmed. Gate and fence to be modified. All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads.

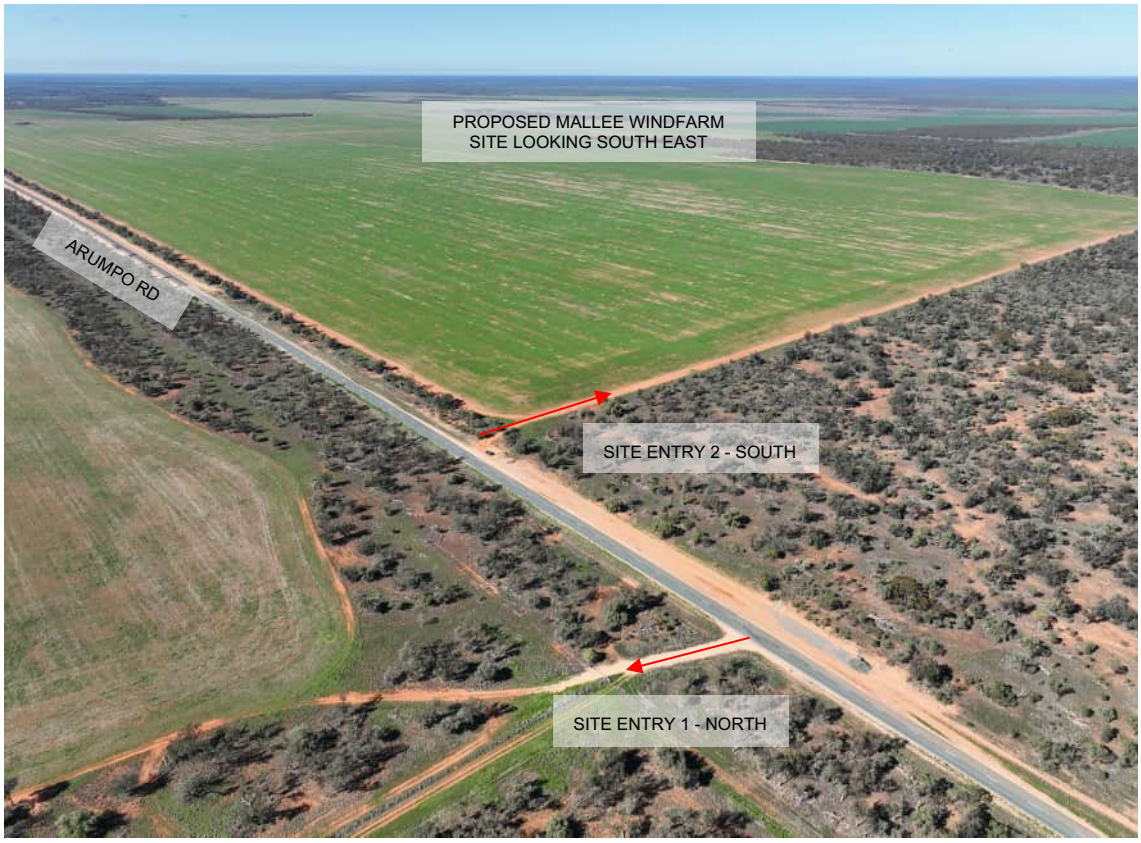


Figure 38 - Proposed Windfarm Entry Looking South East

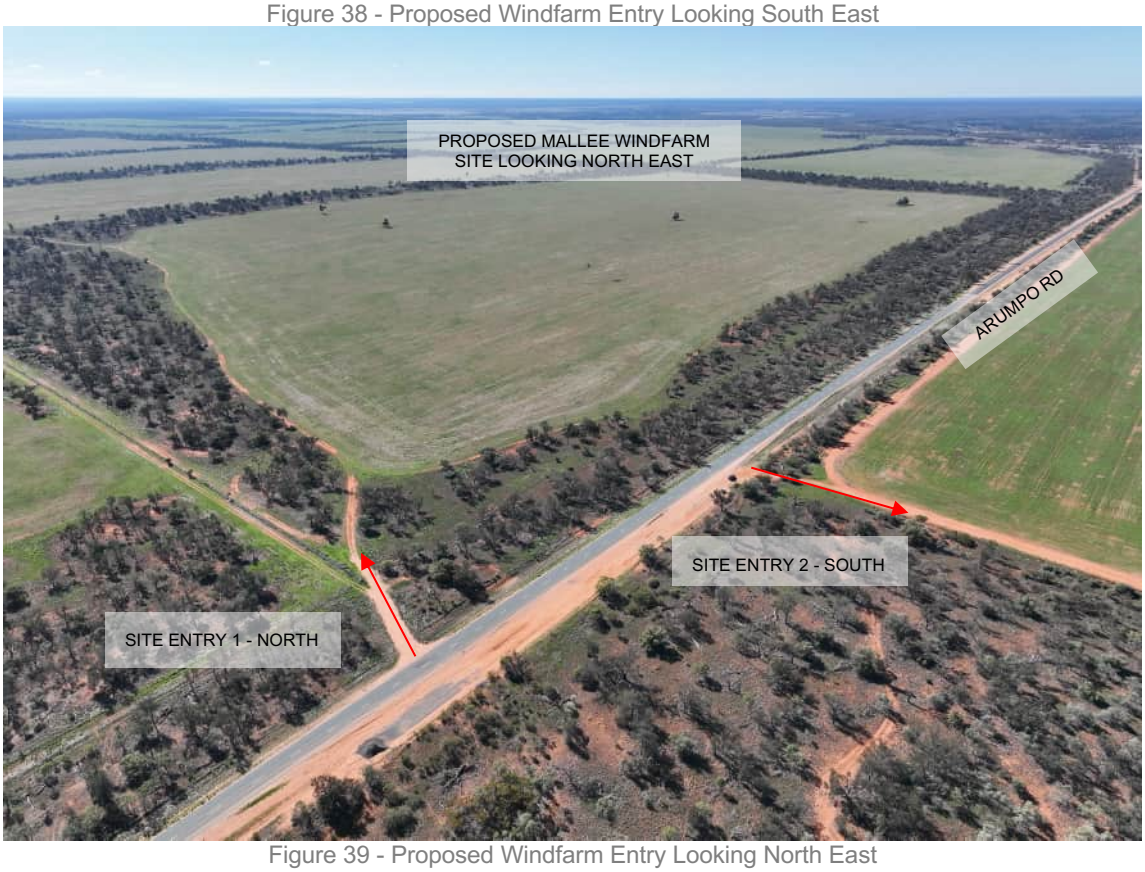


Figure 39 - Proposed Windfarm Entry Looking North East

Alternate Blade Route to Bypass Buronga

The roundabout from the Sturt Hwy onto the Silver City Hwy at Buronga is extremely tight for the proposed blade type. The swept path required is constrained on all sides by electrical and telecommunications infrastructure, private property and road infrastructure. As a result, significant upgrading will be required as well as negotiating with private land holders, infrastructure owners and road managers.

Therefore, a route has been identified that may provide a method for bypassing Buronga. The route uses Dansons Road to access the Southern end of the windfarm, from where the remainder of the site could be accessed via internal roads. During on site scoping Dansons road was not accessible due to private property signage so the condition of the road could not be determined. However, the available aerial imagery appears to indicate the road is a gazetted road and in a maintained condition. If the viability of this road can be proven, then further onsite scoping will be required to confirm the routes suitability.

Route: https://maps.app.goo.gl/RMGLPjVMLJ24xs1D8

Figure 40 - Buronga Bypass Route Option

Figure 41 - Dansons Rd Looking North

614.00 Km's: Sturt Hwy onto Dansons Rd

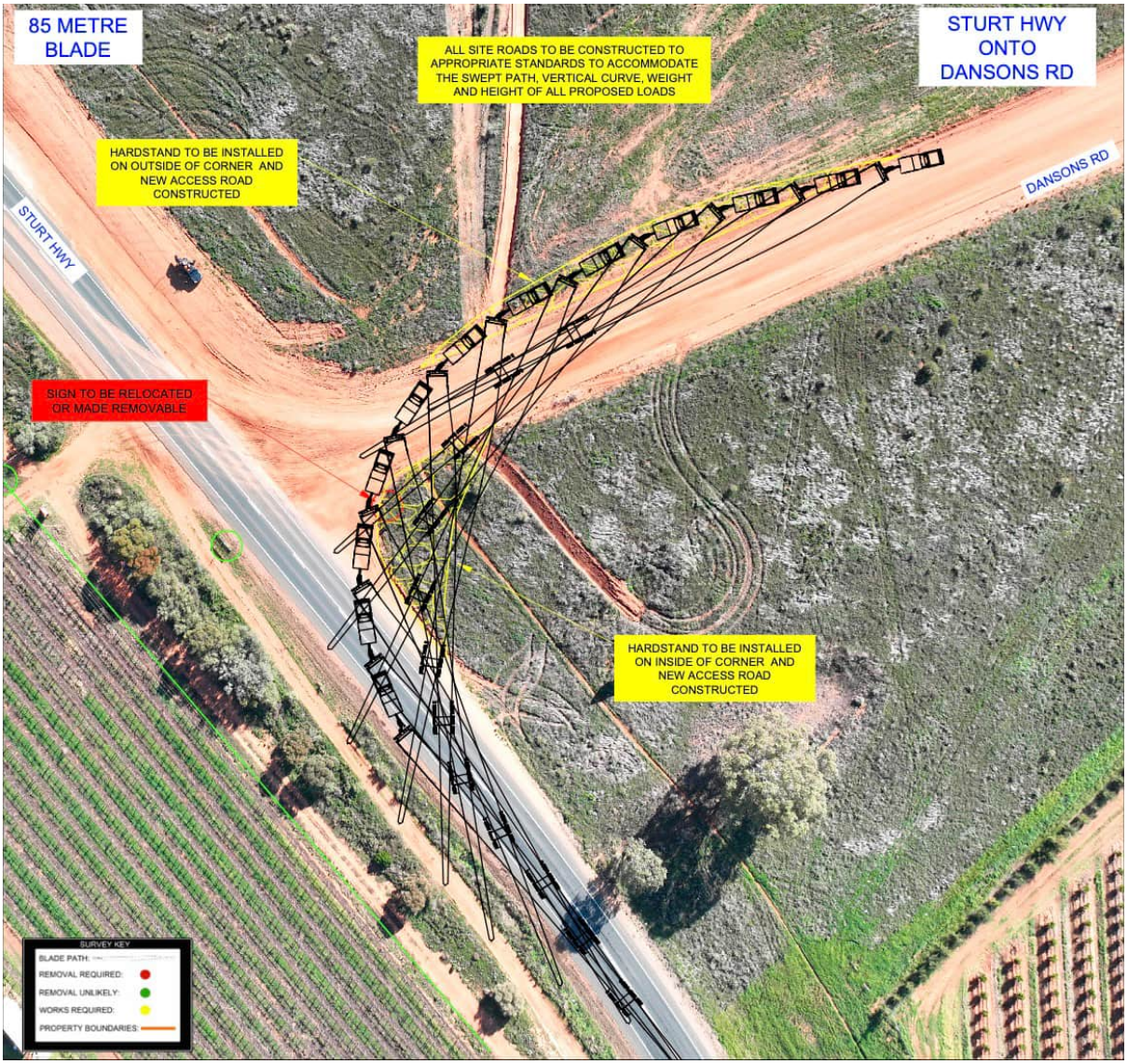


Figure 42 - Sturt Hwy onto Dansons Rd

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/aKYh4eZU3TBDvfNS6
PROCEDURE: Right hand turn.
COMMENTS: Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic.
ROAD MODIFICATIONS: Hardstand to be installed on inside and entry to corner. sign relocated or made removable and vegetation trimmed for blade clearance.

10.0 Conclusion Route 1

After studying all options and undertaking a route survey, this route in its current condition will require a moderate to major amount 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 moderate to 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 outlined in the report.

OVERHEAD STRUCTURES: (5.0 Maximum loaded height)

- The maximum loaded height through the Northconnex tunnel should not exceed 5.00m.
- The rail overpass at wagga needs further investigation to determine the impact the change in vertical curve around this overpass may have.
- Loads higher than 5.0m cannot use this route and will need to travel along route 2 (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 5.0 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 Edwards Road rail bridge under pass will require a detailed vertical curve assessment to determine whether blade loads can travel through the dip and maintain clearance to the bridge, as well as blade tip clearance to the road on entry and bridge on exit. Also trailer clearance on entry and exit crests will require confirmation.

VEGETATION:

- The route requires a moderate amount of vegetation clearing at various locations as shown in the report.

PAVEMENT:

- The Pavement on all roads have adequate highway pavement.
- Site roads which are gravel will require grading prior to commencement and to be maintained for the duration of the project. Site roads should be all weather otherwise the roads may become unusable in wet conditions which will impact delivery schedules.

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.

11.0 Route Survey 2: High Load Route. Maximum Loaded Height 5.9m

DISTANCE: 1324 kilometres
GPS LINK: https://maps.app.goo.gl/8GzMtJr3pMLzkbww5
ROUTE: Selwyn street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Golden Highway, Denman Road, Bengalla Road, Wybong Road, Golden Highway, Boothenba Road,Troy Bridge Road, Bunglegumbie Road, Mitchell Highway, Manildra Street, Derribing Avenue, Algalah Street, Tomingley Road, Newell Highway, Thomas Street, Moulden Street, Henry Parkes Way, Westlime Road, Hartigan Avenue, Newell Highway, Compton Road, Showground Road, Newell Highway, Sturt Highway, Silver City Hwy, Arumpo Road.

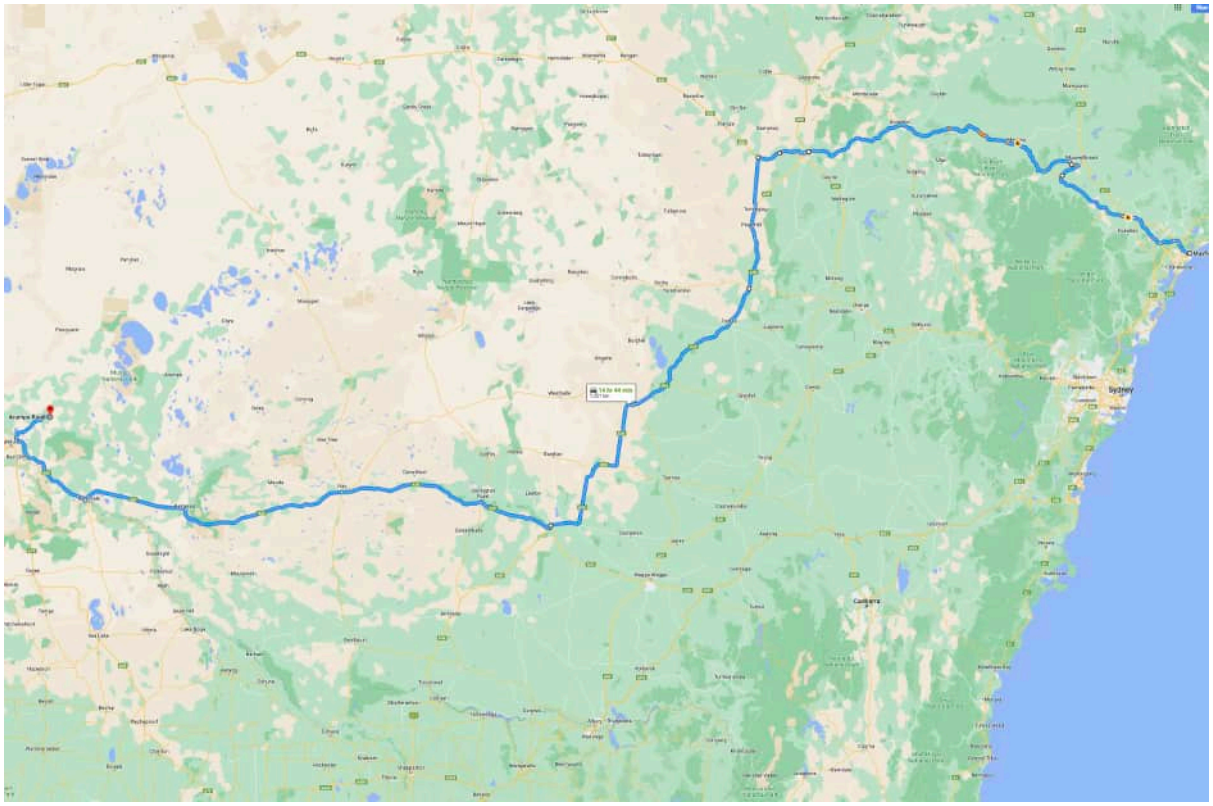


Figure 43 - Route 2

KEY	
CRITICAL	
CAUTION	
EMERGENCY PARKING	

KM index	Location	Section of road	Current clearance	Procedure	Notes
0.0	Mayfield	Mayfield #4 berth onto Selwyn Street https://goo.gl/maps/afLwPYKuNdm	Length: 70.0 Mtrs Width: 8.0 Mtrs	Moderate right hand turn	No problems with the towers on this section of road.
0.4	Mayfield	Selwyn Street over rail crossing https://goo.gl/maps/AmohE54hKSz	Length: 90 metres Width: 9.0 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
1.3	Mayfield	Selwyn Street onto George Street https://goo.gl/maps/gXeHvBtCp4D2	Length: 40.0 Mtrs Width: 8.0 Mtrs	Right hand turn	No problems with the towers on this section of road.
1.4	Mayfield	George Street onto Industrial Drive https://goo.gl/maps/s4ayrsuoAsD2	Length: 40.0 Mtrs Width: 8.0 Mtrs	Right hand turn	No problems with the towers on this section of road.
4.9	Mayfield	Industrial Drive under traffic signals https://goo.gl/maps/YmqhiS2iR582	Height: 5.4 metres	Travel directly ahead in the far right lane.	The lowest traffic signal on route is at the intersection of Steel River Blvd. Trucks that exceed 5.3 metres will need to travel in the right-hand lane. Clearance in the right end lane is 6.0 metres. Base towers (6.1m) will need to be lowered for travel through this intersection
5.5	Mayfield West	Industrial Drive onto Maitland Road https://goo.gl/maps/Kn49dhWG2qG2	Length: 40.0 Mtrs Width: 7.0 Mtrs	Right hand turn	No problems with the towers on this section of road.
6.4	Sandgate	Maitland Road over rail bridge https://goo.gl/maps/W2JWWjhfqv5UMviB7	Length: 90 metres Width: 9.0 Metres	Travel directly ahead in the right-hand lane	Approval from Rail company required to cross this structure. Travel over this structure may have specific conditions.
13.9	Hexham	New England Highway under gantry https://goo.gl/maps/YTMoFe7Aick	Height: 5.9 metres	Travel directly ahead	This is the lowest structure on route. There is no bypass around the gantry. A maximum loaded height of 5.9 metres should not be exceeded. Base towers (6.1m) will need to be lowered before travelling under this structure.
15.1	Tarro	New England Highway over rail bridge https://goo.gl/maps/tTnWLwQC2hzSPhAp6	Length: 90 metres Width: 7.0 Metres	Travel directly ahead in the right-hand lane	Approval from Rail company required to cross this structure. Travel over this structure may have specific conditions.
17.4	Tarro	New England Highway onto John Renshaw Drive https://goo.gl/maps/SRDr5JiqkBp	Length: 100.0 Mtrs Width: 12.0 Mtrs	Left hand merge	No problems with the towers on this section of road.
18.4	Beresfield	John Renshaw Drive https://goo.gl/maps/N19vJih1Fqr	Length: 100.0 Mtrs Width: 10.0 Mtrs	Travel directly ahead	The roundabout has been removed. A set of dual lanes now takes traffic directly across the intersection.
28.7	Buchanan	John Renshaw Drive onto the Hunter Expressway https://goo.gl/maps/1STJ1PfQt9E2	Length: 65.0 Mtrs Width: 7.0 Mtrs	Right hand turn	No problems with the towers on this section of road.
58.9	Branxton	The Hunter Expressway onto The New England Highway https://goo.gl/maps/7rauNuxzqjq	Length: 100.0 Mtrs Width: 12.0 Mtrs	Travel directly ahead	No problems with this section of road.

KM index	Location	Section of road	Current clearance	Procedure	Notes
67.3	Whittingham	The New England Highway onto the Golden Highway https://goo.gl/maps/nAnfkYfeUn42	Length: 70.0 Mtrs Width: 8.0 Mtrs	Left Hand turn	The NSW Government is currently upgrading this intersection. At this stage the data that is available for the upgrades shows that the section of road that we would need to access does not change considerably. However, it is recommended that you monitor the progress of the upgrades, and that any changes are thoroughly looked at.
67.4	Whittingham	Golden Highway https://goo.gl/maps/R86RFuPnmFU2	115.0 x 9.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
68.0	Whittingham	Golden Highway over rail bridge https://goo.gl/maps/5NwDQofandvvMKfY9	Length: 90 metres Width: 9.0 Metres	Travel directly ahead in the centre of the road.	Approval from Rail company required to cross this structure. Travel over this structure may have specific conditions.
77.3	Mount Thorley	Golden Highway over rail bridge https://goo.gl/maps/qTxSbkxPu87L5hx4A	Length: 90 metres Width: 9.0 Metres	Travel directly ahead in the centre of the road.	Approval from Rail company required to cross this structure. Travel over this structure may have specific conditions.
77.4	Whittingham	Golden Highway intersection with the Putty Road https://goo.gl/maps/7hQdEmK1EgE2	Length: 65 metres Width: 6.0 Metres	Left hand turn	No problems with this section of road.
77.5	Mount Thorley	Golden Highway https://goo.gl/maps/zGvdupDuixx	100.0 x 10.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
80.6	Mount Thorley	Golden Highway over rail bridge https://goo.gl/maps/ipGU4USXmWZ8GkJs6	Length: 90 metres Width: 9.0 Metres	Travel directly ahead in the centre of the road.	Approval from Rail company required to cross this structure. Travel over this structure may have specific conditions.
80.8	Mount Thorley	Putty Road under Mt Thorley Road https://goo.gl/maps/SMzSLP1kvQYDMqa86	Heights: Left: 6.6 metres Centre: 6.3 Metres Right: 6.3 metres	Travel under the bridge in the left lane	Mt Thorley underpass is 6.3 metres in the centre of the road. Towers to pass under this structure on the correct side.
80.8	Mount Thorley	Golden Highway intersection with the Putty Road https://goo.gl/maps/QS9quvSyHYWaFHoX9	Length: 45 metres Width: 6.0 Metres	Right hand turn	No problems with this section of road.
98.0	Warkworth	Golden Highway https://goo.gl/maps/Y6V6EXaCwxq	100.0 x 8.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
107.0	Jerrys Plains	Golden Highway through Jerrys Plains village https://goo.gl/maps/WgSCRsJ9ZGt	Length: 60 metres Width: 6.0 Metres	Left hand than right hand turn	No problems with this section of road.
126.0	Ogilvy	Golden Highway https://goo.gl/maps/58Tj9ojs7CC2	6% gradient	Travel directly ahead	This section of road has a steep mountain range that will require additional pull trucks to assists loads that exceed 80T gross weight. Additionally, the NSW Government is currently upgrading this section of road. It is recommended that you monitor the progress of the upgrades, and that any changes are thoroughly looked at.
131.9	Denman	Golden Highway onto Denman Road https://goo.gl/maps/sf4PNnycxB32	Length: 55 metres Width: 6.0 Metres	Right hand turn	No problems with this section of road.
137.9	Muswellbrook	Denman Road onto Bengalla Road https://goo.gl/maps/3sK4m6YSHNHqkqn68	Length: 60 metres Width: 8.0 Metres	Left hand turn	No problems with this section of road.
149.0	Bengalla	Bengalla Road onto Wybong Road https://goo.gl/maps/zfDyG4GQq6G37imB9	Length: 90 metres Width: 8.0 Metres	Left hand bend	No problems with this section of road.
158.0 to 183.0	Bengalla	Wybong Road https://goo.gl/maps/ekGZA5wFFK55Mvmc7	Length: 60 metres Width: 8.0 Metres	Travel directly ahead	This road is maintained by Muswellbrook Council. Approval will be required to travel on this section of Road.

KM index	Location	Section of road	Current clearance	Procedure	Notes
183.0	Sandy Hollow	Wybong Road onto Golden Highway https://goo.gl/maps/5ft3VnWpnPhpeN4u7	Length: 60 metres Width: 8.0 Metres	Right hand turn	No problems with this section of road.
190.1	Sandy Hollow	Golden highway https://goo.gl/maps/2THBuV165xx	50.0 x 4.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
193.0	Sandy Hollow	Golden Highway under safety Cam https://goo.gl/maps/b7t9zH2ankJcvWpT6	Height: Left: 6.3 metres	Travel directly ahead on the correct side	No problems with this section of road.
201.0	Gungal	Golden highway https://goo.gl/maps/WDoL2LfeCoP2	70.0 x 6.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
221.0	Merriwa	Golden Highway under safety Cam https://goo.gl/maps/D92rzQ8vnUcYsqj56	Height: Right: 6.4 metres	Travel directly ahead on the correct side	No problems with this section of road.
224.0	Merriwa	Golden highway https://goo.gl/maps/NqrWzTsRmnt	100.0 x 5.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
274.0	Cassilis	Golden highway https://goo.gl/maps/vs6YMT6TxCA2	200.0 x 8.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
305.0	Leadville	Golden highway https://goo.gl/maps/ujxMGukhopeFWRhb8	200.0 x 8.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
331.0	Dunedoo	Golden Highway over rail crossing https://goo.gl/maps/wsyNKfcoAij3SosY9	Length: 90 metres Width: 7.0 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
331.1	Dunedoo	Golden Highway intersection with Wargundy Street https://goo.gl/maps/WzACUHey3jYadj1K7	Length: 60 metres Width: 6.0 Metres	Right hand bend	No problems with this section of road.
384.0	Ballimore	Golden Highway https://goo.gl/maps/RuKKrfHarw1Mjy5E9	150.0 x 8.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
392.0	Ballimore	Golden Highway over rail crossing https://goo.gl/maps/yb15Kz6R2r3E69fj6	Length: 90 metres Width: 7.0 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
400.0	Dubbo	Golden Highway onto Boothenba Road https://goo.gl/maps/TJLi5W4ir11ejgtb6	Length: 50 metres Width: 6.5 Metres	Right hand turn	No problems with this section of road.
411.0	Dubbo	Boothenba Road over rail crossing https://goo.gl/maps/72ageimPLqPWYY7M9	Length: 90 metres Width: 6.5 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
411.1	Dubbo	Boothenba Road onto Troy Bridge Road https://goo.gl/maps/2u5uRf2BvKxseoFm9	Length: 90 metres Width: 6.5 Metres	Travel directly ahead	No problems with this section of road.
414.0	Dubbo	Troy Bridge Road onto Bunglegumbie road https://goo.gl/maps/6Uke9jwPypNYVPux5	Length: 90 metres Width: 6.5 Metres	Travel directly ahead	No problems with this section of road.
420.0	Dubbo	Bunglegumbie road onto the Mitchell Highway https://goo.gl/maps/jCWqmaQsd3fChp837	Length: 50 metres Width: 6.5 Metres	Right hand turn	No problems with this section of road.
450.0	Narromine	Mitchell Highway onto Manildra Street https://goo.gl/maps/hFG648tcSMUHxJ8h6	Length: 40 metres Width: 6.5 Metres	Left hand turn	No problems with this section of road.
450.1	Narromine	Manildra Street over rail crossing https://goo.gl/maps/4s2HYJJfJQ5pGbKq7	Length: 60 metres Width: 7.0 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
450.2	Narromine	Manildra Street onto Derribong Avenue https://goo.gl/maps/776aPaxgsFTWi6qL6	Length: 40 metres Width: 6.5 Metres	Left hand turn	No problems with this section of road.
450.5	Narromine	Derribong Avenue onto Algalah Street https://goo.gl/maps/9s8cb8G4T2c75t1V8	Length: 40 metres Width: 6.5 Metres	Left hand turn	No problems with this section of road.
452.0	Narromine	Algalah Street onto Tomingley Road https://goo.gl/maps/EWfZYo3Xos6T3J8A8	Length: 60 metres Width: 7.0 Metres	Travel directly ahead	No problems with this section of road.
487.5	Tomingley	Tomingley Road onto the Newell Highway https://goo.gl/maps/NJtXmHCFHxaiMag39	Length: 60 metres Width: 7.0 Metres	Travel directly ahead	No problems with this section of road.
488.0	Tomingley	Newell Highway https://goo.gl/maps/ADMke5At2A1Uy1z4A	200.0 x 15.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
489.0	Tomingley	Newell Highway under safety Cam https://goo.gl/maps/9Vqu9xXxRwhHt4Uk6	Height: Right: 6.8 metres	Travel directly ahead on the correct side	No problems with this section of road.
490.0	South Tomingley	Newell Highway https://goo.gl/maps/1q8f6HJ2zsZSxup66	150.0 x 7.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
502.0	Peak Hill	Newell Highway https://goo.gl/maps/orKTBB8wobK6exsc6	90.0 x 7.0 metres	Parking Bay	Suitable parking for Fatigue breaks.

KM index	Location	Section of road	Current clearance	Procedure	Notes
503.0	Peak Hill	Newell Highway under safety Cam https://goo.gl/maps/sAbh8zwZzZVMriD2A	Height: Right: 6.3 metres	Travel directly ahead on the correct side	No problems with this section of road.
526.0	Alectown	Newell Highway https://goo.gl/maps/GMGbEJHAEkeWuRyz5	90.0 x 7.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
552.0	Parkes	Newell Highway onto Thomas Street https://goo.gl/maps/fSnFVWPr78RePSTz9	Length: 55 metres Width: 6.5 Metres	Right hand turn	No problems with this section of road.
554.0	Parkes	Thomas Street onto Moulden Street https://goo.gl/maps/HpYrcwcx8BHrUmfc8	Length: 55 metres Width: 6.5 Metres	Left hand turn	No problems with this section of road.
554.8	Parkes	Moulden Street onto Henry Parkes Way https://goo.gl/maps/atnNtdtyi21wK4PF9	Length: 55 metres Width: 6.5 Metres	Left hand turn	No problems with this section of road.
555.0	Parkes	Henry Parkes Way onto Westlime Road https://goo.gl/maps/Uk2nuLS7xvfnv5dt6	Length: 55 metres Width: 6.5 Metres	Right hand turn	No problems with this section of road.
556.0	Parkes	Westlime Road onto Hartigan Ave https://goo.gl/maps/XtKgPrWcZHY3im65A	Length: 55 metres Width: 6.5 Metres	Travel directly ahead	No problems with this section of road.
557.0	Parkes	Hartigan Avenue under traffic signal https://goo.gl/maps/sQxVxzZivbDX7E3j6	Height: Left: 5.5 metres	Travel around the traffic signal on the incorrect side of the road.	Traffic signal is too low. Pass on right hand side.
558.0	Parkes	Hartigan Ave onto the Newell Highway https://goo.gl/maps/y3rabftt4HGreX9e6	Length: 55 metres Width: 6.5 Metres	Travel directly ahead	No problems with this section of road.
558.1	Parkes	Newell Highway over rail crossing https://goo.gl/maps/7tSoLfFManXyKV3T9	Length: 60 metres Width: 7.0 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
562.0	Parkes	Newell Highway over rail crossing https://goo.gl/maps/Kxa3shUCMiuKe2sX7	Length: 60 metres Width: 7.0 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
569.0	Tichborne	Newell Highway over rail crossing https://goo.gl/maps/gxYUZLLe3jsCEJgD7	Length: 60 metres Width: 7.0 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
576.0	Daroobalgie rest area	Newell Highway https://goo.gl/maps/swec16PWh1N8ZbUR7	200.0 x 7.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
590.0	Forbes	Newell Highway intersection with Dowling Street https://goo.gl/maps/DqkvxH4qtWnXvLJ26	Length: 45 metres Width: 6.0 Metres	Left hand turn	No problems with this section of road.
590.2	Forbes	Newell Highway https://goo.gl/maps/Hsmjs9pqvZ5UYFAH7	100.0 x 6.5 metres	Parking Bay	Suitable parking for Fatigue breaks.
595.5	Forbes	Newell Highway under safety Cam https://goo.gl/maps/hUdv6YJunC9yfoxF7	Height: Right: 6.4 metres	Travel directly ahead on the correct side	No problems with this section of road.
658.0	Marsden	Newell Highway under safety Cam https://goo.gl/maps/fRpjbRoXfup29Swx6	Height: Right: 6.9 metres	Travel directly ahead on the correct side	No problems with this section of road.
659.0	Marsden rest area	Newell Highway https://goo.gl/maps/AfAfr2wuNTjQMdKT8	200.0 x 7.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
689.0	Wyalong	Newell Highway under safety Cam https://goo.gl/maps/sudP4qYXPWbDB6sL6	Height: Centre: 6.2 metres	Travel directly ahead on the correct side	No problems with this section of road.
698.0	West Wyalong	Newell Highway onto Compton Road https://goo.gl/maps/PeM4uWg5hLiyZiPd8	Length: 55 metres Width: 6.5 Metres	Left hand turn	Spotter to assist at this pinchpoint. Escorts to control traffic as per plan below for this section of road.
700.5	West Wyalong	Compton Road onto Showground Road https://goo.gl/maps/hts5qARMMWZcvW7R7	Length: 50 metres Width: 6.5 Metres	left hand turn	No problems with this section of road.
701.0	West Wyalong	Compton Road over rail crossing https://goo.gl/maps/KQwsqDkEDASMpB9r8	Length: 50 metres Width: 6.0 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
702.5	West Wyalong	Showground Road https://goo.gl/maps/C8GevkguVtpkHjkFA	150.0 x 7.0 metres	Parking Bay	Suitable parking for Fatigue breaks.

KM index	Location	Section of road	Current clearance	Procedure	Notes
703.0	West Wyalong	Showground Road onto the Newell Highway https://goo.gl/maps/yAyBdrZcocEeTBnz6	Length: 50 metres Width: 6.5 Metres	Left hand turn	Spotter to assist at this pinchpoint. Escorts to control traffic as per plan below for this section of road.
721.0	Allena	Newell Highway over rail crossing https://goo.gl/maps/GMHsd5ynEFwzjmnXA	Length: 50 metres Width: 7.0 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
749.0	Mirrool	Newell Highway over rail crossing https://goo.gl/maps/kFkwMBL9nfKqL954A	Length: 50 metres Width: 6.5 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
784.0	Ardlethan rest area	Newell Highway https://goo.gl/maps/Na3rzBt25sMnsBva6	200.0 x 7.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
810.0	Grong Grong rest area	Newell Highway https://goo.gl/maps/vBTyD3zJVMcbn6wy9	200.0 x 7.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
823.0	Narrandera	Newell Highway over rail bridge https://goo.gl/maps/YBWuYYyVoZfSUTJ37	Length: 50 metres Width: 7.0 Metres	Travel directly ahead	Loads to travel over the bridge in the center of the road. Approval required crossing this line, likely cross with caution.
824.0	Narrandera	Newell Highway at Whitton Street https://goo.gl/maps/EXcuuBeMsXdhVDtm8	Length: 50 metres Width: 7.5 Metres	Left hand turn	Spotter to assist at this pinchpoint. Escorts to control traffic as per plan below for this section of road.
824 to 827	Narrandera	Newell Highway (Cadell St) https://goo.gl/maps/Z3ptasM9sGGtaB5A8	Length: 50 metres Width: 7.5 Metres	Travel directly ahead	Trees to be trimmed
827	Narrandera	Newell Highway onto Sturt Highway https://goo.gl/maps/uFiCyhp9uF147Wie8	Length: 80 metres Width: 7.5 Metres	Right hand turn. use wrong side of road.	Use slip lane on incorrect side of road.
999	Hay South	Sturt Hwy Roundabout at Cobb Hwy GPS Link: https://maps.app.goo.gl/Sfn5kWiKvUXBYK5e9	50 metres	Travel directly ahead	Use correct side of road
1131	Balranald	Sturt Hwy at McCabe St GPS Link: https://maps.app.goo.gl/5VihDcLGuMVa4Djo7	70 metres	Left hand turn	Use slip lane on correct side of road
1212	Euston	Sturt Hwy roundabout at Carey St GPS Link: https://maps.app.goo.gl/uufR6raWdwSyWMHK6	40 metres	Right hand turn using incorrect side of roundabout	Use slip lane on incorrect side of road
1289	Buronga	Sturt Hwy roundabout onto Silver City Hwy GPS Link: https://maps.app.goo.gl/gGczCY2sNeHvYeQE9	40 metres	Right hand turn using incorrect side of road.	Load to cross to incorrect side at Chapman St and turn onto silver City Hwy.
1291	Buronga	Silver City Hwy onto Arumpo Rd GPS Link: https://maps.app.goo.gl/B9eX3mqi1bs2eq9H6	50 metres	Right hand turn	No problems with this section of road.
1324	Arumpo	Arumpo Rd into Site Entry # 1 GPS Link: https://maps.app.goo.gl/isnpFUM61dPrJdvP7	40 metres	Left hand turn	All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads.
1324	Arumpo	Arumpo Rd into Site Entry # 2 GPS Link: https://maps.app.goo.gl/iscWEaj936ECc2vE9	40 metres	Right hand turn	All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads.

12.0 Conclusion Route 2

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.

LENGTH

- The longest combination that can travel along this route without upgrades is **55m overall length**

OVERHEAD STRUCTURES: (Maximum loaded height 5.9m)

- The lowest unavoidable structures are the gantrys along the New England Highway. The lowest of these has a clearance of 5.9m. A maximum loaded height of 5.9m should not be exceeded on this route.
- Base towers will need to be lowered at a number of points along the route.

OVERHEAD UTILITIES:

- This route will need to be checked by an authorised scoping company. It is likely that a route of at least 6.2m 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 for all items over 80T in weight.

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.

PAVEMENT:

- The Pavement on all roads have adequate highway pavement.
- Site roads which are gravel will require grading prior to commencement and to be maintained for the duration of the project. Site roads should be all weather otherwise the roads may become unusable in wet conditions which will impact delivery schedules.

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.

13.0 References

Rex J Andrews P/L
Rex J Andrews P/L Route Survey # 427
Google Earth/Maps
Nearmaps
Spark Renewables
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.

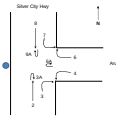
The blade listed in this report is a prototype only. More information on this blade is required before confirmation that the route can accommodate this size load.

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.

Appendix B – Intersection Count Data

austraffic

Client	: Access Traffic
Job	: Silver City Hwy & Arumpo Rd
Day/Date	: Monday, 22 July 2024
Survey Location	: Silver City Hwy & Arumpo Rd
Weather	: Fine



Time	Movement 2				Movement 3				Movement 3A				Movement 4				Movement 8				Movement 8A				Movement 7				Movement 9				Movement 9A					
Period	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Total of all Movements	Peak Hour Volume Determination
0:00 - 0:15	1	0	0	1	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	4	0:00 - 1:00 13
0:15 - 0:30	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	5	0:15 - 1:15 9
0:30 - 0:45	2	0	0	2	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	0	2	0:30 - 1:30 5
0:45 - 1:00	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	2	0	0	2	0	0	0	0	2	0:45 - 1:45 4
1:00 - 1:15	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	0	0	0	0	0	0	1:00 - 2:00 2
1:15 - 1:30	0	1	0	1	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	0	1	1:15 - 2:15 3
1:30 - 1:45	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1:30 - 2:30 3
1:45 - 2:00	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	0	0	0	0	0	0	1:45 - 2:45 4
2:00 - 2:15	0	1	0	1	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	0	1	2:00 - 3:00 10
2:15 - 2:30	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	1	0	0	1	0	0	0	0	1	2:15 - 3:15 9
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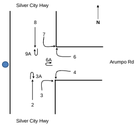
Client : Access Traffic
Job : Silver City Hwy & Arumpo Rd
Day/Date : Monday, 22 July 2024
Survey Location : Silver City Hwy & Arumpo Rd
Weather : Fine



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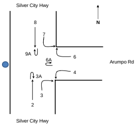
10:00 - 10:15	6	1	0	**7**	7	3	0	**10**	0	0	0	**0**	6	3	0	**9**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	17	6	0	**23**	0	0	0	**0**	**49**	**10:00 - 11:00**	**214**
10:15 - 10:30	20	4	0	**24**	8	1	0	**9**	0	0	0	**0**	5	1	0	**6**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	10	2	0	**12**	0	0	0	**0**	**52**	**10:15 - 11:15**	**213**
10:30 - 10:45	13	2	1	**16**	6	6	1	**13**	0	0	0	**0**	7	2	0	**9**	2	0	0	**2**	0	0	0	**0**	0	0	0	**0**	17	2	0	**19**	0	0	0	**0**	**59**	**10:30 - 11:30**	**221**
10:45 - 11:00	11	3	0	**14**	5	6	0	**11**	0	0	0	**0**	5	4	0	**9**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	12	8	0	**20**	0	0	0	**0**	**54**	**10:45 - 11:45**	**226**
11:00 - 11:15	9	2	1	**12**	3	2	0	**5**	0	0	0	**0**	8	6	0	**14**	0	1	0	**1**	0	0	0	**0**	0	0	0	**0**	12	4	0	**16**	0	0	0	**0**	**48**	**11:00 - 12:00**	**232**
11:15 - 11:30	19	2	0	**21**	4	2	0	**6**	0	0	0	**0**	4	3	0	**7**	0	0	0	**0**	0	0	0	**0**	1	1	0	**2**	19	5	0	**24**	0	0	0	**0**	**60**	**11:15 - 12:15**	**225**
11:30 - 11:45	23	2	0	**25**	8	6	0	**14**	0	0	0	**0**	6	4	0	**10**	0	0	0	**0**	0	0	0	**0**	1	0	0	**1**	11	3	0	**14**	0	0	0	**0**	**64**	**11:30 - 12:30**	**215**
11:45 - 12:00	16	2	0	**18**	6	3	0	**9**	0	0	0	**0**	10	1	1	**12**	0	1	0	**1**	0	0	0	**0**	0	0	0	**0**	18	2	0	**20**	0	0	0	**0**	**60**	**11:45 - 12:45**	**208**
12:00 - 12:15	12	0	0	**12**	3	2	0	**5**	0	0	0	**0**	4	4	0	**8**	0	1	0	**1**	0	0	0	**0**	1	0	0	**1**	13	1	0	**14**	0	0	0	**0**	**41**	**12:00 - 13:00**	**211**
12:15 - 12:30	13	3	1	**17**	4	4	0	**8**	0	0	0	**0**	4	0	0	**4**	0	1	0	**1**	0	0	0	**0**	0	1	0	**1**	15	4	0	**19**	0	0	0	**0**	**50**	**12:15 - 13:15**	**229**
12:30 - 12:45	20	2	0	**22**	11	0	0	**11**	0	0	0	**0**	2	2	0	**4**	0	2	0	**2**	0	0	0	**0**	0	0	0	**0**	13	5	0	**18**	0	0	0	**0**	**57**	**12:30 - 13:30**	**235**
12:45 - 13:00	19	5	0	**24**	8	2	0	**10**	0	0	0	**0**	8	1	0	**9**	0	0	0	**0**	0	0	0	**0**	2	0	0	**2**	14	4	0	**18**	0	0	0	**0**	**63**	**12:45 - 13:45**	**262**
13:00 - 13:15	15	2	0	**17**	13	1	0	**14**	0	0	0	**0**	6	1	0	**7**	0	0	0	**0**	0	0	0	**0**	1	1	0	**2**	17	1	1	**19**	0	0	0	**0**	**59**	**13:00 - 14:00**	**259**
13:15 - 13:30	13	1	0	**14**	13	2	0	**15**	0	0	0	**0**	4	4	0	**8**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	16	3	0	**19**	0	0	0	**0**	**56**	**13:15 - 14:15**	**270**
13:30 - 13:45	25	2	0	**27**	6	5	0	**11**	0	0	0	**0**	17	3	0	**20**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	21	5	0	**26**	0	0	0	**0**	**84**	**13:30 - 14:30**	**283**
13:45 - 14:00	20	0	1	**21**	8	5	1	**14**	0	0	0	**0**	2	1	0	**3**	0	0	0	**0**	0	0	0	**0**	1	0	0	**1**	19	2	0	**21**	0	0	0	**0**	**60**	**13:45 - 14:45**	**274**
14:00 - 14:15	21	3	0	**24**	6	2	0	**8**	0	0	0	**0**	14	4	0	**18**	0	0	0	**0**	0	0	0	**0**	0	1	0	**1**	13	5	1	**19**	0	0	0	**0**	**70**	**14:00 - 15:00**	**285**
14:15 - 14:30	21	3	2	**26**	10	0	0	**10**	0	0	0	**0**	5	5	0	**10**	1	0	0	**1**	0	0	0	**0**	1	1	0	**2**	18	2	0	**20**	0	0	0	**0**	**69**	**14:15 - 15:15**	**296**
14:30 - 14:45	10	2	0	**12**	6	3	0	**9**	0	0	0	**0**	13	5	0	**18**	1	1	0	**2**	0	0	0	**0**	0	0	0	**0**	31	2	1	**34**	0	0	0	**0**	**75**	**14:30 - 15:30**	**285**
14:45 - 15:00	8	3	0	**11**	7	2	0	**9**	0	0	0	**0**	8	3	0	**11**	0	0	0	**0**	0	0	0	**0**	0	1	0	**1**	35	3	1	**39**	0	0	0	**0**	**71**	**14:45 - 15:45**	**295**
15:00 - 15:15	14	2	0	**16**	7	3	1	**11**	0	0	0	**0**	10	1	0	**11**	0	0	0	**0**	0	0	0	**0**	1	1	0	**2**	36	5	0	**41**	0	0	0	**0**	**81**	**15:00 - 16:00**	**297**
15:15 - 15:30	14	3	0	**17**	7	2	0	**9**	0	0	0	**0**	6	1	1	**8**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	23	1	0	**24**	0	0	0	**0**	**58**	**15:15 - 16:15**	**299**
15:30 - 15:45	22	4	2	**28**	4	2	0	**6**	0	0	0	**0**	5	2	1	**8**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	38	5	0	**43**	0	0	0	**0**	**85**	**15:30 - 16:30**	**347**
15:45 - 16:00	11	1	0	**12**	4	4	0	**8**	0	0	0	**0**	10	4	0	**14**	1	1	0	**2**	0	0	0	**0**	1	0	0	**1**	32	3	1	**36**	0	0	0	**0**	**73**	**15:45 - 16:45**	**358**
16:00 - 16:15	16	1	0	**17**	8	0	0	**8**	0	0	0	**0**	13	3	0	**16**	1	2	0	**3**	0	0	0	**0**	0	0	0	**0**	37	2	0	**39**	0	0	0	**0**	**83**	**16:00 - 17:00**	**355**
16:15 - 16:30	19	1	0	**20**	3	3	0	**6**	0	0	0	**0**	39	1	0	**40**	2	0	0	**2**	0	0	0	**0**	0	0	0	**0**	37	1	0	**38**	0	0	0	**0**	**106**	**16:15 - 17:15**	**352**

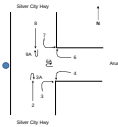
Client : Access Traffic
Job : Silver City Hwy & Arumpo Rd
Day/Date : Monday, 22 July 2024
Survey Location : Silver City Hwy & Arumpo Rd
Weather : Fine



16:30 - 16:45	18	0	0	18	12	4	0	16	0	0	0	0	31	1	0	32	0	0	0	0	0	0	0	0	2	0	0	2	27	1	0	28	0	0	0	0	96	16:30 - 17:30	302
16:45 - 17:00	14	1	2	17	9	2	0	11	0	0	0	0	22	2	0	24	0	0	0	0	0	0	0	0	2	1	0	3	12	2	1	15	0	0	0	0	70	16:45 - 17:45	252
17:00 - 17:15	14	1	0	15	11	0	0	11	0	0	0	0	29	0	0	29	0	0	0	0	0	0	0	0	3	0	0	3	20	2	0	22	0	0	0	0	80	17:00 - 18:00	212
17:15 - 17:30	6	2	1	9	4	0	0	4	0	0	0	0	17	1	0	18	0	0	0	0	0	0	0	0	0	0	0	0	24	1	0	25	0	0	0	0	56	17:15 - 18:15	161
17:30 - 17:45	9	1	0	10	6	0	1	7	0	0	0	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	19	2	0	21	0	0	0	0	46	17:30 - 18:30	125
17:45 - 18:00	12	0	0	12	5	1	0	6	0	0	0	0	6	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	0	0	0	30	17:45 - 18:45	102
18:00 - 18:15	6	2	0	8	4	0	0	4	0	0	0	0	9	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	7	0	1	8	0	0	0	0	29	18:00 - 19:00	89
18:15 - 18:30	3	1	0	4	5	0	0	5	0	0	0	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	0	0	0	20	18:15 - 19:15	73
18:30 - 18:45	6	0	0	6	7	0	0	7	0	0	0	0	2	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	6	1	0	7	0	0	0	0	23	18:30 - 19:30	65
18:45 - 19:00	3	2	0	5	2	0	0	2	0	0	0	0	2	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	0	0	0	17	18:45 - 19:45	68
19:00 - 19:15	4	1	0	5	2	0	0	2	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	0	0	0	13	19:00 - 20:00	61
19:15 - 19:30	3	1	0	4	2	0	0	2	0	0	0	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	12	19:15 - 20:15	67
19:30 - 19:45	10	0	0	10	7	0	0	7	0	0	0	0	2	0	0	2	1	0	0	1	0	0	0	0	0	0	0	0	6	0	0	6	0	0	0	0	26	19:30 - 20:30	65
19:45 - 20:00	1	1	0	2	2	0	0	2	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	5	0	0	0	0	10	19:45 - 20:45	51
20:00 - 20:15	7	0	0	7	4	0	0	4	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	0	0	0	19	20:00 - 21:00	46
20:15 - 20:30	6	0	0	6	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	10	20:15 - 21:15	38
20:30 - 20:45	6	0	0	6	1	0	1	2	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	12	20:30 - 21:30	47
20:45 - 21:00	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	5	20:45 - 21:45	40
21:00 - 21:15	5	1	0	6	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	0	0	11	21:00 - 22:00	39
21:15 - 21:30	3	0	0	3	0	0	1	1	0	0	0	0	7	0	0	7	0	0	0	0	0	0	0	0	0	1	0	1	6	1	0	7	0	0	0	0	19	21:15 - 22:15	38
21:30 - 21:45	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	5	21:30 - 22:30	27
21:45 - 22:00	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	4	21:45 - 22:45	39
22:00 - 22:15	9	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	10	22:00 - 23:00	39
22:15 - 22:30	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	5	0	0	0	0	8	22:15 - 23:15	33
22:30 - 22:45	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	15	0	0	0	0	17	22:30 - 23:30	27
22:45 - 23:00	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	4	22:45 - 23:45	16
23:00 - 23:15	3	0	0	3	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	23:00 - 0:00	14
23:15 - 23:30	1	0	0	1	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	1	0	1	0	0	0	0	2	AM Peak	308
23:30 - 23:45	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	5	1	0	6	0	0	0	0	6	PM Peak	358
23:45 - 0:00	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	2		
Total	1028	132	14	1174	529	126	9	664	0	0	0	0	467	130	10	607	22	15	0	37	0	0	0	0	25	19	0	44	1000	155	9	1164	0	0	0	0	3690		
AM Peak	147	5	1	153	23	13	0	36	0	0	0	0	28	16	3	47	2	1	0	3	0	0	0	0	1	5	0	6	51	10	2	63	0	0	0	0	308		
PM Peak	64	3	0	67	27	11	0	38	0	0	0	0	93	9	0	102	4	3	0	7	0	0	0	0	3	0	0	3	133	7	1	141	0	0	0	0	358		

austraffic

Client	: Access Traffic
Job	: Silver City Hwy & Arumpo Rd
Day/Date	: Monday, 22 July 2024
Survey Location	: Silver City Hwy & Arumpo Rd
Weather	: Fine



HOURLY FLOW

TIME PERIOD	Movement 2				Movement 3				Movement 3A				Movement 4				Movement 4				Movement 4A				Movement 7				Movement 8				Movement 8A				Grand Total			
	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total
0:00 - 1:00	4	0	0	**4**	2	0	0	**2**	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	6	0	0	**6**	0	0	0	**0**	13	0	0	**13**
0:15 - 1:15	3	0	0	**3**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	5	0	0	**5**	0	0	0	**0**	9	0	0	**9**
0:30 - 1:30	2	1	0	**3**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	2	0	0	**2**	0	0	0	**0**	4	1	0	**5**
0:45 - 1:45	0	1	0	**1**	0	0	0	**0**	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	2	0	0	**2**	0	0	0	**0**	3	1	0	**4**
1:00 - 2:00	0	1	0	**1**	0	0	0	**0**	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	1	1	0	**2**
1:15 - 2:15	0	2	0	**2**	0	0	0	**0**	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	1	2	0	**3**
1:30 - 2:30	0	1	0	**1**	0	0	0	**0**	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**	2	1	0	**3**
1:45 - 2:45	1	1	0	**2**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	2	0	0	**2**	0	0	0	**0**	5	1	0	**6**
2:00 - 3:00	2	1	0	**3**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	5	1	0	**6**	0	0	0	**0**	8	2	0	**10**
2:15 - 3:15	2	0	0	**2**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	5	1	0	**6**	0	0	0	**0**	8	1	0	**9**
2:30 - 3:30	2	0	0	**2**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	4	3	0	**7**	0	0	0	**0**	7	3	0	**10**
2:45 - 3:45	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	2	3	0	**5**	0	0	0	**0**	3	3	0	**6**
3:00 - 4:00	1	1	0	**2**	1	0	0	**1**	0	0	0	**0**	1	0	0	**1**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	2	2	0	**5**	0	0	0	**0**	7	3	0	**10**
3:15 - 4:15	1	1	0	**2**	2	0	0	**2**	0	0	0	**0**	1	0	0	**1**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	2	3	0	**5**	0	0	0	**0**	8	4	0	**12**
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4:15 - 5:15	11	5	0	**16**	27	4	1	**32**	0	0	0	**0**	2	1	2	**5**	0	0	0	**0**	0	0	0	**0**	1	0	0	**1**	7	1	0	**8**	0	0	0	**0**	49	11	3	**63**
4:30 - 5:30	17	4	0	**21**	55	3	1	**59**	0	0	0	**0**	3	1	0	**4**	0	0	0	**0**	0	0	0	**0**	1	0	0	**1**	13	3	0	**16**	0	0	0	**0**	89	11	1	**101**
4:45 - 5:45	24	9	0	**33**	96	5	2	**103**	0	0	0	**0**	4	1	0	**5**	0	0	0	**0**	0	0	0	**0**	3	0	0	**3**	16	3	0	**19**	0	0	0	**0**	143	18	2	**163**
5:00 - 6:00	37	7	0	**44**	129	6	2	**137**	0	0	0	**0**	6	1	0	**7**	0	0	0	**0**	0	0	0	**0**	3	0	0	**3**	23	8	0	**31**	0	0	0	**0**	198	22	2	**222**
5:15 - 6:15	68	7	0	**75**	144	6	1	**151**	0	0	0	**0**	7	0	0	**7**	0	0	0	**0**	0	0	0	**0**	3	1	0	**4**	31	10	0	**41**	0	0	0	**0**	253	24	1	**278**
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5:45 - 6:45	117	9	0	**126**	92	5	0	**97**	0	0	0	**0**	11	5	0	**16**	4	0	0	**4**	0	0	0	**0**	1	4	0	**5**	47	8	0	**55**	0	0	0	**0**	262	31	0	**293**
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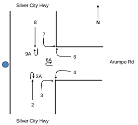
6:45 - 7:45	130	6	1	**137**	24	12	0	**36**	0	0	0	**0**	21	16	1	**37**	4	4	0	**8**	0	0	0	**0**	2	1	0	**3**	60	13	0	**73**	0	0	0	**0**	241	51	2	**294**
7:00 - 8:00	143	4	0	**144**	21	10	0	**31**	0	0	0	**0**	21	16	1	**42**	3	2	0	**5**	0	0	0	**0**	2	3	0	**5**	60	13	2	**75**	0	0	0	**0**	255	48	3	**306**
7:15 - 8:15	147	5	1	**153**	23	13	0	**36**	0	0	0	**0**	28	16	3	**47**	2	1	0	**3**	0	0	0	**0**	1	5	0	**6**	51	10	2	**63**	0	0	0	**0**	252	60	6	**318**
7:30 - 8:30	117	8	1	**126**	21	12	1	**34**	0	0	0	**0**	22	17	3	**42**	2	1	0	**3**	0	0	0	**0**	1	6	0	**7**	51	10	2	**63**	0	0	0	**0**	214	64	7	**285**
7:45 - 8:45	95	9	2	**106**	25	13	1	**39**	0	0	0	**0**	23	14	2	**39**	0	1	0	**1**	0	0	0	**0**	0	5	0	**5**	50	6	2	**58**	0	0	0	**0**	193	68	7	**268**

austraffic
EST. 1993
TRAFFIC & TRANSPORT DATA SPECIALISTS

Client : Access Traffic
Job : Silver City Hwy & Arumpo Rd
Day/Date : Monday, 22 July 2024
Survey Location : Silver City Hwy & Arumpo Rd
Weather : Fine



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8:30 - 9:30	51	18	1	**70**	27	10	0	**37**	0	0	0	**0**	20	11	0	**31**	2	0	0	**2**	0	0	0	**0**	1	0	0	**1**	43	12	0	**55**	0	0	0	**0**	144	51	1	**196**
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9:00 - 10:00	70	16	0	**86**	24	10	0	**34**	0	0	0	**0**	25	16	0	**41**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	52	15	0	**67**	0	0	0	**0**	172	57	0	**229**
9:15 - 10:15	63	10	0	**73**	23	11	0	**34**	0	0	0	**0**	26	17	0	**43**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	58	17	0	**75**	0	0	0	**0**	171	55	0	**226**
9:30 - 10:30	68	11	0	**79**	25	8	0	**33**	0	0	0	**0**	27	17	0	**44**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	57	15	0	**72**	0	0	0	**0**	178	51	0	**229**
9:45 - 10:45	62	10	1	**73**	24	13	1	**38**	0	0	0	**0**	26	12	0	**38**	3	0	0	**3**	0	0	0	**0**	0	0	0	**0**	55	13	0	**68**	0	0	0	**0**	170	48	2	**220**
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10:15 - 11:15	53	11	2	**66**	22	15	1	**38**	0	0	0	**0**	25	13	0	**38**	3	1	0	**4**	0	0	0	**0**	0	0	0	**0**	51	16	0	**67**	0	0	0	**0**	154	56	3	**213**
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12:45 - 13:45	72	10	0	**82**	40	10	0	**50**	0	0	0	**0**	35	9	0	**44**	0	0	0	**0**	0	0	0	**0**	3	1	0	**4**	68	13	1	**82**	0	0	0	**0**	218	43	1	**262**
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13:15 - 14:15	79	6	1	**86**	33	14	1	**48**	0	0	0	**0**	37	12	0	**49**	0	0	0	**0**	0	0	0	**0**	1	1	0	**2**	69	15	1	**85**	0	0	0	**0**	219	48	3	**270**
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13:45 - 14:45	72	8	3	**83**	30	10	1	**41**	0	0	0	**0**	34	15	0	**49**	2	1	0	**3**	0	0	0	**0**	2	2	0	**4**	81	11	2	**94**	0	0	0	**0**	221	47	6	**274**
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14:15 - 15:15	53	10	2	**65**	30	8	1	**39**	0	0	0	**0**	36	14	0	**50**	2	1	0	**3**	0	0	0	**0**	2	3	0	**5**	120	12	2	**134**	0	0	0	**0**	243	48	5	**296**
14:30 - 15:30	46	10	0	**56**	27	10	1	**38**	0	0	0	**0**	37	10	1	**48**	1	1	0	**2**	0	0	0	**0**	1	2	0	**3**	125	11	2	**138**	0	0	0	**0**	237	44	4	**285**
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15:00 - 16:00	61	10	2	**73**	22	11	1	**34**	0	0	0	**0**	31	8	2	**41**	1	1	0	**2**	0	0	0	**0**	2	1	0	**3**	129	14	1	**144**	0	0	0	**0**	246	45	6	**297**
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15:30 - 16:30	68	7	2	**77**	19	9	0	**28**	0	0	0	**0**	67	10	1	**78**	4	3	0	**7**	0	0	0	**0**	1	0	0	**1**	144	11	1	**156**	0	0	0	**0**	303	40	4	**347**
15:45 - 16:45	64	3	0	**67**	27	11	0	**38**	0	0	0	**0**	93	9	0	**102**	4	3	0	**7**	0	0	0	**0**	3	0	0	**3**	133	7	1	**141**	0	0	0	**0**	324	33	1	**358**
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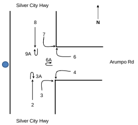
16:30 - 17:30	52	4	3	**59**	36	6	0	**42**	0	0	0	**0**	99	4	0	**103**	0	0	0	**0**	0	0	0	**0**	7	1	0	**8**	83	6	1	**90**	0	0	0	**0**	277	21	4	**302**

Client : Access Traffic
Job : Silver City Hwy & Arumpo Rd
Day/Date : Monday, 22 July 2024
Survey Location : Silver City Hwy & Arumpo Rd
Weather : Fine



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19:15 - 20:15	21	2	0	**23**	15	0	0	**15**	0	0	0	**0**	9	0	0	**9**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	18	1	0	**19**	0	0	0	**0**	64	3	0	**67**
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20:30 - 21:30	16	1	0	**17**	2	0	2	**4**	0	0	0	**0**	9	0	0	**9**	0	0	0	**0**	0	0	0	**0**	0	1	0	**1**	14	2	0	**16**	0	0	0	**0**	41	4	2	**47**
20:45 - 21:45	13	1	0	**14**	1	0	1	**2**	0	0	0	**0**	7	0	0	**7**	0	0	0	**0**	0	0	0	**0**	0	1	0	**1**	15	1	0	**16**	0	0	0	**0**	36	3	1	**40**
21:00 - 22:00	14	1	0	**15**	1	0	1	**2**	0	0	0	**0**	7	0	0	**7**	0	0	0	**0**	0	0	0	**0**	0	1	0	**1**	13	1	0	**14**	0	0	0	**0**	35	3	1	**39**
21:15 - 22:15	18	0	0	**18**	0	0	1	**1**	0	0	0	**0**	7	0	0	**7**	0	0	0	**0**	0	0	0	**0**	0	1	0	**1**	10	1	0	**11**	0	0	0	**0**	35	2	1	**38**
21:30 - 22:30	18	0	0	**18**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	8	1	0	**9**	0	0	0	**0**	26	1	0	**27**
21:45 - 22:45	15	1	0	**16**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	21	1	0	**22**	0	0	0	**0**	37	2	0	**39**
22:00 - 23:00	12	2	0	**14**	2	0	0	**2**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	22	1	0	**23**	0	0	0	**0**	36	3	0	**39**
22:15 - 23:15	6	2	0	**8**	2	0	0	**2**	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	21	1	0	**22**	0	0	0	**0**	30	3	0	**33**
22:30 - 23:30	4	2	0	**6**	2	0	0	**2**	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	17	1	0	**18**	0	0	0	**0**	24	3	0	**27**
22:45 - 23:45	4	1	0	**5**	1	0	0	**1**	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	7	2	0	**9**	0	0	0	**0**	13	3	0	**16**
23:00 - 0:00	5	0	0	**5**	0	0	0	**0**	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	6	2	0	**8**	0	0	0	**0**	12	2	0	**14**

Appendix C – SIDRA Results Silver City Highway / Arumpo Road

MOVEMENT SUMMARY

Site: 1 [EXIST 2024 AM Peak (Project) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo 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: Silver City Highway															
2	T1	All MCs	132	9.1	132	9.1	0.059	0.1	LOS A	0.3	2.0	0.03	0.08	0.03	97.0
3	R2	All MCs	58	13.8	58	13.8	0.059	8.3	LOS A	0.3	2.0	0.17	0.45	0.17	71.1
Approach			190	10.5	190	10.5	0.059	2.6	NA	0.3	2.0	0.07	0.20	0.07	87.3
NorthEast: Arumpo Road															
4	L2	All MCs	25	36.0	25	36.0	0.034	9.1	LOS A	0.1	1.1	0.19	0.61	0.19	61.5
6	R2	All MCs	7	28.6	7	28.6	0.034	11.0	LOS A	0.1	1.1	0.19	0.61	0.19	63.5
Approach			32	34.4	32	34.4	0.034	9.5	LOS A	0.1	1.1	0.19	0.61	0.19	61.9
NorthWest: Silver City Highway															
7	L2	All MCs	5	80.0	5	80.0	0.004	9.9	LOS A	0.0	0.0	0.00	0.67	0.00	52.5
8	T1	All MCs	59	5.1	59	5.1	0.031	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			64	10.9	64	10.9	0.031	0.8	NA	0.0	0.0	0.00	0.05	0.00	93.4
All Vehicles			286	13.3	286	13.3	0.059	3.0	NA	0.3	2.0	0.07	0.21	0.07	84.7

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.

MOVEMENT SUMMARY

Site: 1 [EXIST 2024 PM Peak (Project) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo 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: Silver City Highway															
2	T1	All MCs	23	21.7	23	21.7	0.013	0.0	LOS A	0.1	0.4	0.00	0.02	0.00	99.2
3	R2	All MCs	18	0.0	18	0.0	0.013	7.7	LOS A	0.1	0.4	0.10	0.60	0.10	73.8
Approach			41	12.2	41	12.2	0.013	3.4	NA	0.1	0.4	0.05	0.27	0.05	86.1
NorthEast: Arumpo Road															
4	L2	All MCs	19	10.5	19	10.5	0.016	8.2	LOS A	0.1	0.4	0.10	0.62	0.10	69.4
6	R2	All MCs	1	0.0	1	0.0	0.016	8.2	LOS A	0.1	0.4	0.10	0.62	0.10	73.1
Approach			20	10.0	20	10.0	0.016	8.2	LOS A	0.1	0.4	0.10	0.62	0.10	69.6
NorthWest: Silver City Highway															
7	L2	All MCs	1	0.0	1	0.0	0.001	7.8	LOS A	0.0	0.0	0.00	0.66	0.00	74.4
8	T1	All MCs	29	6.9	29	6.9	0.015	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			30	6.7	30	6.7	0.015	0.3	NA	0.0	0.0	0.00	0.02	0.00	98.9
All Vehicles			91	9.9	91	9.9	0.016	3.4	NA	0.1	0.4	0.04	0.27	0.04	85.3

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.

MOVEMENT SUMMARY

Site: 1 [EXIST 2024 AM Peak (Network) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo 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: Silver City Highway															
2	T1	All MCs	153	3.9	153	3.9	0.058	0.1	LOS A	0.2	2.0	0.05	0.09	0.05	97.3
3	R2	All MCs	36	36.1	36	36.1	0.058	9.0	LOS A	0.2	2.0	0.17	0.32	0.17	66.9
Approach			189	10.1	189	10.1	0.058	1.8	NA	0.2	2.0	0.07	0.14	0.07	89.5
NorthEast: Arumpo Road															
4	L2	All MCs	47	40.4	47	40.4	0.051	9.3	LOS A	0.2	1.7	0.18	0.62	0.18	60.4
6	R2	All MCs	3	33.3	3	33.3	0.051	11.5	LOS A	0.2	1.7	0.18	0.62	0.18	62.2
Approach			50	40.0	50	40.0	0.051	9.4	LOS A	0.2	1.7	0.18	0.62	0.18	60.5
NorthWest: Silver City Highway															
7	L2	All MCs	6	83.3	6	83.3	0.005	10.0	LOS A	0.0	0.0	0.00	0.67	0.00	51.9
8	T1	All MCs	63	19.0	63	19.0	0.036	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			69	24.6	69	24.6	0.036	0.9	NA	0.0	0.0	0.00	0.06	0.00	92.5
All Vehicles			308	18.2	308	18.2	0.058	2.8	NA	0.2	2.0	0.08	0.20	0.08	83.6

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.

MOVEMENT SUMMARY

Site: 1 [EXIST 2024 PM Peak (Network) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo 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: Silver City Highway															
2	T1	All MCs	67	4.5	67	4.5	0.035	0.0	LOS A	0.1	1.2	0.00	0.01	0.00	99.7
3	R2	All MCs	38	28.9	38	28.9	0.035	9.2	LOS A	0.1	1.2	0.27	0.61	0.27	63.3
Approach			105	13.3	105	13.3	0.035	3.3	NA	0.1	1.2	0.10	0.23	0.10	82.5
NorthEast: Arumpo Road															
4	L2	All MCs	102	8.8	102	8.8	0.104	8.7	LOS A	0.4	3.0	0.27	0.63	0.27	69.1
6	R2	All MCs	7	42.9	7	42.9	0.104	12.0	LOS A	0.4	3.0	0.27	0.63	0.27	59.4
Approach			109	11.0	109	11.0	0.104	8.9	LOS A	0.4	3.0	0.27	0.63	0.27	68.4
NorthWest: Silver City Highway															
7	L2	All MCs	3	0.0	3	0.0	0.002	7.8	LOS A	0.0	0.0	0.00	0.66	0.00	74.4
8	T1	All MCs	141	5.7	141	5.7	0.074	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			144	5.6	144	5.6	0.074	0.2	NA	0.0	0.0	0.00	0.01	0.00	99.3
All Vehicles			358	9.5	358	9.5	0.104	3.8	NA	0.4	3.0	0.11	0.26	0.11	82.9

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.

MOVEMENT SUMMARY

Site: 1 [CONST 2027 AM Peak (Project) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo Road
Proposed Upgraded (CHR) 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: Silver City Highway															
2	T1	All MCs	140	9.3	140	9.3	0.075	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
3	R2	All MCs	160	7.5	160	7.5	0.124	8.2	LOS A	0.5	4.0	0.19	0.62	0.19	70.1
Approach			300	8.3	300	8.3	0.124	4.4	NA	0.5	4.0	0.10	0.33	0.10	81.5
NorthEast: Arumpo Road															
4	L2	All MCs	31	45.2	31	45.2	0.044	9.4	LOS A	0.2	1.5	0.20	0.61	0.20	58.9
6	R2	All MCs	7	28.6	7	28.6	0.044	12.9	LOS A	0.2	1.5	0.20	0.61	0.20	63.4
Approach			38	42.1	38	42.1	0.044	10.0	LOS A	0.2	1.5	0.20	0.61	0.20	59.7
NorthWest: Silver City Highway															
7	L2	All MCs	10	40.0	10	40.0	0.007	8.9	LOS A	0.0	0.0	0.00	0.66	0.00	61.3
8	T1	All MCs	62	4.8	62	4.8	0.032	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			72	9.7	72	9.7	0.032	1.2	NA	0.0	0.0	0.00	0.09	0.00	91.9
All Vehicles			410	11.7	410	11.7	0.124	4.3	NA	0.5	4.0	0.09	0.31	0.09	80.4

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.

MOVEMENT SUMMARY

Site: 1 [CONST 2027 PM Peak (Project) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo Road
Proposed Upgraded (CHR) 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: Silver City Highway															
2	T1	All MCs	24	20.8	24	20.8	0.014	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
3	R2	All MCs	23	17.4	23	17.4	0.018	8.2	LOS A	0.1	0.6	0.11	0.62	0.11	67.2
Approach			47	19.1	47	19.1	0.018	4.0	NA	0.1	0.6	0.05	0.31	0.05	80.7
NorthEast: Arumpo Road															
4	L2	All MCs	119	5.0	119	5.0	0.099	8.1	LOS A	0.4	2.8	0.11	0.62	0.11	71.2
6	R2	All MCs	5	0.0	5	0.0	0.099	8.6	LOS A	0.4	2.8	0.11	0.62	0.11	73.0
Approach			124	4.8	124	4.8	0.099	8.1	LOS A	0.4	2.8	0.11	0.62	0.11	71.3
NorthWest: Silver City Highway															
7	L2	All MCs	1	0.0	1	0.0	0.001	7.8	LOS A	0.0	0.0	0.00	0.66	0.00	74.4
8	T1	All MCs	31	6.5	31	6.5	0.016	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			32	6.3	32	6.3	0.016	0.2	NA	0.0	0.0	0.00	0.02	0.00	98.9
All Vehicles			203	8.4	203	8.4	0.099	5.9	NA	0.4	2.8	0.08	0.45	0.08	76.7

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.

MOVEMENT SUMMARY

Site: 1 [CONST 2027 AM Peak (Network) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo Road
Proposed Upgraded (CHR) 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: Silver City Highway															
2	T1	All MCs	162	3.7	162	3.7	0.084	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
3	R2	All MCs	47	38.3	47	38.3	0.043	9.1	LOS A	0.2	1.6	0.20	0.62	0.20	60.8
Approach			209	11.5	209	11.5	0.084	2.1	NA	0.2	1.6	0.04	0.14	0.04	87.3
NorthEast: Arumpo Road															
4	L2	All MCs	59	40.7	59	40.7	0.063	9.3	LOS A	0.2	2.2	0.19	0.62	0.19	60.3
6	R2	All MCs	3	33.3	3	33.3	0.063	12.1	LOS A	0.2	2.2	0.19	0.62	0.19	62.5
Approach			62	40.3	62	40.3	0.063	9.4	LOS A	0.2	2.2	0.19	0.62	0.19	60.4
NorthWest: Silver City Highway															
7	L2	All MCs	6	83.3	6	83.3	0.005	10.0	LOS A	0.0	0.0	0.00	0.67	0.00	51.9
8	T1	All MCs	67	19.4	67	19.4	0.038	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			73	24.7	73	24.7	0.038	0.8	NA	0.0	0.0	0.00	0.05	0.00	92.9
All Vehicles			344	19.5	344	19.5	0.084	3.1	NA	0.2	2.2	0.06	0.21	0.06	81.8

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.

MOVEMENT SUMMARY

Site: 1 [CONST 2027 PM Peak (Network) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo Road
Proposed Upgraded (CHR) 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: Silver City Highway															
2	T1	All MCs	71	4.2	71	4.2	0.037	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
3	R2	All MCs	50	32.0	50	32.0	0.048	9.3	LOS A	0.2	1.7	0.28	0.63	0.28	62.1
Approach			121	15.7	121	15.7	0.048	3.9	NA	0.2	1.7	0.12	0.26	0.12	79.9
NorthEast: Arumpo Road															
4	L2	All MCs	118	11.9	118	11.9	0.122	8.9	LOS A	0.5	3.6	0.28	0.64	0.28	68.0
6	R2	All MCs	7	42.9	7	42.9	0.122	12.7	LOS A	0.5	3.6	0.28	0.64	0.28	59.7
Approach			125	13.6	125	13.6	0.122	9.1	LOS A	0.5	3.6	0.28	0.64	0.28	67.5
NorthWest: Silver City Highway															
7	L2	All MCs	3	0.0	3	0.0	0.002	7.8	LOS A	0.0	0.0	0.00	0.66	0.00	74.4
8	T1	All MCs	149	5.4	149	5.4	0.078	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			152	5.3	152	5.3	0.078	0.2	NA	0.0	0.0	0.00	0.01	0.00	99.3
All Vehicles			398	11.1	398	11.1	0.122	4.1	NA	0.5	3.6	0.12	0.28	0.12	81.2

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.

MOVEMENT SUMMARY

Site: 1 [CUMUL CONST 2027 AM Peak (Project) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo Road
Proposed Upgraded (CHR) 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: Silver City Highway															
2	T1	All MCs	140	9.3	140	9.3	0.075	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
3	R2	All MCs	327	6.7	327	6.7	0.255	8.3	LOS A	1.2	9.2	0.23	0.62	0.23	70.2
Approach			467	7.5	467	7.5	0.255	5.8	NA	1.2	9.2	0.16	0.43	0.16	77.1
NorthEast: Arumpo Road															
4	L2	All MCs	43	53.5	43	53.5	0.067	9.6	LOS A	0.2	2.4	0.22	0.61	0.22	56.5
6	R2	All MCs	8	37.5	8	37.5	0.067	17.6	LOS B	0.2	2.4	0.22	0.61	0.22	60.5
Approach			51	51.0	51	51.0	0.067	10.9	LOS A	0.2	2.4	0.22	0.61	0.22	57.1
NorthWest: Silver City Highway															
7	L2	All MCs	19	26.3	19	26.3	0.012	8.5	LOS A	0.0	0.0	0.00	0.66	0.00	65.0
8	T1	All MCs	62	4.8	62	4.8	0.032	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			81	9.9	81	9.9	0.032	2.0	NA	0.0	0.0	0.00	0.15	0.00	88.8
All Vehicles			599	11.5	599	11.5	0.255	5.7	NA	1.2	9.2	0.14	0.41	0.14	76.1

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.

MOVEMENT SUMMARY

Site: 1 [CUMUL CONST 2027 PM Peak (Project) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo Road
Proposed Upgraded (CHR) 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: Silver City Highway															
2	T1	All MCs	24	20.8	24	20.8	0.014	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
3	R2	All MCs	36	38.9	36	38.9	0.031	8.8	LOS A	0.1	1.1	0.12	0.63	0.12	61.0
Approach			60	31.7	60	31.7	0.031	5.3	NA	0.1	1.1	0.07	0.38	0.07	72.2
NorthEast: Arumpo Road															
4	L2	All MCs	286	5.6	286	5.6	0.242	8.1	LOS A	1.1	7.9	0.12	0.62	0.12	70.9
6	R2	All MCs	14	7.1	14	7.1	0.242	9.1	LOS A	1.1	7.9	0.12	0.62	0.12	70.5
Approach			300	5.7	300	5.7	0.242	8.2	LOS A	1.1	7.9	0.12	0.62	0.12	70.9
NorthWest: Silver City Highway															
7	L2	All MCs	1	100.0	1	100.0	0.001	10.4	LOS A	0.0	0.0	0.00	0.67	0.00	52.3
8	T1	All MCs	31	6.5	31	6.5	0.016	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			32	9.4	32	9.4	0.016	0.3	NA	0.0	0.0	0.00	0.02	0.00	97.2
All Vehicles			392	9.9	392	9.9	0.242	7.1	NA	1.1	7.9	0.11	0.53	0.11	72.7

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.

MOVEMENT SUMMARY

Site: 1 [CUMUL CONST 2027 AM Peak (Network) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo Road
Proposed Upgraded (CHR) 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: Silver City Highway															
2	T1	All MCs	162	3.7	162	3.7	0.084	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
3	R2	All MCs	68	39.7	68	39.7	0.062	9.2	LOS A	0.3	2.4	0.20	0.62	0.20	60.4
Approach			230	14.3	230	14.3	0.084	2.7	NA	0.3	2.4	0.06	0.18	0.06	83.7
NorthEast: Arumpo Road															
4	L2	All MCs	80	42.5	80	42.5	0.087	9.4	LOS A	0.3	3.1	0.20	0.62	0.20	59.9
6	R2	All MCs	4	50.0	4	50.0	0.087	13.6	LOS A	0.3	3.1	0.20	0.62	0.20	58.4
Approach			84	42.9	84	42.9	0.087	9.6	LOS A	0.3	3.1	0.20	0.62	0.20	59.8
NorthWest: Silver City Highway															
7	L2	All MCs	7	85.7	7	85.7	0.006	10.1	LOS A	0.0	0.0	0.00	0.67	0.00	51.4
8	T1	All MCs	67	19.4	67	19.4	0.038	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			74	25.7	74	25.7	0.038	1.0	NA	0.0	0.0	0.00	0.06	0.00	91.8
All Vehicles			388	22.7	388	22.7	0.087	3.9	NA	0.3	3.1	0.08	0.26	0.08	78.2

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.

MOVEMENT SUMMARY

Site: 1 [CUMUL CONST 2027 PM Peak (Network) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo Road
Proposed Upgraded (CHR) 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: Silver City Highway															
2	T1	All MCs	71	4.2	71	4.2	0.037	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
3	R2	All MCs	70	35.7	70	35.7	0.069	9.5	LOS A	0.3	2.5	0.29	0.64	0.29	61.1
Approach			141	19.9	141	19.9	0.069	4.7	NA	0.3	2.5	0.15	0.32	0.15	76.0
NorthEast: Arumpo Road															
4	L2	All MCs	138	16.7	138	16.7	0.147	9.1	LOS A	0.6	4.6	0.29	0.64	0.29	66.5
6	R2	All MCs	8	50.0	8	50.0	0.147	13.6	LOS A	0.6	4.6	0.29	0.64	0.29	58.0
Approach			146	18.5	146	18.5	0.147	9.3	LOS A	0.6	4.6	0.29	0.64	0.29	65.9
NorthWest: Silver City Highway															
7	L2	All MCs	4	25.0	4	25.0	0.003	8.5	LOS A	0.0	0.0	0.00	0.66	0.00	65.4
8	T1	All MCs	149	5.4	149	5.4	0.078	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			153	5.9	153	5.9	0.078	0.2	NA	0.0	0.0	0.00	0.02	0.00	98.6
All Vehicles			440	14.5	440	14.5	0.147	4.7	NA	0.6	4.6	0.14	0.32	0.14	78.3

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.

MOVEMENT SUMMARY

Site: 1 [OPS 2039 AM Peak (Project) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo Road
Proposed Upgraded (CHR) 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: Silver City Highway															
2	T1	All MCs	178	9.0	178	9.0	0.096	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
3	R2	All MCs	109	11.0	109	11.0	0.087	8.3	LOS A	0.4	2.8	0.20	0.62	0.20	68.8
Approach			287	9.8	287	9.8	0.096	3.2	NA	0.4	2.8	0.08	0.24	0.08	85.3
NorthEast: Arumpo Road															
4	L2	All MCs	35	37.1	35	37.1	0.053	9.2	LOS A	0.2	1.8	0.24	0.61	0.24	60.7
6	R2	All MCs	10	30.0	10	30.0	0.053	13.1	LOS A	0.2	1.8	0.24	0.61	0.24	62.8
Approach			45	35.6	45	35.6	0.053	10.1	LOS A	0.2	1.8	0.24	0.61	0.24	61.1
NorthWest: Silver City Highway															
7	L2	All MCs	6	83.3	6	83.3	0.005	10.0	LOS A	0.0	0.0	0.00	0.67	0.00	51.9
8	T1	All MCs	79	5.1	79	5.1	0.041	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			85	10.6	85	10.6	0.041	0.7	NA	0.0	0.0	0.00	0.05	0.00	93.8
All Vehicles			417	12.7	417	12.7	0.096	3.4	NA	0.4	2.8	0.08	0.24	0.08	83.3

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.

MOVEMENT SUMMARY

Site: 1 [OPS 2039 PM Peak (Project) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo Road
Proposed Upgraded (CHR) 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: Silver City Highway															
2	T1	All MCs	31	22.6	31	22.6	0.018	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
3	R2	All MCs	25	4.0	25	4.0	0.018	7.9	LOS A	0.1	0.5	0.12	0.62	0.12	71.7
Approach			56	14.3	56	14.3	0.018	3.5	NA	0.1	0.5	0.05	0.28	0.05	85.0
NorthEast: Arumpo Road															
4	L2	All MCs	57	7.0	57	7.0	0.047	8.2	LOS A	0.2	1.3	0.12	0.62	0.12	70.5
6	R2	All MCs	1	0.0	1	0.0	0.047	8.7	LOS A	0.2	1.3	0.12	0.62	0.12	73.0
Approach			58	6.9	58	6.9	0.047	8.2	LOS A	0.2	1.3	0.12	0.62	0.12	70.5
NorthWest: Silver City Highway															
7	L2	All MCs	1	0.0	1	0.0	0.001	7.8	LOS A	0.0	0.0	0.00	0.66	0.00	74.4
8	T1	All MCs	39	7.7	39	7.7	0.021	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			40	7.5	40	7.5	0.021	0.2	NA	0.0	0.0	0.00	0.02	0.00	99.1
All Vehicles			154	9.7	154	9.7	0.047	4.4	NA	0.2	1.3	0.06	0.34	0.06	81.7

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.

MOVEMENT SUMMARY

Site: 1 [OPS 2039 AM Peak (Network) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo Road
Proposed Upgraded (CHR) 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: Silver City Highway															
2	T1	All MCs	206	3.9	206	3.9	0.107	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
3	R2	All MCs	54	33.3	54	33.3	0.049	9.1	LOS A	0.2	1.8	0.23	0.62	0.23	62.0
Approach			260	10.0	260	10.0	0.107	1.9	NA	0.2	1.8	0.05	0.13	0.05	88.7
NorthEast: Arumpo Road															
4	L2	All MCs	65	41.5	65	41.5	0.073	9.5	LOS A	0.3	2.5	0.22	0.62	0.22	60.0
6	R2	All MCs	4	25.0	4	25.0	0.073	12.7	LOS A	0.3	2.5	0.22	0.62	0.22	64.6
Approach			69	40.6	69	40.6	0.073	9.6	LOS A	0.3	2.5	0.22	0.62	0.22	60.2
NorthWest: Silver City Highway															
7	L2	All MCs	8	87.5	8	87.5	0.007	10.1	LOS A	0.0	0.0	0.00	0.67	0.00	51.1
8	T1	All MCs	85	18.8	85	18.8	0.048	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			93	24.7	93	24.7	0.048	0.9	NA	0.0	0.0	0.00	0.06	0.00	92.4
All Vehicles			422	18.2	422	18.2	0.107	2.9	NA	0.3	2.5	0.07	0.19	0.07	83.0

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.

MOVEMENT SUMMARY

Site: 1 [OPS 2039 PM Peak (Network) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo Road
Proposed Upgraded (CHR) 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: Silver City Highway															
2	T1	All MCs	90	4.4	90	4.4	0.047	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
3	R2	All MCs	52	30.8	52	30.8	0.053	9.6	LOS A	0.2	1.8	0.33	0.64	0.33	62.3
Approach			142	14.1	142	14.1	0.053	3.5	NA	0.2	1.8	0.12	0.24	0.12	81.8
NorthEast: Arumpo Road															
4	L2	All MCs	143	9.1	143	9.1	0.155	9.1	LOS A	0.6	4.6	0.33	0.66	0.33	68.6
6	R2	All MCs	9	44.4	9	44.4	0.155	14.1	LOS A	0.6	4.6	0.33	0.66	0.33	59.2
Approach			152	11.2	152	11.2	0.155	9.3	LOS A	0.6	4.6	0.33	0.66	0.33	68.0
NorthWest: Silver City Highway															
7	L2	All MCs	4	0.0	4	0.0	0.002	7.8	LOS A	0.0	0.0	0.00	0.66	0.00	74.4
8	T1	All MCs	190	5.8	190	5.8	0.100	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			194	5.7	194	5.7	0.100	0.2	NA	0.0	0.0	0.00	0.01	0.00	99.3
All Vehicles			488	9.8	488	9.8	0.155	4.0	NA	0.6	4.6	0.14	0.28	0.14	82.3

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.

MOVEMENT SUMMARY

Site: 1 [DECOMM 2059 AM Peak (Project) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo Road
Proposed Upgraded (CHR) 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: Silver City Highway															
2	T1	All MCs	264	9.1	264	9.1	0.142	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
3	R2	All MCs	185	10.3	185	10.3	0.155	8.6	LOS A	0.7	5.1	0.27	0.63	0.27	68.7
Approach			449	9.6	449	9.6	0.155	3.5	NA	0.7	5.1	0.11	0.26	0.11	84.2
NorthEast: Arumpo Road															
4	L2	All MCs	53	39.6	53	39.6	0.094	9.6	LOS A	0.3	3.1	0.33	0.63	0.33	59.0
6	R2	All MCs	14	28.6	14	28.6	0.094	17.4	LOS B	0.3	3.1	0.33	0.63	0.33	62.0
Approach			67	37.3	67	37.3	0.094	11.2	LOS A	0.3	3.1	0.33	0.63	0.33	59.6
NorthWest: Silver City Highway															
7	L2	All MCs	13	61.5	13	61.5	0.010	9.4	LOS A	0.0	0.0	0.00	0.66	0.00	56.2
8	T1	All MCs	118	5.1	118	5.1	0.062	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			131	10.7	131	10.7	0.062	0.9	NA	0.0	0.0	0.00	0.07	0.00	92.8
All Vehicles			647	12.7	647	12.7	0.155	3.8	NA	0.7	5.1	0.11	0.26	0.11	82.2

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.

MOVEMENT SUMMARY

Site: 1 [DECOMM 2059 PM Peak (Project) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo Road
Proposed Upgraded (CHR) 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: Silver City Highway															
2	T1	All MCs	46	21.7	46	21.7	0.027	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
3	R2	All MCs	39	7.7	39	7.7	0.030	8.1	LOS A	0.1	0.9	0.15	0.62	0.15	70.2
Approach			85	15.3	85	15.3	0.030	3.7	NA	0.1	0.9	0.07	0.28	0.07	83.7
NorthEast: Arumpo Road															
4	L2	All MCs	107	6.5	107	6.5	0.092	8.3	LOS A	0.3	2.6	0.15	0.62	0.15	70.4
6	R2	All MCs	4	0.0	4	0.0	0.092	9.1	LOS A	0.3	2.6	0.15	0.62	0.15	72.7
Approach			111	6.3	111	6.3	0.092	8.3	LOS A	0.3	2.6	0.15	0.62	0.15	70.5
NorthWest: Silver City Highway															
7	L2	All MCs	1	0.0	1	0.0	0.001	7.8	LOS A	0.0	0.0	0.00	0.66	0.00	74.4
8	T1	All MCs	58	6.9	58	6.9	0.031	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			59	6.8	59	6.8	0.031	0.1	NA	0.0	0.0	0.00	0.01	0.00	99.4
All Vehicles			255	9.4	255	9.4	0.092	4.9	NA	0.3	2.6	0.09	0.36	0.09	80.1

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.

MOVEMENT SUMMARY

Site: 1 [DECOMM 2059 AM Peak (Network) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo Road
Proposed Upgraded (CHR) 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: Silver City Highway															
2	T1	All MCs	306	3.9	306	3.9	0.159	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
3	R2	All MCs	78	37.2	78	37.2	0.077	9.5	LOS A	0.3	2.9	0.29	0.64	0.29	60.7
Approach			384	10.7	384	10.7	0.159	1.9	NA	0.3	2.9	0.06	0.13	0.06	88.3
NorthEast: Arumpo Road															
4	L2	All MCs	97	42.3	97	42.3	0.120	9.8	LOS A	0.4	4.3	0.30	0.64	0.30	59.4
6	R2	All MCs	6	33.3	6	33.3	0.120	17.3	LOS B	0.4	4.3	0.30	0.64	0.30	61.9
Approach			103	41.7	103	41.7	0.120	10.3	LOS A	0.4	4.3	0.30	0.64	0.30	59.5
NorthWest: Silver City Highway															
7	L2	All MCs	12	83.3	12	83.3	0.010	10.0	LOS A	0.0	0.0	0.00	0.67	0.00	51.8
8	T1	All MCs	126	19.0	126	19.0	0.072	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			138	24.6	138	24.6	0.072	0.9	NA	0.0	0.0	0.00	0.06	0.00	92.5
All Vehicles			625	18.9	625	18.9	0.159	3.1	NA	0.4	4.3	0.09	0.20	0.09	82.6

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.

MOVEMENT SUMMARY

Site: 1 [DECOMM 2059 PM Peak (Network) (Site Folder: 1. Silver City Highway - Arumpo Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Silver City Highway / Arumpo Road
Proposed Upgraded (CHR) 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: Silver City Highway															
2	T1	All MCs	134	4.5	134	4.5	0.070	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
3	R2	All MCs	79	31.6	79	31.6	0.092	10.4	LOS A	0.4	3.2	0.42	0.69	0.42	61.4
Approach			213	14.6	213	14.6	0.092	3.9	NA	0.4	3.2	0.15	0.26	0.15	81.1
NorthEast: Arumpo Road															
4	L2	All MCs	210	10.0	210	10.0	0.264	9.8	LOS A	1.1	8.3	0.45	0.71	0.45	67.2
6	R2	All MCs	14	42.9	14	42.9	0.264	18.7	LOS B	1.1	8.3	0.45	0.71	0.45	58.7
Approach			224	12.1	224	12.1	0.264	10.4	LOS A	1.1	8.3	0.45	0.71	0.45	66.6
NorthWest: Silver City Highway															
7	L2	All MCs	6	0.0	6	0.0	0.003	7.8	LOS A	0.0	0.0	0.00	0.66	0.00	74.4
8	T1	All MCs	282	5.7	282	5.7	0.148	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			288	5.6	288	5.6	0.148	0.2	NA	0.0	0.0	0.00	0.01	0.00	99.2
All Vehicles			725	10.2	725	10.2	0.264	4.4	NA	1.1	8.3	0.18	0.30	0.18	81.5

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).

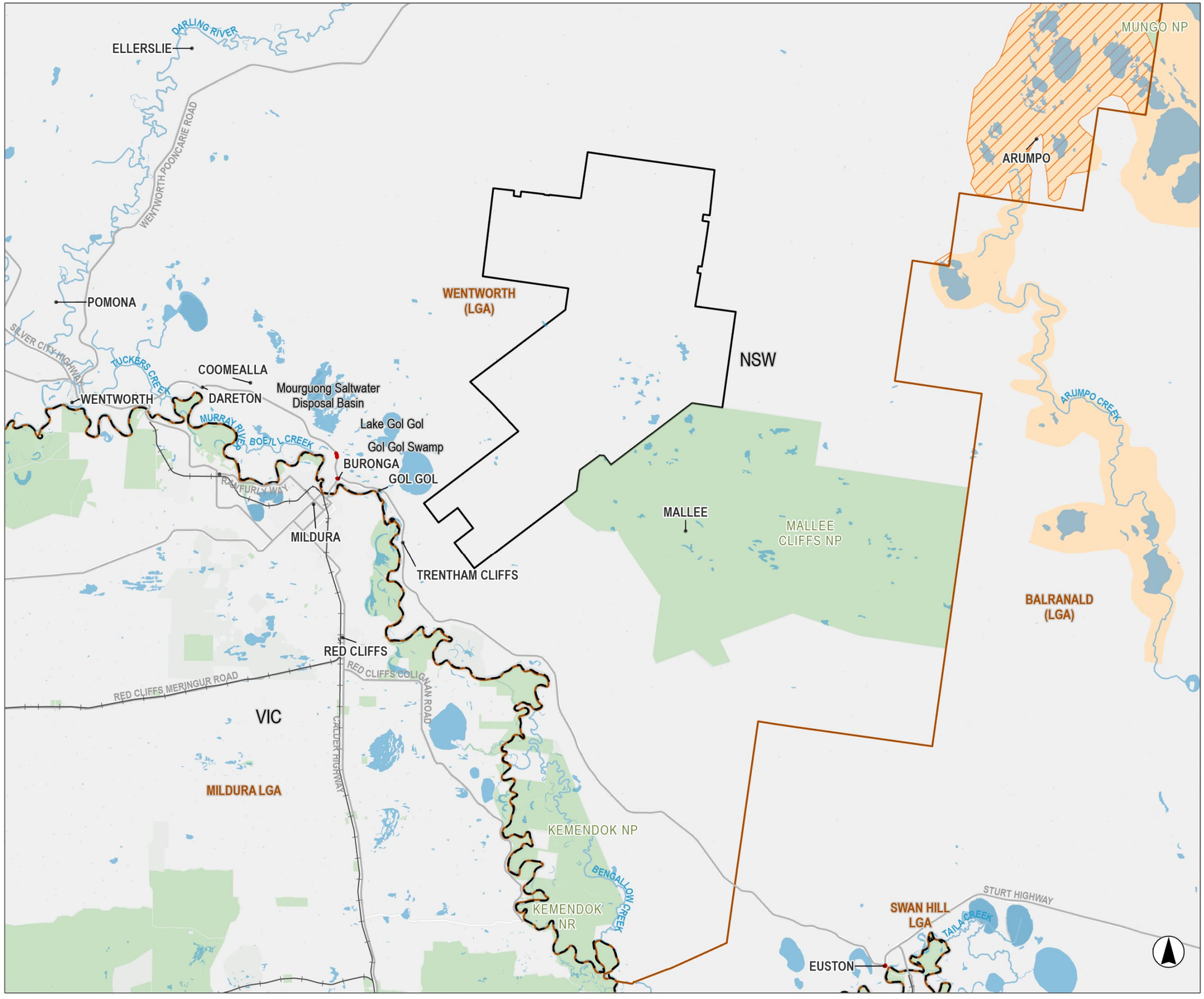
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Appendix D – Plan of Development

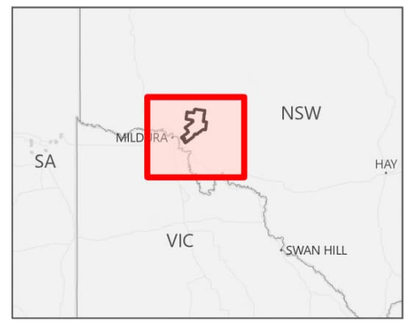
FIGURE 1.1

Regional Context



Legend

- Project Boundary
- Off-site Road Works
- Willandra Lakes Region / National Heritage Property
- Willandra Lakes World Heritage Area
- State Border
- Local Government Area (LGA)
- NPWS Estate
- Water Body
- Watercourse
- Road
- Railway



0 10 20
Kilometres

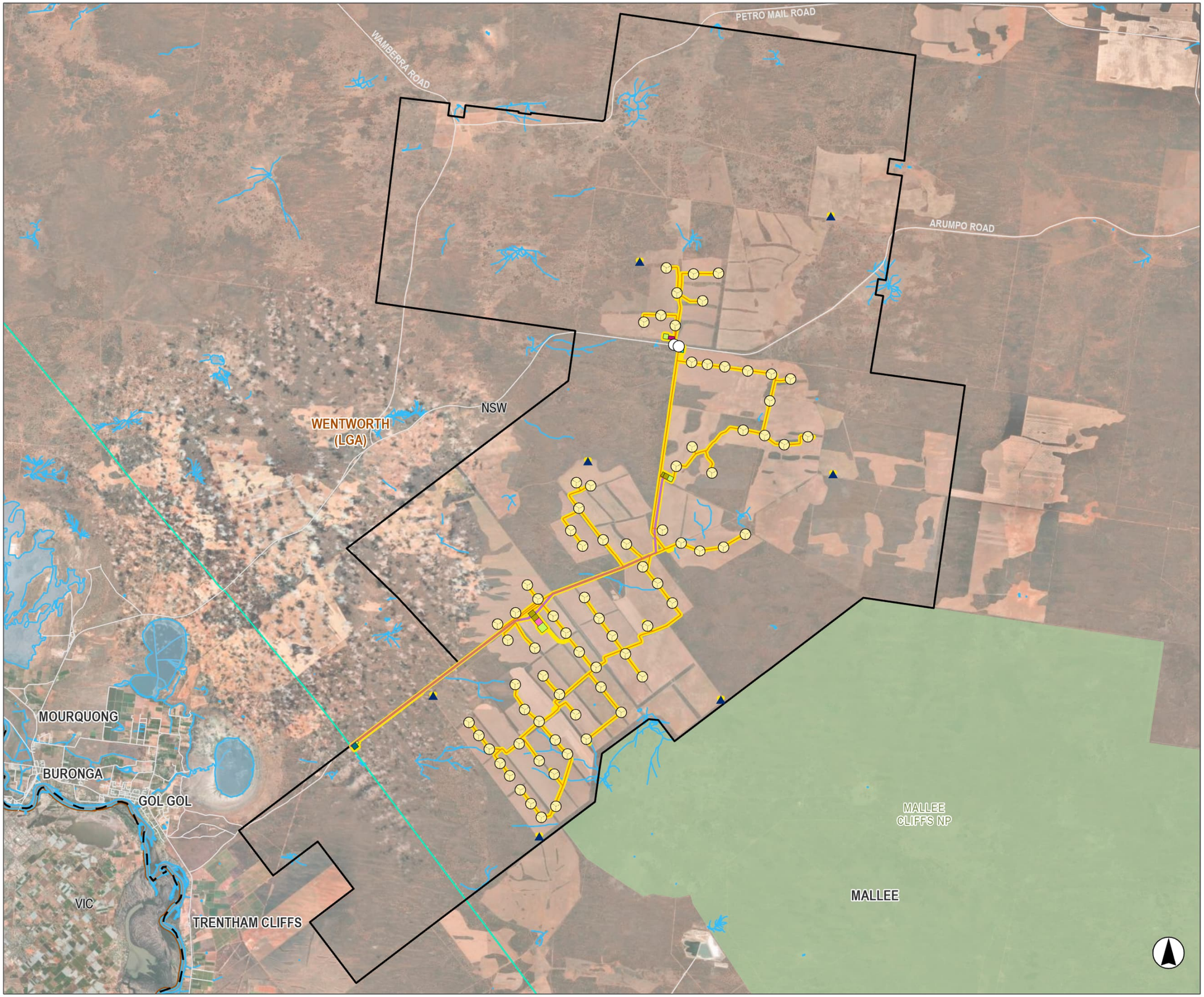
Scale 1:500,000 at A4
GDA2020 MGA Zone 54

Image Source: ESRI Basemap (2024) **Data source:** NSW DFSI (2024), VIC DELWP (2023), Spark (2024)

C:\USERS\CMISKELL\UMWELT (AUSTRALIA) PTY LTD\22494 - 03 SWV02_PROJECTS\22494_R26_EIS_SECTION3_AMD_4_V6.APRX - 22494_R26_F0301_PROJECTLAYOUT

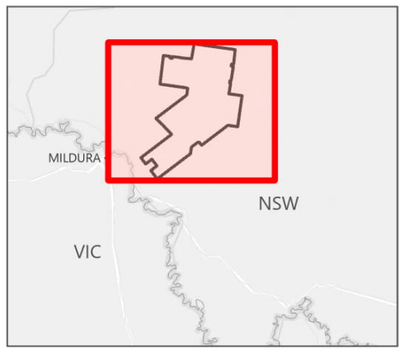
FIGURE 3.1

Project Layout



Legend

- Project Boundary
- Disturbance Footprint
- Access Points
- Wind Turbine Generators
- Permanent Meteorological Masts
- Access Tracks
- HV Transmission Line
- Collector Substation and Switchyard
- Operations and Maintenance Facility
- Construction Compound
- Accommodation Camp
- Switchyard
- Battery Energy Storage System (BESS)
- Existing HV Transmission Lines
- State Border
- Local Government Area (LGA)
- NPWS Estates
- Road
- Watercourse
- Waterbody



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Metres

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GDA2020 MGA Zone 54

Image Source: ESRI Basemap (2024) **Data source:** NSW DFSI (2024), VIC DELWP (2023), Spark (2024)

D:\UMWELT (AUSTRALIA) PTY. LTD\22494 - 03 SSV\02_PROJECTS\22494_R26_EIS_SECTION1_AND_2_V6.APRX - 22494_R26_F0209_DEVELOPMENTSINVICINITY

FIGURE 2.9

Major Approved and Proposed Development in the Vicinity of the Project

Legend

- Project Boundary
- Hybrid Project
- Wind Farm Project
- Solar Farm Project
- Buronga Landfill Expansion
- Euston Mineral Sands Project
- South West Renewable Energy Zone
- State Border
- Local Government Area (LGA)
- NPWS Estate
- Water Body
- Watercourse
- Road
- Railway
- Existing HV Transmission Lines

0 10 20
Kilometres

Scale 1:800,000 at A4
GDA2020 MGA Zone 54

Image Source: ESRI Basemap (2024) **Data source:** NSW DFSI (2024), VIC DELWP (2023), Spark (2024)

Appendix E – Silver City Highway / Arumpo Road Intersection Upgrade Concept Design

PRELIMINARY

FOR INFORMATION ONLY

DRAWING No.	REFERENCE DRAWING TITLE	REV	DATE	REVISION DESCRIPTION	DFT	DFT CHK	DES	DES CHK
		A	30/03/2023	PRELIMINARY ONLY	AJB		AJB	

	BY	DATE
REVIEWED	AJB	23/08/24
RPEQ ENG	AJB	23/08/24

RPEQ No:

CLIENT: SPARK RENEWABLES

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SCALE: 1:500 @ A3

PREPARED BY: UMW0122-004

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CLIENT: SPARK RENEWABLES
PROJECT: MALLEE WIND FARM PROJECT
TITLE: SILVER CITY HIGHWAY / ARUMPO ROAD INTERSECTION
PROPOSED CHR INTERSECTION UPGRADE
GENERAL INTERSECTION CONFIGURATION 1 OF 2

A1

DRAWING NUMBER: UMW0122-004_SK001

REVISION: A

SURVEYOR:
ADDRESS:
CO-ORDINATE DATUM:
HEIGHT DATUM:

PLOT DATE:
DRAWING LOCATION: C:\ACCESS TRAFFIC\PROJECTS\2023\UMW0122-004 - TECHNICAL\5. SWEPT PATH\UMW0122-004_SILVER-ARUMPO_CONCEPT.DWG

PRELIMINARY

FOR INFORMATION ONLY

SURVEYOR

ADDRESS:

CO-ORDINATE DATUM:

HEIGHT DATUM:

DRAWING No.	REFERENCE DRAWING TITLE	REV	DATE	REVISION DESCRIPTION	DFT	DFT CHK	DES	DES CHK
		A	30/03/2023	PRELIMINARY ONLY	AJB		AJB	

	BY	DATE
REVIEWED	AJB	23/08/24
RPEQ ENG	AJB	23/08/24

RPEQ No:

CLIENT

SPARK RENEWABLES

SCALE: 1:250 @ A3

PREPARED BY

ACCESS TRAFFIC CONSULTING

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UMW0122-004

CLIENT SPARK RENEWABLES

PROJECT MALLEE WIND FARM PROJECT

TITLE SILVER CITY HIGHWAY / ARUMPO ROAD INTERSECTION
PROPOSED CHR INTERSECTION UPGRADE
GENERAL SITE LAYOUT 2 OF 2

A1

DRAWING NUMBER UMW0122-004_SK002

REVISION A

DRAWING LOCATION: C:\ACCESS TRAFFIC\PROJECTS\2023\UMW0122.00\44. TECHNICAL\5. SWEPT PATHS\UMW0122-004_SILVER-ARUMPO_CONCEPT.DWG

PLOT DATE:

Appendix F – Arumpo Road / Site Access Intersections Concept Design Layout

PRELIMINARY

FOR INFORMATION ONLY

DRAWING No.	REFERENCE DRAWING TITLE	REV	DATE	REVISION DESCRIPTION	DFT	DFT CHK	DES	DES CHK
		A	30/03/2023	PRELIMINARY ONLY	AJB		AJB	

SURVEYOR
ADDRESS:
CO-ORDINATE DATUM
HEIGHT DATUM

	BY	DATE
REVIEWED	AJB	23/08/24
RPEQ ENG	AJB	23/08/24

RPEQ No:

CLIENT

SPARK RENEWABLES

SCALE: 1:400 @ A3

PREPARED BY UMW0122-004

ACCESS TRAFFIC CONSULTING

Address: 10 Cascade Close FRENCHVILLE QLD 4701
Mobile: 0402 180 902
Postal: PO BOX 9864, FRENCHVILLE QLD 4701
E-mail: admin@accesstraffic.com.au

CLIENT SPARK RENEWABLES
PROJECT MALLEE WIND FARM PROJECT
TITLE
ARUMPO ROAD / SITE ACCESS 1 INTERSECTION
PROPOSED BAL / BAR ACCESS INTERSECTION UPGRADE
GENERAL INTERSECTION CONFIGURATION - SITE ACCESS 1

A1 | DRAWING NUMBER UMW0122-004_SK003 | REVISION A

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SPARK RENEWABLES

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CLIENT SPARK RENEWABLES
PROJECT MALLEE WIND FARM PROJECT
TITLE
ARUMPO ROAD / SITE ACCESS 1 INTERSECTION
PROPOSED BAL / BAR ACCESS INTERSECTION UPGRADE
VEHICLE SWEPT PATHS 1 OF 2 - 26m B DOUBLE

A1

DRAWING NUMBER UMW0122-004_SK004

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CLIENT SPARK RENEWABLES
PROJECT MALLEE WIND FARM PROJECT
TITLE
ARUMPO ROAD / SITE ACCESS 1 INTERSECTION
PROPOSED BAL / BAR ACCESS INTERSECTION UPGRADE
VEHICLE SWEPT PATHS 2 OF 2 - 26m B DOUBLE

A1

DRAWING NUMBER UMW0122-004_SK005

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CLIENT SPARK RENEWABLES
PROJECT MALLEE WIND FARM PROJECT
TITLE
ARUMPO ROAD / SITE ACCESS 2 INTERSECTION
PROPOSED BAL / BAR ACCESS INTERSECTION UPGRADE
GENERAL INTERSECTION CONFIGURATION - SITE ACCESS 2

A1

DRAWING NUMBER UMW0122-004_SK006

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CLIENT SPARK RENEWABLES

PROJECT MALLEE WIND FARM PROJECT

TITLE

ARUMPO ROAD / SITE ACCESS 2 INTERSECTION

PROPOSED BAL / BAR ACCESS INTERSECTION UPGRADE

VEHICLE SWEPT PATHS 1 OF 2 - 26m B DOUBLE

A1	DRAWING NUMBER	REVISION
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HEIGHT DATUM									
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CLIENT SPARK RENEWABLES
PROJECT MALLEE WIND FARM PROJECT
TITLE
ARUMPO ROAD / SITE ACCESS 2 INTERSECTION
PROPOSED BAL / BAR ACCESS INTERSECTION UPGRADE
VEHICLE SWEPT PATHS 2 OF 2 - 26m B DOUBLE

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Appendix G – Project Traffic Calculations

UMW0122-004 | Mallee Wind Farm & BESS Project

Site Vehicle Movement Summary

Assumed Work Days per Month: 24 days

PHASE A - SITE MOBILISATION AND COMPOUND ESTABLISHMENT

Task Transport Duration (Site Mobilisation & Compound Establishment: 6 months

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route
Main Construction Compound - Base Construction Aggregate	1,235	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
Main Construction Compound - Miscelaneous Deliveries	1	Low Loader	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Accomodation Camp - Base Construction Aggregate	480	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Northern Site Access
Minor Construction Compound (North) - Base Construction Aggregate	549	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Northern Site Access
Minor Construction Compound (South) - Base Construction Aggregate	549	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
Concrete Batch Plant - Base Construction Imported Material	138	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
Site Laydown Areas - Base Construction Imported Material	919	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Silver City Highway (Sturt Highway to Corbett Ave)	1	1	1
Silver City Highway (Corbett Ave to Arumpo Road)	1	1	1
Silver City Highway (Arumpo Road to Wentworth)	0	0	0
Sturt Highway (Mildura to River Drv)	1	1	1
Sturt Highway (River Drv to Silver City Highway)	1	1	1
Sturt Highway (Silver City Highway to Gol Gol)	0	0	0
Sturt Highway (Gol Gol to Hay)	0	0	0
Arumpo Road (Silver City Highway to WTS Access)	1	1	1
Arumpo Road (WTS Access to Quarry)	1	1	1
Arumpo Road (Quarry to Northern Access)	3,871	646	27
Arumpo Road (Northern Access to Southern Access)	3,871	646	27

PHASE B - INTERNAL ACCESS ROAD AND HARDSTAND CONSTRUCTION

Task Transport Duration (Internal Tracks / Hardstands): 12 months

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route
Machinery and Civil Equipment (North)	2	Low Loader	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Machinery and Civil Equipment (South)	18	Low Loader	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Access Track Construction (North) - Imported Material (Fill)	675	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Northern Site Access
Access Track Construction (North) - Imported Material (Capping)	75	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Northern Site Access
Access Track Construction (North) - Water for Dust Suppression	313	Water Tanker	100%	Buronga - River Drive	River Drive / Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
Access Track Construction (South) - Imported Material (Fill)	5,106	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
Access Track Construction (South) - Imported Material (Capping)	568	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
Access Track Construction (South) - Water for Dust Suppression	2,365	Water Tanker	100%	Buronga - River Drive	River Drive / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Crane Hardstand Areas (North) - Imported Material (Fill)	237	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Northern Site Access
Crane Hardstand Areas (North) - Imported Material (Capping)	26	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Northern Site Access
Crane Hardstand Areas (South) - Imported Material (Fill)	2,015	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
Crane Hardstand Areas (South) - Imported Material (Capping)	225	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
Turbine Laydown Areas (North) - Imported Material (Fill)	198	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Northern Site Access
Turbine Laydown Areas (North) - Imported Material (Capping)	22	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Northern Site Access
Turbine Laydown Areas (South) - Imported Material (Fill)	1,679	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
Turbine Laydown Areas (South) - Imported Material (Capping)	187	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Silver City Highway (Sturt Highway to Corbett Ave)	2,698	225	10
Silver City Highway (Corbett Ave to Arumpo Road)	2,698	225	10
Silver City Highway (Arumpo Road to Wentworth)	0	0	0
Sturt Highway (Mildura to River Drv)	20	2	1
Sturt Highway (River Drv to Silver City Highway)	2,698	225	10
Sturt Highway (Silver City Highway to Gol Gol)	0	0	0
Sturt Highway (Gol Gol to Hay)	0	0	0
Arumpo Road (Silver City Highway to WTS Access)	2,698	225	10
Arumpo Road (WTS Access to Quarry)	2,698	225	10
Arumpo Road (Quarry to Northern Access)	13,711	1,143	48
Arumpo Road (Northern Access to Southern Access)	12,163	1,014	43
River Drive	2,678	224	10

PHASE C - WIND TURBINE FOUNDATION CONSTRUCTION

Task Transport Duration (Wind Turbine Foundation Construction) 12 months

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route
WTG Foundations (North) - Steel Anchors	16	Low Loader	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
WTG Foundations (South) - Steel Anchors	136	Low Loader	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
WTG Foundations (North) - Water (for concrete)	40	Water Tanker	100%	Buronga - Modica Crescent	Modica Crescent / Corbett Avenue / Silver City Highway / Arumpo Road / Northern Site Access
WTG Foundations (South) - Water (for concrete)	340	Water Tanker	100%	Buronga - Modica Crescent	Modica Crescent / Corbett Avenue / Silver City Highway / Arumpo Road / Northern Site Access
WTG Foundations (North) - Steel Reinforcement	74	Truck and Dog Trailer	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
WTG Foundations (South) - Steel Reinforcement	628	Truck and Dog Trailer	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
WTG Foundations (North) - Sand	99	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Northern Site Access
WTG Foundations (South) - Sand	840	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
WTG Foundations (North) - Aggregate	148	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Northern Site Access
WTG Foundations (South) - Aggregate	1,260	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
WTG Foundations (North) - Cement	46	Truck and Dog Trailer	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
WTG Foundations (South) - Cement	394	Truck and Dog Trailer	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Silver City Highway (Sturt Highway to Corbett Ave)	1,294	108	5
Silver City Highway (Corbett Ave to Arumpo Road)	1,674	140	6
Silver City Highway (Arumpo Road to Wentworth)	0	0	0
Sturt Highway (Mildura to River Drv)	1,294	108	5
Sturt Highway (River Drv to Silver City Highway)	1,294	108	5
Sturt Highway (Silver City Highway to Gol Gol)	0	0	0
Sturt Highway (Gol Gol to Hay)	0	0	0
Arumpo Road (Silver City Highway to WTS Access)	1,674	140	6
Arumpo Road (WTS Access to Quarry)	1,674	140	6
Arumpo Road (Quarry to Northern Access)	4,021	336	14
Arumpo Road (Northern Access to Southern Access)	3,598	300	13
Modica Crescent / Corbett Avenue	380	32	2

PHASE D - WTG COMPONENT DELIVERY TO SITE

Task Transport Duration (WTG Component Delivery to Site) 14 months

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route
Blades - WTG Northern Site Area	24	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
Blades - WTG Southern Site Area	204	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Hub - WTG Northern Site Area	8	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
Hub - WTG Southern Site Area	68	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Nacelle - WTG Northern Site Area	8	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
Nacelle - WTG Southern Site Area	68	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Power Train - WTG Northern Site Area	8	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
Power Train - WTG Southern Site Area	68	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Cooler Top - WTG Northern Site Area	8	Semi Trailer	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
Cooler Top - WTG Southern Site Area	68	Semi Trailer	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Base Tower - WTG Northern Site Area	8	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
Base Tower - WTG Southern Site Area	68	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Section 2 Towers - WTG Northern Site Area	8	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
Section 2 Towers - WTG Southern Site Area	68	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Section 3 Towers - WTG Northern Site Area	8	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
Section 3 Towers - WTG Southern Site Area	68	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Section 4 Towers - WTG Northern Site Area	8	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
Section 4 Towers - WTG Southern Site Area	68	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Section 5 Towers - WTG Northern Site Area	8	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
Section 5 Towers - WTG Southern Site Area	68	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Section 6 Towers - WTG Northern Site Area	8	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
Section 6 Towers - WTG Southern Site Area	68	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Top Towers - WTG Northern Site Area	8	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
Top Towers - WTG Southern Site Area	68	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
WTG Container - WTG Northern Site Area	8	Semi Trailer	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
WTG Container- WTG Southern Site Area	68	Semi Trailer	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
OSOM Escort Vehicles	1,976	Ligh Vehicles	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Silver City Highway (Sturt Highway to Corbett Ave)	3,116	223	10
Silver City Highway (Corbett Ave to Arumpo Road)	3,116	223	10
Silver City Highway (Arumpo Road to Wentworth)	0	0	0
Sturt Highway (Mildura to River Drv)	0	0	0
Sturt Highway (River Drv to Silver City Highway)	0	0	0
Sturt Highway (Silver City Highway to Gol Gol)	3,116	223	10
Sturt Highway (Gol Gol to Hay)	3,116	223	10
Arumpo Road (Silver City Highway to WTS Access)	3,116	223	10
Arumpo Road (WTS Access to Quarry)	3,116	223	10
Arumpo Road (Quarry to Northern Access)	3,116	223	10
Arumpo Road (Northern Access to Southern Access)	2,788	200	9

PHASE E - WTG INSTALLATION

Task Transport Duration (WTG Installation) 16 months

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route
WTG Erection Cranes (North)	6	OSOM Special	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
WTG Erection Cranes (South)	6	OSOM Special	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Silver City Highway (Sturt Highway to Corbett Ave)	12	1	1
Silver City Highway (Corbett Ave to Arumpo Road)	12	1	1
Silver City Highway (Arumpo Road to Wentworth)	0	0	0
Sturt Highway (Mildura to River Drv)	12	1	1
Sturt Highway (River Drv to Silver City Highway)	12	1	1
Sturt Highway (Silver City Highway to Gol Gol)	0	0	0
Sturt Highway (Gol Gol to Hay)	0	0	0
Arumpo Road (Silver City Highway to WTS Access)	12	1	1
Arumpo Road (WTS Access to Quarry)	12	1	1
Arumpo Road (Quarry to Northern Access)	12	1	1
Arumpo Road (Northern Access to Southern Access)	6	1	1

PHASE F - ELECTRICAL TRENCHING AND CABLING

Task Transport Duration (Electrical Trenching and Cabling) 16 months

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route
Electrical Cabling - HV Cable (South)	9	Low Loader	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Electrical Cabling - HV Towers (South)	89	Semi Trailer	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Electrical Cabling - LV Cable (North)	6	Low Loader	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
Electrical Cabling - LV Cable (South)	39	Low Loader	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Electrical Cabling - LV Trench Sand (North)	239	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Northern Site Access
Electrical Cabling - LV Trench Sand (South)	2,406	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
Cable Trenching Equipment	13	Low Loader	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
HV Transmission Foundation (Water for Concrete)	7	Water Tanker	100%	Buronga - Modica Crescent	Modica Crescent / Corbett Avenue / Silver City Highway / Arumpo Road / Southern Site Access
HV Transmission Foundation (Steel Reinforcement)	12	Truck and Dog Trailer	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
HV Transmission Foundation (Sand)	16	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
HV Transmission Foundation (Aggregate)	24	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
HV Transmission Foundation (Cement)	8	Truck and Dog Trailer	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Silver City Highway (Sturt Highway to Corbett Ave)	176	11	1
Silver City Highway (Corbett Ave to Arumpo Road)	183	12	1
Silver City Highway (Arumpo Road to Wentworth)	0	0	0
Sturt Highway (Mildura to River Drv)	176	11	1
Sturt Highway (River Drv to Silver City Highway)	176	11	1
Sturt Highway (Silver City Highway to Gol Gol)	0	0	0
Sturt Highway (Gol Gol to Hay)	0	0	0
Arumpo Road (Silver City Highway to WTS Access)	183	12	1
Arumpo Road (WTS Access to Quarry)	183	12	1
Arumpo Road (Quarry to Northern Access)	2,868	180	8
Arumpo Road (Northern Access to Southern Access)	2,623	164	7
Modica Crescent / Corbett Avenue	7	1	1

PHASE G - WTG COMMISSIONING AND TESTING

Proposed Turbine Transport Rate 16 months

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route
PMM Delivery (North)	2	Semi Trailer	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
PMM Foundation (Water for Concrete) (North)	1	Water Tanker	100%	Buronga - Modica Crescent	Modica Crescent / Corbett Avenue / Silver City Highway / Arumpo Road / Northern Site Access
PMM Foundation (Steel Reinforcement) (North)	1	Truck and Dog Trailer	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
PMM Foundation (Sand) (North)	1	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Northern Site Access
PMM Foundation (Aggregate) (North)	1	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Northern Site Access
PMM Foundation (Cement) (North)	1	Truck and Dog Trailer	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
PMM Delivery (South)	5	Semi Trailer	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
PMM Foundation (Water for Concrete) (South)	1	Water Tanker	100%	Buronga - Modica Crescent	Modica Crescent / Corbett Avenue / Silver City Highway / Arumpo Road / Southern Site Access
PMM Foundation (Steel Reinforcement) (South)	1	Truck and Dog Trailer	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
PMM Foundation (Sand) (South)	1	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
PMM Foundation (Aggregate) (South)	1	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
PMM Foundation (Cement) (South)	1	Truck and Dog Trailer	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Silver City Highway (Sturt Highway to Corbett Ave)	11	1	1
Silver City Highway (Corbett Ave to Arumpo Road)	13	1	1
Silver City Highway (Arumpo Road to Wentworth)	0	0	0
Sturt Highway (Mildura to River Drv)	4	1	1
Sturt Highway (River Drv to Silver City Highway)	4	1	1
Sturt Highway (Silver City Highway to Gol Gol)	7	1	1
Sturt Highway (Gol Gol to Hay)	7	1	1
Arumpo Road (Silver City Highway to WTS Access)	13	1	1
Arumpo Road (WTS Access to Quarry)	13	1	1
Arumpo Road (Quarry to Northern Access)	17	2	1
Arumpo Road (Northern Access to Southern Access)	10	1	1
Modica Crescent / Corbett Avenue	2	1	1

PHASE H - SUBSTATION AND ELECTRICAL CONNECTION CONSTRUCTION

Task Transport Duration (Substation and Electrical Connection Construction) 6 months

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route
Substation Civils - Imported Materials (Fill)	1,235	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
Substation Civils - Imported Materials (Capping)	138	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
Substation Electrical Components - Substation Equipment (Transformer)	6	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Substation Electrical Components - Substation Equipment (Switchgear)	6	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Substation Electrical Components - Substation Equipment (Cabling)	1	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Substation Electrical Components - Substation Equipment (Misc. Equipment)	1	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Collector Substations Civils - Imported Materials (Fill)	4,938	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
Collector Substations Civils - Imported Materials (Capping)	549	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Silver City Highway (Sturt Highway to Corbett Ave)	14	3	1
Silver City Highway (Corbett Ave to Arumpo Road)	14	3	1
Silver City Highway (Arumpo Road to Wentworth)	0	0	0
Sturt Highway (Mildura to River Drv)	0	0	0
Sturt Highway (River Drv to Silver City Highway)	0	0	0
Sturt Highway (Silver City Highway to Gol Gol)	14	3	1
Sturt Highway (Gol Gol to Hay)	14	3	1
Arumpo Road (Silver City Highway to WTS Access)	14	3	1
Arumpo Road (WTS Access to Quarry)	14	3	1
Arumpo Road (Quarry to Northern Access)	6,874	1,146	48
Arumpo Road (Northern Access to Southern Access)	6,874	1,146	48

PHASE I - OPERATIONAL INFRASTRUCTURE

Task Transport Duration (Operational Infrastructure) 3 months

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route
Construction O&M Facility (Water for Concrete) (South)	7	Water Tanker	100%	Buronga - Modica Crescent	Modica Crescent / Corbett Avenue / Silver City Highway / Arumpo Road / Southern Site Access
Construction O&M Facility (Steel Reinforcement) (South)	13	Truck and Dog Trailer	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Construction O&M Facility (Sand) (South)	17	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
Construction O&M Facility (Aggregate) (South)	25	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
Construction O&M Facility (Cement) (South)	8	Truck and Dog Trailer	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Construction O&M Facility (Imported Fill) (South)	494	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Silver City Highway (Sturt Highway to Corbett Ave)	21	7	1
Silver City Highway (Corbett Ave to Arumpo Road)	28	10	1
Silver City Highway (Arumpo Road to Wentworth)	0	0	0
Sturt Highway (Mildura to River Drv)	21	7	1
Sturt Highway (River Drv to Silver City Highway)	21	7	1
Sturt Highway (Silver City Highway to Gol Gol)	0	0	0
Sturt Highway (Gol Gol to Hay)	0	0	0
Arumpo Road (Silver City Highway to WTS Access)	28	10	1
Arumpo Road (WTS Access to Quarry)	28	10	1
Arumpo Road (Quarry to Northern Access)	564	188	8
Arumpo Road (Northern Access to Southern Access)	564	188	8
Modica Crescent / Corbett Avenue	7	3	1

PHASE J - BESS CONSTRUCTION

Task Transport Duration (Operational Infrastructure) 6 months

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route
BESS Civils - Imported Materials (Fill)	772	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
BESS Civils - Imported Materials (Capping)	86	Truck and Dog Trailer	100%	Arumpo Road Quarry	Quarry - Arumpo Road - Southern Site Access
BESS Components - Battery Segments & Collectors	220	Semi Trailer	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
BESS Components - Power Conversion Stations (PCS)	132	Semi Trailer	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
BESS Components - MV Skid Units	46	Semi Trailer	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
BESS Components - Power Transformers	2	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
BESS Components - High Voltage Switch Gear	2	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
BESS Components - Control Room	1	OSOM Special	100%	Newcastle	Newcastle / OSOM Route / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Silver City Highway (Sturt Highway to Corbett Ave)	403	68	3
Silver City Highway (Corbett Ave to Arumpo Road)	403	68	3
Silver City Highway (Arumpo Road to Wentworth)	0	0	0
Sturt Highway (Mildura to River Drv)	0	0	0
Sturt Highway (River Drv to Silver City Highway)	0	0	0
Sturt Highway (Silver City Highway to Gol Gol)	403	68	3
Sturt Highway (Gol Gol to Hay)	403	68	3
Arumpo Road (Silver City Highway to WTS Access)	403	68	3
Arumpo Road (WTS Access to Quarry)	403	68	3
Arumpo Road (Quarry to Northern Access)	1,261	211	9
Arumpo Road (Northern Access to Southern Access)	1,261	211	9

PHASE K - DECOMMISSION TEMPORARY STRUCTURES AND DEMOBILISATION

Task Transport Duration (Decommission and Demobilisation) 1 month

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route
Main Construction Compound Demobilisation (South)	20	Semi Trailer	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Accomodation Camp Demobilisation (North)	50	Semi Trailer	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
Minor Construction Compound Demobilisation (North)	10	Semi Trailer	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
Minor Construction Compound Demobilisation (South)	10	Semi Trailer	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Batch Plant Demobilisation (South)	10	Semi Trailer	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Silver City Highway (Sturt Highway to Corbett Ave)	100	100	5
Silver City Highway (Corbett Ave to Arumpo Road)	100	100	5
Silver City Highway (Arumpo Road to Wentworth)	0	0	0
Sturt Highway (Mildura to River Drv)	100	100	5
Sturt Highway (River Drv to Silver City Highway)	100	100	5
Sturt Highway (Silver City Highway to Gol Gol)	0	0	0
Sturt Highway (Gol Gol to Hay)	0	0	0
Arumpo Road (Silver City Highway to WTS Access)	100	100	5
Arumpo Road (WTS Access to Quarry)	100	100	5
Arumpo Road (Quarry to Northern Access)	100	100	5
Arumpo Road (Northern Access to Southern Access)	40	40	2

GENERAL OPERATIONS - SITE WATER (RAW & POTABLE)

Task Duration (Site Water - Raw & Potable) 34 months

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route
Raw Water (General Operations) - Northern Site	117	Water Tanker	100%	Buronga - River Drive	River Drive / Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
Raw Water (General Operations) - Southern Site	995	Water Tanker	100%	Buronga - River Drive	River Drive / Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access
Potable Water (General Operations) - Northern Site	3,330	Water Tanker	100%	Buronga - Modica Crescent	Modica Crescent / Corbett Avenue / Silver City Highway / Arumpo Road / Northern Site Access

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Silver City Highway (Sturt Highway to Corbett Ave)	1,112	33	2
Silver City Highway (Corbett Ave to Arumpo Road)	4,442	131	6
Silver City Highway (Arumpo Road to Wentworth)	0	0	0
Sturt Highway (Mildura to River Drv)	0	0	0
Sturt Highway (River Drv to Silver City Highway)	1,112	33	2
Sturt Highway (Silver City Highway to Gol Gol)	0	0	0
Sturt Highway (Gol Gol to Hay)	0	0	0
Arumpo Road (Silver City Highway to WTS Access)	4,442	131	6
Arumpo Road (WTS Access to Quarry)	4,442	131	6
Arumpo Road (Quarry to Northern Access)	4,442	131	6
Arumpo Road (Northern Access to Southern Access)	995	30	2

GENERAL OPERATIONS - SITE FUEL

Task Duration (Site Fuel) 34 months

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route
Site Fuel (General Operations) - Northern Site	117	Fuel Tanker	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Northern Site Access
Site Fuel (General Operations) - Southern Site	995	Fuel Tanker	100%	Mildura	Sturt Highway / Silver City Highway / Arumpo Road / Southern Site Access

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Silver City Highway (Sturt Highway to Corbett Ave)	1,112	33	2
Silver City Highway (Corbett Ave to Arumpo Road)	1,112	33	2
Silver City Highway (Arumpo Road to Wentworth)	0	0	0
Sturt Highway (Mildura to River Drv)	1,112	33	2
Sturt Highway (River Drv to Silver City Highway)	1,112	33	2
Sturt Highway (Silver City Highway to Gol Gol)	0	0	0
Sturt Highway (Gol Gol to Hay)	0	0	0
Arumpo Road (Silver City Highway to WTS Access)	1,112	33	2
Arumpo Road (WTS Access to Quarry)	1,112	33	2
Arumpo Road (Quarry to Northern Access)	1,112	33	2
Arumpo Road (Northern Access to Southern Access)	995	30	2

GENERAL OPERATIONS - WASTE

Task Duration (Waste Collection) 34 months

Activity Description	Project Volume	Vehicle	Project Vol Distrib	Origin	Route
Site Waste (General Operations) - Northern Site	74	Semi	100%	Buronga Landfill	Buronga Landfill - Arumpo Road - Northern Site Access
Site Waste (General Operations) - Southern Site	147	Semi	100%	Buronga Landfill	Buronga Landfill - Arumpo Road - Southern Site Access

Road Section	Total Trips	Trips / Month	Max. Trips / Day
Silver City Highway (Sturt Highway to Corbett Ave)	0	0	0
Silver City Highway (Corbett Ave to Arumpo Road)	0	0	0
Silver City Highway (Arumpo Road to Wentworth)	0	0	0
Sturt Highway (Mildura to River Drv)	0	0	0
Sturt Highway (River Drv to Silver City Highway)	0	0	0
Sturt Highway (Silver City Highway to Gol Gol)	0	0	0
Sturt Highway (Gol Gol to Hay)	0	0	0
Arumpo Road (Silver City Highway to WTS Access)	0	0	0
Arumpo Road (WTS Access to Quarry)	221	7	1
Arumpo Road (Quarry to Northern Access)	221	7	1
Arumpo Road (Northern Access to Southern Access)	147	5	1

UMW0122-004 | Mallee Wind Farm & BESS Project

Project Staff Movements

Project Timeframe

Element	Qty	Unit
Hours per day	11	hrs
Working days per month	30	days
Expected project length	36	months

Construction Workforce

Element	Qty	Unit
Peak Workforce	400	staff
DIDO Workforce	25%	%
	100	staff
Site Camp Workforce	75%	%
	300	staff

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)	
DIDO Workforce									
Mildura	80%	%	80	LV	100%	80	1	80	
Buronga	5%	%	5	LV	100%	5	1	5	
Gol Gol	10%	%	10	LV	100%	10	1	10	
Wentworth / Dareton	5%	%	5	LV	100%	5	1	5	
							Total	**100**	**Peak @ Silver City Highway / Arumpo Road**

Operations

Element	Qty	Unit
Hours per day	10	hrs
Working days per week	7	days
Peak Workforce	30	each

Location	Distribution	Unit	Qty	Vehicle Type	Vehicle Capacity	Movements 2-way (per day)	
Mildura	100%	%	30	LV	1	30	
					Total	**30**	**Peak @ Silver City Highway / Arumpo Road**

UMW0122-004 | Mallee Wind Farm & BESS Project

Preliminary Staff Vehicle Movement Schedule

ID	Duration (Days)	TASK	MAX STAFF	MONTH																																									
				Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	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	Jan-28	Feb-28	Mar-28	Apr-28	May-28	Jun-28	Jul-28	Aug-28	Sep-28	Oct-28	Nov-28	Dec-28						
				Q1 2026			Q2 2026			Q3 2026			Q4 2026			Q1 2027			Q2 2027			Q3 2027			Q4 2027			Q1 2028			Q2 2028			Q3 2028			Q4 2028							
				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	31	32	33	34	35	36						
A		Site Mobilisation and Compound Establishment			24	30	33	33	30	24																																				
B		Internal Access Road and Hardstand Construction					64	75	84	91	95	97	97	95	91	84	75	64																												
C		Wind Turbine Foundation Construction											64	75	84	94	95	97	97	95	91	84	75	64																						
D		WTG Components Delivery to Site														22	25	28	30	31	33	33	33	33	31	30	28	25	22																	
E		WTG Installation																63	71	79	85	90	94	96	97	97	96	94	90	85	79	71	63													
F		Electrical Trenching and Cabling													53	60	66	71	75	78	81	82	82	81	78	75	71	66	60	53															
G		WTG Commissioning and Testing																				25	29	32	34	36	38	39	39	39	39	38	36	34	32	29	25							
H		Substation and Electrical Connection Construction														47	58	64	64	58	47																								
I		Operational Infrastructure																							30	30																			
J		BESS Infrastructure							71	89	98	98	89	71																															
K		Decommission Temporary Structures and Demobilisation																																				39							
M		Construction Management		13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13						
Total Daily Staff Numbers				**13**	**37**	**43**	**110**	**121**	**198**	**217**	**206**	**208**	**263**	**254**	**241**	**320**	**332**	**400**	**350**	**354**	**350**	**327**	**326**	**319**	**253**	**281**	**276**	**237**	**224**	**190**	**131**	**122**	**112**	**47**	**45**	**42**	**38**	**52**	**13**						

				MONTH																																									
				Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	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	Jan-28	Feb-28	Mar-28	Apr-28	May-28	Jun-28	Jul-28	Aug-28	Sep-28	Oct-28	Nov-28	Dec-28						
				Q1 2026			Q2 2026			Q3 2026			Q4 2026			Q1 2027			Q2 2027			Q3 2027			Q4 2027			Q1 2028			Q2 2028			Q3 2028			Q4 2028							
				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	31	32	33	34	35	36						
Total Staff Vehicle Numbers				**13**	**37**	**43**	**110**	**121**	**198**	**217**	**206**	**208**	**263**	**254**	**241**	**320**	**332**	**400**	**350**	**354**	**350**	**327**	**326**	**319**	**253**	**281**	**276**	**237**	**224**	**190**	**131**	**122**	**112**	**47**	**45**	**42**	**38**	**52**	**52**						
Local Staff DIDO	**Vehicle**	25%																																											
		Capacity	**Utilisation by Staff**	*3*	*9*	*11*	*28*	*30*	*50*	*54*	*52*	*52*	*66*	*64*	*60*	*80*	*83*	*100*	*88*	*89*	*88*	*82*	*82*	*80*	*63*	*70*	*69*	*59*	*56*	*48*	*33*	*31*	*28*	*12*	*11*	*11*	*10*	*13*	*13*						
Required Vehicle Movements (1-Way)	LV (Mildura)	1	80%	3	8	9	22	25	40	44	42	42	53	51	49	64	67	80	70	71	70	66	66	64	51	57	56	48	45	38	27	25	23	10	9	9	8	11	11						
	LV (Buronga)	1	5%	1	1	1	2	2	3	3	3	3	4	4	4	4	5	5	5	5	5	5	5	4	4	4	4	3	3	3	2	2	2	1	1	1	1	1	1						
	LV (Gol Gol)	1	10%	1	1	2	3	4	5	6	6	6	7	7	7	8	9	10	9	9	9	9	9	8	7	8	7	6	6	5	4	4	3	2	2	2	1	2	2						
	LV (Wentworth)	1	5%	1	1	1	2	2	3	3	3	3	4	4	4	4	5	5	5	5	5	5	5	4	4	4	4	3	3	3	2	2	2	1	1	1	1	1	1						
Total Daily DIDO Staff Vehicle Movements				**6**	**11**	**13**	**29**	**33**	**51**	**56**	**54**	**54**	**68**	**66**	**64**	**80**	**86**	**100**	**89**	**90**	**89**	**85**	**85**	**80**	**66**	**73**	**71**	**60**	**57**	**49**	**35**	**33**	**30**	**14**	**13**	**13**	**11**	**15**	**15**						
Total Daily DIDO Staff Vehicle Movements to Access Point 1				*1*	*2*	*2*	*4*	*4*	*6*	*6*	*6*	*6*	*8*	*7*	*7*	*9*	*10*	*11*	*10*	*10*	*10*	*9*	*9*	*9*	*7*	*8*	*8*	*7*	*6*	*6*	*4*	*4*	*4*	*2*	*2*	*2*	*2*	*2*	*2*						
Total Daily DIDO Staff Vehicle Movements to Access Point 2				*6*	*10*	*12*	*26*	*30*	*46*	*51*	*49*	*49*	*61*	*60*	*58*	*72*	*77*	*90*	*80*	*81*	*80*	*77*	*77*	*72*	*60*	*66*	*64*	*54*	*51*	*44*	*32*	*30*	*27*	*13*	*12*	*12*	*10*	*14*	*14*						
Non-LocalStaff	**Vehicle**	75%																																										
		Capacity	**Utilisation by Staff**	*10*	*28*	*32*	*83*	*91*	*149*	*163*	*155*	*156*	*197*	*191*	*181*	*240*	*249*	*300*	*263*	*266*	*263*	*245*	*245*	*239*	*190*	*211*	*207*	*178*	*168*	*143*	*98*	*92*	*84*	*35*	*34*	*32*	*29*	*39*	*39*						
Required Vehicle Movements (1-Way)	Mini Bus (TWA to Access Point 1)	20	9%	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
	LV (TWA to Access Point 1)	1	1%	1	1	1	1	1	2	2	2	2	3	3	2	3	3	4	3	3	3	3	3	3	2	3	3	2	2	2	2	1	1	1	1	1	1	1	1						
	Mini Bus (TWA to Access Point 2)	20	81%	1	2	2	4	4	6	7	7	7	8	8	8	10	11	13	11	11	11	10	10	10	8	9	9	8	7	6	4	4	4	2	2	2	2	2	2						
	LV (TWA to Access Point1)	1	9%	1	3	3	8	9	14	15	14	14	18	18	17	22	23	27	24	24	24	22	22	22	17	19	19	16	16	13	9	9	8	4	4	3	3	4	4						
Total Daily TWA to Access Point 1 Staff Vehicle Movements				*2*	*2*	*2*	*2*	*2*	*3*	*3*	*3*	*3*	*4*	*4*	*3*	*5*	*5*	*6*	*5*	*5*	*5*	*5*	*5*	*5*	*3*	*4*	*4*	*3*	*3*	*3*	*3*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*						
Total Daily TWA to Access Point 2 Staff Vehicle Movements				*2*	*5*	*5*	*12*	*13*	*20*	*22*	*21*	*21*	*26*	*26*	*25*	*32*	*34*	*40*	*35*	*35*	*35*	*32*	*32*	*32*	*25*	*28*	*28*	*24*	*23*	*19*	*13*	*13*	*12*	*6*	*6*	*5*	*5*	*6*	*6*						
Total Daily TWA to Project Area Staff Vehicle Movements				**4**	**7**	**7**	**14**	**15**	**23**	**25**	**24**	**24**	**30**	**30**	**28**	**37**	**39**	**46**	**40**	**40**	**40**	**37**	**37**	**37**	**28**	**32**	**32**	**27**	**26**	**22**	**16**	**15**	**14**	**8**	**8**	**7**	**7**	**8**	**8**						

Appendix H – Intersection Volume Forecast Calculations

UMW0122-004 | Mallee Wind Farm & BESS Project

Silver City Highway / Arumpo Road

Project Peak Hour Intersection Volume Forecasts

AM PEAK (6:00-7:00am)

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	Silver City Highway (SE)				Arumpo Road (NE)				Silver City Highway (NW)			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2024	120	12	50	8	16	9	5	2	1	4	56	3
2025	122	12	51	8	16	9	5	2	1	4	57	3
2026	125	12	52	8	17	9	5	2	1	4	58	3
2027	127	13	53	8	17	10	5	2	1	4	59	3
2028	130	13	54	9	17	10	5	2	1	4	61	3
2029	132	13	55	9	18	10	6	2	1	4	62	3
2030	135	14	56	9	18	10	6	2	1	5	63	3
2031	138	14	57	9	18	10	6	2	1	5	64	3
2032	141	14	59	9	19	11	6	2	1	5	66	4
2033	143	14	60	10	19	11	6	2	1	5	67	4
2034	146	15	61	10	20	11	6	2	1	5	68	4
2035	149	15	62	10	20	11	6	2	1	5	70	4
2036	152	15	63	10	20	11	6	3	1	5	71	4
2037	155	16	65	10	21	12	6	3	1	5	72	4
2038	158	16	66	11	21	12	7	3	1	5	74	4
2039	162	16	67	11	22	12	7	3	1	5	75	4
2040	165	16	69	11	22	12	7	3	1	5	77	4
2041	168	17	70	11	22	13	7	3	1	6	78	4
2042	171	17	71	11	23	13	7	3	1	6	80	4
2043	175	17	73	12	23	13	7	3	1	6	82	4
2044	178	18	74	12	24	13	7	3	1	6	83	4
2045	182	18	76	12	24	14	8	3	2	6	85	5
2046	186	19	77	12	25	14	8	3	2	6	87	5
2047	189	19	79	13	25	14	8	3	2	6	88	5
2048	193	19	80	13	26	14	8	3	2	6	90	5
2049	197	20	82	13	26	15	8	3	2	7	92	5
2050	201	20	84	13	27	15	8	3	2	7	94	5
2051	205	20	85	14	27	15	9	3	2	7	96	5
2052	209	21	87	14	28	16	9	3	2	7	97	5
2053	213	21	89	14	28	16	9	4	2	7	99	5
2054	217	22	91	14	29	16	9	4	2	7	101	5
2055	222	22	92	15	30	17	9	4	2	7	103	6
2056	226	23	94	15	30	17	9	4	2	8	106	6
2057	231	23	96	15	31	17	10	4	2	8	108	6
2058	235	24	98	16	31	18	10	4	2	8	110	6
2059	240	24	100	16	32	18	10	4	2	8	112	6
PROJECT TRAFFIC	0	0	95	4	0	4	0	0	5	0	0	0
PROJECT CONSTRUCTION	127	13	148	12	17	14	5	2	6	4	59	3
PEAK OPERATIONS TRAFFIC	0	0	30	1	0	1	0	0	0	0	0	0
PROJECT OPERATIONS	162	16	97	12	22	13	7	3	1	5	75	4
DECOMMISSIONING TRAFFIC	0	0	67	3	0	3	0	0	4	0	0	0
PROJECT DECOMMISIONING	240	24	166	19	32	21	10	4	5	8	112	6
EXTERNAL PROJECTS	0	0	157	10	3	10	0	1	8	1	0	0
CONST CUMULATIVE	127	13	305	22	20	23	5	3	14	5	59	3

UMW0122-004 | Mallee Wind Farm & BESS Project

Silver City Highway / Arumpo Road
Project Peak Hour Intersection Volume Forecasts

PM PEAK (6:00-7:00pm)

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	Silver City Highway (SE)				Arumpo Road (NE)				Silver City Highway (NW)			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2024	18	5	18	0	17	2	0	0	0	0	27	2
2025	18	5	18	0	17	2	0	0	0	0	28	2
2026	19	5	19	0	18	2	0	0	0	0	28	2
2027	19	5	19	0	18	2	0	0	0	0	29	2
2028	19	5	19	0	18	2	0	0	0	0	29	2
2029	20	6	20	0	19	2	0	0	0	0	30	2
2030	20	6	20	0	19	2	0	0	0	0	30	2
2031	21	6	21	0	20	2	0	0	0	0	31	2
2032	21	6	21	0	20	2	0	0	0	0	32	2
2033	22	6	22	0	20	2	0	0	0	0	32	2
2034	22	6	22	0	21	2	0	0	0	0	33	2
2035	22	6	22	0	21	2	0	0	0	0	34	2
2036	23	6	23	0	22	3	0	0	0	0	34	3
2037	23	6	23	0	22	3	0	0	0	0	35	3
2038	24	7	24	0	22	3	0	0	0	0	36	3
2039	24	7	24	0	23	3	0	0	0	0	36	3
2040	25	7	25	0	23	3	0	0	0	0	37	3
2041	25	7	25	0	24	3	0	0	0	0	38	3
2042	26	7	26	0	24	3	0	0	0	0	39	3
2043	26	7	26	0	25	3	0	0	0	0	39	3
2044	27	7	27	0	25	3	0	0	0	0	40	3
2045	27	8	27	0	26	3	0	0	0	0	41	3
2046	28	8	28	0	26	3	0	0	0	0	42	3
2047	28	8	28	0	27	3	0	0	0	0	43	3
2048	29	8	29	0	27	3	0	0	0	0	43	3
2049	30	8	30	0	28	3	0	0	0	0	44	3
2050	30	8	30	0	28	3	0	0	0	0	45	3
2051	31	9	31	0	29	3	0	0	0	0	46	3
2052	31	9	31	0	30	3	0	0	0	0	47	3
2053	32	9	32	0	30	4	0	0	0	0	48	4
2054	33	9	33	0	31	4	0	0	0	0	49	4
2055	33	9	33	0	31	4	0	0	0	0	50	4
2056	34	9	34	0	32	4	0	0	0	0	51	4
2057	35	10	35	0	33	4	0	0	0	0	52	4
2058	35	10	35	0	33	4	0	0	0	0	53	4
2059	36	10	36	0	34	4	0	0	0	0	54	4
PROJECT TRAFFIC	0	0	0	4	95	4	5	0	0	0	0	0
PROJECT CONSTRUCTION	19	5	19	4	113	6	5	0	0	0	29	2
PEAK OPERATIONS TRAFFIC	0	0	0	1	30	1	0	0	0	0	0	0
PROJECT OPERATIONS	24	7	24	1	53	4	0	0	0	0	36	3
DECOMMISSIONING TRAFFIC	0	0	0	3	67	3	4	0	0	0	0	0
PROJECT DECOMMISIONING	36	10	36	3	100	7	4	0	0	0	54	4
EXTERNAL PROJECTS	0	0	3	10	157	10	8	1	0	1	0	0
CONST CUMULATIVE	19	5	22	14	270	16	13	1	0	1	29	2

UMW0122-004 | Mallee Wind Farm & BESS Project
Silver City Highway / Arumpo Road
Peak Hour Intersection Volume Forecasts

Development Scenario - Schedule Tasks B + C + D + E + F + H + Site Water + Site Fuel + Project Staff

Staff Movements - Peak Construction

Task	Silver City Highway (SE)				Arumpo Road (NE)				Silver City Highway (NW)			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	0	0	95	0	0	0	0	0	5	0	0	0
PM Peak Staff	0	0	0	0	95	0	5	0	0	0	0	0

Staff Movements - Operations

Task	Silver City Highway (SE)				Arumpo Road (NE)				Silver City Highway (NW)			
	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	1	0	1	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	1	0	1	0	0	0	0	0	0

Staff Movements - Decommissioning

Task	Silver City Highway (SE)				Arumpo Road (NE)				Silver City Highway (NW)			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	0	0	67	0	0	0	0	0	4	0	0	0
PM Peak Staff	0	0	0	0	67	0	4	0	0	0	0	0

Heavy Vehicle Movements - Peak Construction

Task	Silver City Highway (SE)				Arumpo Road (NE)				Silver City Highway (NW)			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
B	0	0	0	10	0	10	0	0	0	0	0	0
C	0	0	0	6	0	6	0	0	0	0	0	0
D	0	0	0	10	0	10	0	0	0	0	0	0
E	0	0	0	1	0	1	0	0	0	0	0	0
F	0	0	0	1	0	1	0	0	0	0	0	0
H	0	0	0	1	0	1	0	0	0	0	0	0
Water	0	0	0	6	0	6	0	0	0	0	0	0
Fuel	0	0	0	2	0	2	0	0	0	0	0	0
Waste Management	0	0	0	0	0	0	0	0	0	0	0	0
Total (11 hrs)	**0**	**0**	**0**	**37**	**0**	**37**	**0**	**0**	**0**	**0**	**0**	**0**
Peak Hour	**0**	**0**	**0**	**4**	**0**	**4**	**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	Silver City Highway (SE)				Arumpo Road (NE)				Silver City Highway (NW)			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Peak Hour	**0**	**0**	**0**	**3**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**

External Project Traffic Movements (AM Peak)

Task	Silver City Highway (SE)				Arumpo Road (NE)				Silver City Highway (NW)			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Mallee Solar Farm	0	0	71	3	0	3	0	0	4	0	0	0
GoI GoI Solar Farm	0	0	48	2	0	2	0	0	3	0	0	0
GoI GoI BESS	0	0	36	2	0	2	0	0	2	0	0	0
Buronga WTS Expansion	0	0	3	3	3	3	0	1	0	1	0	0
AM Peak Hour	**0**	**0**	**157**	**10**	**3**	**10**	**0**	**1**	**8**	**1**	**0**	**0**

External Project Traffic Movements (PM Peak)

Task	Silver City Highway (SE)				Arumpo Road (NE)				Silver City Highway (NW)			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Mallee Solar Farm	0	0	0	3	71	3	4	0	0	0	0	0
GoI GoI Solar Farm	0	0	0	2	48	2	3	0	0	0	0	0
GoI GoI BESS	0	0	0	2	36	2	2	0	0	0	0	0
Buronga WTS Expansion	0	0	3	3	3	3	0	1	0	1	0	0
PM Peak Hour	**0**	**0**	**3**	**10**	**157**	**10**	**8**	**1**	**0**	**1**	**0**	**0**

UMW0122-004 | Mallee Wind Farm & BESS Project

Silver City Highway / Arumpo Road

Network Peak Hour Intersection Volume Forecasts

AM PEAK (6:00-7:00am)

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	Silver City Highway (SE)				Arumpo Road (NE)				Silver City Highway (NW)			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2024	147	6	23	13	28	19	2	1	1	5	51	12
2025	150	6	23	13	29	19	2	1	1	5	52	12
2026	153	6	24	14	29	20	2	1	1	5	53	12
2027	156	6	24	14	30	20	2	1	1	5	54	13
2028	159	6	25	14	30	21	2	1	1	5	55	13
2029	162	7	25	14	31	21	2	1	1	6	56	13
2030	166	7	26	15	32	21	2	1	1	6	57	14
2031	169	7	26	15	32	22	2	1	1	6	59	14
2032	172	7	27	15	33	22	2	1	1	6	60	14
2033	176	7	27	16	33	23	2	1	1	6	61	14
2034	179	7	28	16	34	23	2	1	1	6	62	15
2035	183	7	29	16	35	24	2	1	1	6	63	15
2036	186	8	29	16	36	24	3	1	1	6	65	15
2037	190	8	30	17	36	25	3	1	1	6	66	16
2038	194	8	30	17	37	25	3	1	1	7	67	16
2039	198	8	31	17	38	26	3	1	1	7	69	16
2040	202	8	32	18	38	26	3	1	1	7	70	16
2041	206	8	32	18	39	27	3	1	1	7	71	17
2042	210	9	33	19	40	27	3	1	1	7	73	17
2043	214	9	34	19	41	28	3	1	1	7	74	17
2044	218	9	34	19	42	28	3	1	1	7	76	18
2045	223	9	35	20	42	29	3	2	2	8	77	18
2046	227	9	36	20	43	29	3	2	2	8	79	19
2047	232	9	36	20	44	30	3	2	2	8	80	19
2048	236	10	37	21	45	31	3	2	2	8	82	19
2049	241	10	38	21	46	31	3	2	2	8	84	20
2050	246	10	38	22	47	32	3	2	2	8	85	20
2051	251	10	39	22	48	32	3	2	2	9	87	20
2052	256	10	40	23	49	33	3	2	2	9	89	21
2053	261	11	41	23	50	34	4	2	2	9	91	21
2054	266	11	42	24	51	34	4	2	2	9	92	22
2055	272	11	42	24	52	35	4	2	2	9	94	22
2056	277	11	43	24	53	36	4	2	2	9	96	23
2057	283	12	44	25	54	37	4	2	2	10	98	23
2058	288	12	45	25	55	37	4	2	2	10	100	24
2059	294	12	46	26	56	38	4	2	2	10	102	24
PROJECT TRAFFIC	0	0	5	4	5	4	0	0	0	0	0	0
PROJECT CONSTRUCTION	156	6	29	18	35	24	2	1	1	5	54	13
PEAK OPERATIONS TRAFFIC	0	0	5	1	0	1	0	0	0	0	0	0
PROJECT OPERATIONS	198	8	36	18	38	27	3	1	1	7	69	16
DECOMMISSIONING TRAFFIC	0	0	4	3	0	3	0	0	0	0	0	0
PROJECT DECOMMISIONING	294	12	49	29	56	41	4	2	2	10	102	24
EXTERNAL PROJECTS	0	0	11	10	11	10	0	1	0	1	0	0
CONST CUMULATIVE	156	6	41	27	46	34	2	2	1	6	54	13

UMW0122-004 | Mallee Wind Farm & BESS Project

Silver City Highway / Arumpo Road
Network Peak Hour Intersection Volume Forecasts

PM PEAK (6:00-7:00pm)

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	Silver City Highway (SE)				Arumpo Road (NE)				Silver City Highway (NW)			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2024	64	3	27	11	93	9	4	3	3	0	133	8
2025	65	3	28	11	95	9	4	3	3	0	136	8
2026	67	3	28	11	97	9	4	3	3	0	138	8
2027	68	3	29	12	99	10	4	3	3	0	141	8
2028	69	3	29	12	101	10	4	3	3	0	144	9
2029	71	3	30	12	103	10	4	3	3	0	147	9
2030	72	3	30	12	105	10	5	3	3	0	150	9
2031	74	3	31	13	107	10	5	3	3	0	153	9
2032	75	4	32	13	109	11	5	4	4	0	156	9
2033	76	4	32	13	111	11	5	4	4	0	159	10
2034	78	4	33	13	113	11	5	4	4	0	162	10
2035	80	4	34	14	116	11	5	4	4	0	165	10
2036	81	4	34	14	118	11	5	4	4	0	169	10
2037	83	4	35	14	120	12	5	4	4	0	172	10
2038	84	4	36	15	123	12	5	4	4	0	175	11
2039	86	4	36	15	125	12	5	4	4	0	179	11
2040	88	4	37	15	128	12	5	4	4	0	183	11
2041	90	4	38	15	130	13	6	4	4	0	186	11
2042	91	4	39	16	133	13	6	4	4	0	190	11
2043	93	4	39	16	135	13	6	4	4	0	194	12
2044	95	4	40	16	138	13	6	4	4	0	198	12
2045	97	5	41	17	141	14	6	5	5	0	202	12
2046	99	5	42	17	144	14	6	5	5	0	206	12
2047	101	5	43	17	147	14	6	5	5	0	210	13
2048	103	5	43	18	150	14	6	5	5	0	214	13
2049	105	5	44	18	153	15	7	5	5	0	218	13
2050	107	5	45	18	156	15	7	5	5	0	223	13
2051	109	5	46	19	159	15	7	5	5	0	227	14
2052	111	5	47	19	162	16	7	5	5	0	232	14
2053	114	5	48	20	165	16	7	5	5	0	236	14
2054	116	5	49	20	168	16	7	5	5	0	241	14
2055	118	6	50	20	172	17	7	6	6	0	246	15
2056	121	6	51	21	175	17	8	6	6	0	251	15
2057	123	6	52	21	179	17	8	6	6	0	256	15
2058	125	6	53	22	182	18	8	6	6	0	261	16
2059	128	6	54	22	186	18	8	6	6	0	266	16
PROJECT TRAFFIC	0	0	5	4	5	4	0	0	0	0	0	0
PROJECT CONSTRUCTION	68	3	34	16	104	14	4	3	3	0	141	8
PEAK OPERATIONS TRAFFIC	0	0	0	1	5	1	0	0	0	0	0	0
PROJECT OPERATIONS	86	4	36	16	130	13	5	4	4	0	179	11
DECOMMISSIONING TRAFFIC	0	0	0	3	4	3	0	0	0	0	0	0
PROJECT DECOMMISIONING	128	6	54	25	189	21	8	6	6	0	266	16
EXTERNAL PROJECTS	0	0	11	10	11	10	0	1	0	1	0	0
CONST CUMULATIVE	68	3	45	25	115	23	4	4	3	1	141	8

UMW0122-004 | Mallee Wind Farm & BESS Project
Silver City Highway / Arumpo Road
Network Peak Hour Intersection Volume Forecasts

Development Scenario - Schedule Tasks B + C + D + E + F + H + Site Water + Site Fuel + Project Staff

Staff Movements - Peak Construction

Task	Silver City Highway (SE)				Arumpo Road (NE)				Silver City Highway (NW)			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	0	0	5	0	5	0	0	0	0	0	0	0
PM Peak Staff	0	0	5	0	5	0	0	0	0	0	0	0

Staff Movements - Operations

Task	Silver City Highway (SE)				Arumpo Road (NE)				Silver City Highway (NW)			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	0	0	5	0	0	0	0	0	0	0	0	0
AM HV	0	0	0	1	0	1	0	0	0	0	0	0
PM Peak Staff	0	0	0	0	5	0	0	0	0	0	0	0
PM HV	0	0	0	1	0	1	0	0	0	0	0	0

Staff Movements - Decommissioning

Task	Silver City Highway (SE)				Arumpo Road (NE)				Silver City Highway (NW)			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	0	0	4	0	0	0	0	0	0	0	0	0
PM Peak Staff	0	0	0	0	4	0	0	0	0	0	0	0

Heavy Vehicle Movements - Peak Construction

Task	Silver City Highway (SE)				Arumpo Road (NE)				Silver City Highway (NW)			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
B	0	0	0	10	0	10	0	0	0	0	0	0
C	0	0	0	6	0	6	0	0	0	0	0	0
D	0	0	0	10	0	10	0	0	0	0	0	0
E	0	0	0	1	0	1	0	0	0	0	0	0
F	0	0	0	1	0	1	0	0	0	0	0	0
H	0	0	0	1	0	1	0	0	0	0	0	0
Water	0	0	0	6	0	6	0	0	0	0	0	0
Fuel	0	0	0	2	0	2	0	0	0	0	0	0
Waste Management	0	0	0	0	0	0	0	0	0	0	0	0
Total (11 hrs)	**0**	**0**	**0**	**37**	**0**	**37**	**0**	**0**	**0**	**0**	**0**	**0**
Peak Hour	**0**	**0**	**0**	**4**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**

Heavy Vehicle Movements - Decommissioning

Task	Silver City Highway (SE)				Arumpo Road (NE)				Silver City Highway (NW)			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Peak Hour	**0**	**0**	**0**	**3**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**

External Project Traffic Movements (AM Peak)

Task	Silver City Highway (SE)				Arumpo Road (NE)				Silver City Highway (NW)			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Mallee Solar Farm	0	0	4	3	4	3	0	0	0	0	0	0
GoI GoI Solar Farm	0	0	3	2	3	2	0	0	0	0	0	0
GoI GoI BESS	0	0	2	2	2	2	0	0	0	0	0	0
Buronga WTS Expansion	0	0	3	3	3	3	0	1	0	1	0	0
AM Peak Hour	**0**	**0**	**11**	**10**	**11**	**10**	**0**	**1**	**0**	**1**	**0**	**0**

External Project Traffic Movements (PM Peak)

Task	Silver City Highway (SE)				Arumpo Road (NE)				Silver City Highway (NW)			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Mallee Solar Farm	0	0	4	3	4	3	0	0	0	0	0	0
GoI GoI Solar Farm	0	0	3	2	3	2	0	0	0	0	0	0
GoI GoI BESS	0	0	2	2	2	2	0	0	0	0	0	0
Buronga WTS Expansion	0	0	3	3	3	3	0	1	0	1	0	0
PM Peak Hour	**0**	**0**	**11**	**10**	**11**	**10**	**0**	**1**	**0**	**1**	**0**	**0**

Appendix I – Turn Warrant Assessment – Silver City Highway / Arumpo Road

Turn Warrant Assessment

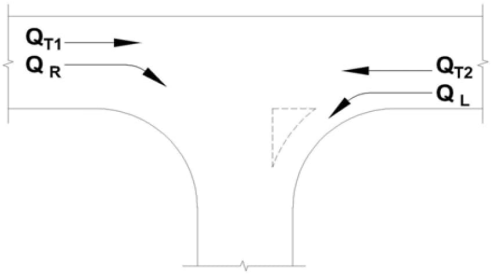
Intersection:	**Silver City Highway / Arumpo Road**
Year / Peak:	**2027 AM & PM Project Peak**
Scenario:	**Peak Construction**

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} =	140	24
Q_R =	160	23

Splitter Island? No

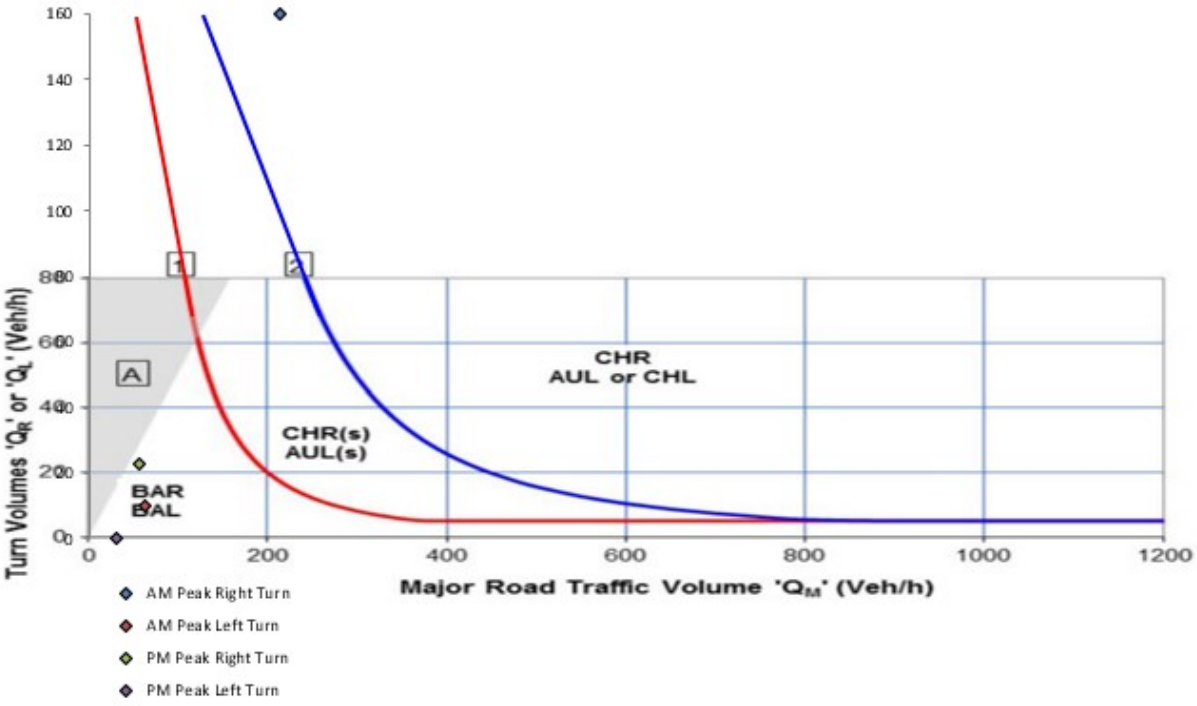
Design speed (km/h) 110



Arumpo Road

	AM Peak	PM Peak
Q_{T2} =	63	31
Q_L =	10	0

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	213	160
Left	63	10
PM Peak		
Right	55	23
Left	31	0



Recommended treatments:

Right Turn	CHR
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:	08/08/2024

Turn Warrant Assessment

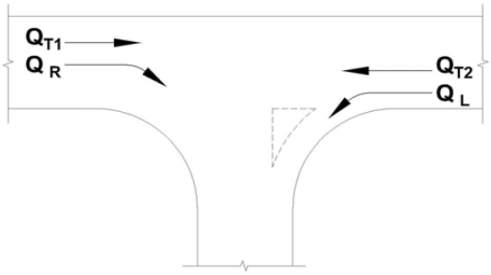
Intersection:	**Silver City Highway / Arumpo Road**
Year / Peak:	**2027 AM & PM Project Peak**
Scenario:	**Cumulative Assessment**

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} =	140	24
Q_R =	327	23

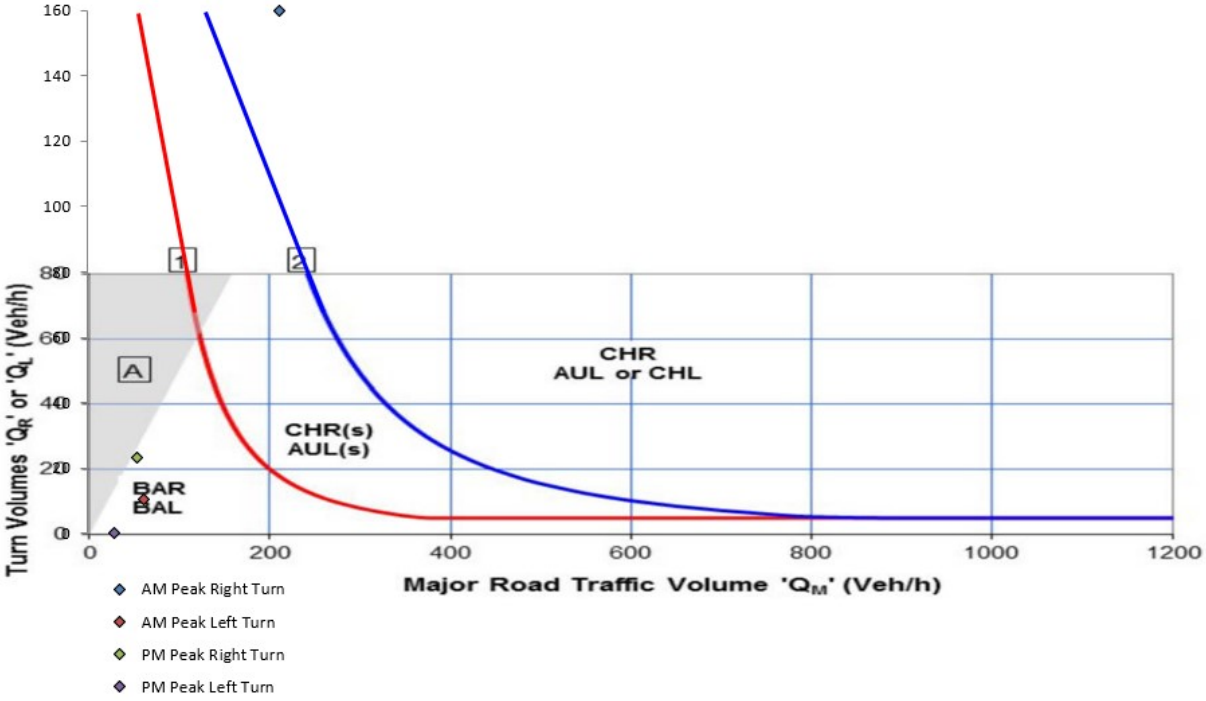
Splitter Island? No

Design speed (km/h) 110



	AM Peak	*PM Peak*
Q_{T2} =	63	31
Q_L =	10	0

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	213	327
Left	63	10
PM Peak		
Right	55	23
Left	31	0



Recommended treatments:

Right Turn	CHR
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:	08/08/2024

Turn Warrant Assessment

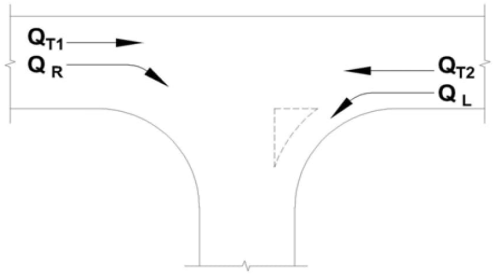
Intersection:	**Silver City Highway / Arumpo Road**
Year / Peak:	**2039 AM & PM Project Peak**
Scenario:	**Operations**

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} =	178	31
Q_R =	109	25

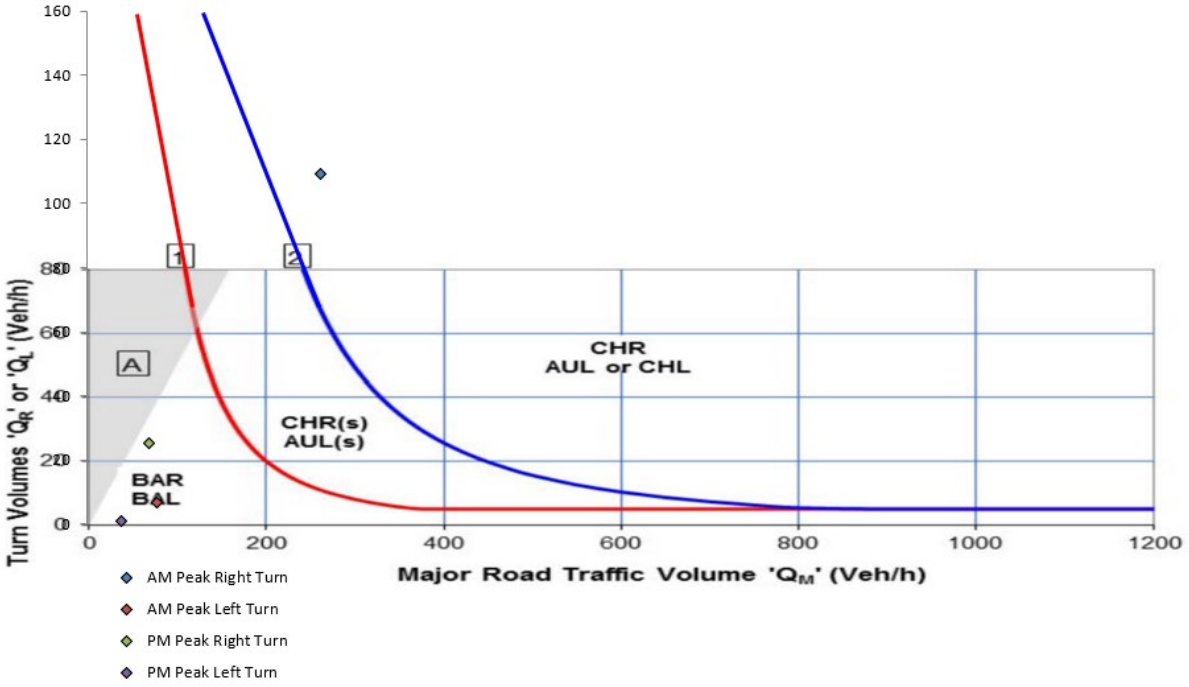
Splitter Island? No

Design speed (km/h) 110



	AM Peak	*PM Peak*
Q_{T2} =	79	39
Q_L =	7	1

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	264	109
Left	79	7
PM Peak		
Right	71	25
Left	39	1



Recommended treatments:

Right Turn	CHR
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:	08/08/2024

Turn Warrant Assessment

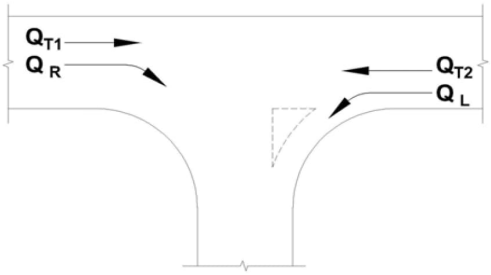
Intersection:	**Silver City Highway / Arumpo Road**
Year / Peak:	**2059 AM & PM Project Peak**
Scenario:	**Decommissioning**

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} =	264	46
Q_R =	160	39

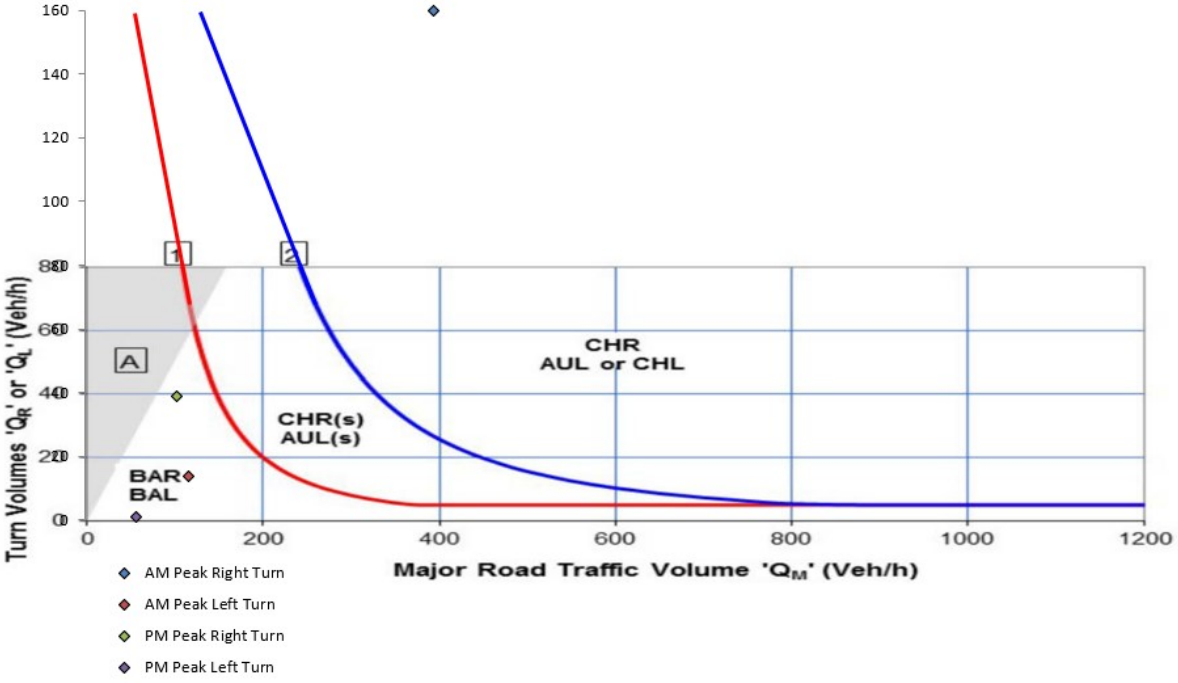
Splitter Island? No

Design speed (km/h) 110



	AM Peak	*PM Peak*
Q_{T2} =	118	58
Q_L =	13	1

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	395	160
Left	118	13
PM Peak		
Right	105	39
Left	58	1



Recommended treatments:

Right Turn	CHR
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:	08/08/2024

ACCESS TRAFFIC CONSULTING

Turn Warrant Assessment

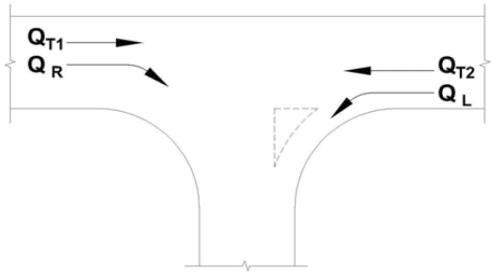
Intersection:	**Silver City Highway / Arumpo Road**
Year / Peak:	**2027 AM & PM Network Peak**
Scenario:	**Peak Construction**

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} =	162	71
Q_R =	47	49

Splitter Island? No

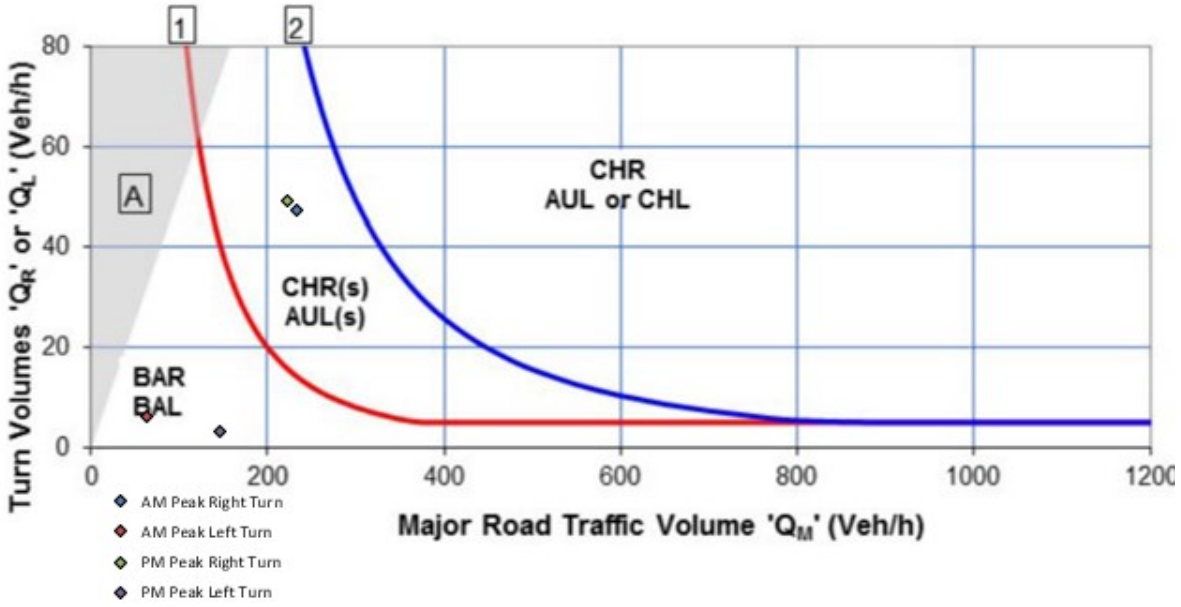
Design speed (km/h) 110



Arumpo Road

	AM Peak	*PM Peak*
Q_{T2} =	67	150
Q_L =	6	3

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	236	47
Left	67	6
PM Peak		
Right	224	49
Left	150	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:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	08/08/2024

ACCESS TRAFFIC CONSULTING

Turn Warrant Assessment

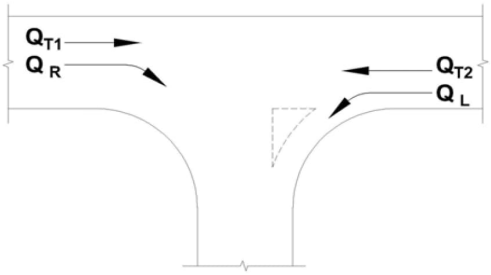
Intersection:	**Silver City Highway / Arumpo Road**
Year / Peak:	**2027 AM & PM Network Peak**
Scenario:	**Cumulative Assessment**

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} =	162	71
Q_R =	68	70

Splitter Island? No

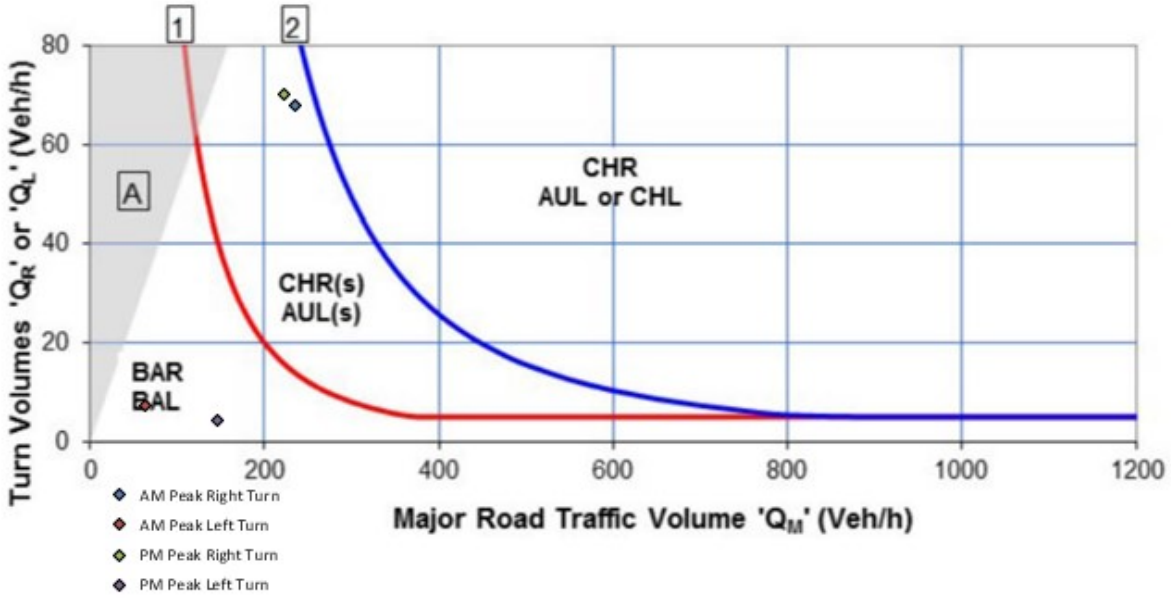
Design speed (km/h) 110



Arumpo Road

	AM Peak	*PM Peak*
Q_{T2} =	67	150
Q_L =	7	4

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	237	68
Left	67	7
PM Peak		
Right	225	70
Left	150	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:	08/08/2024

Turn Warrant Assessment

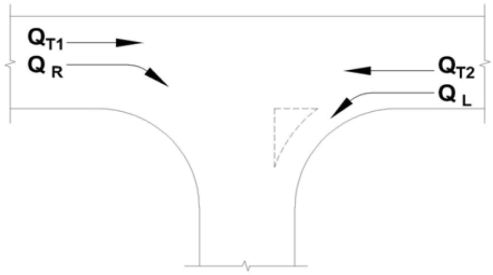
Intersection:	**Silver City Highway / Arumpo Road**
Year / Peak:	**2039 AM & PM Network Peak**
Scenario:	**Operations**

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} =	206	90
Q_R =	54	52

Splitter Island? No

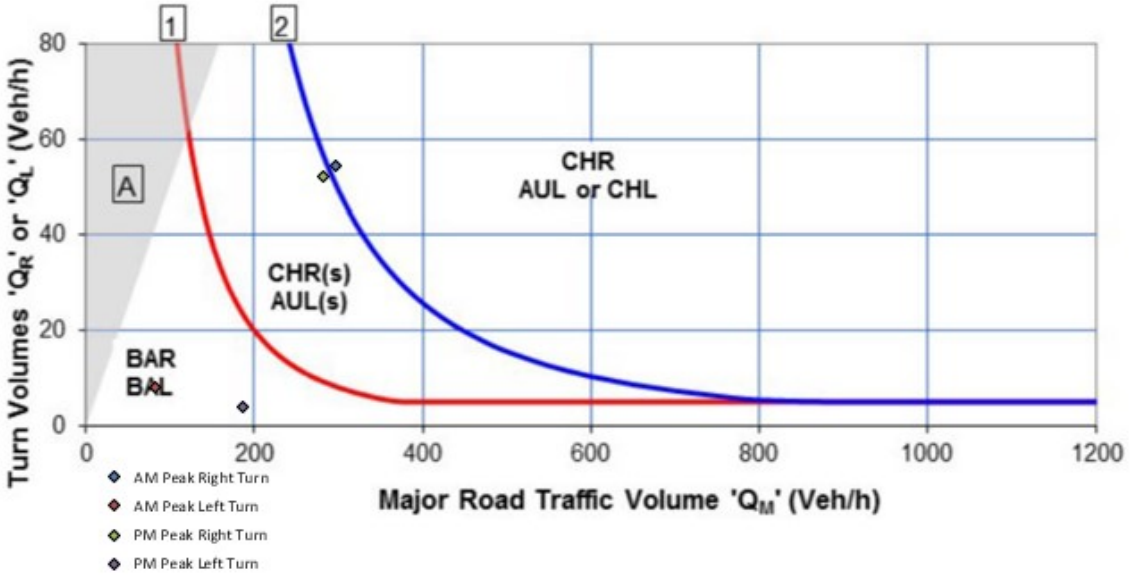
Design speed (km/h) 110



Arumpo Road

	AM Peak	*PM Peak*
Q_{T2} =	85	190
Q_L =	8	4

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	299	54
Left	85	8
PM Peak		
Right	284	52
Left	190	4



Recommended treatments:

Right Turn	CHR
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:	08/08/2024

Turn Warrant Assessment

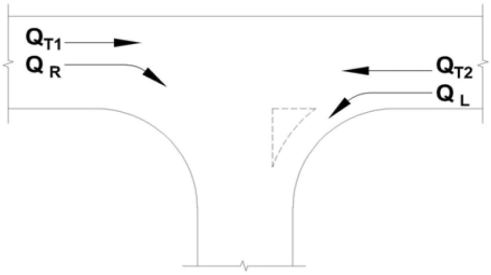
Intersection:	**Silver City Highway / Arumpo Road**
Year / Peak:	**2059 AM & PM Network Peak**
Scenario:	**Decommissioning**

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} =	306	134
Q_R =	78	79

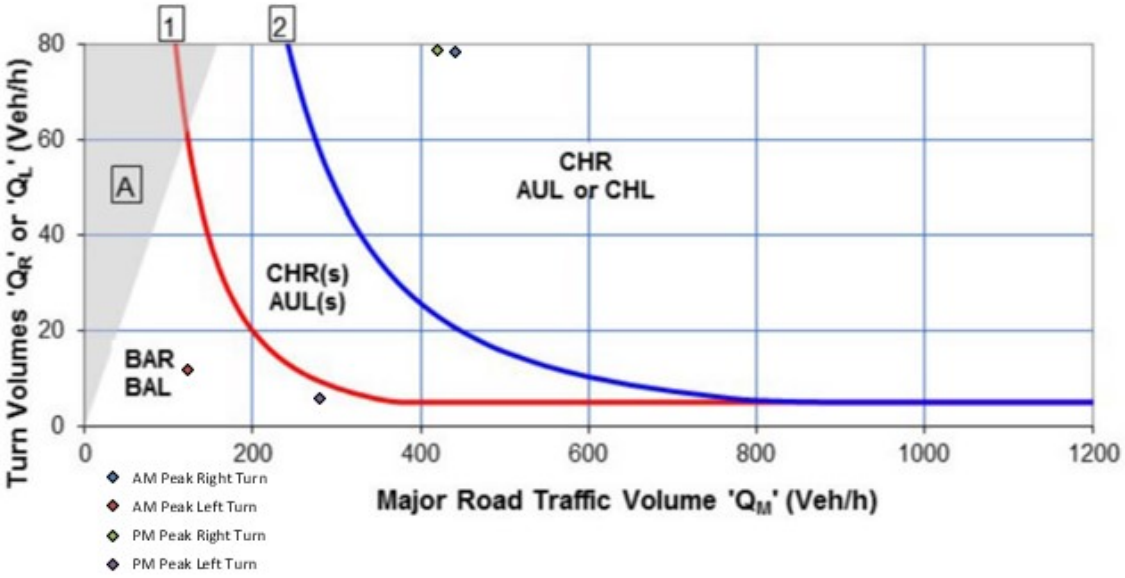
Splitter Island? No

Design speed (km/h) 110



	AM Peak	PM Peak
Q_{T2} =	126	282
Q_L =	12	6

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	444	78
Left	126	12
PM Peak		
Right	422	79
Left	282	6



Recommended treatments:

Right Turn	CHR
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:	08/08/2024

Appendix J – Project Traffic Impact Calculations

UMW0122-004 | Mallee Wind Farm & BESS Project

Project Traffic Impact % Calculations

Road ID	Road Description	Road Segment	Base Data Year	Base Year AADT			Base Year HV%		Base Year HV		10 Yr GR%	2027 AADT			2027 HV		
				Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Gaz	A-Gaz		Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	
B79	Silver City Highway (Sturt Highway to Corbett Ave)	98286	2010	2,893	2,940	5,833	*11.75%*	*11.31%*	340	333	2.0%	4,051	4,117	8,168	476	466	** HV% from adjacent site 98038
B79	Silver City Highway (Corbett Ave to Arumpo Road)	-	2024	1,838	1,771	3,609	14.04%	16.09%	258	285	2.0%	1,951	1,879	3,830	274	302	
B79	Silver City Highway (Arumpo Road to Wentworth)	-	2024	1,211	1,208	2,419	12.14%	14.40%	147	174	2.0%	1,285	1,282	2,567	156	185	
A20	Sturt Highway (Mildura to River Drv)	98063	2007	5,961	5,905	11,866	10.80%	10.96%	644	647	2.0%	8,858	8,775	17,632	957	961	
A20	Sturt Highway (River Drv to Silver City Highway)	98063	2007	5,961	5,905	11,866	10.80%	10.96%	644	647	2.0%	8,858	8,775	17,632	957	961	
A20	Sturt Highway (Silver City Highway to Gol Gol)		2010	2,730	2,730	5,460	10.80%	10.96%	644	647	2.0%	3,823	3,823	7,645	902	906	** Based on 2010 Eastbound Volume TfNSW- Assumed Westbound volume the same / HV% from Site 98063
A20	Sturt Highway (Gol Gol to Hay)	98064	2007	1,011	1,028	2,039	27.00%	27.43%	273	282	2.0%	1,502	1,528	3,030	406	419	
431	Arumpo Road (Silver City Highway to WTS Access)	-	2024	708	644	1,352	20.48%	22.52%	145	145	2.0%	751	683	1,435	154	154	
431	Arumpo Road (WTS Access to Quarry)	-	2024	708	644	1,352	20.48%	22.52%	145	145	2.0%	751	683	1,435	154	154	
431	Arumpo Road (Quarry to PEC Camp)	-	2024	708	644	1,352	20.48%	22.52%	145	145	2.0%	751	683	1,435	154	154	
431	Arumpo Road (PEC Camp to Northern Access)	98156	2010	191	181	372	*27.32%*	*33.82%*	52	61	2.0%	267	253	521	73	86	** Based on 2010 count from Site 98156 prior to PEC project / HV% from 2006 count at Site 98156
431	Arumpo Road (Northern Access to Southern Access)	98156	2010	191	181	372	*27.32%*	*33.82%*	52	61	2.0%	267	253	521	73	86	** Based on 2010 count from Site 98156 prior to PEC project / HV% from 2006 count at Site 98157

UMW0122-004 | Mallee Wind Farm & BESS Project

Project Traffic Impact % Calculations

Road ID	Road Description	Road Segment	Project Traffic (Daily) - Construction																																			Dev Traffic % Impact - Construction			In Construction Volumes		
			Gazettal																A-Gazettal																Bi-Dir								
			A	B	C	D	E	F	G	H	I	J	K	Water	Fuel	Waste	Staff	Max	A	B	C	D	E	F	G	H	I	J	K	Water	Fuel	Waste	Staff	Max	Total	LV	HV	Gaz %	A-Gaz %	Bi-Dir %	Gaz	A-Gaz	Bi-Dir
	Silver City Highway (Sturt Highway to Corbett Ave)	98286	1	10	5	10	1	1	1	1	1	3	5	2	2	0	95	**127**	1	10	5	10	1	1	1	1	1	3	5	2	2	0	95	**127**	**254**	190	64	3.14%	3.08%	3.11%	4,178	4,244	8,422
	Silver City Highway (Corbett Ave to Arumpo Road)	-	1	10	6	10	1	1	1	1	1	3	5	6	2	0	95	**132**	1	10	6	10	1	1	1	1	1	3	5	6	2	0	95	**132**	**264**	190	74	6.77%	7.02%	6.89%	2,083	2,011	4,094
	Silver City Highway (Arumpo Road to Wentworth)	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	**5**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	**5**	**10**	10	0	0.39%	0.39%	0.39%	1,290	1,287	2,577
	Sturt Highway (Mildura to River Drv)	98063	1	1	5	0	1	1	1	0	1	0	5	0	2	0	80	**90**	1	1	5	0	1	1	1	0	1	0	5	0	2	0	80	**90**	**180**	160	20	1.02%	1.03%	1.02%	8,948	8,865	17,812
	Sturt Highway (River Drv to Silver City Highway)	98063	1	10	5	0	1	1	1	0	1	0	5	2	2	0	80	**101**	1	10	5	0	1	1	1	0	1	0	5	2	2	0	80	**101**	**202**	160	42	1.14%	1.15%	1.15%	8,959	8,876	17,834
	Sturt Highway (Silver City Highway to Gol Gol)		0	0	0	10	0	0	1	1	0	3	0	0	0	0	10	**21**	0	0	0	10	0	0	1	1	0	3	0	0	0	0	10	**21**	**42**	20	22	0.55%	0.55%	0.55%	3,844	3,844	7,687
	Sturt Highway (Gol Gol to Hay)	98064	0	0	0	10	0	0	1	1	0	3	0	0	0	0	0	**11**	0	0	0	10	0	0	1	1	0	3	0	0	0	0	0	**11**	**22**	0	22	0.73%	0.72%	0.73%	1,513	1,539	3,052
	Arumpo Road (Silver City Highway to WTS Access)	-	1	10	6	10	1	1	1	1	1	3	5	6	2	0	100	**137**	1	10	6	10	1	1	1	1	1	3	5	6	2	0	100	**137**	**274**	200	74	18.23%	20.05%	19.10%	888	820	1,709
	Arumpo Road (WTS Access to Quarry)	-	1	10	6	10	1	1	1	1	1	3	5	6	2	1	100	**138**	1	10	6	10	1	1	1	1	1	3	5	6	2	1	100	**138**	**276**	200	76	18.37%	20.19%	19.24%	889	821	1,711
	Arumpo Road (Quarry to PEC Camp)	-	27	48	14	10	1	8	1	48	8	9	5	6	2	1	100	**238**	27	48	14	10	1	8	1	48	8	9	5	6	2	1	100	**238**	**476**	200	276	31.68%	34.82%	33.18%	989	921	1,911
	Arumpo Road (PEC Camp to Northern Access)	98156	27	48	14	10	1	8	1	48	8	9	5	6	2	1	100	**238**	27	48	14	10	1	8	1	48	8	9	5	6	2	1	100	**238**	**476**	200	276	88.99%	93.91%	91.38%	505	491	997
	Arumpo Road (Northern Access to Southern Access)	98156	27	43	13	9	1	7	1	48	8	9	2	2	2	1	111	**237**	27	43	13	9	1	7	1	48	8	9	2	2	2	1	111	**237**	**474**	222	252	88.62%	93.51%	91.00%	504	490	995
WSC	River Drive (Sturt Highway to Raw Water Supply)	-	0	10	0	0	0	0	0	0	0	0	0	2	0	0	0	**12**	0	10	0	0	0	0	0	0	0	0	0	2	0	0	0	**12**	**24**	0	24						
WSC	Corbett Avenue (Silver City Hwy to Modica Crs E)	-	0	0	2	0	0	1	1	0	1	0	0	4	0	0	0	**7**	0	0	2	0	0	1	1	0	1	0	0	4	0	0	0	**7**	**14**	0	14						
WSC	Modica Crescent (Corbett Ave W to Corbett Ave E)	-	0	0	2	0	0	1	1	0	1	0	0	4	0	0	0	**7**	0	0	2	0	0	1	1	0	1	0	0	4	0	0	0	**7**	**14**	0	14						

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Background Traffic Volume Forecast Calculations

Road ID	Road Description	AADT Segment	Base Data Year	Base Year AADT			Base Year HV%		Base Year HV		10 Yr GR%	2027 AADT			2027 HV		2039 AADT			2039 HV		2059 AADT			2059 HV	
				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	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz
B79	Silver City Highway (Sturt Highway to Corbett Ave)	98286	2010	2,893	2,940	5,833	*11.75%*	*11.31%*	340	333	2.0%	4,051	4,117	8,168	476	466	5,138	5,221	10,359	604	590	7,634	7,758	15,392	897	877
B79	Silver City Highway (Corbett Ave to Arumpo Road)	-	2024	1,838	1,771	3,609	14.04%	16.09%	258	285	2.0%	1,951	1,879	3,830	274	302	2,474	2,384	4,857	347	384	3,676	3,542	7,218	516	570
B79	Silver City Highway (Arumpo Road to Wentworth)	-	2024	1,211	1,208	2,419	12.14%	14.40%	147	174	2.0%	1,285	1,282	2,567	156	185	1,630	1,626	3,256	198	234	2,422	2,416	4,838	294	348
A20	Sturt Highway (Mildura to River Drv)	98063	2007	5,961	5,905	11,866	10.80%	10.96%	644	647	2.0%	8,858	8,775	17,632	957	961	11,234	11,128	22,362	1,214	1,219	16,693	16,536	33,229	1,803	1,812
A20	Sturt Highway (River Drv to Silver City Highway)	98063	2007	5,961	5,905	11,866	10.80%	10.96%	644	647	2.0%	8,858	8,775	17,632	957	961	11,234	11,128	22,362	1,214	1,219	16,693	16,536	33,229	1,803	1,812
A20	Sturt Highway (Silver City Highway to Gol Gol)		2010	2,730	2,730	5,460	10.80%	10.96%	644	647	2.0%	3,823	3,823	7,645	902	906	4,848	4,848	9,696	1,144	1,149	7,204	7,204	14,408	1,699	1,707
A20	Sturt Highway (Gol Gol to Hay)	98064	2007	1,011	1,028	2,039	27.00%	27.43%	273	282	2.0%	1,502	1,528	3,030	406	419	1,905	1,937	3,843	514	531	2,831	2,879	5,710	764	790
	Arumpo Road (Silver City Highway to WTS Access)	-	2024	708	644	1,352	20.48%	22.52%	145	145	2.0%	751	683	1,435	154	154	953	867	1,820	195	195	1,416	1,288	2,704	290	290
	Arumpo Road (WTS Access to Quarry)	-	2024	708	644	1,352	20.48%	22.52%	145	145	2.0%	751	683	1,435	154	154	953	867	1,820	195	195	1,416	1,288	2,704	290	290
	Arumpo Road (Quarry to PEC Camp)	-	2024	708	644	1,352	20.48%	22.52%	145	145	2.0%	751	683	1,435	154	154	953	867	1,820	195	195	1,416	1,288	2,704	290	290
	Arumpo Road (PEC Camp to Northern Access)	98156	2010	191	181	372	*27.32%*	*33.82%*	52	61	2.0%	267	253	521	73	86	339	321	661	93	109	504	478	982	138	162
	Arumpo Road (Northern Access to Southern Access)	98156	2010	191	181	372	*27.32%*	*33.82%*	52	61	2.0%	267	253	521	73	86	339	321	661	93	109	504	478	982	138	162

Project Traffic Impact % Calculations

Road ID	Road Description	AADT Segment	MWF Construction			MWF Operations			MWF Decommissioing		
			Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
B79	Silver City Highway (Sturt Highway to Corbett Ave)	98286	127	127	**254**	31	31	**62**	89	89	**178**
B79	Silver City Highway (Corbett Ave to Arumpo Road)	-	132	132	**264**	31	31	**62**	92	92	**185**
B79	Silver City Highway (Arumpo Road to Wentworth)	-	5	5	**10**	0	0	**0**	4	4	**7**
A20	Sturt Highway (Mildura to River Drv)	98063	90	90	**180**	31	31	**62**	63	63	**126**
A20	Sturt Highway (River Drv to Silver City Highway)	98063	101	101	**202**	31	31	**62**	71	71	**141**
A20	Sturt Highway (Silver City Highway to Gol Gol)		21	21	**42**	0	0	**0**	15	15	**29**
A20	Sturt Highway (Gol Gol to Hay)	98064	11	11	**22**	0	0	**0**	8	8	**15**
	Arumpo Road (Silver City Highway to WTS Access)	-	137	137	**274**	31	31	**62**	96	96	**192**
	Arumpo Road (WTS Access to Quarry)	-	138	138	**276**	31	31	**62**	97	97	**193**
	Arumpo Road (Quarry to PEC Camp)	-	238	238	**476**	31	31	**62**	167	167	**333**
	Arumpo Road (PEC Camp to Northern Access)	98156	238	238	**476**	31	31	**62**	167	167	**333**
	Arumpo Road (Northern Access to Southern Access)	98156	237	237	**474**	31	31	**62**	166	166	**332**

MWF % Increase			MWF In Construction Vols			MWF Operations % Increase			MWF Operations			MWF Decommissioing %			MWF Decommissioing		
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
3.1%	3.1%	3.1%	4,178	4,244	8,422	0.6%	0.6%	0.6%	5,169	5,252	10,421	1.2%	1.1%	1.2%	7,723	7,847	15,570
6.8%	7.0%	6.9%	2,083	2,011	4,094	1.3%	1.3%	1.3%	2,505	2,415	4,919	2.5%	2.6%	2.6%	3,768	3,634	7,402
0.4%	0.4%	0.4%	1,290	1,287	2,577	0.0%	0.0%	0.0%	1,630	1,626	3,256	0.1%	0.1%	0.1%	2,425	2,419	4,845
1.0%	1.0%	1.0%	8,948	8,865	17,812	0.3%	0.3%	0.3%	11,265	11,159	22,424	0.4%	0.4%	0.4%	16,756	16,599	33,355
1.1%	1.2%	1.1%	8,959	8,876	17,834	0.3%	0.3%	0.3%	11,265	11,159	22,424	0.4%	0.4%	0.4%	16,763	16,607	33,370
0.5%	0.5%	0.5%	3,844	3,844	7,687	0.0%	0.0%	0.0%	4,848	4,848	9,696	0.2%	0.2%	0.2%	7,219	7,219	14,437
0.7%	0.7%	0.7%	1,513	1,539	3,052	0.0%	0.0%	0.0%	1,905	1,937	3,843	0.3%	0.3%	0.3%	2,839	2,886	5,725
18.2%	20.0%	19.1%	888	820	1,709	3.3%	3.6%	3.4%	984	898	1,882	6.8%	7.4%	7.1%	1,512	1,384	2,896
18.4%	20.2%	19.2%	889	821	1,711	3.3%	3.6%	3.4%	984	898	1,882	6.8%	7.5%	7.1%	1,513	1,385	2,897
31.7%	34.8%	33.2%	989	921	1,911	3.3%	3.6%	3.4%	984	898	1,882	11.8%	12.9%	12.3%	1,583	1,455	3,037
89.0%	93.9%	91.4%	505	491	997	9.1%	9.6%	9.4%	370	352	723	33.1%	34.9%	33.9%	671	644	1,315
88.6%	93.5%	91.0%	504	490	995	9.1%	9.6%	9.4%	370	352	723	32.9%	34.7%	33.8%	670	644	1,313

External Project Traffic Volume Calculations

Road ID	Road Description	AADT Segment	Euston Mineral Sands			Mallee Solar Farm			Gol Gol Solar Farm			Gol Gol BESS			Buronga WTS Expansion			Euston Wind Farm			Koorakee Energy Park		
			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
B79	Silver City Highway (Sturt Highway to Corbett Ave)	98286	0	0	**0**	95	95	**191**	64	64	**127**	48	48	**95**	97	97	**194**	0	0	**0**	0	0	**0**
B79	Silver City Highway (Corbett Ave to Arumpo Road)	-	0	0	**0**	99	99	**198**	66	66	**132**	50	50	**99**	97	97	**194**	0	0	**0**	0	0	**0**
B79	Silver City Highway (Arumpo Road to Wentworth)	-	0	0	**0**	4	4	**8**	3	3	**5**	2	2	**4**	10	10	**20**	0	0	**0**	0	0	**0**
A20	Sturt Highway (Mildura to River Drv)	98063	175	175	**350**	68	68	**135**	45	45	**90**	34	34	**68**	83	83	**166**	50	50	**100**	50	50	**100**
A20	Sturt Highway (River Drv to Silver City Highway)	98063	175	175	**350**	76	76	**152**	51	51	**101**	38	38	**76**	83	83	**166**	50	50	**100**	50	50	**100**
A20	Sturt Highway (Silver City Highway to Gol Gol)		175	175	**350**	16	16	**32**	11	11	**21**	8	8	**16**	14	14	**28**	50	50	**100**	50	50	**100**
A20	Sturt Highway (Gol Gol to Hay)	98064	175	175	**350**	8	8	**17**	6	6	**11**	4	4	**8**	0	0	**0**	50	50	**100**	50	50	**100**
	Arumpo Road (Silver City Highway to WTS Access)	-	0	0	**0**	103	103	**206**	69	69	**137**	51	51	**103**	107	107	**214**	0	0	**0**	0	0	**0**
	Arumpo Road (WTS Access to Quarry)	-	0	0	**0**	104	104	**207**	69	69	**138**	52	52	**104**	0	0	**0**	0	0	**0**	0	0	**0**
	Arumpo Road (Quarry to PEC Camp)	-	0	0	**0**	179	179	**357**	119	119	**238**	89	89	**179**	0	0	**0**	0	0	**0**	0	0	**0**
	Arumpo Road (PEC Camp to Northern Access)	98156	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
	Arumpo Road (Northern Access to Southern Access)	98156	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**

Overall External Project		
Gaz	A-Gaz	Bi-Dir
303	303	**607**
312	312	**623**
18	18	**36**
504	504	**1,009**
522	522	**1,044**
323	323	**646**
293	293	**586**
330	330	**659**
224	224	**449**
387	387	**774**
0	0	**0**
0	0	**0**

MWF + External			MWF+ External % Increase		
Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
4,481	4,547	9,028	10.6%	10.5%	10.5%
2,394	2,323	4,717	22.7%	23.6%	23.2%
1,308	1,305	2,613	1.8%	1.8%	1.8%
9,452	9,369	18,821	6.7%	6.8%	6.7%
9,481	9,398	18,879	7.0%	7.1%	7.1%
4,167	4,167	8,334	9.0%	9.0%	9.0%
1,806	1,831	3,638	20.2%	19.9%	20.1%
1,218	1,150	2,368	62.1%	68.3%	65.0%
1,114	1,046	2,159	48.2%	53.0%	50.5%
1,376	1,308	2,684	83.2%	91.4%	87.1%
505	491	997	89.0%	93.9%	91.4%
504	490	995	88.6%	93.5%	91.0%

Appendix K – Project Pavement Loading Calculations

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Project Pavement Loadings

PHASE A - SITE MOBILISATION AND COMPOUND ESTABLISHMENT

Activity Description	Project Volume	Vehicle	Origin
Main Construction Compound - Base Construction Aggregate	1,235	Truck and Dog Trailer	Arumpo Road Quarry
Main Construction Compound - Miscelaneous Deliveries	1	Low Loader	Mildura
Accomodation Camp - Base Construction Aggregate	480	Truck and Dog Trailer	Arumpo Road Quarry
Minor Construction Compound (North) - Base Construction Aggregate	549	Truck and Dog Trailer	Arumpo Road Quarry
Minor Construction Compound (South) - Base Construction Aggregate	549	Truck and Dog Trailer	Arumpo Road Quarry
Concrete Batch Plant - Base Construction Imported Material	138	Truck and Dog Trailer	Arumpo Road Quarry
Site Laydown Areas - Base Construction Imported Material	919	Truck and Dog Trailer	Arumpo Road Quarry

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs
Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs

Route Summary	Gaz	A-Gaz
Silver City Highway (Sturt Highway to Corbett Ave)	5	1
Silver City Highway (Corbett Ave to Arumpo Road)	5	1
Silver City Highway (Arumpo Road to Wentworth)	0	0
Sturt Highway (Mildura to River Drv)	5	1
Sturt Highway (River Drv to Silver City Highway)	5	1
Sturt Highway (Silver City Highway to Gol Gol)	0	0
Sturt Highway (Gol Gol to Hay)	0	0
Arumpo Road (Silver City Highway to WTS Access)	5	1
Arumpo Road (WTS Access to Quarry)	5	1
Arumpo Road (Quarry to Northern Access)	23,805	6,347
Arumpo Road (Northern Access to Southern Access)	17,477	4,660

PHASE B - INTERNAL ACCESS ROAD AND HARDSTAND CONSTRUCTION

Activity Description	Project Volume	Vehicle	Origin
Machinery and Civil Equipment (North)	2	Low Loader	Mildura
Machinery and Civil Equipment (South)	18	Low Loader	Mildura
Access Track Construction (North) - Imported Material (Fill)	675	Truck and Dog Trailer	Arumpo Road Quarry
Access Track Construction (North) - Imported Material (Capping)	75	Truck and Dog Trailer	Arumpo Road Quarry
Access Track Construction (North) - Water for Dust Suppression	313	Water Tanker	Buronga - River Drive
Access Track Construction (South) - Imported Material (Fill)	5,106	Truck and Dog Trailer	Arumpo Road Quarry
Access Track Construction (South) - Imported Material (Capping)	568	Truck and Dog Trailer	Arumpo Road Quarry
Access Track Construction (South) - Water for Dust Suppression	2,365	Water Tanker	Buronga - River Drive
Crane Hardstand Areas (North) - Imported Material (Fill)	237	Truck and Dog Trailer	Arumpo Road Quarry
Crane Hardstand Areas (North) - Imported Material (Capping)	26	Truck and Dog Trailer	Arumpo Road Quarry
Crane Hardstand Areas (South) - Imported Material (Fill)	2,015	Truck and Dog Trailer	Arumpo Road Quarry
Crane Hardstand Areas (South) - Imported Material (Capping)	225	Truck and Dog Trailer	Arumpo Road Quarry
Turbine Laydown Areas (North) - Imported Material (Fill)	198	Truck and Dog Trailer	Arumpo Road Quarry
Turbine Laydown Areas (North) - Imported Material (Capping)	22	Truck and Dog Trailer	Arumpo Road Quarry
Turbine Laydown Areas (South) - Imported Material (Fill)	1,679	Truck and Dog Trailer	Arumpo Road Quarry
Turbine Laydown Areas (South) - Imported Material (Capping)	187	Truck and Dog Trailer	Arumpo Road Quarry

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs
Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs

Route Summary	Gaz	A-Gaz
Silver City Highway (Sturt Highway to Corbett Ave)	13,301	1,376
Silver City Highway (Corbett Ave to Arumpo Road)	13,301	1,376
Silver City Highway (Arumpo Road to Wentworth)	0	0
Sturt Highway (Mildura to River Drv)	99	10
Sturt Highway (River Drv to Silver City Highway)	13,301	1,376
Sturt Highway (Silver City Highway to Gol Gol)	0	0
Sturt Highway (Gol Gol to Hay)	0	0
Arumpo Road (Silver City Highway to WTS Access)	13,301	1,376
Arumpo Road (WTS Access to Quarry)	13,301	1,376
Arumpo Road (Quarry to Northern Access)	81,031	19,437
Arumpo Road (Northern Access to Southern Access)	71,894	17,254

PHASE C - WIND TURBINE FOUNDATION CONSTRUCTION

Activity Description	Project Volume	Vehicle	Origin
WTG Foundations (North) - Steel Anchors	16	Low Loader	Mildura
WTG Foundations (South) - Steel Anchors	136	Low Loader	Mildura
WTG Foundations (North) - Water (for concrete)	40	Water Tanker	Buronga - Modica Crescent
WTG Foundations (South) - Water (for concrete)	340	Water Tanker	Buronga - Modica Crescent
WTG Foundations (North) - Steel Reinforcement	74	Truck and Dog Trailer	Mildura
WTG Foundations (South) - Steel Reinforcement	628	Truck and Dog Trailer	Mildura
WTG Foundations (North) - Sand	99	Truck and Dog Trailer	Arumpo Road Quarry
WTG Foundations (South) - Sand	840	Truck and Dog Trailer	Arumpo Road Quarry
WTG Foundations (North) - Aggregate	148	Truck and Dog Trailer	Arumpo Road Quarry
WTG Foundations (South) - Aggregate	1260	Truck and Dog Trailer	Arumpo Road Quarry
WTG Foundations (North) - Cement	46	Truck and Dog Trailer	Mildura
WTG Foundations (South) - Cement	394	Truck and Dog Trailer	Mildura

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs
Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs

Route Summary	Gaz	A-Gaz
Silver City Highway (Sturt Highway to Corbett Ave)	6,379	660
Silver City Highway (Corbett Ave to Arumpo Road)	8,253	854
Silver City Highway (Arumpo Road to Wentworth)	0	0
Sturt Highway (Mildura to River Drv)	6,379	660
Sturt Highway (River Drv to Silver City Highway)	6,379	660
Sturt Highway (Silver City Highway to Gol Gol)	0	0
Sturt Highway (Gol Gol to Hay)	0	0
Arumpo Road (Silver City Highway to WTS Access)	8,253	854
Arumpo Road (WTS Access to Quarry)	8,253	854
Arumpo Road (Quarry to Northern Access)	22,687	4,703
Arumpo Road (Northern Access to Southern Access)	20,299	4,208

PHASE D - WTG COMPONENT DELIVERY TO SITE

Activity Description	Project Volume	Vehicle	Origin
Blades - WTG Northern Site Area	24	OSOM Special	Newcastle
Blades - WTG Southern Site Area	204	OSOM Special	Newcastle
Hub - WTG Northern Site Area	8	OSOM Special	Newcastle
Hub - WTG Southern Site Area	68	OSOM Special	Newcastle
Nacelle - WTG Northern Site Area	8	OSOM Special	Newcastle
Nacelle - WTG Southern Site Area	68	OSOM Special	Newcastle
Power Train - WTG Northern Site Area	8	OSOM Special	Newcastle
Power Train - WTG Southern Site Area	68	OSOM Special	Newcastle
Cooler Top - WTG Northern Site Area	8	Semi Trailer	Newcastle
Cooler Top - WTG Southern Site Area	68	Semi Trailer	Newcastle
Base Tower - WTG Northern Site Area	8	OSOM Special	Newcastle
Base Tower - WTG Southern Site Area	68	OSOM Special	Newcastle
Section 2 Towers - WTG Northern Site Area	8	OSOM Special	Newcastle
Section 2 Towers - WTG Southern Site Area	68	OSOM Special	Newcastle
Section 3 Towers - WTG Northern Site Area	8	OSOM Special	Newcastle
Section 3 Towers - WTG Southern Site Area	68	OSOM Special	Newcastle
Section 4 Towers - WTG Northern Site Area	8	OSOM Special	Newcastle
Section 4 Towers - WTG Southern Site Area	68	OSOM Special	Newcastle
Section 5 Towers - WTG Northern Site Area	8	OSOM Special	Newcastle
Section 5 Towers - WTG Southern Site Area	68	OSOM Special	Newcastle
Section 6 Towers - WTG Northern Site Area	8	OSOM Special	Newcastle
Section 6 Towers - WTG Southern Site Area	68	OSOM Special	Newcastle
Top Towers - WTG Northern Site Area	8	OSOM Special	Newcastle
Top Towers - WTG Southern Site Area	68	OSOM Special	Newcastle
WTG Container - WTG Northern Site Area	8	Semi Trailer	Newcastle
WTG Container- WTG Southern Site Area	68	Semi Trailer	Newcastle

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 (6 & Top) Transport Unloaded (Average) (0%)	2.59	ESAs
Turbine Tower Section (6 & Top) Transport Loaded (Average) (100%)	14.86	ESAs
Turbine Tower Section (Base & 2-5) Transport Unloaded (Average) (0%)	2.73	ESAs
Turbine Tower Section (Base & 2-5) Transport Loaded (Average) (100%)	22.87	ESAs
Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Gaz	A-Gaz
Silver City Highway (Sturt Highway to Corbett Ave)	18,841	4,433
Silver City Highway (Corbett Ave to Arumpo Road)	18,841	4,433
Silver City Highway (Arumpo Road to Wentworth)	0	0
Sturt Highway (Mildura to River Drv)	0	0
Sturt Highway (River Drv to Silver City Highway)	0	0
Sturt Highway (Silver City Highway to Gol Gol)	4,433	18,841
Sturt Highway (Gol Gol to Hay)	4,433	18,841
OSOM Transport route east of Hay	4,433	18,841
Arumpo Road (Silver City Highway to WTS Access)	18,841	4,433
Arumpo Road (WTS Access to Quarry)	18,841	4,433
Arumpo Road (Quarry to Northern Access)	18,841	4,433
Arumpo Road (Northern Access to Southern Access)	16,858	3,966

PHASE E - WTG INSTALLATION

Activity Description	Project Volume	Vehicle	Origin
WTG Erection Cranes (North)	6	OSOM Special	Mildura
WTG Erection Cranes (South)	6	OSOM Special	Mildura

Special Crane (Assume B-Double) Unloaded (0%)	1.69	ESAs
Special Crane (Assume B-Double) Loaded (100%)	6.91	ESAs

Route Summary	Gaz	A-Gaz
Silver City Highway (Sturt Highway to Corbett Ave)	83	20
Silver City Highway (Corbett Ave to Arumpo Road)	83	20
Silver City Highway (Arumpo Road to Wentworth)	0	0
Sturt Highway (Mildura to River Drv)	83	20
Sturt Highway (River Drv to Silver City Highway)	83	20
Sturt Highway (Silver City Highway to Gol Gol)	0	0
Sturt Highway (Gol Gol to Hay)	0	0
Arumpo Road (Silver City Highway to WTS Access)	83	20
Arumpo Road (WTS Access to Quarry)	83	20
Arumpo Road (Quarry to Northern Access)	83	20
Arumpo Road (Northern Access to Southern Access)	41	10

PHASE F - ELECTRICAL TRENCHING AND CABLING

Activity Description	Project Volume	Vehicle	Origin
Electrical Cabling - HV Cable (South)	9	Low Loader	Mildura
Electrical Cabling - HV Towers (South)	89	Semi Trailer	Mildura
Electrical Cabling - LV Cable (North)	6	Low Loader	Mildura
Electrical Cabling - LV Cable (South)	39	Low Loader	Mildura
Electrical Cabling - LV Trench Sand (North)	239	Truck and Dog Trailer	Arumpo Road Quarry
Electrical Cabling - LV Trench Sand (South)	2,406	Truck and Dog Trailer	Arumpo Road Quarry
Cable Trenching Equipment	13	Low Loader	Mildura
HV Transmission Foundation (Water for Concrete)	7	Water Tanker	Buronga - Modica Crescent
HV Transmission Foundation (Steel Reinforcement)	12	Truck and Dog Trailer	Mildura
HV Transmission Foundation (Sand)	16	Truck and Dog Trailer	Arumpo Road Quarry
HV Transmission Foundation (Aggregate)	24	Truck and Dog Trailer	Arumpo Road Quarry
HV Transmission Foundation (Cement)	8	Truck and Dog Trailer	Mildura

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs
Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs

Route Summary	Gaz	A-Gaz
Silver City Highway (Sturt Highway to Corbett Ave)	892	112
Silver City Highway (Corbett Ave to Arumpo Road)	927	116
Silver City Highway (Arumpo Road to Wentworth)	0	0
Sturt Highway (Mildura to River Drv)	892	112
Sturt Highway (River Drv to Silver City Highway)	892	112
Sturt Highway (Silver City Highway to Gol Gol)	0	0
Sturt Highway (Gol Gol to Hay)	0	0
Arumpo Road (Silver City Highway to WTS Access)	927	116
Arumpo Road (WTS Access to Quarry)	927	116
Arumpo Road (Quarry to Northern Access)	17,439	4,519
Arumpo Road (Northern Access to Southern Access)	15,940	4,124

PHASE G - WTG COMMISSIONING AND TESTING

Activity Description	Project Volume	Vehicle	Origin
PMM Delivery (North)	2	Semi Trailer	Newcastle
PMM Foundation (Water for Concrete) (North)	1	Water Tanker	Buronga - Modica Crescent
PMM Foundation (Steel Reinforcement) (North)	1	Truck and Dog Trailer	Mildura
PMM Foundation (Sand) (North)	1	Truck and Dog Trailer	Arumpo Road Quarry
PMM Foundation (Aggregate) (North)	1	Truck and Dog Trailer	Arumpo Road Quarry
PMM Foundation (Cement) (North)	1	Truck and Dog Trailer	Mildura
PMM Delivery (South)	5	Semi Trailer	Newcastle
PMM Foundation (Water for Concrete) (South)	1	Water Tanker	Buronga - Modica Crescent
PMM Foundation (Steel Reinforcement) (South)	1	Truck and Dog Trailer	Mildura
PMM Foundation (Sand) (South)	1	Truck and Dog Trailer	Arumpo Road Quarry
PMM Foundation (Aggregate) (South)	1	Truck and Dog Trailer	Arumpo Road Quarry
PMM Foundation (Cement) (South)	1	Truck and Dog Trailer	Mildura

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs
Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs

Route Summary	Gaz	A-Gaz
Silver City Highway (Sturt Highway to Corbett Ave)	59	10
Silver City Highway (Corbett Ave to Arumpo Road)	71	13
Silver City Highway (Arumpo Road to Wentworth)	0	0
Sturt Highway (Mildura to River Drv)	25	7
Sturt Highway (River Drv to Silver City Highway)	25	7
Sturt Highway (Silver City Highway to Gol Gol)	4	35
Sturt Highway (Gol Gol to Hay)	4	35
OSOM Transport route east of Hay	4	35
Arumpo Road (Silver City Highway to WTS Access)	71	13
Arumpo Road (WTS Access to Quarry)	71	13
Arumpo Road (Quarry to Northern Access)	91	15
Arumpo Road (Northern Access to Southern Access)	53	8

PHASE H - SUBSTATION AND ELECTRICAL CONNECTION CONSTRUCTION

Activity Description	Project Volume	Vehicle	Origin
Substation Civils - Imported Materials (Fill)	1,235	Truck and Dog Trailer	Arumpo Road Quarry
Substation Civils - Imported Materials (Capping)	138	Truck and Dog Trailer	Arumpo Road Quarry
Substation Electrical Components - Substation Equipment (Transformer)	6	OSOM Special	Newcastle
Substation Electrical Components - Substation Equipment (Switchgear)	6	OSOM Special	Newcastle
Substation Electrical Components - Substation Equipment (Cabling)	1	OSOM Special	Newcastle
Substation Electrical Components - Substation Equipment (Misc. Equipment)	1	OSOM Special	Newcastle
Collector Substations Civils - Imported Materials (Fill)	4,938	Truck and Dog Trailer	Arumpo Road Quarry
Collector Substations Civils - Imported Materials (Capping)	549	Truck and Dog Trailer	Arumpo Road Quarry

Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs
Large Electrical Components Unloaded (0%)	37.77	ESAs
Large Electrical Components Loaded (100%)	89.31	ESAs

Route Summary	Gaz	A-Gaz
Silver City Highway (Sturt Highway to Corbett Ave)	1,250	529
Silver City Highway (Corbett Ave to Arumpo Road)	1,250	529
Silver City Highway (Arumpo Road to Wentworth)	0	0
Sturt Highway (Mildura to River Drv)	0	0
Sturt Highway (River Drv to Silver City Highway)	0	0
Sturt Highway (Silver City Highway to Gol Gol)	529	1,250
Sturt Highway (Gol Gol to Hay)	529	1,250
OSOM Transport route east of Hay	529	1,250
Arumpo Road (Silver City Highway to WTS Access)	1,250	529
Arumpo Road (WTS Access to Quarry)	1,250	529
Arumpo Road (Quarry to Northern Access)	43,439	11,779
Arumpo Road (Northern Access to Southern Access)	43,439	11,779

PHASE I - OPERATIONAL INFRASTRUCTURE

Activity Description	Project Volume	Vehicle	Origin
Construction O&M Facility (Water for Concrete) (South)	7	Water Tanker	Buronga - Modica Crescent
Construction O&M Facility (Steel Reinforcement) (South)	13	Truck and Dog Trailer	Mildura
Construction O&M Facility (Sand) (South)	17	Truck and Dog Trailer	Arumpo Road Quarry
Construction O&M Facility (Aggregate) (South)	25	Truck and Dog Trailer	Arumpo Road Quarry
Construction O&M Facility (Cement) (South)	8	Truck and Dog Trailer	Mildura
Construction O&M Facility (Imported Fill) (South)	494	Truck and Dog Trailer	Arumpo Road Quarry

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs
Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs

Route Summary	Gaz	A-Gaz
Silver City Highway (Sturt Highway to Corbett Ave)	129	34
Silver City Highway (Corbett Ave to Arumpo Road)	164	38
Silver City Highway (Arumpo Road to Wentworth)	0	0
Sturt Highway (Mildura to River Drv)	129	34
Sturt Highway (River Drv to Silver City Highway)	129	34
Sturt Highway (Silver City Highway to Gol Gol)	0	0
Sturt Highway (Gol Gol to Hay)	0	0
Arumpo Road (Silver City Highway to WTS Access)	164	38
Arumpo Road (WTS Access to Quarry)	164	38
Arumpo Road (Quarry to Northern Access)	3,460	917
Arumpo Road (Northern Access to Southern Access)	3,460	917

PHASE J - BESS CONSTRUCTION

Activity Description	Project Volume	Vehicle	Origin
BESS Civils - Imported Materials (Fill)	772	Truck and Dog Trailer	Arumpo Road Quarry
BESS Civils - Imported Materials (Capping)	86	Truck and Dog Trailer	Arumpo Road Quarry
BESS Components - Battery Segments & Collectors	220	Semi Trailer	Newcastle
BESS Components - Power Conversion Stations (PCS)	132	Semi Trailer	Newcastle
BESS Components - MV Skid Units	46	Semi Trailer	Newcastle
BESS Components - Power Transformers	2	OSOM Special	Newcastle
BESS Components - High Voltage Switch Gear	2	OSOM Special	Newcastle
BESS Components - Control Room	1	OSOM Special	Newcastle

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs
Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs
Large Electrical Components Unloaded (0%)	37.77	ESAs
Large Electrical Components Loaded (100%)	89.31	ESAs

Route Summary	Gaz	A-Gaz
Silver City Highway (Sturt Highway to Corbett Ave)	2,409	392
Silver City Highway (Corbett Ave to Arumpo Road)	2,409	392
Silver City Highway (Arumpo Road to Wentworth)	0	0
Sturt Highway (Mildura to River Drv)	0	0
Sturt Highway (River Drv to Silver City Highway)	0	0
Sturt Highway (Silver City Highway to Gol Gol)	392	2,409
Sturt Highway (Gol Gol to Hay)	392	2,409
OSOM Transport route east of Hay	392	2,409
Arumpo Road (Silver City Highway to WTS Access)	2,409	392
Arumpo Road (WTS Access to Quarry)	2,409	392
Arumpo Road (Quarry to Northern Access)	7,685	1,799
Arumpo Road (Northern Access to Southern Access)	7,685	1,799

PHASE K - DECOMMISSION TEMPORARY STRUCTURES AND DEMOBILISATION

Activity Description	Project Volume	Vehicle	Origin
Main Construction Compound Demobilisation (South)	20	Semi Trailer	Mildura
Accomodation Camp Demobilisation (North)	50	Semi Trailer	Mildura
Minor Construction Compound Demobilisation (North)	10	Semi Trailer	Mildura
Minor Construction Compound Demobilisation (South)	10	Semi Trailer	Mildura
Batch Plant Demobilisation (South)	10	Semi Trailer	Mildura

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Gaz	A-Gaz
Silver City Highway (Sturt Highway to Corbett Ave)	51	493
Silver City Highway (Corbett Ave to Arumpo Road)	51	493
Silver City Highway (Arumpo Road to Wentworth)	0	0
Sturt Highway (Mildura to River Drv)	51	493
Sturt Highway (River Drv to Silver City Highway)	51	493
Sturt Highway (Silver City Highway to Gol Gol)	0	0
Sturt Highway (Gol Gol to Hay)	0	0
Arumpo Road (Silver City Highway to WTS Access)	51	493
Arumpo Road (WTS Access to Quarry)	51	493
Arumpo Road (Quarry to Northern Access)	51	493
Arumpo Road (Northern Access to Southern Access)	20	197

GENERAL OPERATIONS - SITE WATER (RAW & POTABLE)

Activity Description	Project Volume	Vehicle	Origin
Raw Water (General Operations) - Northern Site	117	Water Tanker	Buronga - River Drive
Raw Water (General Operations) - Southern Site	995	Water Tanker	Buronga - River Drive
Potable Water (General Operations) - Northern Site	3,330	Water Tanker	Buronga - Modica Crescent

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Gaz	A-Gaz
Silver City Highway (Sturt Highway to Corbett Ave)	5,482	567
Silver City Highway (Corbett Ave to Arumpo Road)	21,899	2,265
Silver City Highway (Arumpo Road to Wentworth)	0	0
Sturt Highway (Mildura to River Drv)	0	0
Sturt Highway (River Drv to Silver City Highway)	5,482	567
Sturt Highway (Silver City Highway to Gol Gol)	0	0
Sturt Highway (Gol Gol to Hay)	0	0
Arumpo Road (Silver City Highway to WTS Access)	21,899	2,265
Arumpo Road (WTS Access to Quarry)	21,899	2,265
Arumpo Road (Quarry to Northern Access)	21,899	2,265
Arumpo Road (Northern Access to Southern Access)	4,905	507

GENERAL OPERATIONS - SITE FUEL

Activity Description	Project Volume	Vehicle	Origin
Site Fuel (General Operations) - Northern Site	117	Fuel Tanker	Mildura
Site Fuel (General Operations) - Southern Site	995	Fuel Tanker	Mildura

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Gaz	A-Gaz
Silver City Highway (Sturt Highway to Corbett Ave)	5,482	567
Silver City Highway (Corbett Ave to Arumpo Road)	5,482	567
Silver City Highway (Arumpo Road to Wentworth)	0	0
Sturt Highway (Mildura to River Drv)	5,482	567
Sturt Highway (River Drv to Silver City Highway)	5,482	567
Sturt Highway (Silver City Highway to Gol Gol)	0	0
Sturt Highway (Gol Gol to Hay)	0	0
Arumpo Road (Silver City Highway to WTS Access)	5,482	567
Arumpo Road (WTS Access to Quarry)	5,482	567
Arumpo Road (Quarry to Northern Access)	5,482	567
Arumpo Road (Northern Access to Southern Access)	4,905	507

GENERAL OPERATIONS - WASTE

Activity Description	Project Volume	Vehicle	Origin
Site Waste (General Operations) - Northern Site	74	Semi	Buronga Landfill
Site Waste (General Operations) - Southern Site	147	Semi	Buronga Landfill

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Route Summary	Gaz	A-Gaz
Silver City Highway (Sturt Highway to Corbett Ave)	0	0
Silver City Highway (Corbett Ave to Arumpo Road)	0	0
Silver City Highway (Arumpo Road to Wentworth)	0	0
Sturt Highway (Mildura to River Drv)	0	0
Sturt Highway (River Drv to Silver City Highway)	0	0
Sturt Highway (Silver City Highway to Gol Gol)	0	0
Sturt Highway (Gol Gol to Hay)	0	0
Arumpo Road (Silver City Highway to WTS Access)	0	0
Arumpo Road (WTS Access to Quarry)	113	1,090
Arumpo Road (Quarry to Northern Access)	113	1,090
Arumpo Road (Northern Access to Southern Access)	75	726

UMW0122-004 | Mallee Wind Farm & BESS Project

Construction Pavement Impact % Calculations

Road ID	Road Description	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)		
				Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Gaz	A-Gaz		Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz			Gaz	A-Gaz	Bi-Dir
B79	Silver City Highway (Sturt Highway to Corbett Ave)	98286	2010	2,893	2,940	5,833	*11.75%*	*11.31%*	340	333	2.0%	3,971	4,036	8,007	467	456	3.19	1,095	1,630,023	1,594,474	3,224,498
B79	Silver City Highway (Corbett Ave to Arumpo Road)	-	2024	1,838	1,771	3,609	14.04%	16.09%	258	285	2.0%	1,912	1,843	3,755	268	296	3.19	1,095	937,816	1,035,571	1,973,387
B79	Silver City Highway (Arumpo Road to Wentworth)	-	2024	1,211	1,208	2,419	12.14%	14.40%	147	174	2.0%	1,260	1,257	2,517	153	181	3.19	1,095	534,279	632,171	1,166,450
A20	Sturt Highway (Mildura to River Drv)	98063	2007	5,961	5,905	11,866	10.80%	10.96%	644	647	2.0%	8,684	8,602	17,287	938	943	3.19	1,095	3,277,132	3,292,398	6,569,530
A20	Sturt Highway (River Drv to Silver City Highway)	98063	2007	5,961	5,905	11,866	10.80%	10.96%	644	647	2.0%	8,684	8,602	17,287	938	943	3.19	1,095	3,277,132	3,292,398	6,569,530
A20	Sturt Highway (Silver City Highway to Gol Gol)		2010	2,730	2,730	5,460	10.80%	10.96%	644	647	2.0%	3,748	3,748	7,495	884	888	3.19	1,095	3,088,115	3,102,500	6,190,615
A20	Sturt Highway (Gol Gol to Hay)	98064	2007	1,011	1,028	2,039	27.00%	27.43%	273	282	2.0%	1,473	1,498	2,970	398	411	3.19	1,095	1,389,219	1,435,017	2,824,236
	Arumpo Road (Silver City Highway to WTS Access)	-	2024	708	644	1,352	20.48%	22.52%	145	145	2.0%	737	670	1,407	151	151	3.19	1,095	526,949	527,059	1,054,008
	Arumpo Road (WTS Access to Quarry)	-	2024	708	644	1,352	20.48%	22.52%	145	145	2.0%	737	670	1,407	151	151	3.19	1,095	526,949	527,059	1,054,008
	Arumpo Road (Quarry to PEC Camp)	-	2024	708	644	1,352	20.48%	22.52%	145	145	2.0%	737	670	1,407	151	151	3.19	1,095	526,949	527,059	1,054,008
	Arumpo Road (PEC Camp to Northern Access)	98156	2010	191	181	372	*27.32%*	*33.82%*	52	61	2.0%	262	248	511	72	84	3.19	1,095	250,220	293,535	543,755
	Arumpo Road (Northern Access to Southern Access)	98156	2010	191	181	372	*27.32%*	*33.82%*	52	61	2.0%	262	248	511	72	84	3.19	1,095	250,220	293,535	543,755

Road ID	Road Description	AADT Segment	Project Pavement Loading - Construction																													% Increase ESAs		
			Gazettal															A-Gazettal														Bi-Dir			
			A	B	C	D	E	F	G	H	I	J	K	Water	Fuel	Waste	Total	A	B	C	D	E	F	G	H	I	J	K	Water	Fuel	Waste	Total	Total	Gaz	A-Gaz	Bi-Dir
B79	Silver City Highway (Sturt Highway to Corbett Ave)	98286	5	13,301	6,379	18,841	83	892	59	1,250	129	2,409	51	5,482	5,482	0	**54,364**	1	1,376	660	4,433	20	112	10	529	34	392	493	567	567	0	**9,195**	**63,559**	3.34%	0.58%	1.97%
B79	Silver City Highway (Corbett Ave to Arumpo Road)	-	5	13,301	8,253	18,841	83	927	71	1,250	164	2,409	51	21,899	5,482	0	**72,736**	1	1,376	854	4,433	20	116	13	529	38	392	493	2,265	567	0	**11,097**	**83,833**	7.76%	1.07%	4.25%
B79	Silver City Highway (Arumpo Road to Wentworth)	-	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**	0.00%	0.00%	0.00%
A20	Sturt Highway (Mildura to River Drv)	98063	5	99	6,379	0	83	892	25	0	129	0	51	0	5,482	0	**13,145**	1	10	660	0	20	112	7	0	34	0	493	0	567	0	**1,904**	**15,049**	0.40%	0.06%	0.23%
A20	Sturt Highway (River Drv to Silver City Highway)	98063	5	13,301	6,379	0	83	892	25	0	129	0	51	5,482	5,482	0	**31,830**	1	1,376	660	0	20	112	7	0	34	0	493	567	567	0	**3,837**	**35,667**	0.97%	0.12%	0.54%
A20	Sturt Highway (Silver City Highway to Gol Gol)		0	0	0	4,433	0	0	4	529	0	392	0	0	0	0	**5,357**	0	0	0	18,841	0	0	35	1,250	0	2,409	0	0	0	0	**22,535**	**27,892**	0.17%	0.73%	0.45%
A20	Sturt Highway (Gol Gol to Hay)	98064	0	0	0	4,433	0	0	4	529	0	392	0	0	0	0	**5,357**	0	0	0	18,841	0	0	35	1,250	0	2,409	0	0	0	0	**22,535**	**27,892**	0.39%	1.57%	0.99%
	Arumpo Road (Silver City Highway to WTS Access)	-	5	13,301	8,253	18,841	83	927	71	1,250	164	2,409	51	21,899	5,482	0	**72,736**	1	1,376	854	4,433	20	116	13	529	38	392	493	2,265	567	0	**11,097**	**83,833**	13.80%	2.11%	7.95%
	Arumpo Road (WTS Access to Quarry)	-	5	13,301	8,253	18,841	83	927	71	1,250	164	2,409	51	21,899	5,482	113	**72,849**	1	1,376	854	4,433	20	116	13	529	38	392	493	2,265	567	1,090	**12,187**	**85,035**	13.82%	2.31%	8.07%
	Arumpo Road (Quarry to PEC Camp)	-	23,805	81,031	22,687	18,841	83	17,439	91	43,439	3,460	7,685	51	21,899	5,482	113	**246,108**	6,347	19,437	4,703	4,433	20	4,519	15	11,779	917	1,799	493	2,265	567	1,090	**58,386**	**304,493**	46.70%	11.08%	28.89%
	Arumpo Road (PEC Camp to Northern Access)	98156	23,805	81,031	22,687	18,841	83	17,439	91	43,439	3,460	7,685	51	21,899	5,482	113	**246,108**	6,347	19,437	4,703	4,433	20	4,519	15	11,779	917	1,799	493	2,265	567	1,090	**58,386**	**304,493**	98.36%	19.89%	56.00%
	Arumpo Road (Northern Access to Southern Access)	98156	17,477	71,894	20,299	16,858	41	15,940	53	43,439	3,460	7,685	20	4,905	4,905	75	**207,053**	4,660	17,254	4,208	3,966	10	4,124	8	11,779	917	1,799	197	507	507	726	**50,665**	**257,718**	82.75%	17.26%	47.40%

Appendix L – Sample Driver Code of Conduct

Driver Code of Conduct

This document sets out the requirements for all employees and contractors working at the site.

General Requirements

The Driver Code of Conduct would be distributed to all sub-contractors with fleet accessing the site prior to the commencement of works. The Code would be provided to each driver to read and sign to confirm they have understood and pledge to follow the haulage instructions. Once completed, a copy of the signed Code would be supplied to the contractor for record keeping.

Heavy vehicle drivers hauling to and from the subject site must:

- Have read and signed the Driver Code of Conduct (this document) prior to entry to the site;
- Hold a valid driver's license for the class of vehicle that it being operated;
- Operate the vehicle in a safe manner while on site and public road network;
- Comply with the direction of authorised site personnel when onsite;
- All drivers are to use seat belts when driving; and
- All drivers are to drive to the sign posted speed limit, both on public roads and within the site.

Site Access

All access to the construction site is to be via Arumpo Road only.

Heavy Vehicle Haul Routes

All heavy vehicle drivers must adhere to the designated truck routes to/from the site (to be confirmed).

Heavy Vehicle Speed

Truck drivers must comply with the Australian Road Rules with travelling along public roads. Drivers are to observe the posted speed limits, and adjust speed appropriately to suit the road and weather conditions at the time.

The maximum speed that a vehicle must travel is the signposted speed. Warning signs indicating a reduction in speed ahead must also be obeyed.

Upon reaching the site, drivers will be instructed by traffic controllers on when and how to enter the site.

The speed limit within the site is 5km/hr (unless signposted otherwise in an area) which is to be strictly maintained.

Heavy Vehicles Driver Fatigue

The heavy vehicle driver fatigues law commenced in NSW in 2008 and applies to trucks and truck combinations over 12 tonnes GVM (however, Ministerial Exemption Notices may apply).

Under the law, industry has the choice of operating under three fatigue management schemes, namely:

1. Standard Hours of Operation
2. Basic Fatigue Management (BFM)
3. Advanced Fatigue management (AFM).

All heavy vehicle drivers associated with the construction works at the subject site must be aware of their adopted fatigue management scheme and operate within its requirements.

Heavy Vehicle Compression Braking

Compression braking/ engine braking is not permitted within the vicinity of the site, that includes, internal to and surrounding the subject site.

Heavy Vehicle Noise

Permitted times of construction works at the site are as follows:

- Construction works shall be carried out on:
  - Monday to Friday 7:00am – 6:00pm
  - Saturday 8:00am – 1:00pm
  - No work is to be undertaken on Sundays or public holidays

Any works outside these times will only occur with approval from the relevant authorities prior to the commencement of any works.

Load Covering

All loaded trucks arriving at and departing from the construction site are required to have an effective cover over their load for the duration of the journey. The load cover may be removed only upon arrival at the destination (ie. at the site).

Care must be taken to ensure that all loose debris from vehicles and wheels is removed prior to exiting the site.

Site management is to monitor loose material on the side of the haul route and take appropriate action regularly.

Other Safety Considerations Along the Haul Route

Heavy vehicle drivers should be aware of the following:

- Concealed driveways – drivers are to drive with caution around any signed concealed driveways.
- Wet weather safety – drivers should adjust their driving speed to suit weather condition at the time.
- Other motorists – drivers should stay alert to other drivers, motorcyclists and cyclists on whilst driving to/ from the site.

Declaration

I, the undersigned, hereby agree to abide by the Driver Code of Conduct for the transportation of construction materials to/ from the site in a safe manner.

I have read and understand the requirements outlined in the Code and will, to the best of my ability, comply and assist with their implementation, requirements and ongoing administration.

Driver

Full Name: _____

Organisation: _____

Signature: _____

Date: _____

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