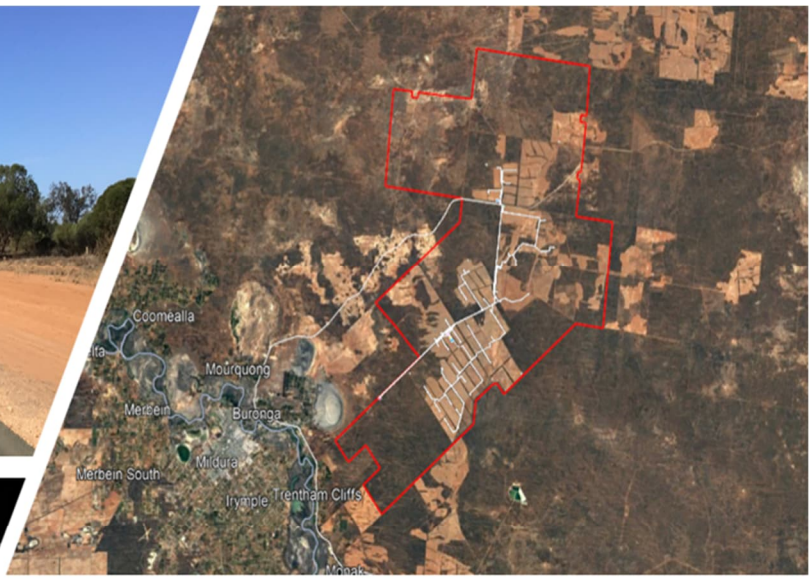
Appendix B

Revised Traffic and Transport Impact Assessment

Part 1 (Revised TTIA, Main Body)

umwelt

ACCESS TRAFFIC
CONSULTING



Mallee Wind Farm

Revised Traffic and Transport Impact Assessment

March 2026

Prepared for Umwelt (Australia) Pty Ltd

Quality Information

Document	Revised Traffic and Transport Impact Assessment
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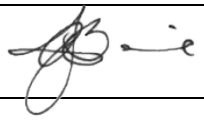
Revision History

Rev	Revision Date	Details	Authorised	
			Name / Position	Signature
A	17/09/2024	Final	Andrew Barrie Principal Traffic Engineer	Original Signed
B	20/09/2024	Final – Minor Revisions	Andrew Barrie Principal Traffic Engineer	Original Signed
C	25/09/2024	Final – Minor Revisions	Andrew Barrie Principal Traffic Engineer	Original Signed
D	06/03/2026	Revisions to Project Timeframes and Minor Operational Amendments	Andrew Barrie Principal Traffic Engineer	Original Signed
E	26/03/2026	Final Revised TTIA	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 Revised Traffic and Transport Impact Assessment (TTIA) 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 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.

A TTIA was previously undertaken in support of the Project's Environmental Impact Statement (EIS) (Access Traffic Consulting, 2024) 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.

This Revised TTIA has subsequently been prepared to:

- Address all traffic related matters raised by Transport for NSW (TfNSW) in its submission on the EIS
- Support an Amendment Report (Umwelt, 2026) for the Project.

The Amendment Report proposes three (3) amendments with respect to the Project, being:

1. Oversize Overmass (OSOM) transport from the Port of Newcastle is no longer proposed. The Port of Portland (Victoria) has now been identified as the Project's preferred port for OSOM deliveries. Spark Renewables has identified two (2) routes for component transport (the OSOM Transport Route).
2. The maximum proposed WTG blade length has increased from 85 m to 91 m.
3. Spark Renewables is seeking greater flexibility for subdivision and boundary adjustments. This is an administrative change and has no impact with respect to traffic and transport.

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 OSOM haulage operation.
- 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 trafficable concrete verge areas on the inside of the approach and outside of the departure to the intersection, minor works to make the northern entry and western exit traffic islands trafficable, the relocation of 2x existing light poles and works to make multiple signs removable 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 an additional trafficable concrete verge area on the outside of the departure to the intersection, modification of 2x gully pits in this verge area to make trafficable, minor works to make the eastern entry and northern exit traffic islands trafficable and works to make multiple signs and the cyclist grab rail 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 include selective tree trimming to provide clearance for blade oversail and minor works to provide flexible road edge guide posts (REGP) and make multiple signs removable (sleeved footings) to accommodate the swept path of the OSOM turbine transport vehicles.
- Provision of site access intersection upgrade works to both Site Access 1 and Site Access 2 on Arumpo Road, with these works to provide basic left (BAL) and right (BAR) turn 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*.
- Provision of minor OSOM haulage route upgrade works to Site Access 1 on Arumpo Road. The proposed route upgrade works at this access include selective tree trimming to provide clearance for blade oversail, site gate modification works and the provision of additional sealed hardstand areas to the north-western side of the access to accommodate the swept path of the OSOM turbine transport vehicles.
- Provision of minor OSOM haulage route upgrade works to Site Access 2 on Arumpo Road. The proposed route upgrade works at this access include selective tree trimming to provide clearance for blade oversail, vegetation clearing works and the provision of additional sealed hardstand areas to the south-western side of the access to accommodate the swept path of the OSOM turbine transport vehicles.
- 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) to 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).

Access Traffic Consulting (ATC) has been engaged to prepare this Revised Traffic and Transport Impact Assessment (TTIA) 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, 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, 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.

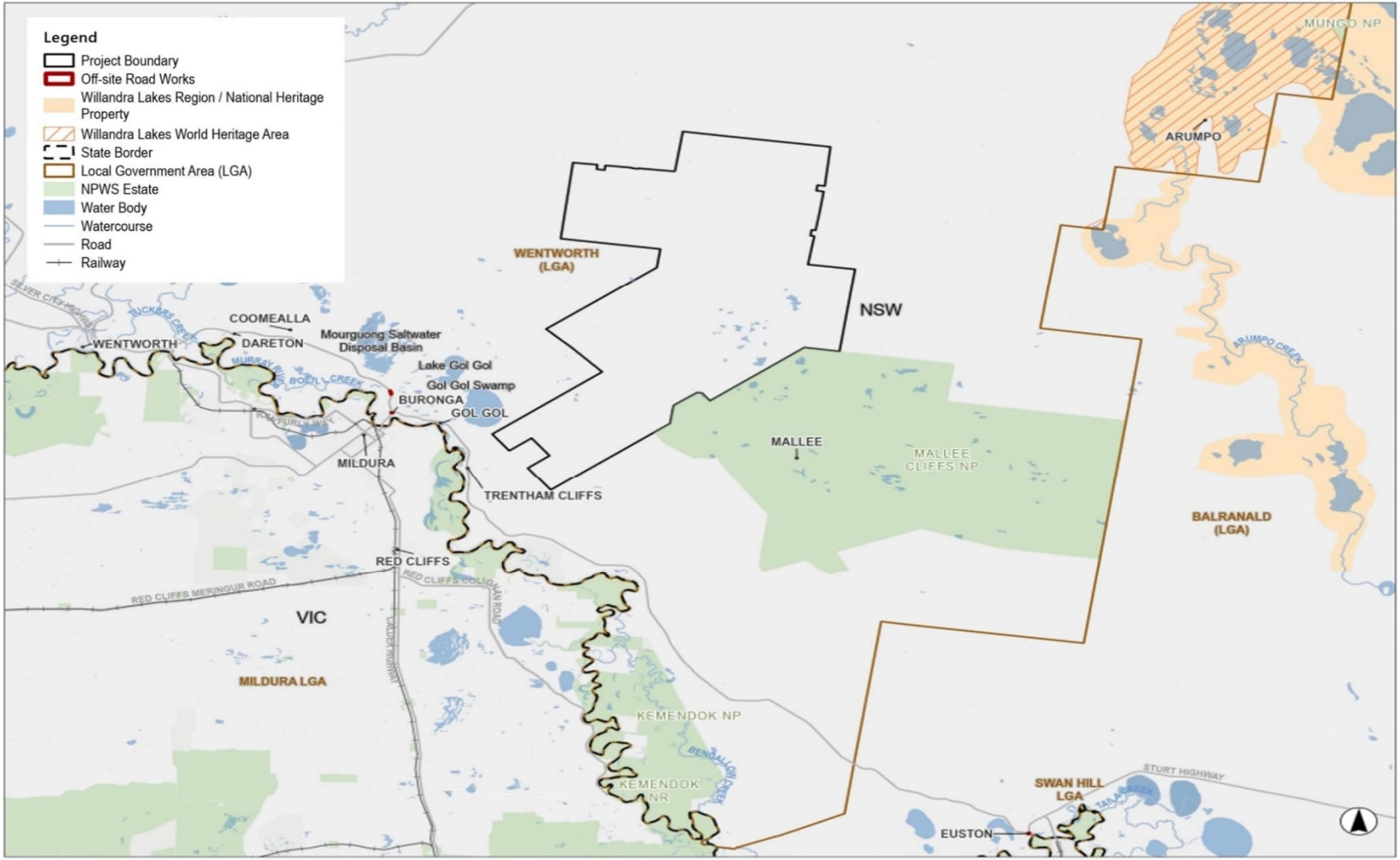

Figure 1 Site Locality - Mallee Wind Farm **[Source: Umwelt]**

1.2.3 Project Phasing

The Project comprises of four (4) 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 and the TWA facility. • 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. • 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

A TTIA was previously undertaken in support of the Project's Environmental Impact Statement (EIS) (Access Traffic Consulting, 2024) 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.

This Revised TTIA has subsequently been prepared to:

- Address all traffic related matters raised by Transport for NSW (TfNSW) in its submission on the EIS
- Support an Amendment Report (Umwelt, 2026) for the Project.

The Amendment Report proposes three (3) amendments with respect to the Project, being:

1. Oversize Overmass (OSOM) transport from the Port of Newcastle is no longer proposed. The Port of Portland (Victoria) has now been identified as the Project's preferred port for OSOM deliveries. Spark Renewables has identified two (2) routes for component transport (the OSOM Transport Route).
2. The maximum proposed WTG blade length has increased from 85 m to 91 m.
3. Spark Renewables is seeking greater flexibility for subdivision and boundary adjustments. This is an administrative change and has no impact with respect to traffic and transport.

The purpose of this Revised TTIA is 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 2 of **Section 1.3.1** below) and to address additional matters raised by Transport for NSW (TfNSW) in its advice on the SEARs (refer to Table 3 in **Section 1.4.2** below) and its subsequent submission on the EIS (refer to Table 4 in **Section 1.4.3** below).

The following methodology was adopted to undertake the required assessments as part of the Revised 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 (TfNSW) Agency Advice

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

1.4.3 TfNSW Response to EIS

Following the submission of the EIS for the Project, TfNSW provided a response to the EIS dated 11 December 2024, in which they requested further information regarding the initial traffic assessments undertaken. A summary of the relevant items from the EIS response is provided in **Table 4**.

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 6.0**) 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 F**.
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 6.0** 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 6.0** 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 Portland and the Sturt Highway 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 6.0** 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.	Details of measures to mitigate and manage the identified impacts of Project are provided in **Section 7.0** of this report. A schedule of all required road upgrades is provided within the Amended Project Description in the Amendment Report (Umwelt, 2026).

Table 3 TfNSW SEARs Input Items

TfNSW 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.

	TfNSW 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 Route. Also refer to **Section 4.2.2** of this report which identifies the anticipated key transport routes for the Project. Details of assessments of Safe Intersection Sight Distance (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.

	TfNSW Items	Reference / Response
	Transport Routes - Heavy Vehicle and OSOM: • National Heavy Vehicle Regulator (NHVR) approved routes identified on the 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.	Please refer to the Preliminary Transport Route Assessment undertaken for the Project (**Appendix A**). Further details of the expected OSOM movement volumes are identified in **Section 5.1.2.1** 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	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** and **Section 6.4** of this report.

	TfNSW Items	Reference / Response
	development, the worst-case scenario traffic volumes (addressing both concurrent construction and operational activities), the site access points, and 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 4.2.2** of this report which outlines the expected transport routes for the Project.

	TfNSW 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.**
	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.

TfNSW Items	Reference / Response
• 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. Parking areas have been allowed for within the TWA facility, temporary construction compounds, operations and maintenance facility areas as shown in the site layout plan. These parking areas have been sufficiently sized to ensure vehicles do not park on the surrounding road network. All car parking and loading areas will be designed in accordance with the relevant Australian Standard (2890 series) and Council requirements. 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 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 Route for the Project. Any modifications or treatments to the road network between Port of Portland and the Sturt Highway at Euston would be undertaken under separate planning assessment and approval processes. 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 6.7** and **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.

	TfNSW Items	Reference / Response
	• 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 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.	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 K**.

	TfNSW Items	Reference / Response
	▪ 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.	
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**).

TfNSW Items	Reference / Response
• 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. - 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.	Please refer to the Preliminary Transport Route Assessment undertaken for the Project (**Appendix A**).

Table 4 TfNSW Response to EIS Items

TfNSW Items		Reference / Response
1.	**Update strategic concept designs for intersection road upgrades** The strategic concept design for the proposed intersection of the Silver City Highway and Arumpo Road will need to be updated in line with the following:	
	a. The applicant proposes to increase the use of the existing treatment, please review this to ensure it meets minimum Austroads requirements in *Austroads Guide to Road Design, Part 4A* and *Austroads Guide to Traffic Management Part 6.*	As identified in **Section 4.4.1** of this report, it is proposed that upgrade works will be provided at the Silver City Highway / Arumpo Road intersection as part of the Project to improve the existing AUR turn treatment through the provision of a full channelised right turn lane. These works are proposed to improve the safety of the right turn movements based on the expected increase in volumes as a result of the Project. This proposed treatment is based on the results of the turn warrants assessment undertaken for the intersection (refer **Section 6.3.1.1**), in accordance with the requirements of *Austroads Guide to Traffic Management Part 6,* while the proposed upgrade works (refer concept designs in **Appendix E**) have been designed in accordance with the relevant requirements of *Austroads Guide to Road Design Part 4A*.
	b. The layout for the intersection will need to be amended to comply with the A value within Table 7.2 of *Austroads Guide to Road Design Part 4A*. The current A value is 55m which is introducing a reverse curve movement. The A value is to be increased to ensure it is tangential and not introducing a reverse curve movement to conform with Austroads.	Please refer to the revised concept design plans for the intersection (C-R0011 to C-R0012) in **Appendix E**, which shows the proposed configuration of the proposed CHR treatment at the intersection, noting that the proposed configuration is in accordance with the relevant requirements of *Part 4A of Austroads Guide to Road Design.* It is noted that the proposed A value within the design has been reduced due to the proposed reduction in the required diverge distance of the through lane based on the centralised location of the right turn lane and entry chevron / taper, meaning that both the northbound and southbound through lanes are only required to diverge 1.75m, rather than the full 3.5m turn lane width. The design provides the suitable radii at the required diverge / lateral shift locations as required for the designated R value of both Table 7.2 and Figure 7.3 of Austroads *Guide to Road Design Part 4A*, with these radii also provided at the proposed locations of diverge of the southbound through lanes at the entry chevron / taper to the right turn lane. As such the proposed geometry of the entry chevron and taper for the proposed right turn lane extension at the intersection is considered appropriate.
	c. The current design proposes a short chevron on approach into the rest area egress. The departure chevon line markings must be increased in area to conform with *Part 4A of Austroads Guide to Road Design*. A widened shoulder that complies with Austroads is to be included within the revised design.	Please refer to the revised concept design plans for the intersection (C-R0008 to C-R0012) in **Appendix E**, in which the identified chevron line markings have been amended to be in accordance with the relevant requirements of *Part 4A of Austroads Guide to Road Design.*

	TfNSW Items	Reference / Response
	d. The design does not identify how the northern portion of the existing intersection where there are two existing northbound lanes will be tied into proposed changes to the road geometry. In addition, the second auxiliary lane is too short to be an acceleration lane or to be used as an overtaking opportunity. Please revise in accordance with Austroads Guide to Road Design Part 4a.	Please refer to the revised concept design plans for the intersection (C-R0008 to C-R0012) in **Appendix E**, in which the outside northbound lane is shown to be removed after the departure diverge of the proposed CHR treatment at the intersection, with chevron line markings provided to identify that the lane is not trafficable. These amendments have been provided in accordance with the relevant requirements of *Part 4A of Austroads Guide to Road Design.*
	e. The right turn from Silver City Highway onto Arumpo Road requires signs to be relocated or made removable on the inside of the corner of turn. The design is to be revised to address this issue.	Please refer to design plans C-R0008 in **Appendix E,** which clearly identifies the required route upgrade works at the Silver City Highway / Arumpo Road intersection to accommodate the expected OSOM vehicle movements. These works include the modification of the signage on the inside of the corner (via provision of sleeved footing) to make it removable.
	f. Widening to accommodate high-risk OSOM vehicles identified within the RJA Route Assessment for the state road network are required to be permanent pavement and not temporary hardstand treatments and must be consistent with the existing pavement of the state road network.	Please refer to the revised concept design plans for the Project (**Appendix E**), in which all proposed additional hardstand areas are shown to be permanent pavement (either sealed road pavement or trafficable concrete).
	g. Drainage detail must be provided on the strategic concept designs for intersections proposed to be widened. This includes a typical cross section. An example can be provided to understand the required detail. See fact sheet Strategic-Design-requirements-for-DA-Factsheet.pdf	Please refer to the details section for formation widening provided in concept design plan C-R0002 for the Project (refer **Appendix E**), which shows the indicative formation widening and batter/drainage arrangements proposed to be adopted at locations requiring widening works for proposed intersection upgrades or as part of route upgrade works to accommodate the OSOM transport vehicle paths for the Project.
2.	**Revised Traffic Impact Assessment (TIA)** The TIA is to be revised to address the key issues raised below in relation to the inclusions of staging, pre-construction minor work, workforce accommodation scenarios, traffic associated with input materials and the inclusion of accumulative traffic volumes:	
	a. The updated TIA must demonstrate the full staging/timing of the traffic volumes and works required, including any pre-construction minor works/enabling works. It must also identify any mitigation measures and the flow-on impacts of this work. The revised TIA is to include separate turn warrant assessments are also to be completed for peaks of any pre-construction minor works.	Please refer to **Table 11** in **Section 4.2** of this report, which identifies the indicative construction timeframes for the Project, and shows the proposed works included in the requested pre-construction minor works phase for the Project, including Tasks A1 to A4. Details of the expected works items associated with the pre-construction minor works are discussed further in **Section 4.2.1** and within the Project traffic calculations for Tasks A1 to A4 in **Appendix F**. An assessment of the impacts of the traffic volumes from the Project during this identified pre-construction minor works phase on the relevant road links, intersections and site access points on the external road network are included in **Section 6.4**, **Section 6.3** and **Section 6.2** of this

TfNSW Items		Reference / Response
		report, including the relevant turn warrant assessment for the pre-construction minor works phase traffic volumes at the Silver City Highway / Arumpo Road intersection in **Section 6.3.1.1**.
	b. Section 1.2.2 notes that a temporary workforce accommodation will be provided "if required". The application is to provide detail on the scenarios that would determine requirement of the facility and provide specific detail including location, timing (would it be part of pre-construction minor works) and traffic volumes for the camp (traffic volumes should be inclusive of any staging, parallel construction activities while the camp is being constructed, the traffic volumes post completion of the workforce accommodation camp and any parallel activities that will occur post completion of the workforce accommodation.	Further clarification has been provided by Spark Renewables to confirm that the proposed TWA will be provided as part of the Project. As such the assessment completed in this report, considering the construction of the TWA as part of the proposed pre-construction minor works phase, and the utilisation of the TWA to accommodate 75% of the workforce during the remainder of the construction phase for the Project is relevant, and is the only staff accommodation scenario required to be considered as part of the assessment of the Project.
	c. Noting that the project proposes optioning of the accommodation camp then both the with the accommodation camp and without the accommodation camp scenario is required to be assessed inclusive of any changes to the strategic concept designs.	As identified above, the proposed TWA will be included in the Project and is anticipated to be constructed within the pre-construction minor works phase as outlined in **Section 4.2.1** of this report. An assessment of the impacts of the traffic volumes from the Project during this identified pre-construction minor works phase on the relevant road links, intersections and site access points on the external road network are included in **Section 6.4**, **Section 6.3** and **Section 6.2** of this report.
	d. The TIA in the accompanying route study identifies the intersection of the Sturt Highway and Danson's Road as a possible access point to the site. The study identifies that further assessment is required to determine the routes suitability. The Response to Submissions must clarify if this intersection is to be used by the project and for what purposes. If proposed to be used for the project, a full assessment of impacts, similar to that provided for the Arumpo Road / Silver City Highway intersection will need to be provided. Traffic mitigation measures and strategic concept designs are required to accompany the resubmission of the revised TIA.	As noted in **Section 4.6** of this report further clarification has been provided by Spark Renewables is also provided that the Buronga bypass option via Dansons Road identified in the Rex J Andrews Transport report is not viable and will not be utilised by the Project. As such this potential route is disregarded and has not been considered as part of this assessment.
	e. Section 4.2.1 notes that quarry materials are proposed to source from a local quarry and that transport requirements would have been assessed as part of the consent for quarry operations. All volumes of deliveries should be provided for the purposes of the Wind Farm (including for water and other items) are to be assessed within the TIA, including traffic volumes, distribution splits at key intersections with the state road network, routes and the turn	The intent in the statement provided in the previous TIA, was to reflect that the approval for quarry transport vehicles (truck and dog combinations) to use of the relevant roads for the Project (in particular Arumpo Road) would have been confirmed as part of the consent for operations for the individual quarry operations, in particular those located on Arumpo Road. Notwithstanding this, it is noted that all material and equipment deliveries for the Project (including quarry materials) are including within the traffic volumes calculated and assessed for

	TfNSW Items	Reference / Response
	warrant assessments are to be adjusted accordingly based on the inclusion of the quarry and other input materials for the wind farm.	the Project. This can clearly be seen in the material quantity / transport vehicle calculations provided for the Project in **Appendix F**, with these volumes then included in the Project volumes identified in **Table 15** and **Section 5.4** and finally the traffic assessments for the Project included in **Section 6.0**.
	f. The potential for cumulative construction overlap is identified however there does not appear to have been full consideration to the general increase in traffic volumes for the affected state roads. A broader assessment of combined impacts of all projects (EIS or approved) that will be present in the background traffic or turning traffic volumes are to be included within the revised TIA and turn warrant assessment.	Please refer to **Section 5.5** of this report which identifies the details of the cumulative traffic assessment undertaken for the Project, including the associated external projects to be considered in the assessment, the assumed traffic volumes from each project and relevant road links and intersections expected to be utilised by traffic from each project. Also please refer details of the assessment of the potential impacts of the cumulative traffic volumes from the Project and the identified external projects in the revised turn warrants assessment summary provided in **Section 6.3.1.1**, and the associated turn warrant graphs for the identified Project and cumulative traffic scenarios in **Appendix H**, as well as the revised intersection analysis in **Section 6.3.1.2** and the associated SIDRA movements summaries in **Appendix C**. Finally, please refer to the **Section 6.4**, which discusses the potential impact of the cumulative traffic scenarios on the operation of the relevant links on the external road network, including the Sturt Highway, Silver City Highway and Arumpo Road.
	g. The routes, traffic distribution splits at each intersection and the AM/PM project peak data is required to be included within the revised TIA and form the basis of the revised turn warrants assessment, referenced in 2(g).	Please refer to **Section 4.2.2** which identifies the proposed transport routes for the Project, enabling the expected turning movements at the relevant Silver City Highway / Arumpo Road to be established. Please refer to **Section 6.1.2** which identifies the peak hour volumes at the intersection, noting that the individual movement volumes for the peak periods for each Project phase and external Projects considered for the cumulative assessments are included in the intersection volumes forecasts included in **Appendix G**. Finally, please refer to the revised turn warrants assessment summary provided in **Section 6.3.1.1**, and the associated turn warrant graphs for the identified Project and cumulative traffic scenarios in **Appendix H**.
	h. The TIA is to be revised to address the above points within a revised turn warrant assessment, prepared in accordance with the above requirements and set out within Figure 3.25 of Austroads Guide to Traffic Management Part 6. Amended strategic concept designs for the state road network are to be included in the revised TIA will need to be provided based on the outcome of the updated turn warrants assessment.	Please refer to the revised turn warrants assessment summary provided in **Section 6.3.1.1**, and the associated turn warrant graphs for the identified Project and cumulative traffic scenarios in **Appendix H.**

	TfNSW Items	Reference / Response
3.	**Update swept path assessments for all State roads**	
	Swept paths are to be provided for the Silver City Highway / Arumpo Road Intersection for the design vehicle demonstrating the concurrent turn movements in all directions and for the check vehicle (the largest high-risk OSOM) demonstrating that the check vehicle will complete the arc within the pavement and the offset requirements without creating additional impacts to State road assets.	Please refer to the revised concept design plan C-R0008 to C-R0010 (refer **Appendix E**), which identifies the completed vehicle swept paths for both the adopted design vehicle (A-Double) and check OSOM (blade and tower section transport) vehicles for the proposed upgraded configuration of the Silver City Highway / Arumpo Road intersection.
4.	**Update high-risk OSOM route assessment for all routes** The following section provides overall considerations for all identified routes in the assessment provided, which need to be resolved and included within the revised TIA. Refer below for specific comments related to routes from the Port of Newcastle.[1]	
	a. Traffic of heavy mass vehicles and vehicles with very large axle group loadings are proposed, which may be an issue for older short-span bridges. The OSOM route requires bridge and culvert assessments to be undertaken. Contact spu@transport.nsw.gov.au to apply for an assessment of the bridges and culverts of TfNSW assets on the state road network.	Please refer to the revised Preliminary Transport Route Assessment for the Project included for reference in **Appendix A**. It is noted that as turbine details have yet to be confirmed for the Project, the route assessment provided is to be considered preliminary. Further assessment of the bridges along the OSOM Transport Route identified will be required to be completed as part of subsequent stages of the Project, once the turbine component and associated transport vehicle configurations have been confirmed.
	b. An extensive review of the height obstructions along the high-risk OSOM route (e.g., powerlines, traffic control signals and gantry heights) is required, and mitigation measures to navigate them must be clearly identified.	Please refer to the revised Preliminary Transport Route Assessment for the Project included for reference in **Appendix A**. It is noted that as turbine details have yet to be confirmed for the Project, the route assessment provided is to be considered preliminary. Further assessment of the height obstruction and associated mitigation works along the OSOM Transport Route identified will be required to be completed as part of subsequent stages of the Project, once the turbine component and associated transport vehicle configurations have been confirmed.
	c. Intersection widening is proposed along the routes. Strategic concept designs must be updated with typical sections depicting transverse and longitudinal drainage requirements and compliance with Austroads.	Please refer to the revised concept design plans for the proposed intersection upgrade and OSOM route upgrade works for the Project in **Appendix E.**
	d. Dimensions of swept paths and parking plans must be provided for each pullover, layby, and rest area on OSOM routes, demonstrating that applicable high-risk OSOMs can physically be accommodated and mitigate impacts to	Please refer to the revised Preliminary Transport Route Assessment for the Project included for reference in **Appendix A**.

[1] Note transport from Port of Newcastle is no longer proposed. Therefore, responses in this table relate to the OSOM Transport Route from Port of Portland.

TfNSW Items		Reference / Response
	other road users. *Note: Locations (including GPS Coordinates) and identification of the OSOM design vehicle used to access each pullover, including rest areas must be included.*	It is noted that as turbine details have yet to be confirmed for the Project, the route assessment provided is to be considered preliminary. Further assessment of the parking / passing bay requirements along the OSOM Transport Route identified will be required to be completed as part of subsequent stages of the Project, once the turbine component and associated transport vehicle configurations have been confirmed.
	e. The route assessment needs to include road modifications where raised concrete medians must be removed.	Please refer to the revised concept design plans for the proposed OSOM Transport Route upgrades for the Project, included for reference in **Appendix E.**
	f. The Traffic Control Signs (TCS) layout and TCS changes must be assessed for each route, where TCS is identified as a pinch point. Changes to TCS will require the identification of a strategic concept design.	Please refer to the revised concept design plans for the proposed OSOM Transport Route upgrades for the Project, included for reference in **Appendix E.**
	g. The location and details of light poles to be relocated on the State road network must be clearly identified (e.g., Gillenbah Intersection). The proposed relocations must comply with TfNSW requirements.	Please refer to the revised concept design plans for the proposed OSOM Transport Route upgrades for the Project, included for reference in **Appendix E.**
	h. The timing of high-risk OSOM deliveries within the construction schedule, indicative weekly program(s), and timeframe for completing deliveries from the relevant port to the site are required.	Please refer to the revised Preliminary Transport Route Assessment for the Project included for reference in **Appendix A** and **Table 11** in **Section 4.2**, which identifies that the proposed OSOM WTG component transport movements are expected to be completed in Task D (WTG Component Deliveries to Site) which is proposed to be completed over 14 months between July 2028 to August 2029 (inclusive). It is noted that as turbine details have yet to be confirmed for the Project and the associated transport configurations and operators are not finalised, no details of the expected weekly programs or timeframes for these movements are currently available. It is anticipated that these works will be completed as part of subsequent assessments for the Project.
	i. Details of road geometry and alignment along the identified transport routes must be clearly identified, including: • existing formations, crossings, medians, transmission lines, roundabouts, bridges, intersection treatments and any identified hazards; • each at-risk structure i.e. bridges, traffic signals, signage, powerlines, medians and major and minor culverts.	Please refer to the revised Preliminary Transport Route Assessment for the Project included for reference in **Appendix A**.
	j. Plantings and beautification works in the roundabout and medians at Buronga are substantial, and pavement levels are significantly higher than those of the road pavement levels. Consideration should be given to	Please refer to concept design plans C-R0005 and C-R006 for the Sturt Highway / Silver City Highway intersection in Buronga (refer **Appendix E.**), which identifies revised vehicle paths

	TfNSW Items	Reference / Response
	avoiding the modifications to the roundabout and medians within Buronga.	through the intersection to remove the requirement for the wheelpaths of the proposed OSOM turbine component transport vehicles to cross the centre island of the roundabout. Additionally, Spark Renewables has consulted with Wentworth Shire Council regarding the proposed works in Buronga and potential impacts to beautification works and no immediate concerns have been raised.
	k. Concept diagrams are required for the works to roundabouts along the Sturt Highway including at the intersection of Carey Street /Sturt Hwy and at the intersection of Sturt Highway and the Cobb Highway.	Please refer to concept design plans C-R0005 and C-R006 (refer **Appendix E**), which identifies the concept design for the route upgrade works at the Sturt Highway / Carey Street intersection to accommodate the OSOM turbine component transport movements for the Project. Further to this, it is noted that no design is now required for the Sturt Highway / Cobb Highway intersection as with the proposed change of the OSOM Transport Route for the Project to be from the Port of Portland in Victoria, rather than from the Port of Newcastle, this intersection is no longer on the OSOM Transport Route for the Project.
	l. The RJA route assessment only includes some relevant TfNSW projects or other third-party projects currently under construction or will be completed on the State road network for either route. The route assessment must be updated to include mitigation measures or modifications required to navigate any identified road or rail project along the routes (i.e., Hexham Straight project).	Please refer to the revised Preliminary Transport Route Assessment for the Project included for reference in **Appendix A**.
	m. With reference to the above point, the route assessments must be updated to assess the alternative route via Newcastle Inner City Bypass to Newcastle Road for high-risk OSOM loads that do not exceed the vertical clearance limitations post-completion of the road upgrades along this route.	Not required as the proposed OSOM Transport Route for the Project has been amended and now is between the Port of Portland (in Victoria) to the Project Area, with no OSOM movements expected to be required from the Port of Newcastle.
5.	**High Risk OSOM Port of Newcastle Routes**	
	The following section provides specific comments for the Newcastle Route assessments from the Port of Newcastle.	Not required as the proposed OSOM Transport Route for the Project has been amended and now is between the Port of Portland (in Victoria) to the Project Area, with no OSOM movements expected to be required from the Port of Newcastle. As such the relevant section of the OSOM Transport Route for TfNSW now is limited to the section of the Sturt Highway between Euston and Mildura, and the section of the Silver City Highway between the Sturt Highway and Arumpo Road.

	TfNSW Items	Reference / Response
6.	**Inclusion of Country Rail Network rail crossing impacts in the route assessment**	
	All matters involving the Country Rail Network (CRN) must adhere to the transport management and safety requirements of RGLRL and TfNSW. Relevant approvals for use, impact or changes to level crossings must be sought from UGL Regional Linx (UGLRL) and TfNSW.	No response is noted to be required to any of the items listed in Section 5 of TfNSW's response to the EIS as the proposed OSOM Transport Route for the Project has been amended and now is between the Port of Portland (in Victoria) to the Project Area, with no OSOM movements proposed from the Port of Newcastle. As such the relevant NSW section of the proposed OSOM Transport Route is not anticipated to traverse any level crossings.

1.4.4 Response to SEARs and TfNSW Advice

This Revised TTIA has been prepared in response to the items identified above in **Table 2** to **Table 4** 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 Revised 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.
- This Revised TTIA is based on the Port of Portland 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 Amendment Report (Umwelt, 2026) and **Section 4.2.2** of this report. Alternate port options are not contemplated in this assessment. Accordingly, the preferred Port of Portland option is the basis of the Amended State Significant Development Application (SSDA).
- Relevant sections of the TTIA are based on the inputs considered within the Preliminary Route Assessment Report provided in **Appendix A**, which is based on a 91 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 a 91 m blade. Accordingly, the 91 m blade (and associated offsite disturbance) is the basis of the Amended SSDA.
- The Amended SSDA (and this Revised TTIA) relates to the section of the OSOM Transport Route within NSW. Any works associated with the OSOM Transport Route within the State of Victoria 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 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 (6) 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 carrying out of 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 sited within C2 land.

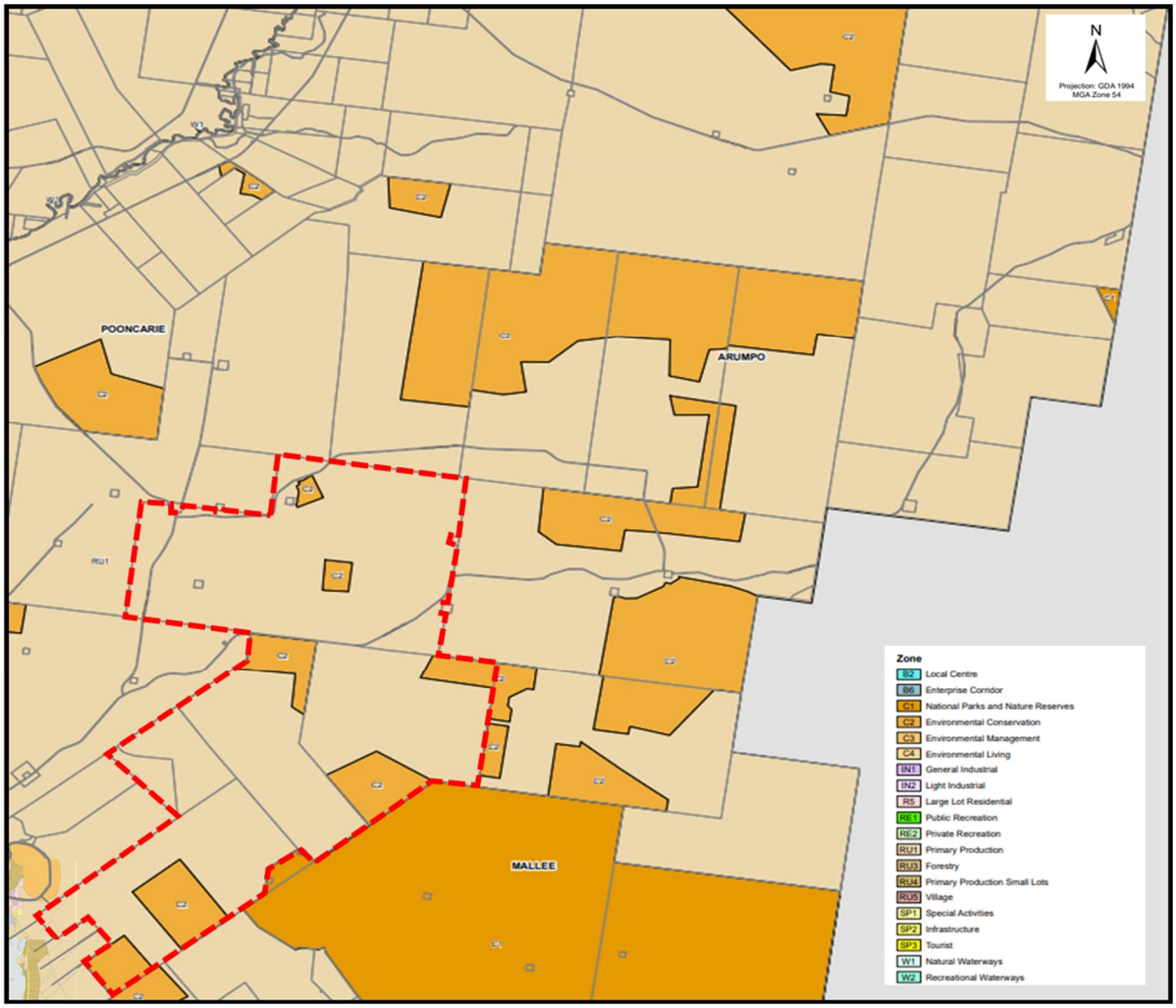

Figure 2 Project Area Land Use Zoning **[Source: NSW Planning Portal]**

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 4.2.2**) 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 Portland and the Project Area. This is further described in **Section 4.2.2** 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 Euston), 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, which is largely located within the State of Victoria and would therefore be subject to separate approval processes.

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.

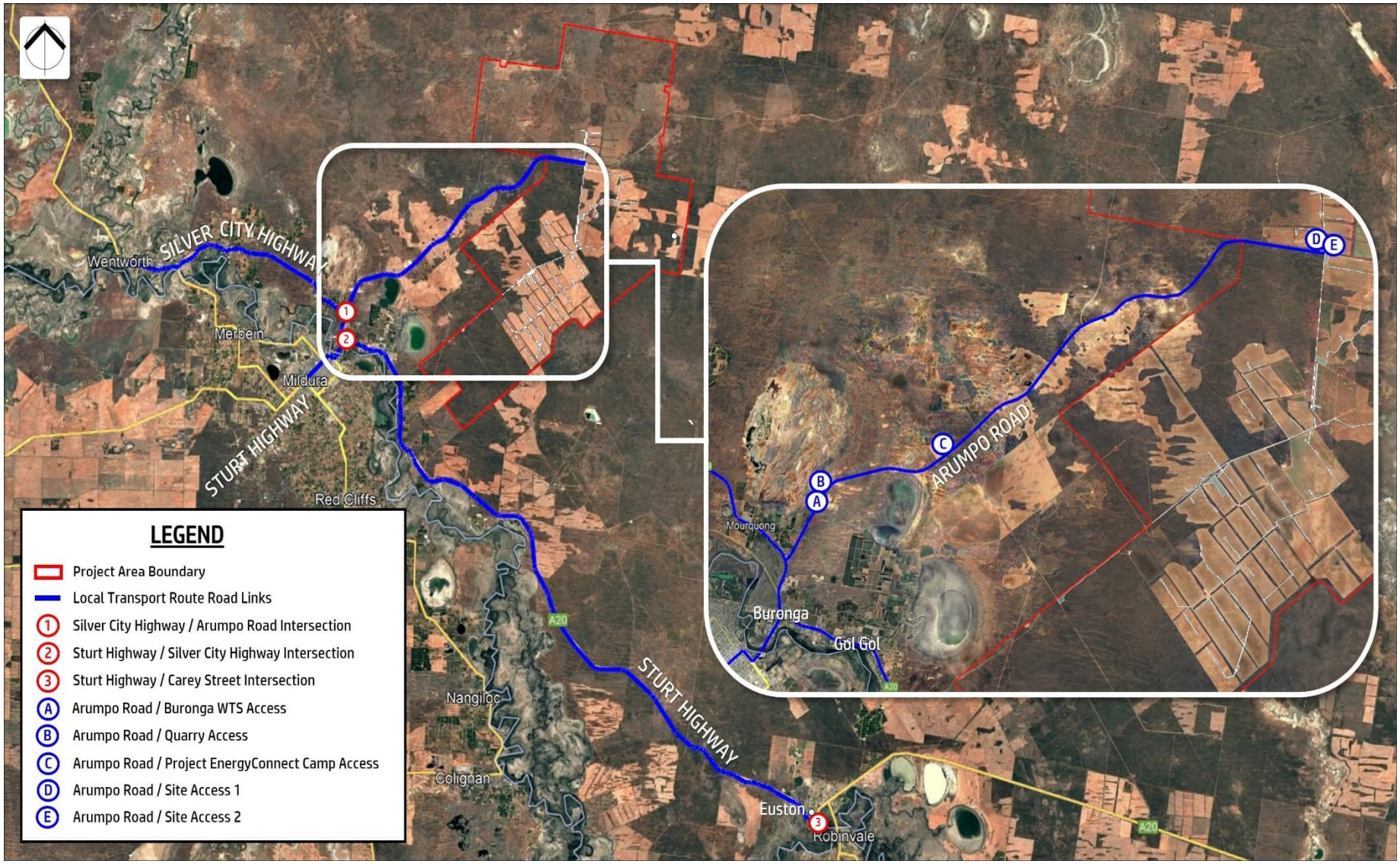

Figure 3 Surrounding Road Network – Relevant Road Links and Intersections

3.3.1.1 Sturt Highway (A20)

The relevant section of the Sturt Highway is between the locations of Euston 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 Euston 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 (4) 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 has recently undertaken 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 (1) 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 5**.

Table 5 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 publicly available information 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.

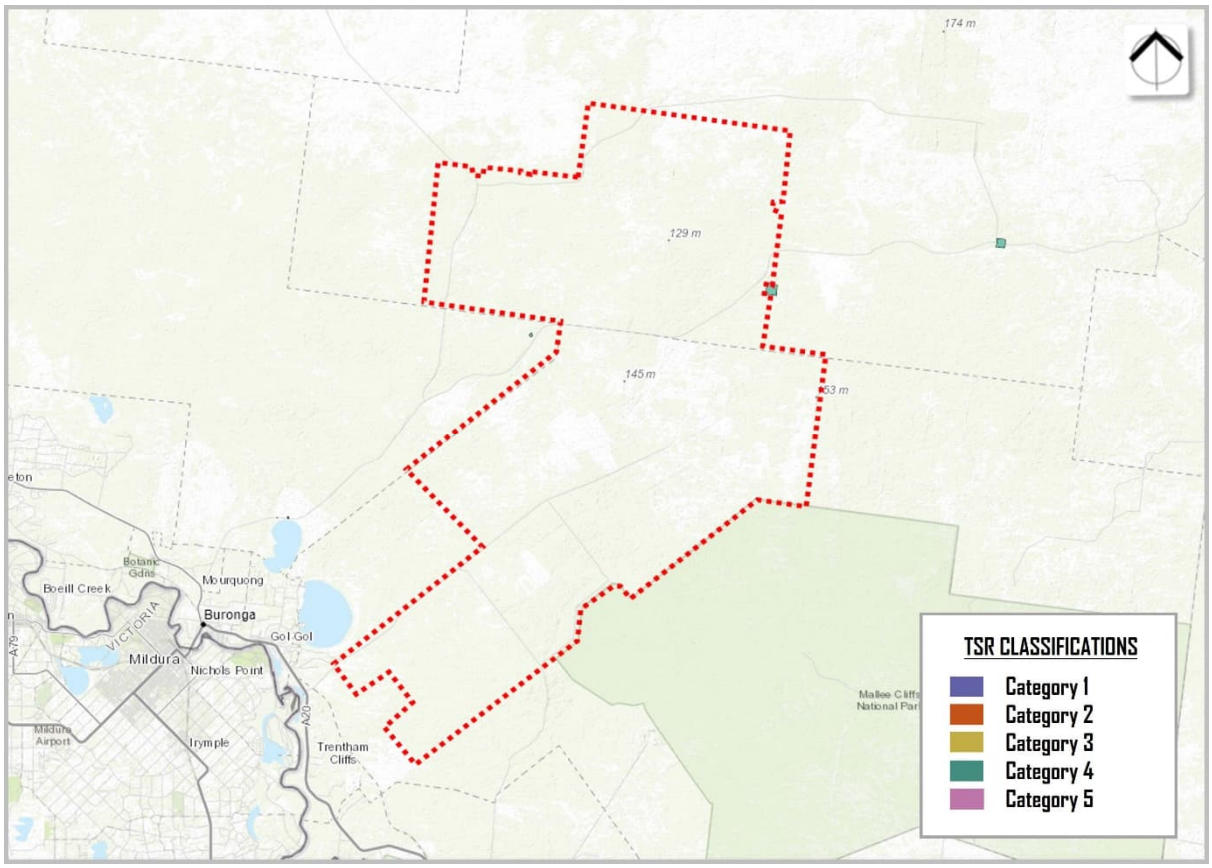

Figure 13 Travelling Stock Reserve Locations [Source: NSW Government]

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 (2026) volumes on the link (refer **Table 6**), as well as the expected background volumes at future design horizons for the Project (i.e. pre-construction minor works (2027), peak construction (2028) and the operations (2040 – 10 years from start of operations) and decommissioning (2060) design horizons.

Table 6 Current (2024) External Road Network AADT Traffic Volumes

Seg. ID	Road Segment Description	Base Data Year	Base Year AADT				10 Yr. GR %	Current (2026) 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%	3,971	467	4,036	456
-	Corbett Avenue to Arumpo Road	2024	1,838	14.04%	1,771	16.09%	2.0%	1,912	268	1,843	296
-	Arumpo Road to Wentworth	2024	1,211	12.14%	1,208	14.40%	2.0%	1,260	153	1,257	181
Sturt Highway (A20)											
98063	Mildura to River Drive	2007	5,961	10.80%	5,905	10.96%	2.0%	8,684	938	8,602	943
98063	River Drive to Silver City Highway	2007	5,961	10.80%	5,905	10.96%	2.0%	8,684	938	8,602	943
-	Silver City Highway to Gol Gol	2010	2,730	10.80%	2,730	10.96%	2.0%	3,748	884	3,748	888
98064	Gol Gol to Euston	2007	1,011	27.00%	1,028	27.43%	2.0%	1,473	398	1,498	411
Arumpo Road											
-	Silver City Highway to Landfill Access	2024	708	20.48%	644	22.52%	2.0%	737	151	670	151
-	Landfill Access to Quarry Access	2024	708	20.48%	644	22.52%	2.0%	737	151	670	151
-	Quarry Access to PEC Camp	2024	708	20.48%	644	22.52%	2.0%	737	151	670	151
98156	PEC Camp to Access Point 1	2010	191	27.32%	181	33.82%	2.0%	262	72	248	84
98156	Access Point 1 to Access Point 2	2010	191	27.32%	181	33.82%	2.0%	262	72	248	84

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.

Using the recorded count data at the intersection and the identified traffic growth rates for the adjacent road links (refer Table 6), a forecast of the current (2026) 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**.

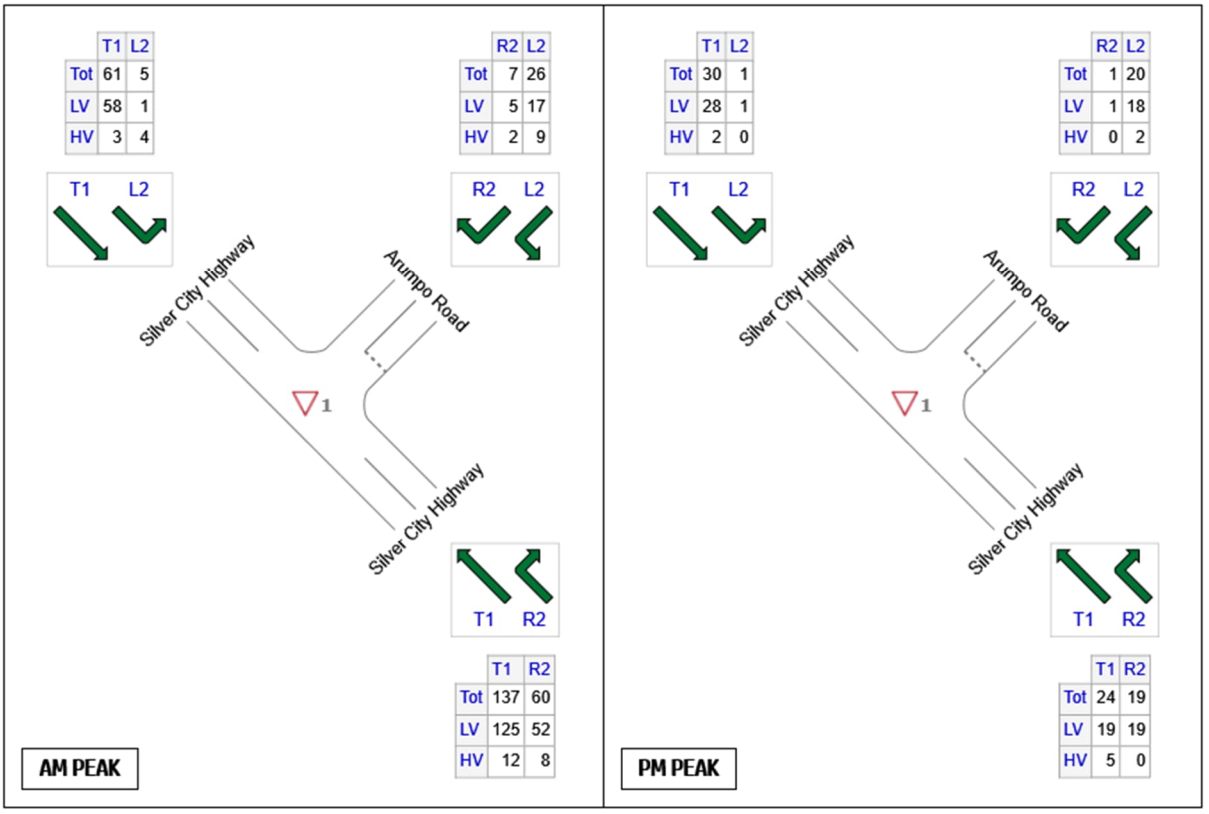

Figure 14 Existing (2026) Peak Hour (Project) Traffic Volumes, Silver City Highway / Arumpo Road Intersection

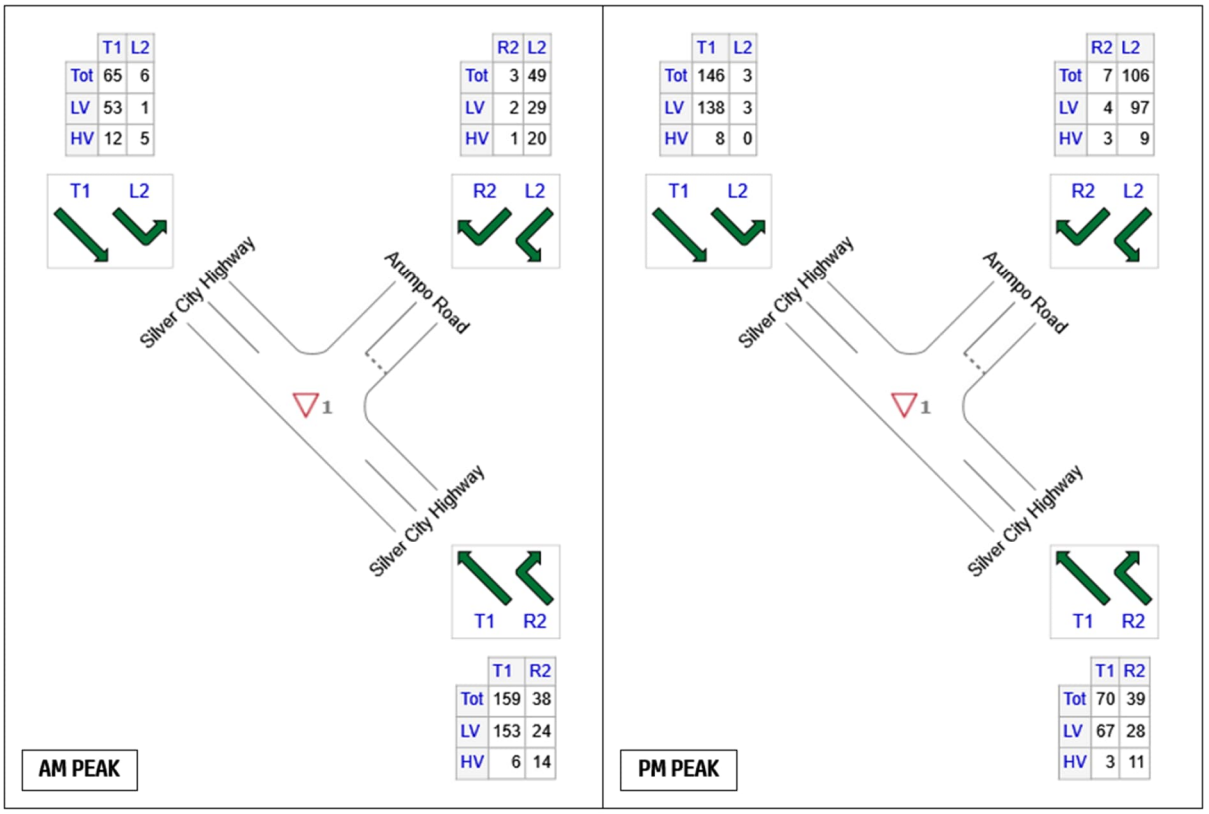

Figure 15 Existing (2026) Peak Hour (Project) Traffic Volumes, Silver City Highway / Arumpo Road Intersection

3.5 Existing Intersection and Network Performance

3.5.1 Road Links

Based on the road link volumes forecast in **Table 6** above, it is expected that the existing configurations of the relevant external road links will have adequate capacity to cater for the current 2026 volume forecasts, considering the generally accepted capacities of two-lane (approx. 12,000-15,000 vehicles per day - vpd) and four (4) lane rural highway sections (30,000vpd) – Sturt Highway & Silver City Highway), four (4) 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 7** below:

Table 7 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 8** below, with the detailed results provided for reference in **Appendix C**.

Table 8 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				
2026 AM Peak (Project)	0.061	LOS A	11.2	2.1
2026 PM Peak (Project)	0.017	LOS A	8.2	0.5
2026 AM Peak (Network)	0.060	LOS A	11.6	2.1
2026 PM Peak (Network)	0.108	LOS A	12.2	3.1

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

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 DOS, 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.

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 2020-2024.

The results of this search identified one (1) recorded crashes within the relevant sections of the network, located at the Silver City Highway / Arumpo Road intersection, with a summary of the details of the recorded data provided for reference in **Table 9.**

Table 9 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

Based on the relatively low number (1) of crashes recorded 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 northern 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 is provided in **Table 10** below.

Table 10 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 Pre-Construction Minor Works

Construction works for the Project are anticipated to commence within one (1) year of Project approval, with works conservatively assumed to start with pre-construction minor works in Q3 2027. Pre-construction minor works are described in **Section 1.2.3** and are expected to occur over a period of approximately six (6) to eight (8) months (refer to Table 11). All proposed road upgrades and the establishment of the TWA facility and site access points would occur during this phase.

The TWA is expected to be completed within the first six (6) months of works commencing. Prior to the completion of the TWA, the Project workforce would be limited to a maximum of 100 staff at any one (1) time. These workers would reside off-site, commuting daily from the adjacent areas of Mildura, Buronga, Gol Gol and Wentworth.

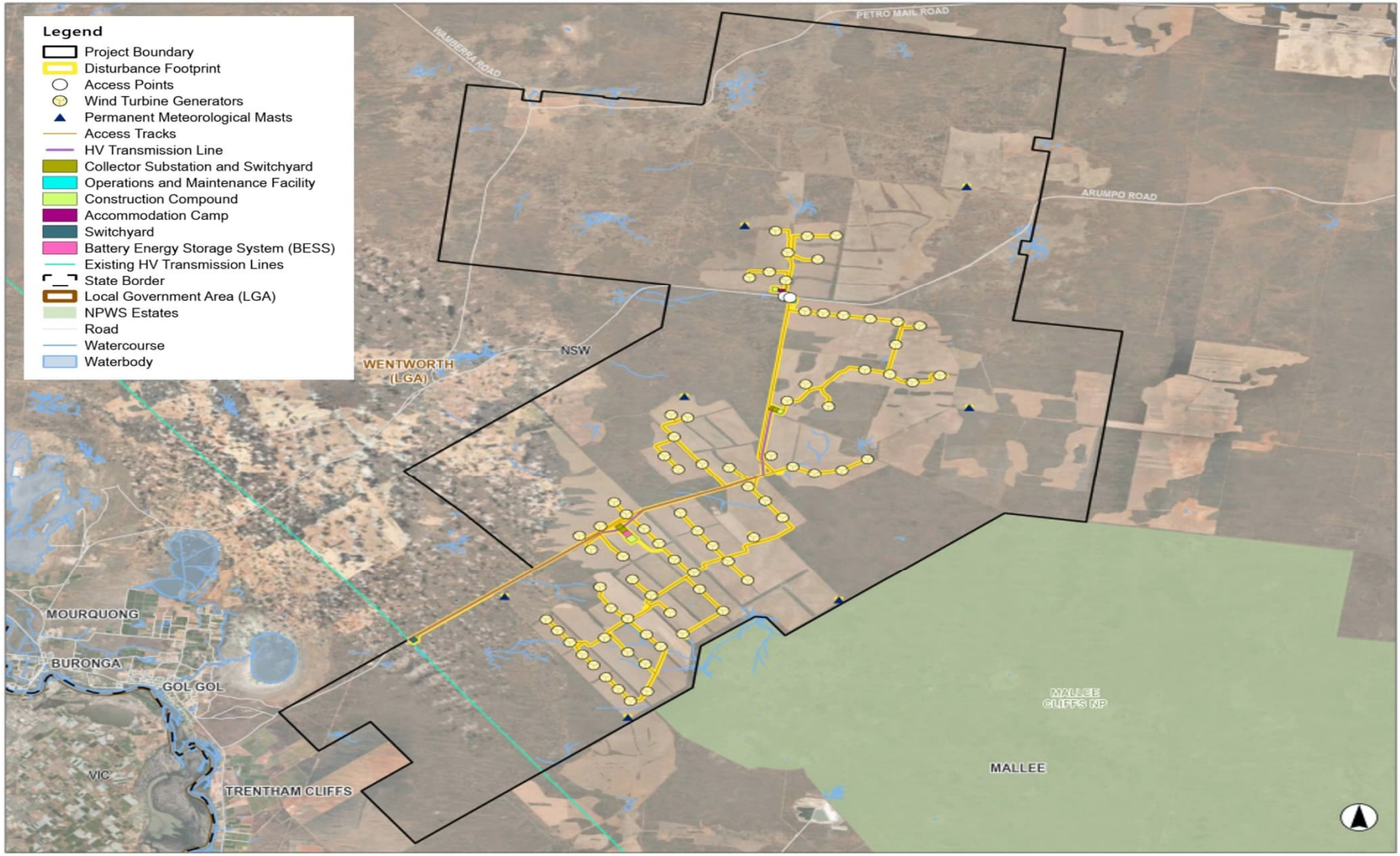

Figure 18 Mallee Wind Farm – Conceptual Project Layout **[Source: Umwelt / Spark Renewables**

Table 11 Indicative Project Pre-Construction and Construction Schedule – Mallee Wind Farm **[Source: Spark Renewables]**

TASK ID	TASK	DURATION (MONTHS)	MONTH
			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 Jan-29 Feb-29 Mar-29 Apr-29 May-29 Jun-29 Jul-29 Aug-29 Sep-29 Oct-29 Nov-29 Dec-29 Jan-30 Feb-30 Mar-30 Apr-30 May-30 Jun-30
			Q3 2027 Q4 2027 Q1 2028 Q2 2028 Q3 2028 Q4 2028 Q1 2029 Q2 2029 Q3 2029 Q4 2029 Q1 2030 Q2 2030
			1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
PRE-CONSTRUCTION MINOR WORKS PHASE			
A1	Early Site Investigations & Preparatory Works	3	1 2 3
A2	Local Transport Route Upgrades	3	1 2 3
A3	Early Site Establishment	6	1 2 3 4 5 6
A4	Off Site Road Works	3	1 2 3
CONSTRUCTION PHASE			
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 Construction	6	1 2 3 4 5 6
K	Decommission Temporary Structures & Demobilisation	1	1

4.2.2 Construction Phase

The main construction phase would commence following pre-construction minor works (indicatively Q1 2028) and continue for approximately 29 months with the overall Project works anticipated to be completed in Q2 2030.Peak construction is anticipated to occur over Q3 2028 to Q1 2029 (refer to Table 11).

The proposed hours of 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.

4.2.3 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.

4.2.4 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.

4.3 Project Transport Routes

4.3.1 Pre-Construction Minor Works and Construction Phases

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 Route) and **Figure 21** (General construction transport routes):

- Prior to the establishment of the TWA, the project workforce would be limited to 100 workers at any one time, commuting daily to/from the Project Area from the nearby townships of Mildura (including Buronga and Gol Gol) and Wentworth, utilising the Sturt Highway, Silver City Highway and Arumpo Road.
- The workforce during the remainder of the construction period is assumed to commute daily to/from the Project Area from either the on-site 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% (approximately 100 staff) will commute daily to/from Mildura, Buronga, Gol Gol and Wentworth, again utilising 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 regional quarry operations, with transport vehicle movements expected to utilise a combination of the Sturt Highway, Silver City Highway and Arumpo Road depending on the location of the individual quarry operations.

  All quarried materials utilised for the Project would be obtained from quarry operations subject to their own development consents and licences for the production and transport of materials, including an approved haulage route to the State road network. As such, this Revised TTIA has assessed the final leg of the quarry transport route, being from the intersection of Silver City Highway and Arumpo Road to the site access points.

  The Project's Submissions Report (Umwelt, 2026) identifies four (4) potential quarry locations that may be utilised by the Project. It is noted that for the purpose of this assessment the full volume of required quarry materials and the associated transport vehicle movements has been assumed to travel to/from the Project Area using the Local Transport Route via the Silver City Highway / Arumpo Road intersection). This approach is considered conservative as two (2) of the potential quarry sites are located along on the Local Transport Route with direct access to Arumpo Road, and as such, would not need to utilise the Highway intersection.

  Other regional quarries within NSW and Victoria would be investigated by Spark Renewables post approval. Use of materials from other regional quarries would be contingent on the quarry operator having all necessary approvals in place, the quarry having an approved haulage route to the State road network, and all quarry trucks utilising the Local Transport Route already identified and assessed within this Revised TTIA for the final approach between the State Road network and the site access points. Selected quarry locations will be determined during detailed design and these locations (and their respective transport routes) would be identified in the Construction Traffic Management Plan (CTMP). Spark Renewables will continue to consult with quarry operators during detailed design, as further information becomes available regarding resource needs and Project scheduling.

- 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 Portland in Victoria, before being transported by road to the Project Area via transport routes utilising both state and local government controlled roads, as per **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 Portland to the Project Area identified, as outlined in **Table 12.**

Figure 19 Project Construction Phase Transport Route 1: Blades and Components <5.3m Loaded Height **[Source: Rex J Andrews]**

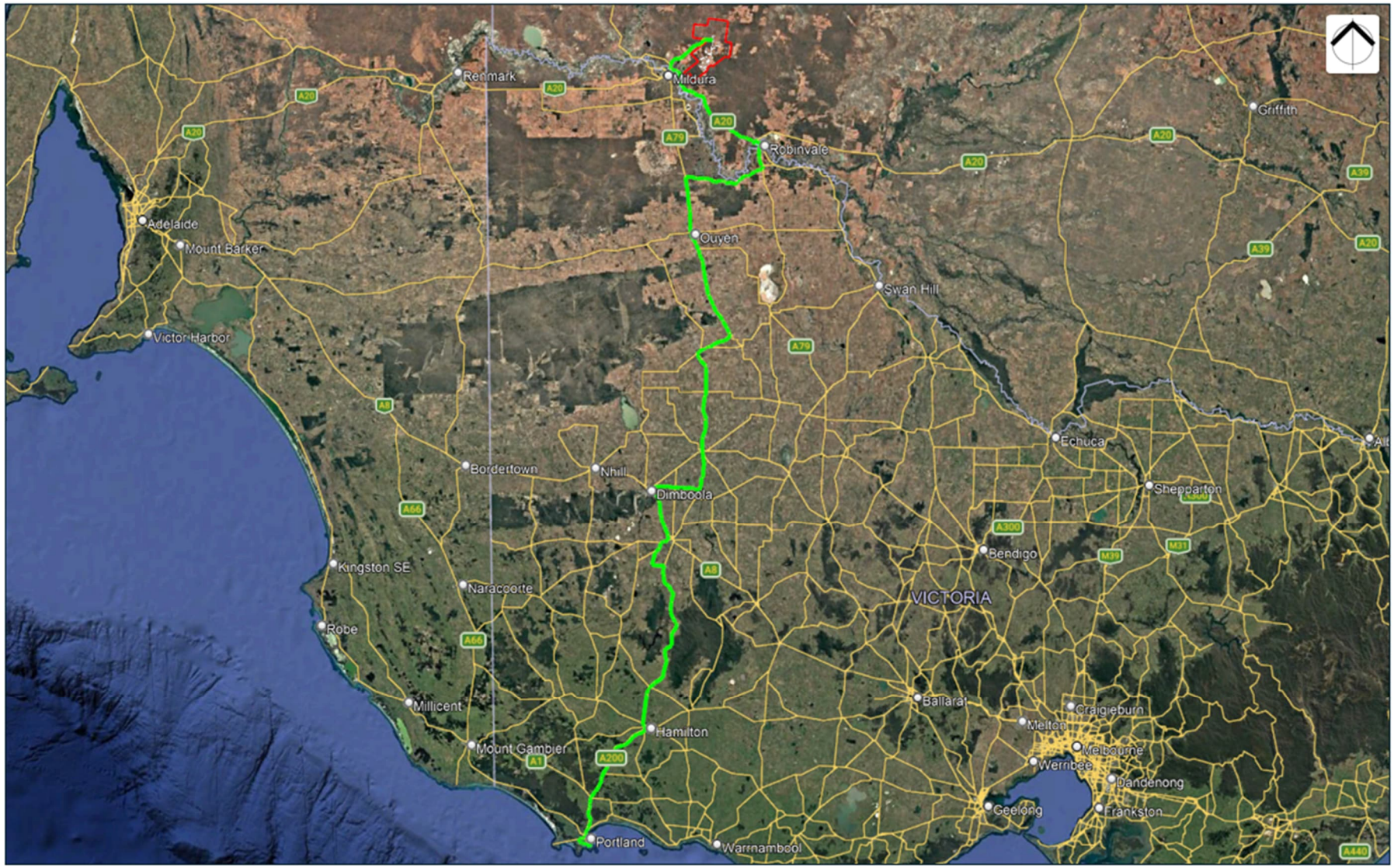

Figure 20 Project Construction Phase Transport Route 2: High Load Route. Maximum Loaded Height 6.4m **[Source: Rex J Andrews]**

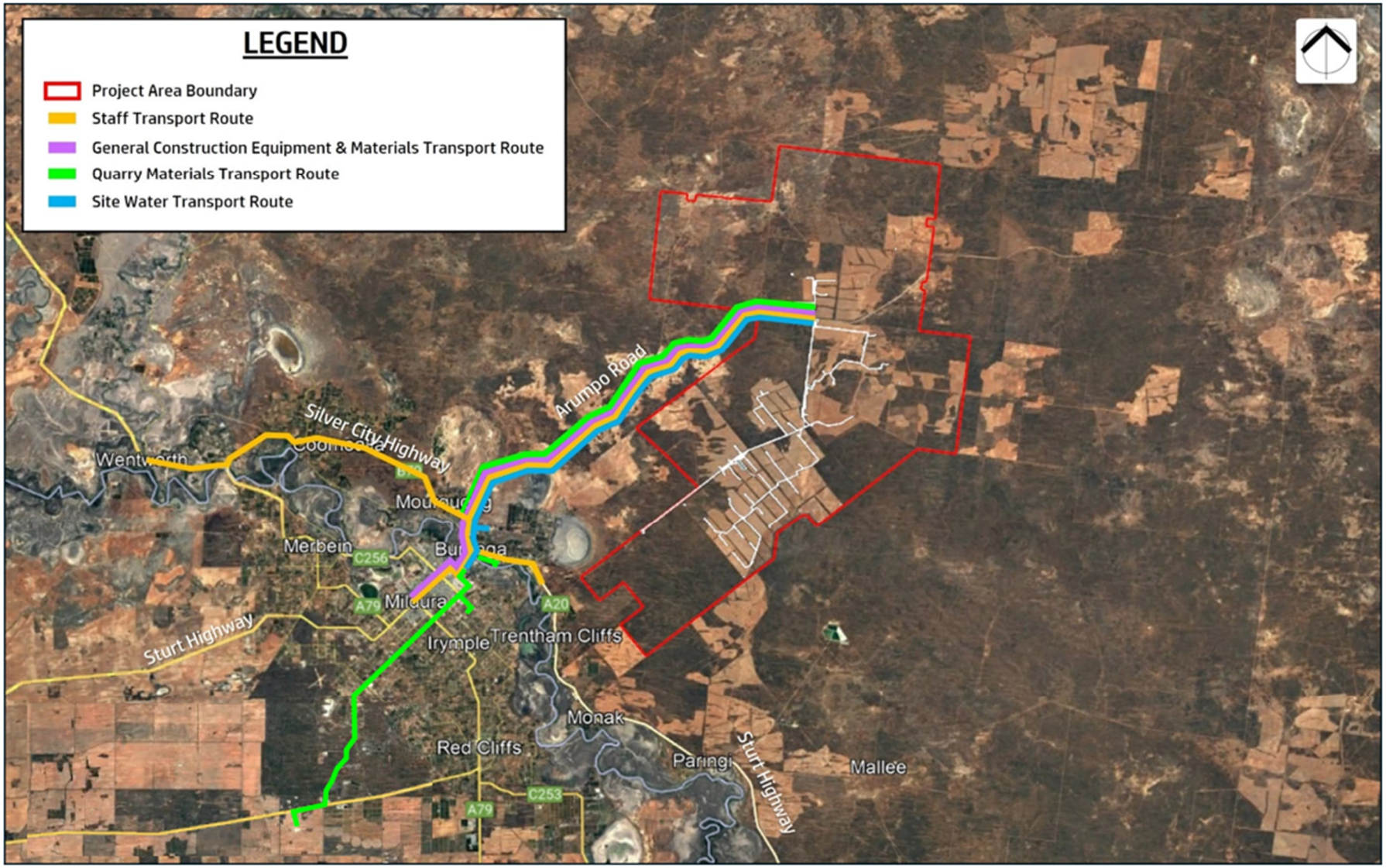

Figure 21 Project Transport Routes (General Construction Traffic) **[Source: Google Earth Pro]**

Table 12 Preliminary WTG Component Transport Routes

Route 1: Blades & Components <5.3m Loaded Height	Route 2: High Load Route. Max Loaded Height 6.4m
Distance: 723 km	**Distance: 700 km**
Madeira Packet Way, Henty Highway, Princess Highway, Portland-Casterton Road, Glenelg Highway, Coleraine-Edenhope Road, Nhil-Harrow Road, Western Highway, Borung Highway, Dimboola-Minyip Road, Henty Highway, Sunraysia Highway, Calder Highway, Hattah Robinvale Road, Robinvale-Sea Lake Road, Murray Valley Highway, Sturt Highway, Silver City Highway, Arumpo Road	Quay Road, Madeira Packet Way, Cape Nelson Road, Mailings Road, Thorns Road, Bridgewater Road, Henty Highway, Glenelg Highway, Henty Highway, Rifle Butts Road, Lower Norton-Nurrabiel Road, Horsham-Noradjuha Road, Wimmera Highway, Curran Road, Obrees Road, Western Highway, Borung Highway, Dimboola-Minyip Road, Henty Highway, Sunraysia Highway, Calder Highway, Hattah Robinvale Road, Robinvale-Sea Lake Road, Murray Valley Highway, Sturt Highway, Silver City Highway, Arumpo Road.

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, 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. Regional quarries within NSW and Victoria would be investigated by Spark Renewables prior to decommissioning. Use of materials from regional quarries would be contingent on the quarry operator having all necessary approvals in place, the quarry having an approved haulage route to the State road network, and all quarry trucks utilising the Local Transport Route already identified and assessed within this Revised TTIA for the final approach between the State Road network and the site access points. Selected quarry locations will be determined during prior to decommissioning and these locations (and their respective transport routes) would be identified in a Decommissioning Traffic Management Plan (DTMP).
- 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.

- WTG components will be either sold and transported to another site for reuse or metal components may be sold to the scrap metal market.

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.

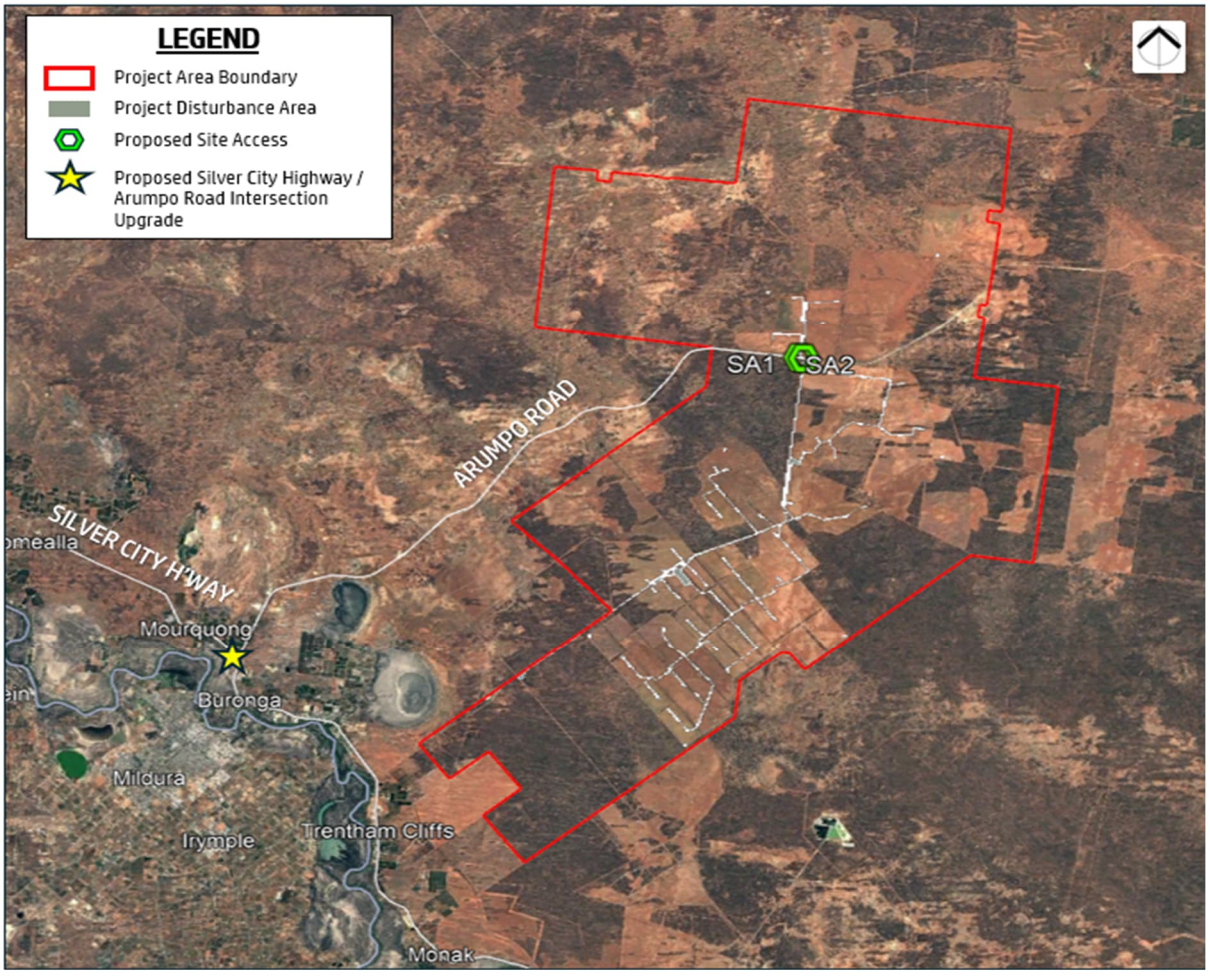

Figure 22 Mallee Wind Farm – External Access Upgrade Works Locations **[Source: Google Earth Pro]**

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 intersection upgrade works shown further in the Drawing C-R0007 to Drawing C-R0010 prepared by Harrison Infrastructure Group (HIG), included for reference as **Appendix E.**

Finally it is noted that the proposed concept design also includes provision of additional sealed hardstand area at the intersection to accommodate the swept paths of the WTG component transport vehicles assessed, with further details of these swept paths shown further in the Drawing C-R0007 and Drawing C-R0008 (refer **Appendix E**).

Notwithstanding this, it is noted that the exact extents of the hardstand area at the intersection will be confirmed in subsequent detailed design phases of the Project once the final configuration of the WTG components and associated transport vehicles are confirmed.

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 at 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 basic left (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 concept design layouts for the proposed access intersection works shown further in the Drawing C-R0011 to Drawing C-R0016 prepared by Harrison Infrastructure Group (HIG), included for reference as **Appendix E.**

Further to this, based on site observations undertaken, 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)

The concept designs for the site access upgrade works are also noted to include provision of additional sealed hardstand / extended pavement area at the access points to accommodate the swept paths of the WTG component transport vehicles assessed, with further details of these swept paths shown further in the Drawing C-R0011 to Drawing C-R0016 (refer **Appendix E**), with the indicative extents shown in **Figure 27** and **Figure 28** for Site Access Point 1 and 2 respectively.

Finally, it is again noted that the exact extents of the hardstand area at the intersection will be confirmed in subsequent detailed design phases of the Project once the final configuration of the WTG components and associated transport vehicles are confirmed.

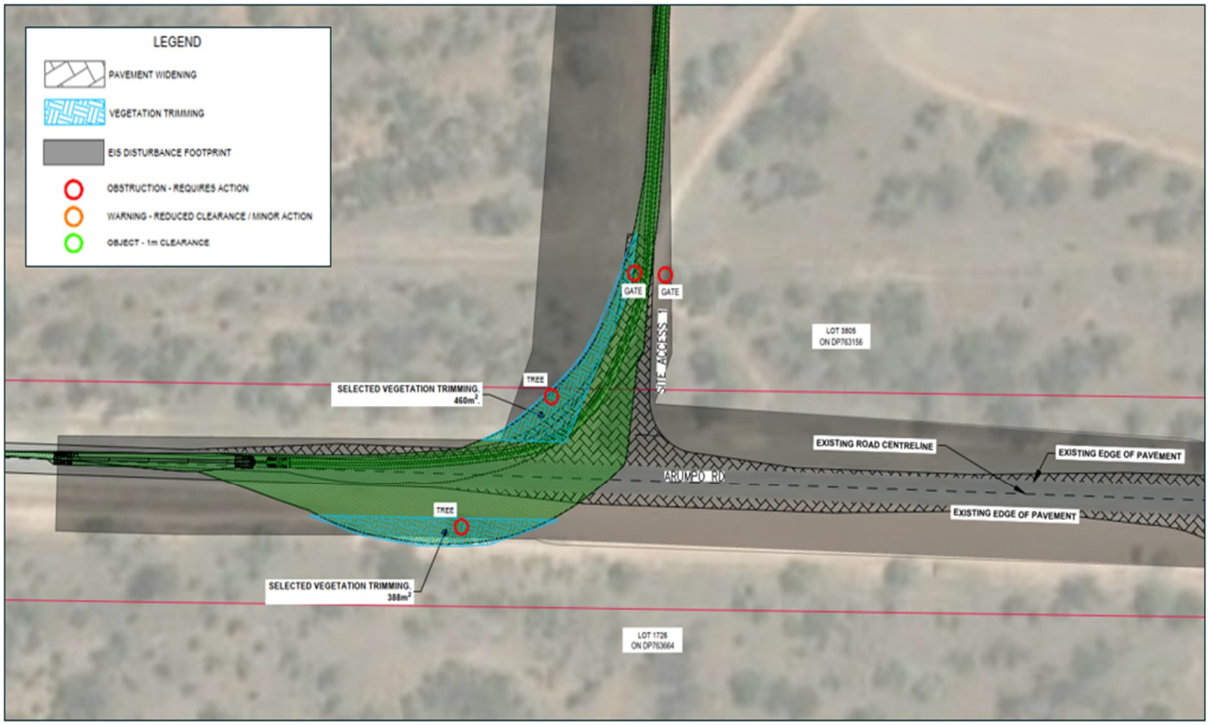

Figure 27 Additional OSOM Route Works – Access Point 1 / Arumpo Road Intersection **[Source: HIG]**

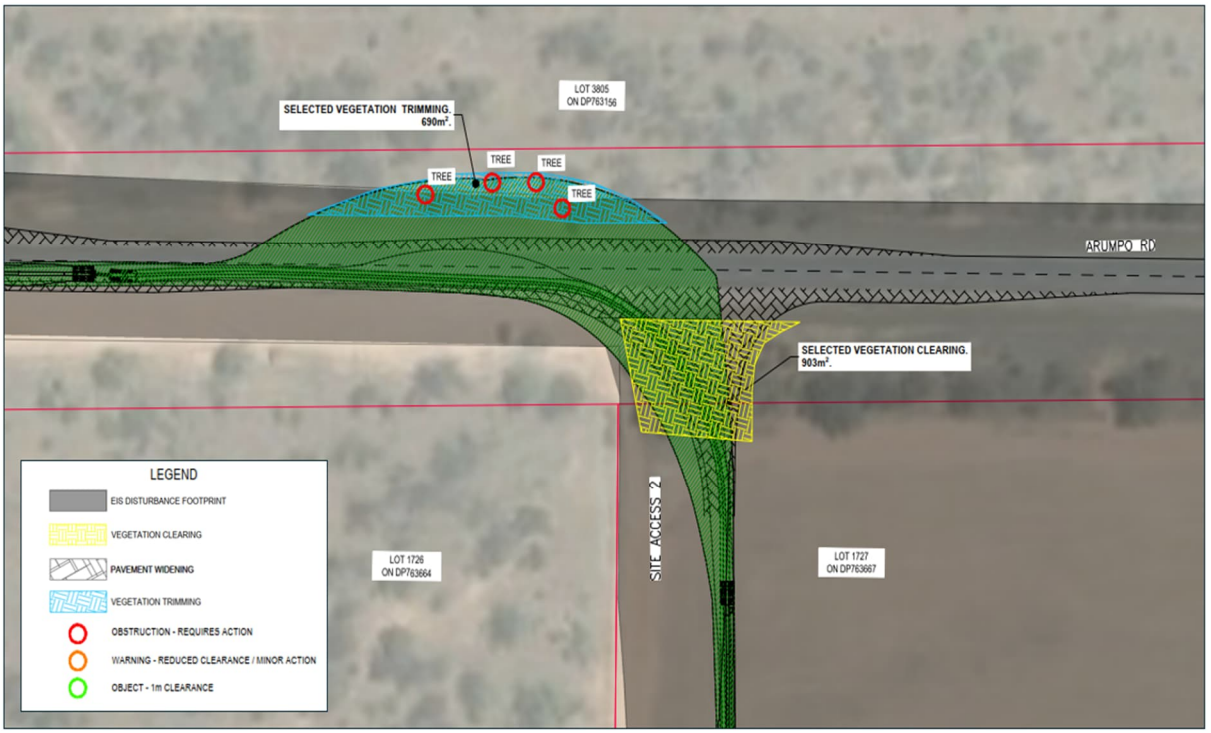

Figure 28 Additional OSOM Route Works – Access Point 2 / Arumpo Road Intersection **[Source: HIG]**

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 be 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.
- Generally internal access tracks will be constructed using compacted crushed rock/road base, however some segments of the tracks may need to be surfaced with asphalt to enable haulage of heavy WTG components.

The conceptual layout also identifies a number of site facilities/compounds, including the proposed substations, switching stations, construction compounds, operations and maintenance compound, laydown areas and on-site concrete batch plant areas, as shown in **Figure 18** above.

4.5.1 On Site Vehicle Parking

On-site parking areas have been allowed for within the TWA facility, temporary construction compounds, operations and maintenance facility areas as shown in the site layout plan. These parking areas have been sufficiently sized for the peak construction and operational workforces (as relevant). The exact configuration of these parking facilities will be determined as part of the subsequent detailed design phase of the Project, noting that all car parking and loading areas will be designed in accordance with the relevant Australian Standard (2890 series) and Council requirements.

Due to the large area of land available within the Disturbance Footprint for the required internal facilities (including 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 (2) separate routes to the Project Area from the Port of Portland, including one (1) for the transport of blades and components under 5.3m, and a high load route for components up to 6.4m high (loaded). A summary of the identified OSOM Transport Route is provided in **Table 12** above.

In addition to identifying the proposed transport routes, the assessment also highlighted a number of specific locations or pinch points along the two (2) 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.

All proposed modifications (within the State of NSW) are assessed within Project's EIS (Umwelt, 2024) and Amendment Report (Umwelt, 2026), noting that the change in preferred port (to Port of Portland) and increase in blade length (to 91 m) has necessitated only minor changes to proposed off-site road works, relative to those previously assessed in the EIS. A revised summary of the works considered for the two (2) WTG component transport routes provided in **Table 13** and **Table 14**.

Further clarification is also provided that the Buronga bypass option via Dansons Road identified in the Rex J Andrews Transport report is not viable and will not be utilised by the Project. As such this potential route is disregarded and not considered as part of this assessment.

Table 13 WTG Component Transport Route 1 – Blades And Components Under 5.3 m - Modification Works Summary [Source: Rex J Andrews]

KM Index	Location	Section of Road	Procedure	Comments
609.5	Robinvale (NSW)	Murray Valley Highway over the Euston-Robinvale Bridge	Travel directly ahead	A bridge assessment will be required to check suitability.
612.0	Euston (NSW)	Murray Valley Highway onto Sturt Highway	Left Hand Turn	Power pole to be relocated out of swept path. Sign to be relocated or made removable.
615.0	Euston (NSW)	Sturt Highway roundabout at Carey Street	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. Light poles to be removed or relocated and multiple signs relocated or made removable. Vegetation to be trimmed.
689.0	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 poles to be relocated out of swept path. Multiple signs relocated. Kerbs made trafficable and hardstand installed.
691.0	Buronga (NSW)	Silver City Highway onto Arumpo Road	Right hand turn	Several signs to be relocated or made removable. Vegetation to be trimmed for blade oversail clearance. *Note: Further intersection upgrade works are also proposed at this intersection – refer **Section 4.4.1** above.*
723.0	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. *Note: Further upgrade works are also proposed at this access – refer **Section 4.4.2** above.*
723.0	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. *Note: Further upgrade works are also proposed at this access – refer **Section 4.4.2** above.*

Table 14 WTG Component Transport Route 2 – 6.4m Max Loaded Height) - Modification Works Summary [Source: Rex J Andrews]

KM Index	Location	Section of Road	Procedure	Comments
586.5	Robinvale (NSW)	Murray Valley Highway over the Euston-Robinvale Bridge	Continue straight	A bridge assessment will be required to check suitability.
591.0	Euston (NSW)	Sturt Highway roundabout at Carey Street	Right hand turn using incorrect side of roundabout	Load to cross to incorrect side of roundabout using modifications made for blade route.
666.0	Buronga (NSW)	Sturt Highway roundabout onto Silver City Highway	Right hand turn using either option	Load to cross to incorrect side of roundabout using modifications made for blade route.
700.0	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. *Note: Further upgrade works are also proposed at this access – refer **Section 4.4.2** above.*
700.0	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. *Note: Further upgrade works are also proposed at this access – refer **Section 4.4.2** above.*

4.6.1 OSOM Transport Route Upgrade Concept Designs

At the request of TfNSW, concept designs have been undertaken at the critical pinch point locations on the OSOM Transport Route where significant civil works are expected to be required.

These designs included further revisions to the Rex J Andrews vehicle paths using vehicle swept path design software (AutoTrack), allowing for confirmation of expected vehicle paths through the pinch points and optimisation of the required route upgrade works to accommodate the OSOM vehicle movements. In some cases, this optimisation has enabled minor changes to the extent of works required, in an effort to reduce disturbance within and adjacent to the road corridor.

A copy of these concept designs is included for reference in **Appendix E**, and include details for the required works at the following pinch point locations:

- Sturt Highway / Carey Street intersection, Euston.
- Sturt Highway / Silver City Highway intersection, Buronga.
- Silver City Highway / Arumpo Road intersection, Buronga.
- Arumpo Road / Site Access 1 intersection, Arumpo.
- Arumpo Road / Site Access 2 intersection, Arumpo.

5.0 Project Traffic

As required by the SEARs for the Project, this assessment considers three (3) distinct periods of traffic generation, including the construction, operations and decommissioning phases of the Project.

The expected traffic generation and distribution during each phase of the Project is discussed in the following sections.

5.1 Pre-Construction Minor Works and Construction Phases

As identified above, construction is proposed to commence in approximately Q3 2027, and conclude approximately 36 months later in Q2 2030. This 36 month period will comprise an initial phase of pre-construction minor works (approximately six (6) to eight (8) months) followed by the main construction phase (approximately 29 months). Peak construction is anticipated to occur over Q3 2028 to Q1 2029 (refer **Table 11** 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 Pre-Construction Minor Works

Pre-construction minor works are described in Table 1 and include preliminary site investigations, external road upgrades (both local and OSOM route works) and site investigation and establishment works (including establishment of temporary site offices, compounds, the TWA and site access points).

As such, the main traffic generating activities occurring within the pre-construction minor works phase are the transport of the various construction materials for the external road upgrade works, the transport of equipment as part of the site investigations, mobilisation and establishment and the daily construction staff movements.

The expected Project traffic generation and its expected distribution on the surrounding road network during the pre-construction minor works phase, are based on the following general assumptions, with the forecast traffic volumes identified in **Table 15**, with the detailed Project traffic calculations for the provided in **Appendix F**.

- Prior to the establishment of the TWA (which is expected to be completed within six (6) months of works commencing), the workforce will be limited to a maximum of 100 staff, of which 80% are assumed to travel from Mildura, 5% from Buronga, 10% from Gol Gol and 5% from Wentworth. These workers are expected to commute to the Project Area daily using private vehicles only, with each staff member expected to travel in their own vehicle (i.e. one (1) staff member per vehicle).
- The preliminary site investigation works have conservatively been assumed to generate up to two (2) heavy vehicle (3-axle rigid truck) movement to/from the Project Area (1 to each site area) from Mildura daily in addition to the up to 30 light vehicle movements by local staff.
- Other miscellaneous site equipment and materials are expected to be imported from external sources in Mildura.
- The required fill and pavement materials for the external road upgrade works have conservatively been assumed to be 100% imported from the local external quarry sources, while the required concrete materials are assumed to be sourced from local batch plant facilities in Mildura.

5.1.2 General Construction

The main traffic generating activities occurring within the remaining construction phase of the Project are the transport of the various components, construction materials and 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.

5.1.2.1 OSOM Movements

As previously identified, the components for the 76 WTGs within the Project Area will be imported from overseas, shipped to Port of Portland, before being transported by road to the Project Area. Each of the WTGs will likely consist of up to 13 main WTG components depending on the configuration adopted, including three (3) blade pieces, hub, nacelle and drivetrain components, and up to seven (7) tower sections, with an average of two (2) light escort vehicles accompanying each over dimension WTG component to site.

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 Portland utilising standard semi-trailer vehicles.

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 Portland, 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 11**), 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 three (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.

In addition to the WTG components, the Project has also identified the requirement for the transport of up to eight (8) transformers, eight (8) switchgears and one (1) control room by OSOM vehicle movements. These movements are proposed to be undertaken as part of 6-month timeframes for the substation and electrical connection works (six (6) transformers & six (6) switchgears) and BESS construction works (two (2) transformers, two (2) switchgears and one (1) control room (see **Table 11**). As per the WTG transport operations these OSOM movements are expected to be between the Port of Portland and the Project Area.

Based on the number of OSOM movements required for this large electrical infrastructure (up to 17 movements) it is anticipated that these movements will be limited to one (1) movement per day, and be scheduled around the identified WTG OSOM movements on the same route/s.

Finally, it is noted that as the exact configurations of the transformer, switchgear and control room components are yet to be confirmed, the associated transport vehicle configurations and transport routes from the port facilities to the Project Area have also not been identified. It is therefore recommended that a detailed transport route survey / TMP be undertaken in subsequent detailed design phases of the Project (once the component and transport vehicle configurations are confirmed) to identify any potential route roadworks required to accommodate the swept paths of the OSOM electrical infrastructure component transport vehicles.

5.1.2.2 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 local quarry sources and be transported to site via a combination of the Sturt Highway, Silver City Highway and Arumpo Road (depending on the location of the quarry location utilised), with no internal sources currently identified within the Project Area.
- 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 local quarry sources.
- Other miscellaneous site equipment (site buildings etc.) and materials (diesel fuel, steel reinforcement etc.) are expected to be imported from external sources in Mildura or the surrounding area.
- Waste from the Project Area and the associated TWA 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 heavy vehicle movements by construction task, is summarised in **Table 15**, while the detailed calculations completed in order to convert operational / construction information into vehicle movements are included for reference in **Appendix F**.

Table 15 Summary of Estimated Total Project Material / Equipment Delivery Movement Volumes – Pre-Construction and Construction Phase

Task	Duration	Total Vehicles	Type of Vehicles	Average Heavy Vehicles per Day (Avg)
Pre- Construction Minor Works				
Phase A1 – Early Site Investigations & Preparatory Works	3 months	142 vehicles (external). (including 142 rigid trucks from Mildura)	3-Axle Rigid Truck	Two (2) vehicles / day (external)
Phase A2 – Local Transport Route Upgrades	3 months	384 vehicles (external). (including 70 semi-trailers from Mildura and 314 truck & dog combinations from local quarry sources)	Semi-Trailer Truck and Dog Combination	Six (6) vehicles / day (external)
Phase A3 – Early Site Establishment (temporary site offices, compounds and TWA)	6 months	4,276 vehicles (external). (including one (1) low loader and 405 semi-trailers from Mildura and 3,870 truck & dog combinations from local quarry sources)	Low Loader Semi-Trailer Truck and Dog Combination	30 vehicles / day (external)
Phase A4 – Off Site Road Works (OSOM Route Upgrades)	3 months	69 vehicles (external). (including 40 semi-trailers and 17 concrete trucks from Mildura and 12 truck & dog combinations from local quarry sources)	Semi-Trailer Concrete Truck Truck and Dog Combination	Two (2) vehicles / day (external)
Construction				
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 from local quarry sources)	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 from local quarry sources)	Low Loader Water Tanker Truck and Dog Combination	14 vehicles / day (external)
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)

Task	Duration	Total Vehicles	Type of Vehicles	Average Heavy Vehicles per Day (Avg)
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 from local quarry sources)	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 six (6) semi-trailers from Portland, four (4) truck & trailers from Mildura, two (2) water tankers from Buronga and four (4) truck & dog combinations from local quarry sources)	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 12 OSOM transport vehicles and two (2) semi-trailers from Portland and 6,860 truck & dog combinations from local quarry sources)	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 from local quarry sources)	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 Portland and 858 truck & dog combinations from local quarry sources)	Special Transport Vehicles (Permit) Semi-Trailer Truck and Dog Combination	Nine (9) vehicles / day (external)
Phase K– Decommission Temporary Structures & Demobilisation	1 month	405 vehicles (external) (including 405 semi-trailers from Mildura)	Semi-Trailer	17 vehicles / day (external)
Other – Site Water (Does not include internal water truck movements)	34 months	4,442 vehicles (external) (including 1,112 raw water & 3,330 potable water tankers from Buronga)	Water Trucks	Six (6) vehicles / day (external)
Other – Fuel & General Deliveries	34 months	2,568 vehicles (external) (including 1,112 fuel tankers and 1,456 rigid trucks from Mildura)	Fuel Tanker 3-Axle Rigid Truck	Four (4) vehicles / day (external)
Other – Waste Removal	34 months	464 vehicles (external)	Semi-Trailer	One (1) vehicle / day (external)

5.1.2.3 Construction Staff Movements

The proponent has also provided the following information and assumptions regarding the proposed staff movements for the construction phase of 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 TWA facility within the Project Area, with the remaining 25% (100 staff) expected to commute daily to/from 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 one (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 one (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 16** summarises the expected number of staff by construction task and by month and **Table 17** 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. one (1) HV per week) and are considered to be negligible from a traffic engineering or transport planning perspective.

5.3 Decommissioning Phase

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.

Table 16 Forecast Staff Numbers During Construction

ID	CONSTRUCTION PHASE	MONTH																																							
		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	Jan-29	Feb-29	Mar-29	Apr-29	May-29	Jun-29	Jul-29	Aug-29	Sep-29	Oct-29	Nov-29	Dec-29	Jan-30	Feb-30	Mar-30	Apr-30	May-30	Jun-30				
		Q3 2027			Q4 2027			Q1 2028			Q2 2028			Q3 2028			Q4 2028			Q1 2029			Q2 2029			Q3 2029			Q4 2029			Q1 2030			Q2 2030					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36				
PRE-CONSTRUCTION MINOR WORKS PHASE																																									
A1	Early Site Investigations & Preparatory Works		30	30	30																																				
A2	Local Transport Route Upgrades		18	18	18																																				
A3	Early Site Establishment		48	48	48	48	48	48																																	
A4	Off Site Road Works					18	18	18																																	
CONSTRUCTION PHASE																																									
B	Internal Access Road and Hardstand Construction								64	75	79	80	85	87	87	85	80	79	75	64																					
C	Wind Turbine Foundation Construction										64	75	79	84	85	87	87	85	81	79	75	64																				
D	WTG Components Delivery to Site													22	25	28	30	30	33	33	33	33	30	30	28	25	22														
E	WTG Installation															62	63	66	75	90	94	96	97	97	96	94	90	75	66	63	61										
F	Electrical Trenching and Cabling												53	60	63	65	67	69	71	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	60	60	58	47																					
I	Operational Infrastructure																							30	30																
J	BESS Construction								71	89	98	98	89	71																											
K	Decommission Temporary Structures & Demobilisation																																			39					
M	Construction Management		4	4	4	4	4	4	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		**0**	**100**	**100**	**100**	**70**	**70**	**70**	**148**	**177**	**254**	**266**	**319**	**384**	**331**	**400**	**400**	**400**	**395**	**386**	**326**	**319**	**252**	**281**	**276**	**237**	**224**	**180**	**118**	**114**	**110**	**47**	**45**	**42**	**38**	**52**	**13**				

Table 17 Forecast Daily Construction Staff Vehicle Volumes

				MONTH																																						
				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	Jan-29	Feb-29	Mar-29	Apr-29	May-29	Jun-29	Jul-29	Aug-29	Sep-29	Oct-29	Nov-29	Dec-29	Jan-30	Feb-30	Mar-30	Apr-30	May-30	Jun-30				
				Q3 2027			Q4 2027			Q1 2028			Q2 2028			Q3 2028			Q4 2028			Q1 2029			Q2 2029			Q3 2029			Q4 2029			Q1 2030			Q2 2030					
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36				
Total Staff Vehicle Numbers				**0**	**100**	**100**	**100**	**70**	**70**	**70**	**148**	**177**	**254**	**266**	**319**	**384**	**331**	**400**	**400**	**400**	**395**	**386**	**326**	**319**	**252**	**281**	**276**	**237**	**224**	**180**	**118**	**114**	**110**	**47**	**45**	**42**	**38**	**52**	**52**				
Local Staff DIDO	**Vehicle**	**Capacity**	**Utilisation by Staff**	100%	100%	100%	100%	100%	100%	100%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%				
				0	*100*	*100*	*100*	*70*	*70*	*70*	*37*	*44*	*64*	*67*	*80*	*96*	*83*	*100*	*100*	*100*	*99*	*97*	*82*	*80*	*63*	*70*	*69*	*59*	*56*	*45*	*30*	*29*	*28*	*12*	*11*	*11*	*10*	*13*	*13*				
Required Vehicle Movements (1-Way)	LV (Mildura)	1	80%	0	80	80	80	56	56	56	30	36	51	54	64	77	67	80	80	80	79	78	66	64	51	57	56	48	45	36	24	23	22	10	9	9	8	11	11				
	LV (Buronga)	1	5%	0	5	5	5	4	4	4	2	3	4	4	4	5	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%	0	10	10	10	7	7	7	4	5	7	7	8	10	9	10	10	10	10	10	9	8	7	8	7	6	6	5	3	3	3	2	2	2	1	2	2				
	LV (Wentworth)	1	5%	0	5	5	5	4	4	4	2	3	4	4	4	5	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				**0**	**100**	**100**	**100**	**71**	**71**	**71**	**38**	**47**	**66**	**69**	**80**	**97**	**86**	**100**	**100**	**100**	**99**	**98**	**85**	**80**	**66**	**73**	**71**	**60**	**57**	**47**	**31**	**30**	**29**	**14**	**13**	**13**	**11**	**15**	**15**				
Total Daily DIDO Staff Vehicle Movements to Access Point 1				*0*	*50*	*50*	*50*	*36*	*36*	*36*	*4*	*5*	*7*	*8*	*9*	*11*	*10*	*11*	*11*	*11*	*11*	*11*	*9*	*9*	*7*	*8*	*8*	*7*	*6*	*5*	*4*	*4*	*4*	*2*	*2*	*2*	*2*	*2*	*2*				
Total Daily DIDO Staff Vehicle Movements to Access Point 2				*0*	*50*	*50*	*50*	*36*	*36*	*36*	*34*	*43*	*60*	*62*	*72*	*87*	*77*	*90*	*90*	*90*	*89*	*88*	*77*	*72*	*60*	*66*	*64*	*54*	*51*	*43*	*28*	*27*	*26*	*13*	*12*	*12*	*10*	*14*	*14*				
Non-LocalStaff	**Vehicle**	**Capacity**	**Utilisation by Staff**	0%	0%	0%	0%	0%	0%	0%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%				
				0	*0*	*0*	*0*	*0*	*0*	*0*	*111*	*133*	*191*	*200*	*239*	*288*	*248*	*300*	*300*	*300*	*296*	*290*	*245*	*239*	*189*	*211*	*207*	*178*	*168*	*135*	*89*	*86*	*83*	*35*	*34*	*32*	*29*	*39*	*39*				
Required Vehicle Movements (1-Way)	Mini Bus (TWA to Access Point 1)	20	9%	0	0	0	0	0	0	0	1	1	1	1	2	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%	0	0	0	0	0	0	0	2	2	3	3	3	4	3	4	4	4	4	4	3	3	2	3	3	2	2	2	1	1	1	1	1	1	1	1	1				
	Mini Bus (TWA to Access Point 2)	20	81%	0	0	0	0	0	0	0	5	6	8	9	10	12	10	13	13	13	12	12	10	10	8	9	9	8	7	6	4	4	4	2	2	2	2	2	2				
	LV (TWA to Access Point1)	1	9%	0	0	0	0	0	0	0	10	12	18	18	22	26	23	27	27	27	27	26	22	22	17	19	19	16	16	13	8	8	8	4	4	3	3	4	4				
Total Daily TWA to Access Point 1 Staff Vehicle Movements				*0*	*0*	*0*	*0*	*0*	*0*	*0*	*3*	*3*	*4*	*4*	*5*	*6*	*5*	*6*	*6*	*6*	*6*	*6*	*5*	*5*	*3*	*4*	*4*	*3*	*3*	*3*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*				
Total Daily TWA to Access Point 2 Staff Vehicle Movements				*0*	*0*	*0*	*0*	*0*	*0*	*0*	*15*	*18*	*26*	*27*	*32*	*38*	*33*	*40*	*40*	*40*	*39*	*38*	*32*	*32*	*25*	*28*	*28*	*24*	*23*	*19*	*12*	*12*	*12*	*6*	*6*	*5*	*5*	*6*	*6*				
Total Daily TWA to Project Area Staff Vehicle Movements				**0**	**0**	**0**	**0**	**0**	**0**	**0**	**18**	**21**	**30**	**31**	**37**	**44**	**38**	**46**	**46**	**46**	**45**	**44**	**37**	**37**	**28**	**32**	**32**	**27**	**26**	**22**	**14**	**14**	**14**	**8**	**8**	**7**	**7**	**8**	**8**				

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 F**.

A summary of the calculated daily construction, operations and decommissioning Project traffic volumes on the identified road links is provided in **Table 18**, noting the following:

- The peak Project volumes during pre-construction minor works are experienced during the period where Phase A1 (early site investigations), Phase A2 (local transport route upgrades) and A3 (early site establishment) (refer **Table 11** & **Table 16**) are being completed simultaneously with typical site water, fuel, general deliveries, waste management and pre-construction staff movements on the network.
- The peak Project volumes during the construction phase Project volumes are experienced during the 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 11** & **Table 16**) are being completed simultaneously with typical site water, fuel, general deliveries, 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 one (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.

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 Portland 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 three (3) OSOM transport vehicles and six (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, noting the adoption of the following assumptions:

- During the AM and PM Project peak periods the turning volumes of Project traffic at the intersection are based primarily on staff movements, and as such reflect inbound movements to Arumpo Road in the AM peak and outbound movements from Arumpo Road in the PM peak.
- During the AM and PM network peak periods a conservative allowance of five (5) vph has been adopted for the right turn into and left turn out of Arumpo Road, to reflect the expected maximum hourly non-staff light vehicle movements between Mildura and the Project as part of the pre-construction minor works, peak construction, operations and decommissioning phases.
- As the hourly heavy vehicle volumes for the Project have been calculated, and are assumed to be constant throughout the day, the peak hour heavy vehicle movements at the intersection are assumed to be the same for both the Project and network peak periods assessed.

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 36** (both Project and Network peaks), with further detailed traffic volume calculations provided for reference in **Appendix G**.

Table 18 Project Traffic Volumes on External Road Network Links

Road Segment	Segment ID	Average Daily Project Traffic Volumes											
		Peak Construction			Peak Construction			Operations			Decommissioning		
		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	139	139	278	229	229	458	31	31	62	160	160	321
Corbett Avenue to Arumpo Road	-	143	143	286	234	234	468	31	31	62	164	164	328
Arumpo Road to Wentworth	-	5	5	10	5	5	10	0	0	0	4	4	7
Sturt Highway (A20)													
Mildura to River Drive	98063	122	122	244	193	193	386	31	31	62	135	135	270
River Drive to Silver City Highway	98063	124	124	248	204	204	408	31	31	62	143	143	286
Silver City Highway to Gol Gol	-	42	42	84	123	123	246	0	0	0	86	86	172
Gol Gol to Euston	98064	0	0	0	11	11	22	0	0	0	8	8	15
Arumpo Road													
Silver City Highway to Landfill Access	-	146	146	292	201	201	402	31	31	62	141	141	281
Landfill Access to Quarry Access	-	147	147	294	202	202	404	31	31	62	141	141	283
Quarry Access to PEC Camp	-	147	147	294	240	240	480	31	31	62	168	168	336
PEC Camp to Access Point 1	98156	147	147	294	240	240	480	31	31	62	168	168	336
Access Point 1 to Access Point 2	98156	138	138	276	236	236	472	31	31	62	165	165	330
River Drive (WSC)													
Sturt Highway to Raw Water Supply Point	WSC	2	2	4	12	12	24	0	0	0	9	9	18
Corbett Avenue (WSC)													
Silver City Highway to Modica Crescent East	WSC	4	4	8	7	7	14	0	0	0	5	5	10
Modica Crescent (WSC)													
Corbett Avenue West to Corbett Avenue East	WSC	4	4	8	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

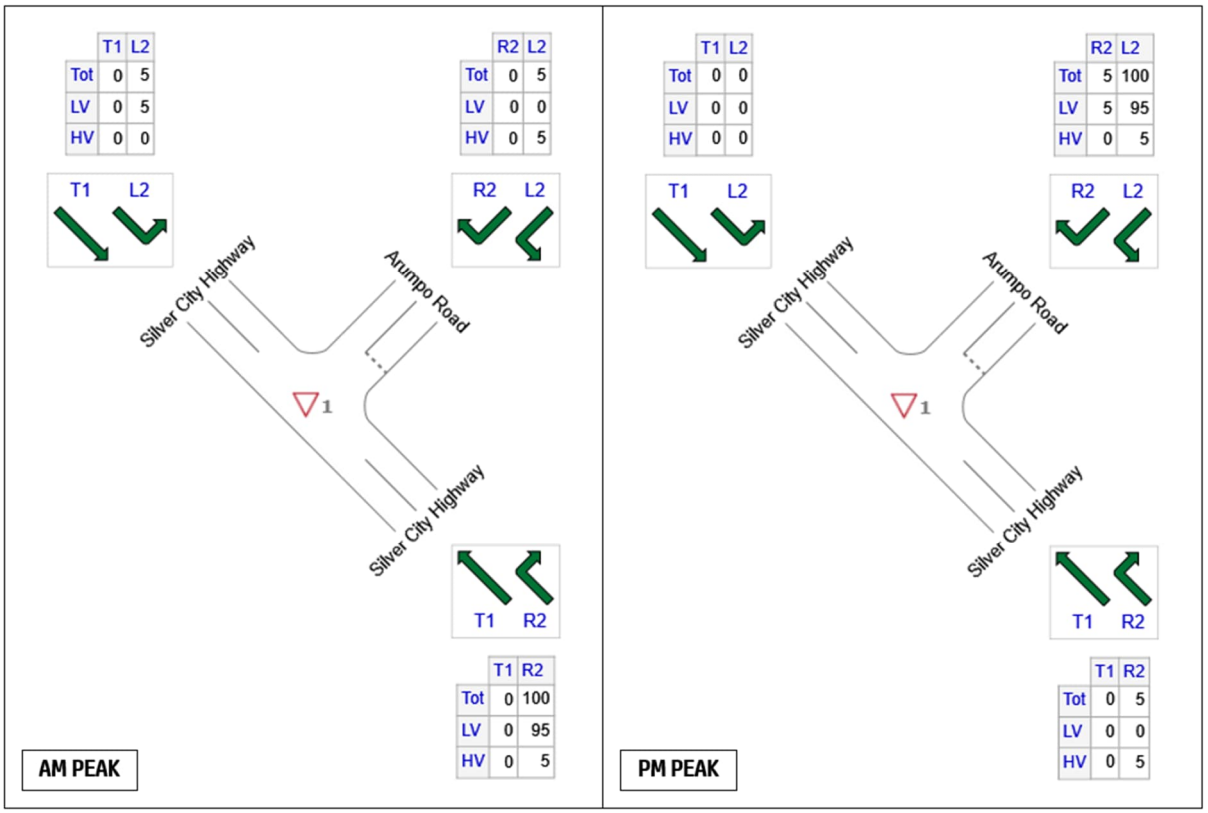

Figure 29 Pre-Construction Minor Works AM & PM Peak (Project) Traffic Volumes, Silver City Highway / Arumpo Road

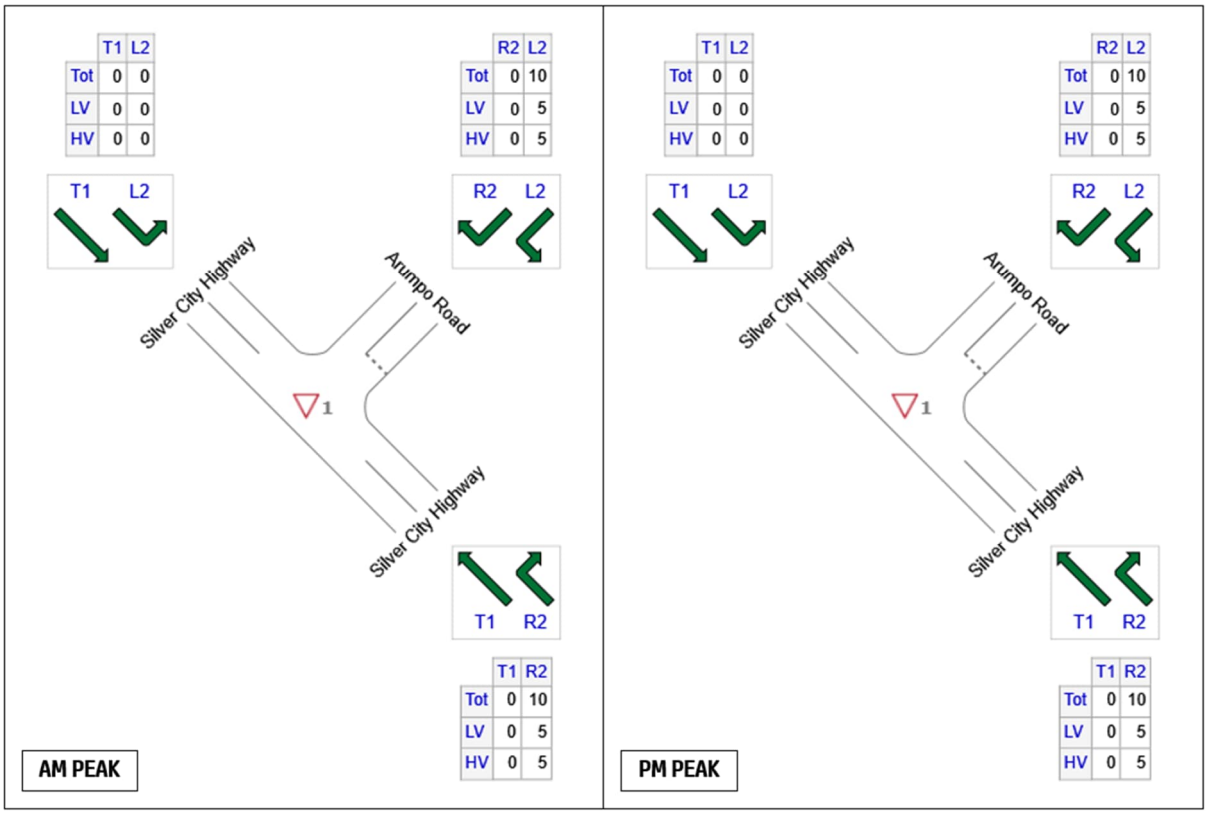

Figure 30 Pre-Construction Minor Works AM & PM Peak (Network) Traffic Volumes, Silver City Highway / Arumpo Road

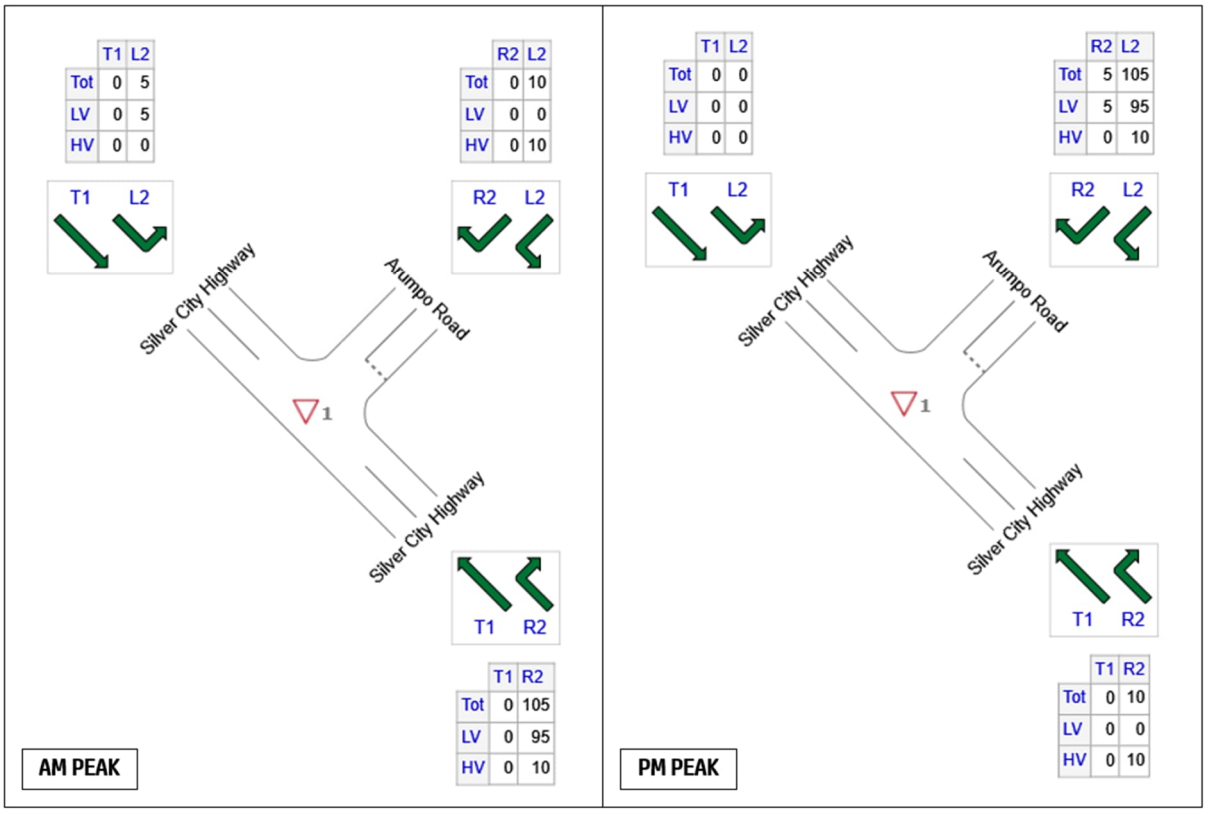

Figure 31 Peak Construction AM & PM Peak (Project) Traffic Volumes, Silver City Highway / Arumpo Road

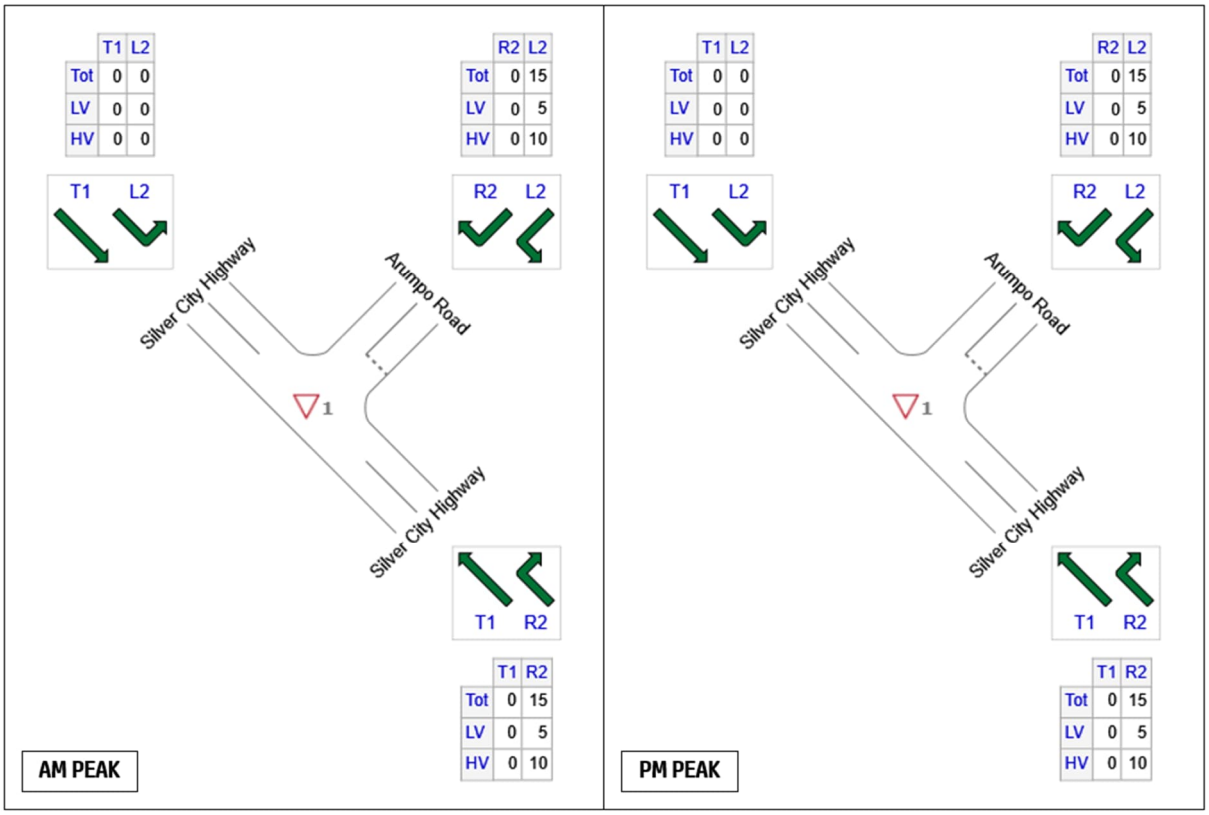

Figure 32 Peak Construction AM & PM Peak (Network) Traffic Volumes, Silver City Highway / Arumpo Road

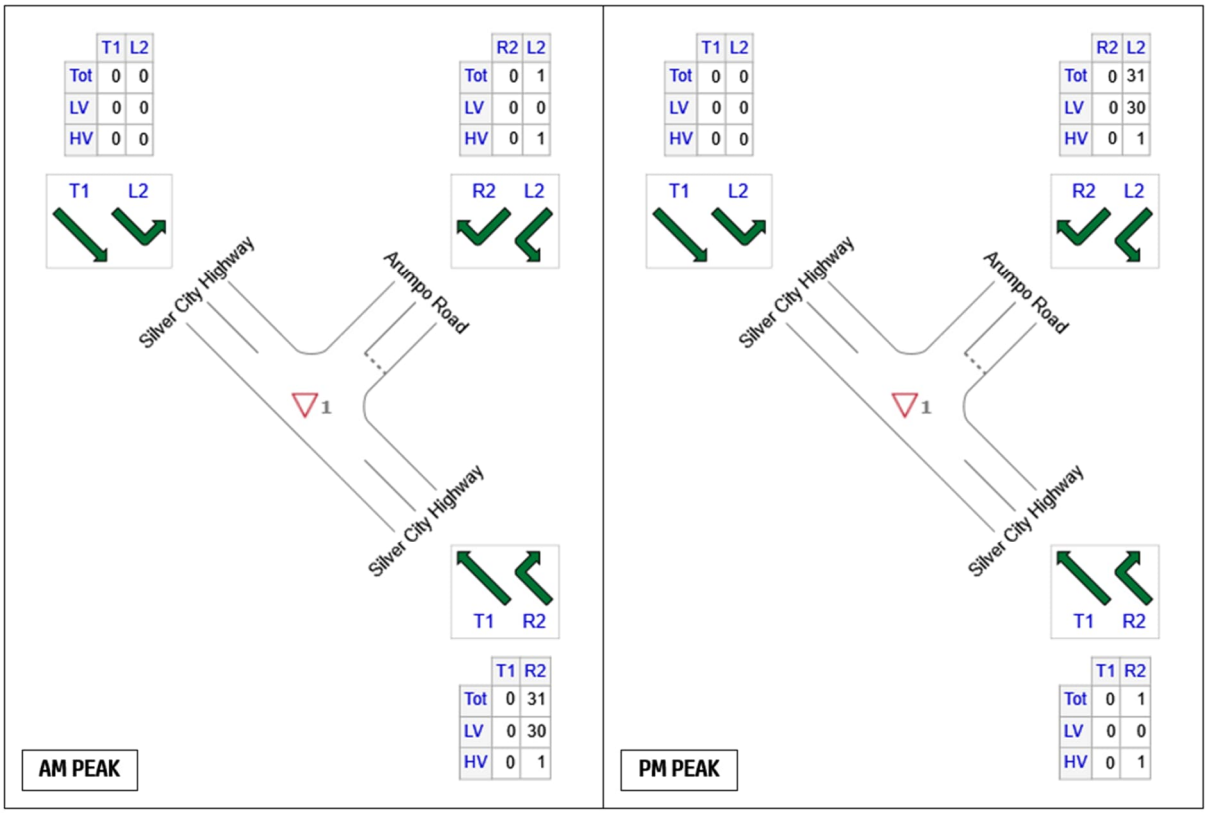

Figure 33 Operations AM & PM Peak (Project) Traffic Volumes, Silver City Highway / Arumpo Road

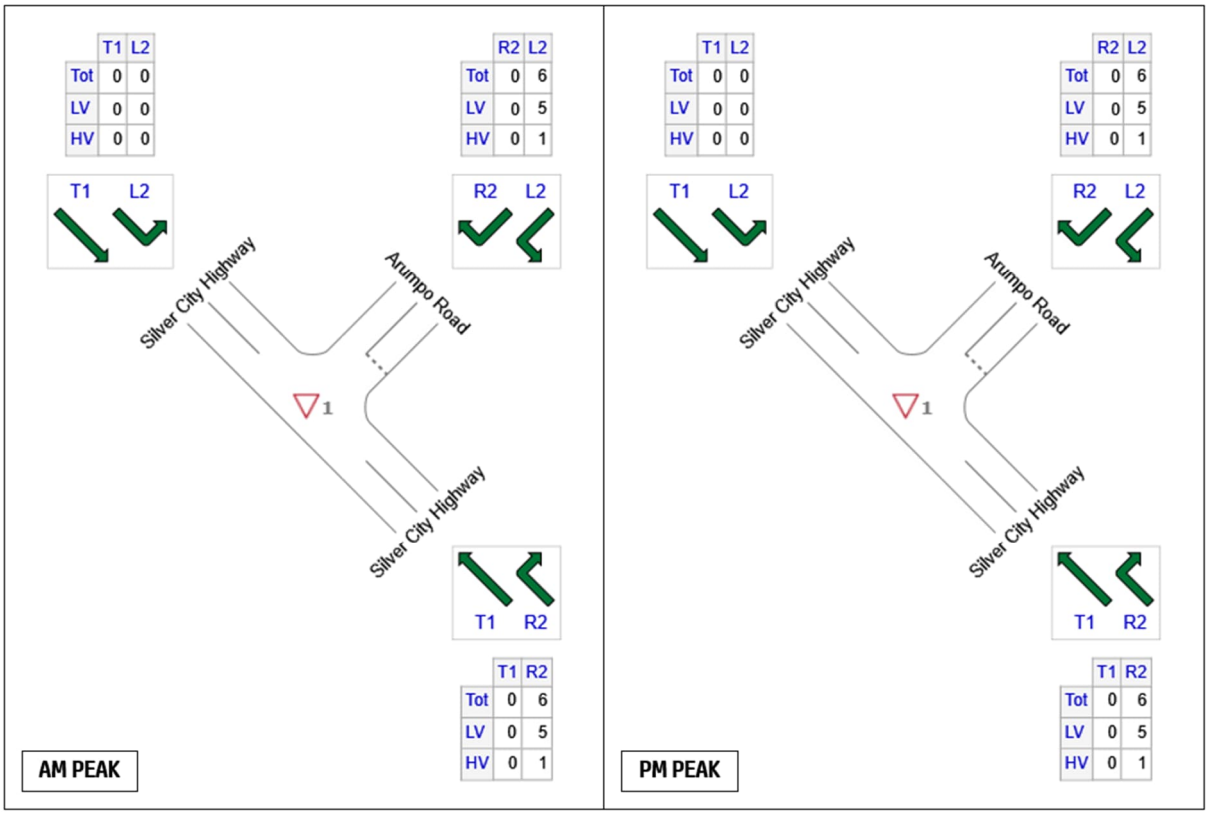

Figure 34 Operations AM & PM Peak (Network) Traffic Volumes, Silver City Highway / Arumpo Road

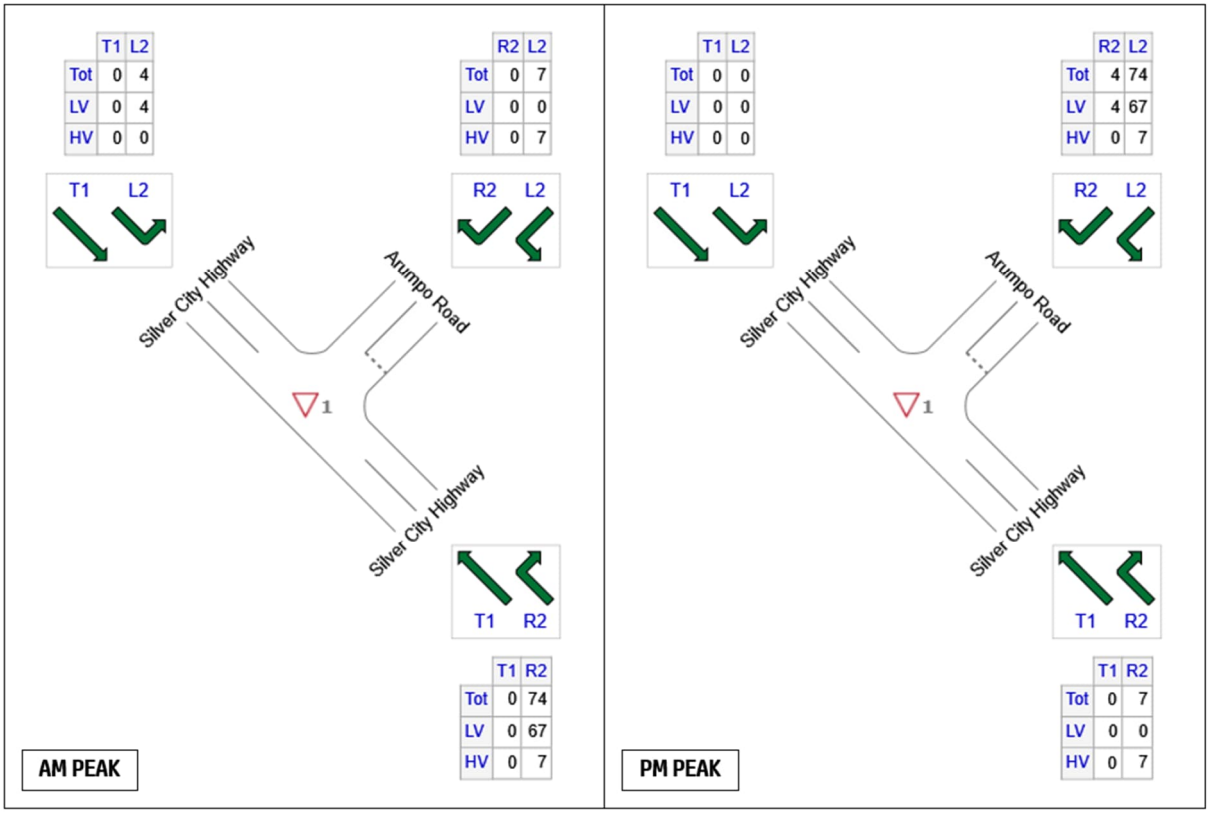

Figure 35 Decommissioning AM & PM Peak (Project) Traffic Volumes, Silver City Highway / Arumpo Road

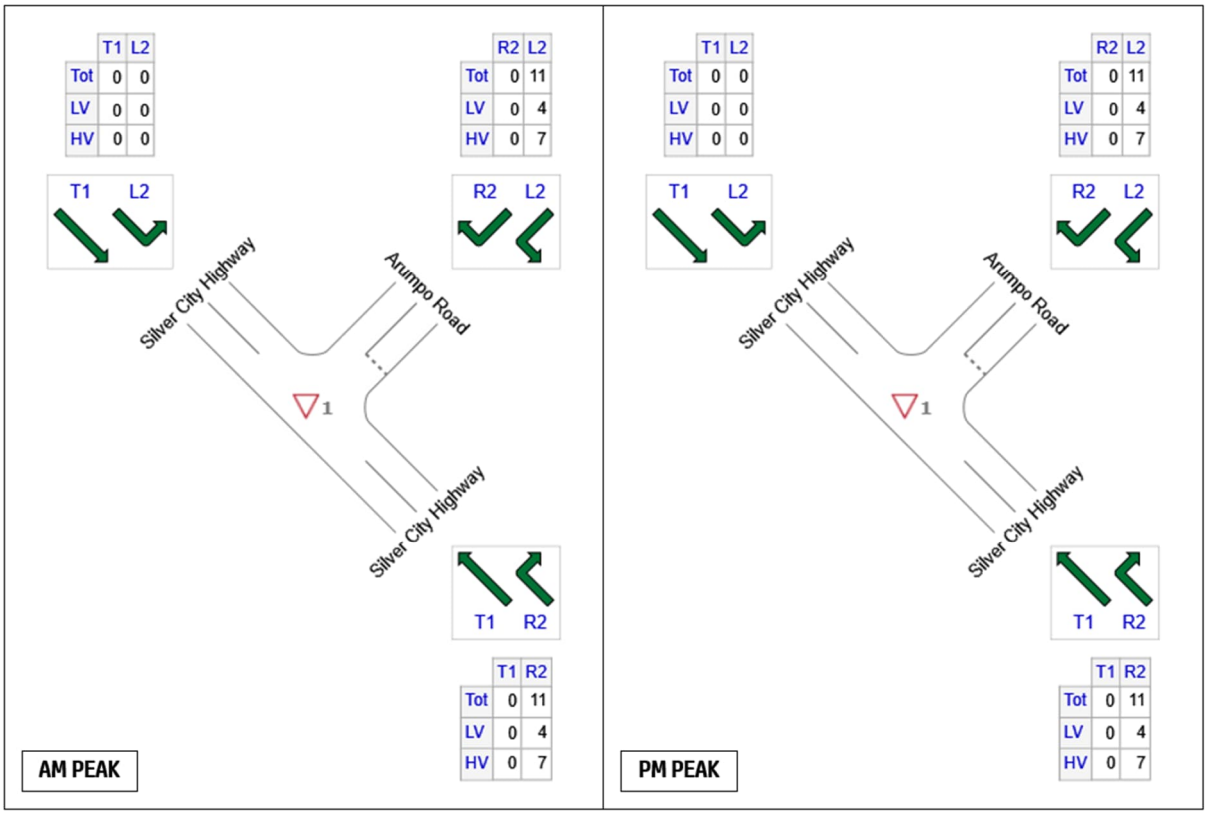

Figure 36 Decommissioning AM & PM Peak (Network) Traffic Volumes, Silver City Highway / Arumpo Road

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 37**) 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 19**.

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 Wind Farm.
- Gol Gol Battery Energy Storage System.
- Euston Wind Farm.
- Koorakee Energy Park.
- Lake Victoria Wind Farm

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 Portland 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 (1) 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 during both the preliminary and peak construction phases of the Project (refer **Table 20** and **Table 21**) and peak hour volumes (both Project and Network peaks) at the critical Silver City Highway / Arumpo Road intersection during both the preliminary and peak construction phases for the Project are provided in **Figure 38** to **Figure 41**.

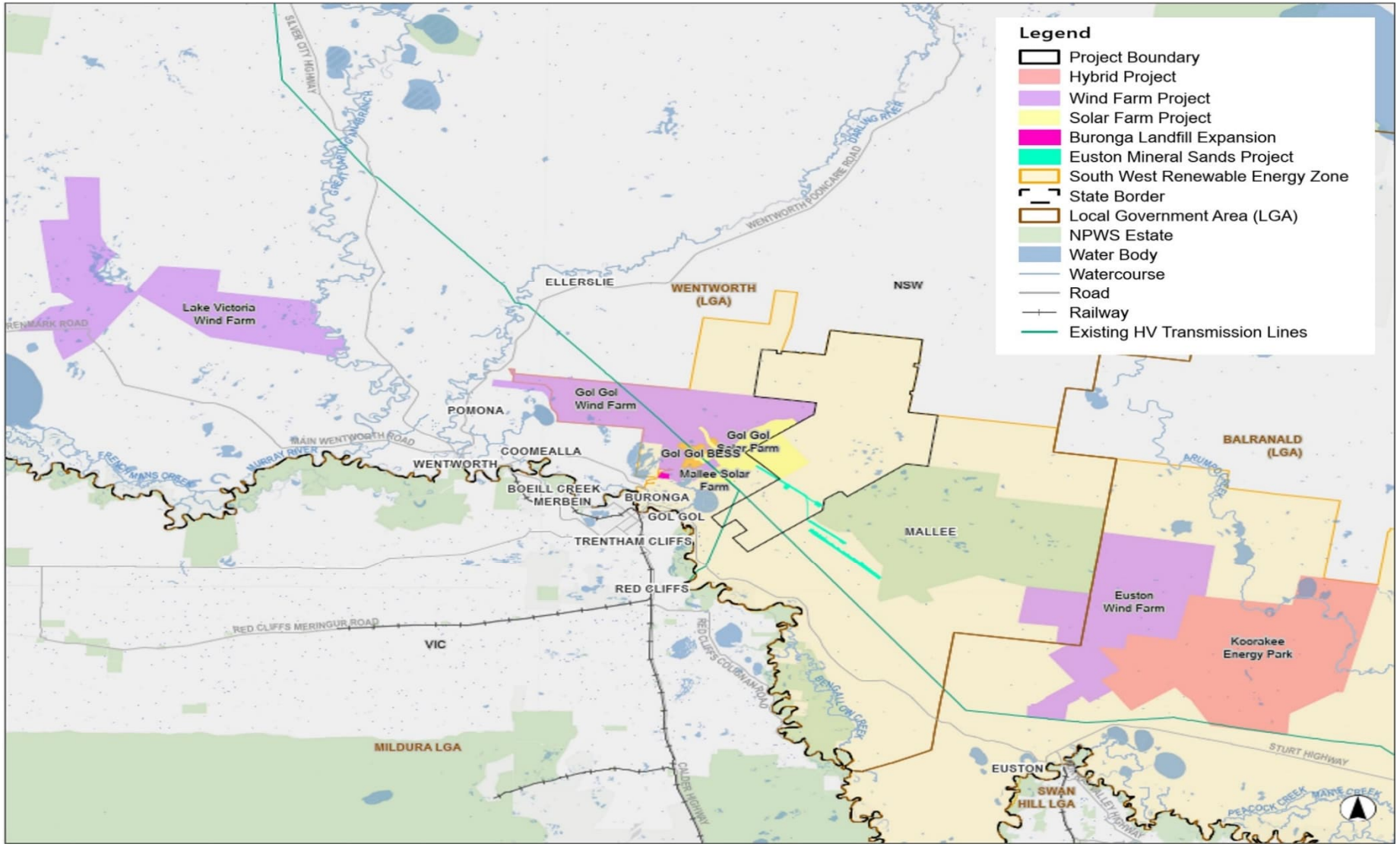

Figure 37 Adjacent External Projects for Cumulative Impact Assessment **[Source: Umwelt]**

Table 19 Cumulative Project Traffic Review Summary

ID	Project	Location	Status & Timeframes	Required for Cumulative Assessment	Review Comments
A	Euston Mineral Sands Project	Wentworth Shire LGA	Unknown	**Yes**	The project is no longer visible on the Major Projects website as at the date of preparing this Revised TTIA. However, the previously published details regarding this project have been retained within this assessment for conservatism. **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 was previously expected to begin in 2026 with commissioning in 2028. • 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** • Based on the previously proposed timings, the construction phase from the Euston Mineral Sands project is not expected to align with the construction phases of the proposed Mallee Wind Farm. • It is anticipated however that the operations phase of the Euston Mineral Sands Project will be concurrent with both the preliminary and peak construction phases of the Mallee Wind Farm. • Allowance has therefore been made for up to 125 staff (approx. 50% of peak construction staff) between Mildura and the proposed access point on the Sturt Highway east of Gol Gol. This equates to approx. 250 vpd (125 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 the Silver City Highway or Arumpo Road, or at the key Silver City Highway / Arumpo Road intersection.

ID	Project	Location	Status & Timeframes	Required for Cumulative Assessment	Review Comments
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. • 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. **Cumulative Assessment Review Comments** • As timing is unknown, the construction phase from the Mallee Solar Farm has conservatively been assumed to be concurrent with both the preliminary and peak construction periods of the 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 during peak hours to the 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 daily road link and peak hour intersection volumes during the construction phase of the Mallee Solar Farm are estimated to be approx. 75% of those identified for the peak construction phase of the Mallee Wind Farm in **Section 5.1** above.
C	Gol Gol 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 & 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**

ID	Project	Location	Status & Timeframes	Required for Cumulative Assessment	Review Comments
					• As timing is unknown, the construction phase from the Gol Gol Solar Farm has conservatively been assumed to be concurrent with both the preliminary and peak construction periods of the 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 during peak hours to the 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 daily road link and peak hour intersection volumes during the construction phase of the Gol Gol Solar Farm are estimated to be approx. 50% of those identified for the peak construction phase of the Mallee Wind Farm in **Section 5.1** above.
D	Gol Gol Wind 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 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 the proposed timing (start late 2028) the construction phase of the Gol Gol Wind Farm is not anticipated to be concurrent with the pre-construction minor works phase of the proposed Mallee Wind Farm. • It is anticipated however that the initial / pre-construction phase for the Gol Gol Wind Farm will be concurrent with the peak construction phase of the 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 Wind Farm is not anticipated to utilised Arumpo Road north of Wamberra Road. • Project expected to contribute movements during peak hours to the key Silver City Highway / Arumpo Road intersection.

ID	Project	Location	Status & Timeframes	Required for Cumulative Assessment	Review Comments
					• No traffic volume estimates are currently available for the Gol Gol Wind Farm project. Therefore an estimate of the daily and peak hour traffic movements associates with the initial / pre-construction phase of the Gol Gol Wind Farm have been established based on an anticipated ratio of estimated pre-construction staff to that for Mallee Wind Farm (i.e. 100 FTE / 400 FTE – 25%). • As such the daily road link volumes and intersection volumes during the initial / pre-construction phase of the Gol Gol Wind Farm are estimated to be approx. 25% of those identified for the peak construction phase of the Mallee Wind Farm in **Section 5.1** above.
E	Gol Gol BESS	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 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** • As timing is unknown, the construction phase from the Gol Gol BESS project has conservatively been assumed to be concurrent with both the preliminary and peak construction periods of the 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 during peak hours to the 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 daily road link and peak hour intersection volumes during the construction phase of the Gol Gol BESS are estimated to be approx. 37.5% of those identified for the peak construction phase of 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	Constructed	**No**	**Relevant Project Details** • Construction in vicinity of Project, including Buronga Substation facility and powerline alignment is complete. • Only minor vehicle movements anticipated after completion of construction. **Cumulative Assessment Traffic Volumes** • As works are completed there is not anticipated to be any significant traffic movements generated during the construction of the Mallee Wind Farm Project.
G	Buronga Landfill Expansion	Wentworth Shire LGA	Constructed	**No**	**Relevant Project Details** • Located to the west of the site, with access primarily gained via Arumpo Road. • Staged expansion works with construction works to be completed in late 2025 / early 2026. • Works to extend operational life by 38 years to 2062. • Operations staff 10 FTE. **Cumulative Assessment Traffic Volumes** • Based on identified timings it is expected that construction works will be completed prior to commencement of construction works for the Mallee Wind Farm Project.
H	Euston Wind Farm	Balranald 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. • 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** • As timing is unknown, the construction phase from the Gol Gol BESS project has conservatively been assumed to be concurrent with both the preliminary and peak construction periods of the proposed Mallee Wind Farm. • 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 Euston Wind Farm access.

ID	Project	Location	Status & Timeframes	Required for Cumulative Assessment	Review Comments
					• Traffic from the Euston Wind Farm is expected to be contained to the Sturt Highway and is not anticipated to utilise the Silver City Highway or Arumpo Road, or the 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. • 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** • As timing is unknown, the construction phase from the GoI GoI BESS project has conservatively been assumed to be concurrent with both the preliminary and peak construction periods of the proposed Mallee Wind Farm. • 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 Koorakee Energy Park is also expected to be contained to the Sturt Highway and is not anticipated to utilise Arumpo Road or key Silver City Highway / Arumpo Road intersection.
J	Lake Victoria Wind Farm	Wentworth Shire LGA	Prepare EIS	**Yes**	**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 (start 2028) the construction phase of the Lake Victoria Wind Farm is not anticipated to be concurrent with the pre-construction minor works phase of the proposed Mallee Wind Farm. • It is anticipated however that the construction phase for the Lake Victoria Wind Farm will be concurrent with the peak construction phase of the Mallee Wind Farm.

ID	Project	Location	Status & Timeframes	Required for Cumulative Assessment	Review Comments
					• Based on location of Lake Victoria Wind Farm, majority of Project traffic movements are expected to be limited to the Wentworth area. • Notwithstanding this, an allowance for movements for up to 75 staff (approx. 20% of identified workforce) between Mildura and the proposed access point on Nulla Road to the west of Wentworth. This equates to approx. 150 vpd (75 vpd each direction) on the sections of the Sturt and Silver City Highways between Mildura and the proposed Lake Victoria Wind Farm. • While the identified staff traffic from the Lake Victoria Wind Farm is not expected to be to utilise Arumpo Road, it will travel through the key Silver City Highway / Arumpo Road intersection during peak hours.

Table 20 External Project Traffic Volumes on Road Network Links during Pre-Construction Minor Works Phase of Mallee Wind Farm

Road Segment	External Project Cumulative Traffic Volumes during Pre-Construction Minor Works Phase of Mallee Wind Farm																										
	Euston Mineral Sands			Mallee Solar Farm			Gol Gol Solar Farm			Gol Gol Wind Farm			Gol Gol BESS			Euston Wind Farm			Koorakee Energy Park			Lake Victoria Wind Farm			Total External Project (Pre-Construction)		
	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
Silver City Highway (B79)																											
Sturt Highway to Corbett Avenue	0	0	0	172	172	344	258	258	515	0	0	0	86	86	172	0	0	0	0	0	0	0	0	0	372	372	744
Corbett Avenue to Arumpo Road	0	0	0	176	176	351	263	263	527	0	0	0	88	88	176	0	0	0	0	0	0	0	0	0	380	380	761
Arumpo Road to Wentworth	0	0	0	4	4	8	6	6	11	0	0	0	2	2	4	0	0	0	0	0	0	0	0	0	8	8	16
Sturt Highway (A20)																											
Mildura to River Drive	125	125	250	145	145	290	217	217	434	0	0	0	72	72	145	50	50	100	50	50	100	0	0	0	539	539	1,077
River Drive to Silver City Highway	125	125	250	153	153	306	230	230	459	0	0	0	77	77	153	50	50	100	50	50	100	0	0	0	557	557	1,113
Silver City Highway to Gol Gol	125	125	250	92	92	185	138	138	277	0	0	0	46	46	92	50	50	100	50	50	100	0	0	0	425	425	850
Gol Gol to Euston	125	125	250	8	8	17	12	12	25	0	0	0	4	4	8	50	50	100	50	50	100	0	0	0	243	243	486
Arumpo Road (431)																											
Silver City Highway to Landfill Access	0	0	0	151	151	302	226	226	452	0	0	0	75	75	151	0	0	0	0	0	0	0	0	0	327	327	653
Landfill Access to Quarry Access	0	0	0	152	152	303	227	227	455	0	0	0	76	76	152	0	0	0	0	0	0	0	0	0	328	328	657
Quarry Access to PEC Camp	0	0	0	180	180	360	270	270	540	0	0	0	90	90	180	0	0	0	0	0	0	0	0	0	390	390	780
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	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	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

Table 21 External Project Traffic Volumes on Road Network Links during Peak Construction Phase of Mallee Wind Farm

Road Segment	External Project Cumulative Traffic Volumes during Peak Construction Phase of Mallee Wind Farm																										
	Euston Mineral Sands			Mallee Solar Farm			Gol Gol Solar Farm			Gol Gol Wind Farm			Gol Gol BESS			Euston Wind Farm			Koorakee Energy Park			Lake Victoria Wind Farm			Total External Project (Peak Construction)		
	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
Silver City Highway (B79)																											
Sturt Highway to Corbett Avenue	0	0	0	172	172	344	115	115	229	86	86	172	57	57	86	0	0	0	0	0	0	75	75	150	504	504	980
Corbett Avenue to Arumpo Road	0	0	0	176	176	351	117	117	234	88	88	176	59	59	88	0	0	0	0	0	0	75	75	150	514	514	998
Arumpo Road to Wentworth	0	0	0	4	4	8	3	3	5	2	2	4	1	1	2	0	0	0	0	0	0	75	75	150	84	84	168
Sturt Highway (A20)																											
Mildura to River Drive	125	125	250	145	145	290	97	97	193	72	72	145	48	48	72	50	50	100	50	50	100	75	75	150	662	662	1,300
River Drive to Silver City Highway	125	125	250	153	153	306	102	102	204	77	77	153	51	51	77	50	50	100	50	50	100	75	75	150	683	683	1,340
Silver City Highway to Gol Gol	125	125	250	92	92	185	62	62	123	46	46	92	31	31	46	50	50	100	50	50	100	0	0	0	456	456	896
Gol Gol to Euston	125	125	250	8	8	17	6	6	11	4	4	8	3	3	4	50	50	100	50	50	100	0	0	0	246	246	490
Arumpo Road (431)																											
Silver City Highway to Landfill Access	0	0	0	151	151	302	101	101	201	75	75	151	50	50	75	0	0	0	0	0	0	0	0	0	377	377	729
Landfill Access to Quarry Access	0	0	0	152	152	303	101	101	202	76	76	152	51	51	76	0	0	0	0	0	0	0	0	0	379	379	732
Quarry Access to PEC Camp	0	0	0	180	180	360	120	120	240	90	90	180	60	60	90	0	0	0	0	0	0	0	0	0	450	450	870
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	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	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

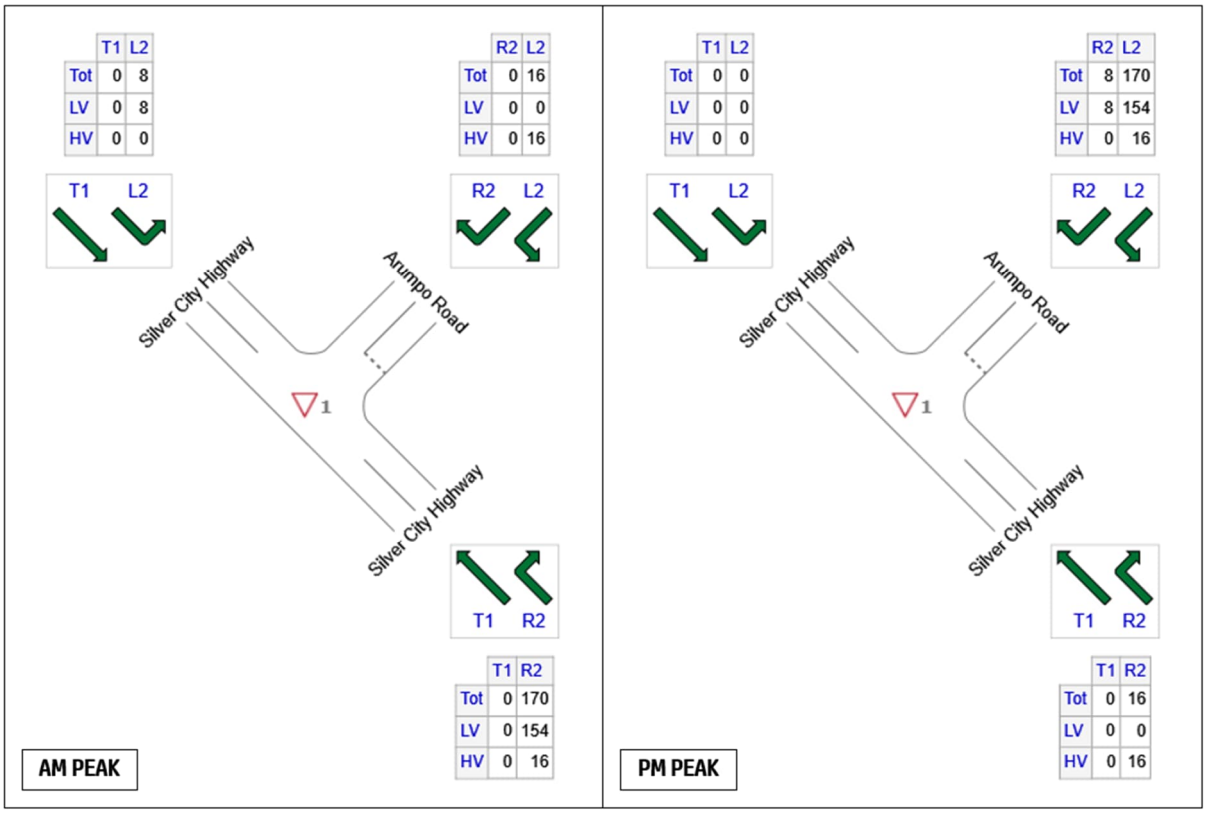

Figure 38 Pre-Construction Minor Works - External Projects Peak Hour (Project) Traffic Volumes

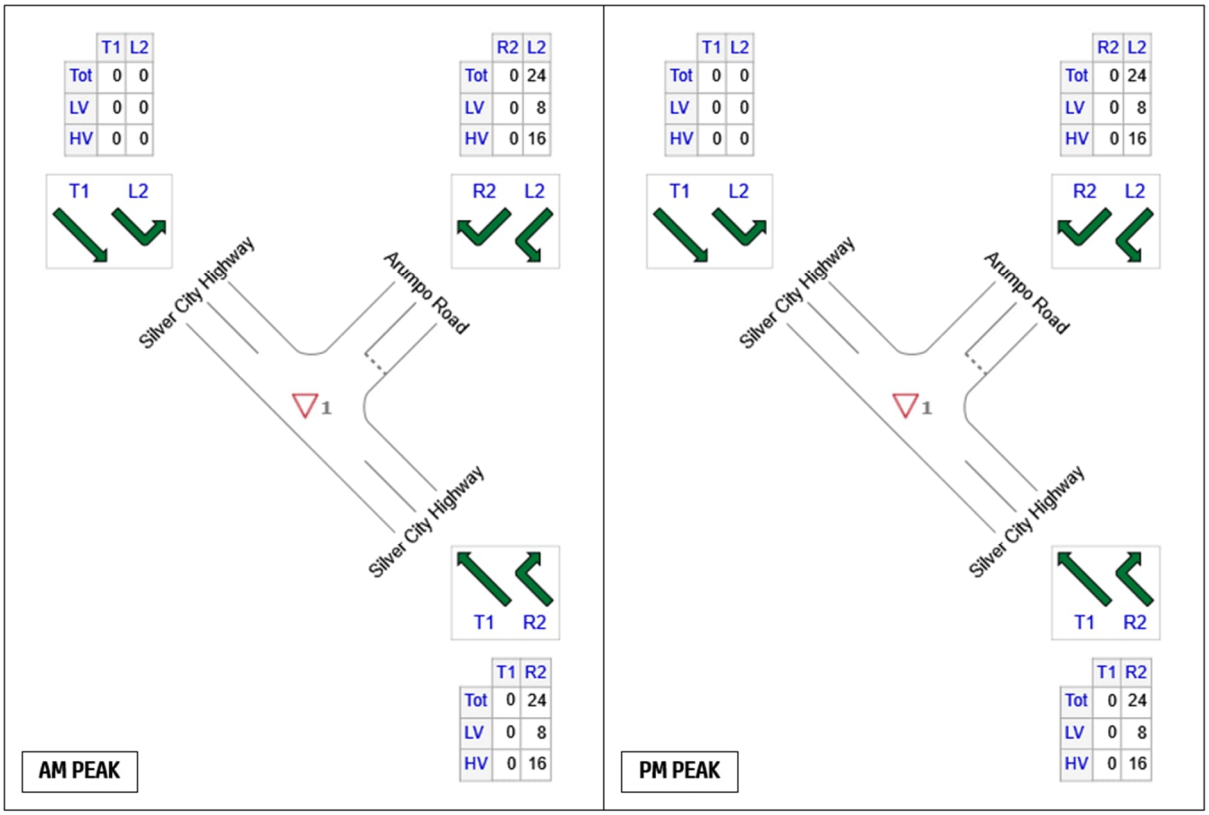

Figure 39 Pre-Construction Minor Works - External Projects Peak Hour (Network) Traffic Volumes

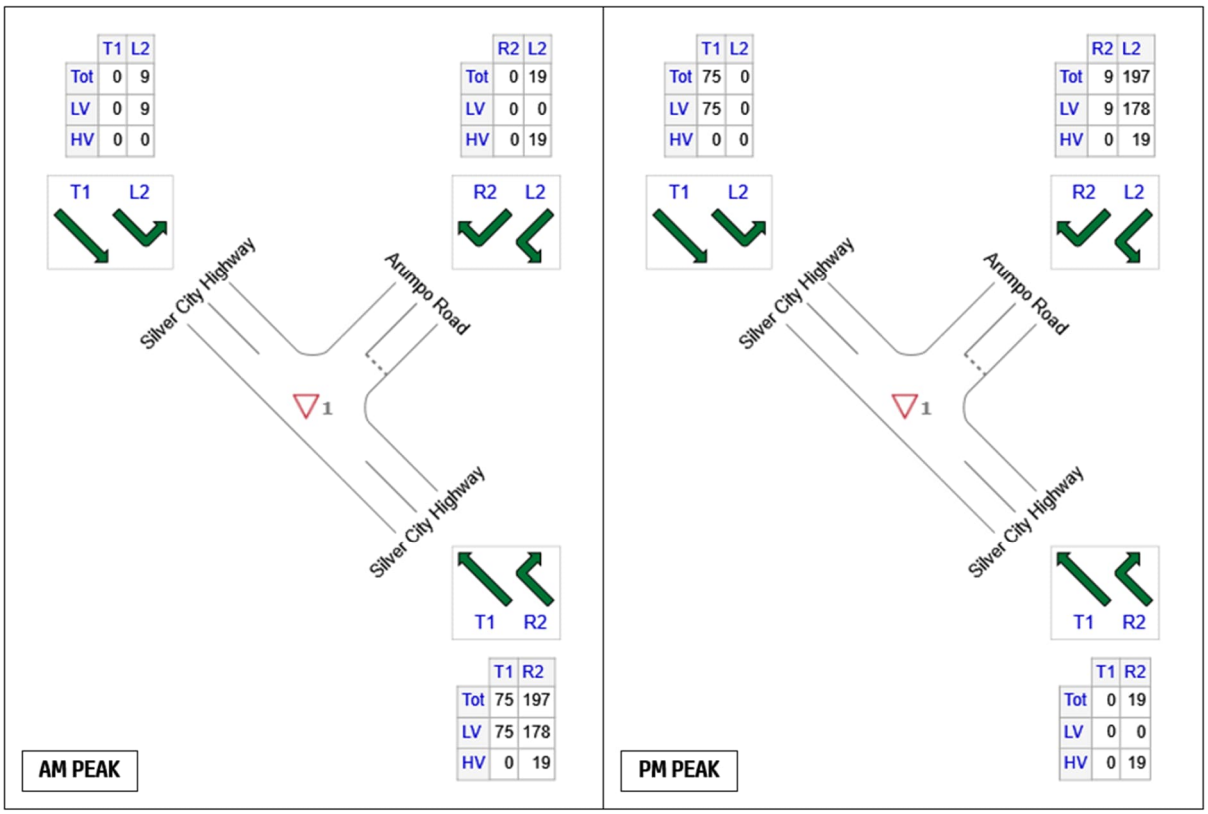

Figure 40 Peak Construction Minor Works - External Projects Peak Hour (Project) Traffic Volumes

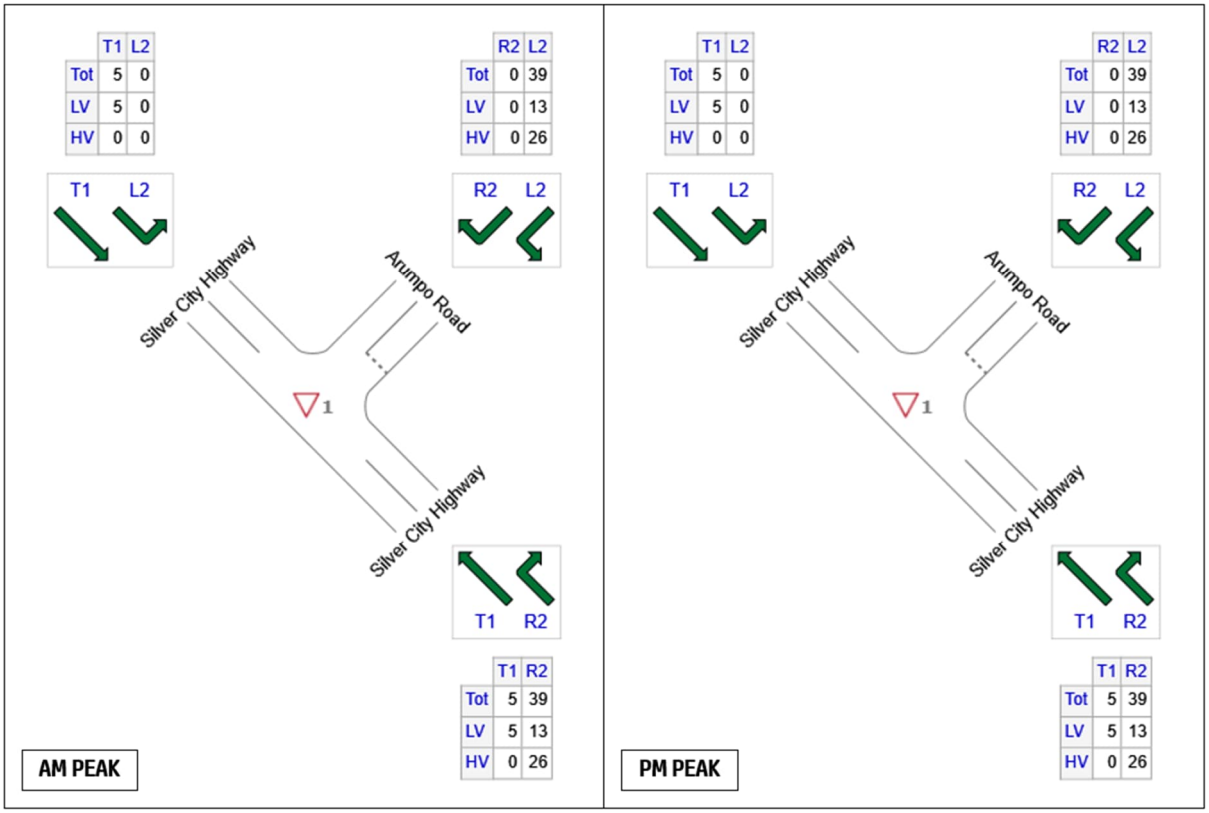

Figure 41 Peak Construction - External Projects Peak Hour (Network) Traffic Volumes

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 (2) 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 – 2040) and decommissioning phase (2060) identified in **Table 18** above.

Based on these estimated 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 2040 and decommissioning 30-year Project life – 2060), with summaries of the resultant daily road link traffic volumes for both the background and Project traffic scenarios during the peak construction, operations and decommissioning phases of the Project are summarised in **Table 22**.

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 20** and **Table 21**of **Section 5.5.1** above), with this assessment completed for the both the preliminary and peak construction period for the Project. These additional cumulative assessment daily link volume forecasts summarised in **Table 23**.

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 38** to **Figure 41** 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 42** to **Figure 53** below.

Table 22 Forecast Road Link Traffic Volumes – Pre and Project Traffic Scenarios

Road Segment	Seg. ID	Daily Traffic Volumes																							
		Background 2027			Pre-Construction Minor Works 2027			Background 2028			Peak Construction 2028			Background 2040			Operations 2040			Background 2060			Operations 2060		
		Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
Silver City Highway (B79)																									
Sturt Highway to Corbett Avenue	98286	4,051	4,117	8,168	4,190	4,256	8,446	4,132	4,117	8,249	4,361	4,346	8,707	5,240	5,325	10,566	5,271	5,356	10,628	7,787	7,913	15,700	7,947	8,074	16,021
Corbett Avenue to Arumpo Road	-	1,951	1,879	3,830	2,094	2,022	4,116	1,990	1,879	3,869	2,224	2,113	4,337	2,523	2,431	4,954	2,554	2,462	5,016	3,749	3,613	7,362	3,913	3,776	7,690
Arumpo Road to Wentworth	-	1,285	1,282	2,567	1,290	1,287	2,577	1,311	1,282	2,593	1,316	1,287	2,603	1,662	1,658	3,321	1,662	1,658	3,321	2,470	2,464	4,934	2,474	2,468	4,941
Sturt Highway (A20)																									
Mildura to River Drive	98063	8,858	8,775	17,632	8,980	8,897	17,876	9,035	8,775	17,809	9,228	8,968	18,195	11,458	11,351	22,809	11,489	11,382	22,871	17,027	16,867	33,893	17,162	17,002	34,163
River Drive to Silver City Highway	98063	8,858	8,775	17,632	8,982	8,899	17,880	9,035	8,775	17,809	9,239	8,979	18,217	11,458	11,351	22,809	11,489	11,382	22,871	17,027	16,867	33,893	17,169	17,009	34,179
Silver City Highway to Gol Gol	-	3,823	3,823	7,645	3,865	3,865	7,729	3,899	3,823	7,722	4,022	3,946	7,968	4,945	4,945	9,890	4,945	4,945	9,890	7,348	7,348	14,696	7,434	7,434	14,868
Gol Gol to Euston	98064	1,502	1,528	3,030	1,502	1,528	3,030	1,532	1,528	3,060	1,543	1,539	3,082	1,943	1,976	3,919	1,943	1,976	3,919	2,888	2,936	5,824	2,895	2,944	5,839
Arumpo Road (431)																									
Silver City Highway to Landfill Access	-	751	683	1,435	897	829	1,727	766	683	1,450	967	884	1,852	972	884	1,856	1,003	915	1,918	1,444	1,314	2,758	1,585	1,454	3,039
Landfill Access to Quarry Access	-	751	683	1,435	898	830	1,729	766	683	1,450	968	885	1,854	972	884	1,856	1,003	915	1,918	1,444	1,314	2,758	1,586	1,455	3,041
Quarry Access to PEC Camp	-	751	683	1,435	898	830	1,729	766	683	1,450	1,006	923	1,930	972	884	1,856	1,003	915	1,918	1,444	1,314	2,758	1,612	1,482	3,094
PEC Camp to Access Point 1	98156	267	253	521	414	400	815	273	253	526	513	493	1,006	346	328	674	377	359	736	514	487	1,001	682	655	1,337
Access Point 1 to Access Point 2	98156	267	253	521	405	391	797	273	253	526	509	489	998	346	328	674	377	359	736	514	487	1,001	679	652	1,332

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

Table 23 Forecast Road Link Traffic Volumes – Pre and Project Traffic Scenarios (Cumulative Assessments)

Road Segment	Seg. ID	Daily Traffic Volumes																	
		Background 2027			Pre-Construction Minor Works 2027			Cumulative Pre-Construction Minor Works 2027			Background 2028			Peak Construction 2028			Cumulative Peak Construction 2028		
		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	4,190	4,256	8,446	4,562	4,628	9,190	4,132	4,117	8,249	4,361	4,346	8,707	4,865	4,850	9,687
Corbett Avenue to Arumpo Road	-	1,951	1,879	3,830	2,094	2,022	4,116	2,474	2,403	4,876	1,990	1,879	3,869	2,224	2,113	4,337	2,737	2,627	5,335
Arumpo Road to Wentworth	-	1,285	1,282	2,567	1,290	1,287	2,577	1,298	1,295	2,593	1,311	1,282	2,593	1,316	1,287	2,603	1,400	1,371	2,771
Sturt Highway (A20)																			
Mildura to River Drive	98063	8,858	8,775	17,632	8,980	8,897	17,876	9,518	9,435	18,954	9,035	8,775	17,809	9,228	8,968	18,195	9,890	9,629	19,495
River Drive to Silver City Highway	98063	8,858	8,775	17,632	8,982	8,899	17,880	9,538	9,455	18,993	9,035	8,775	17,809	9,239	8,979	18,217	9,921	9,661	19,557
Silver City Highway to Gol Gol	-	3,823	3,823	7,645	3,865	3,865	7,729	4,290	4,290	8,579	3,899	3,823	7,722	4,022	3,946	7,968	4,478	4,401	8,864
Gol Gol to Euston	98064	1,502	1,528	3,030	1,502	1,528	3,030	1,745	1,770	3,516	1,532	1,528	3,060	1,543	1,539	3,082	1,789	1,784	3,572
Arumpo Road (431)																			
Silver City Highway to Landfill Access	-	751	683	1,435	897	829	1,727	1,224	1,156	2,380	766	683	1,450	967	884	1,852	1,344	1,261	2,580
Landfill Access to Quarry Access	-	751	683	1,435	898	830	1,729	1,227	1,159	2,385	766	683	1,450	968	885	1,854	1,347	1,264	2,586
Quarry Access to PEC Camp	-	751	683	1,435	898	830	1,729	1,288	1,220	2,509	766	683	1,450	1,006	923	1,930	1,456	1,373	2,800
PEC Camp to Access Point 1	98156	267	253	521	414	400	815	414	400	815	273	253	526	513	493	1,006	513	493	1,006
Access Point 1 to Access Point 2	98156	267	253	521	405	391	797	405	391	797	273	253	526	509	489	998	509	489	998

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

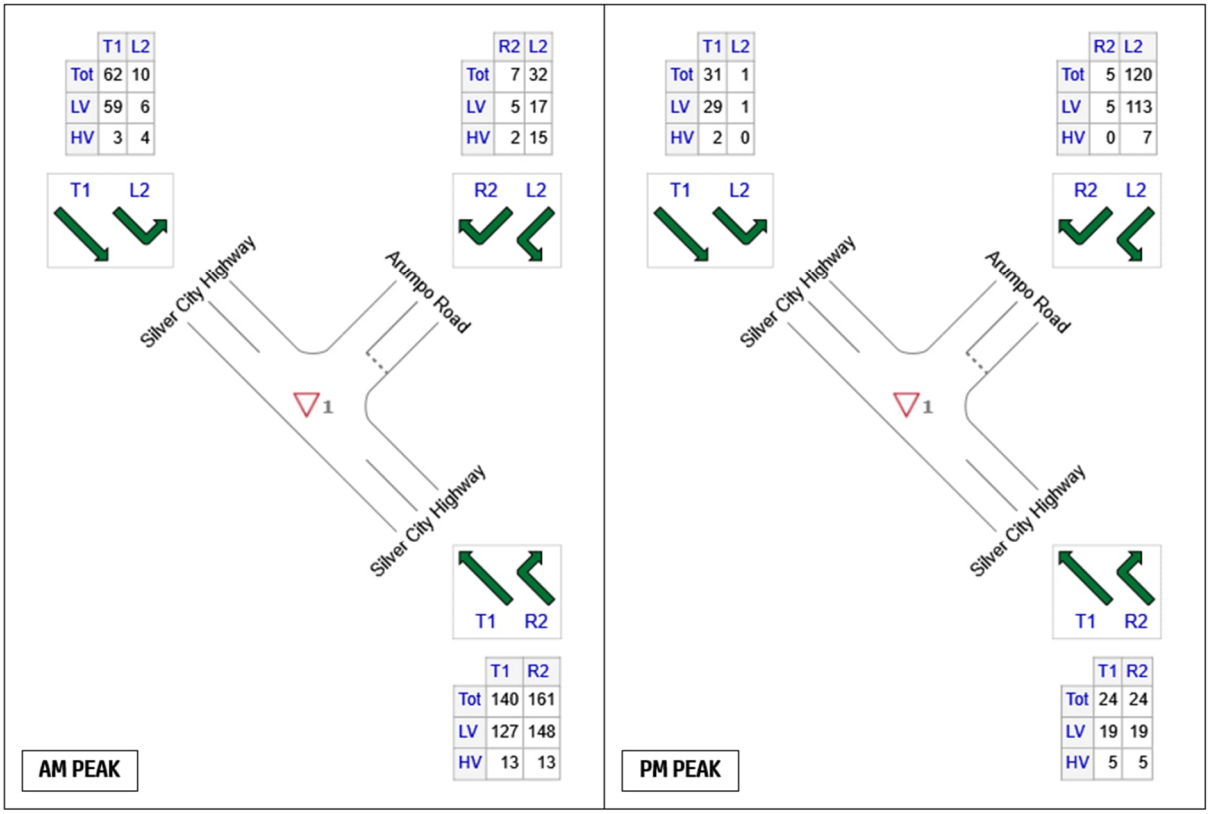

Figure 42 Pre-Construction Minor Works (2027) AM & PM (Project) Peak, Silver City Highway / Arumpo Road Intersection

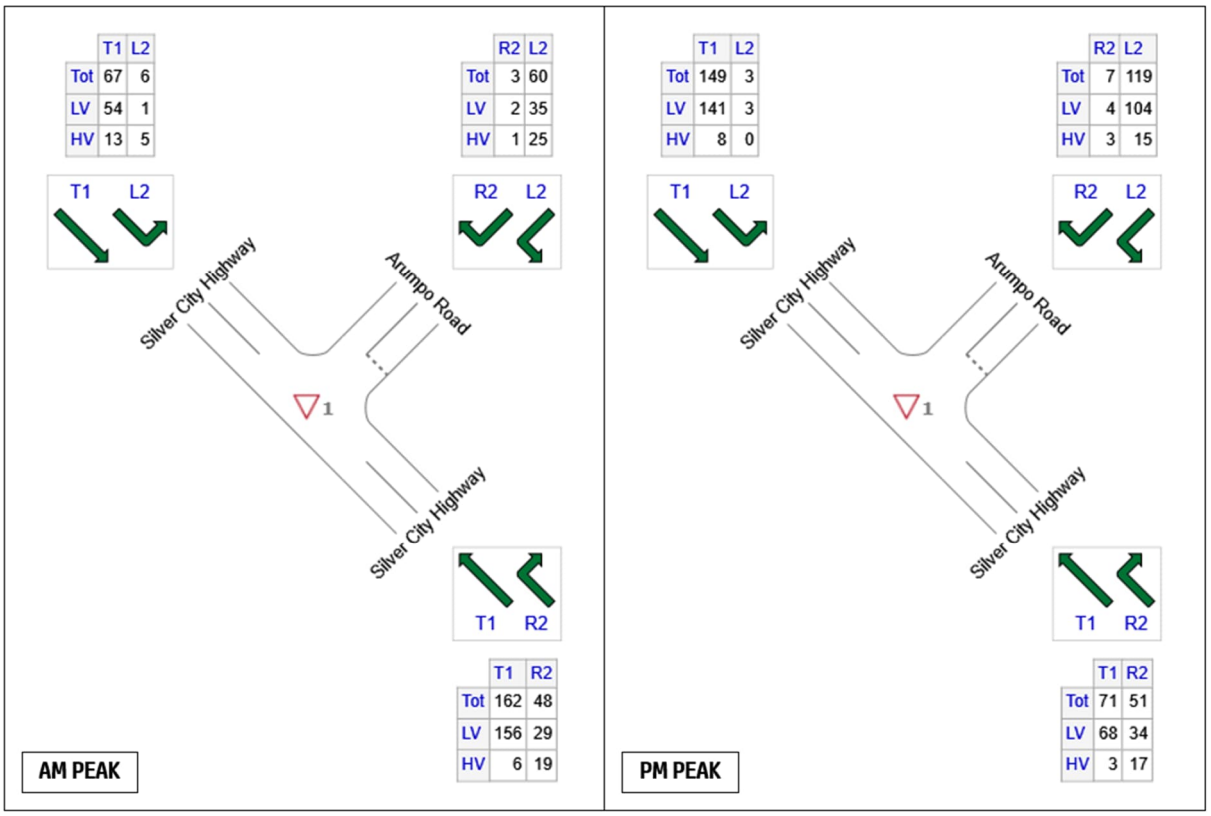

Figure 43 Pre-Construction Minor Works (2027) AM & PM (Network) Peak, Silver City Highway / Arumpo Road Intersection

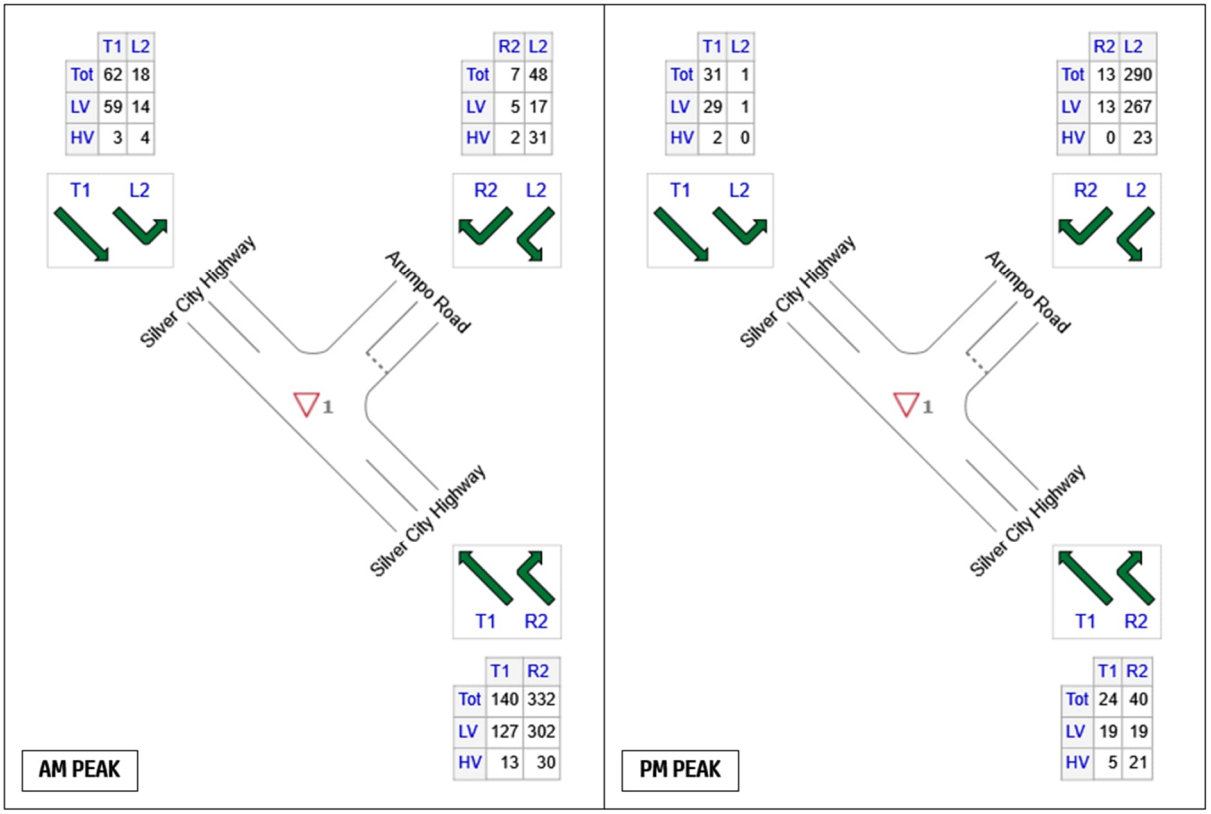

Figure 44 Cumulative Construction (2027) AM & PM (Project) Peak, Silver City Highway / Arumpo Road Intersection

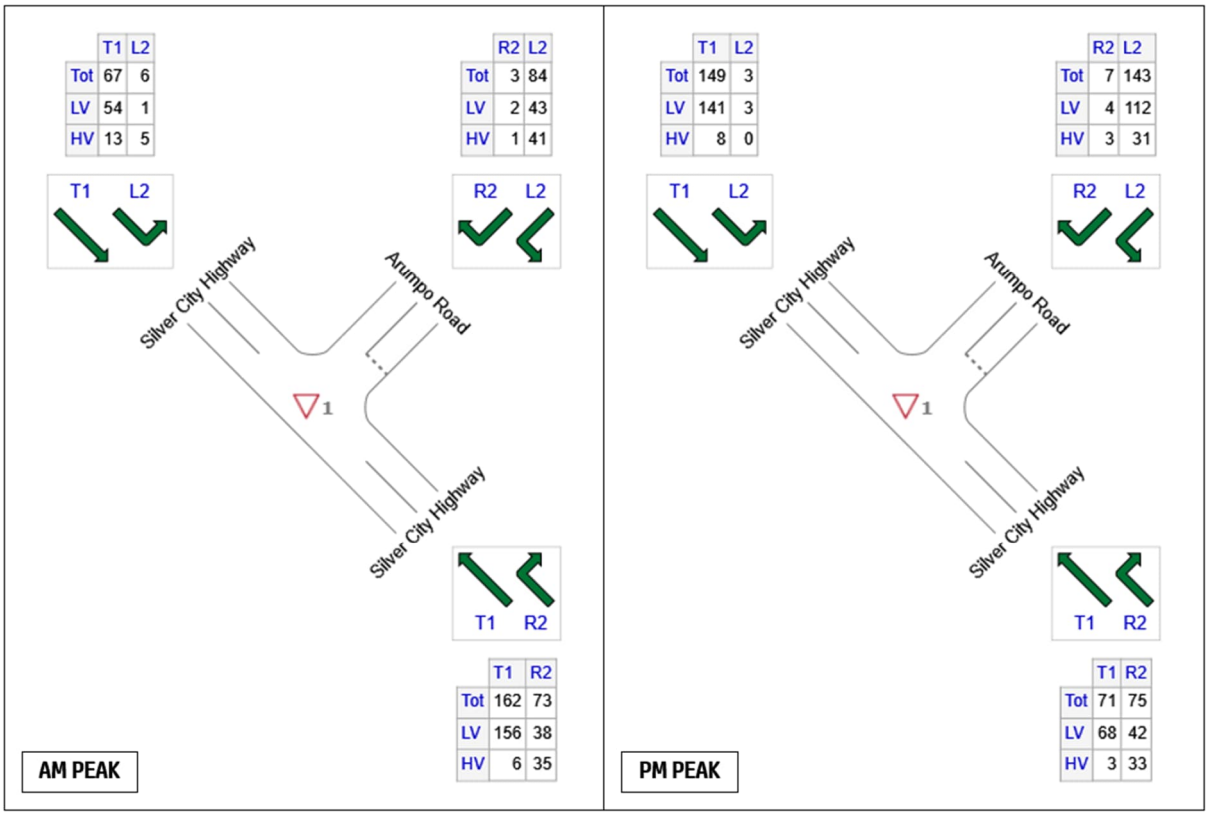

Figure 45 Cumulative Construction (2027) AM & PM (Network) Peak, Silver City Highway / Arumpo Road Intersection

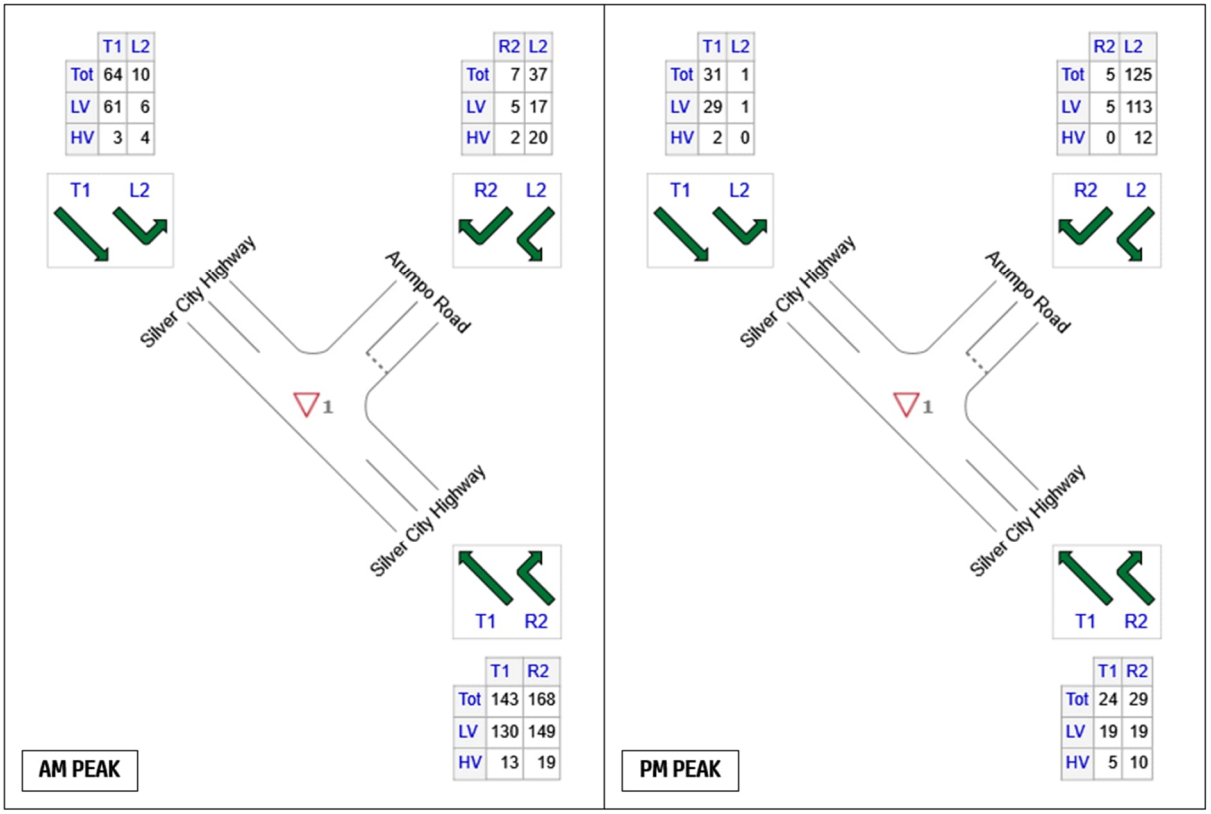

Figure 46 Peak Construction (2028) AM & PM (Project) Peak, Silver City Highway / Arumpo Road Intersection

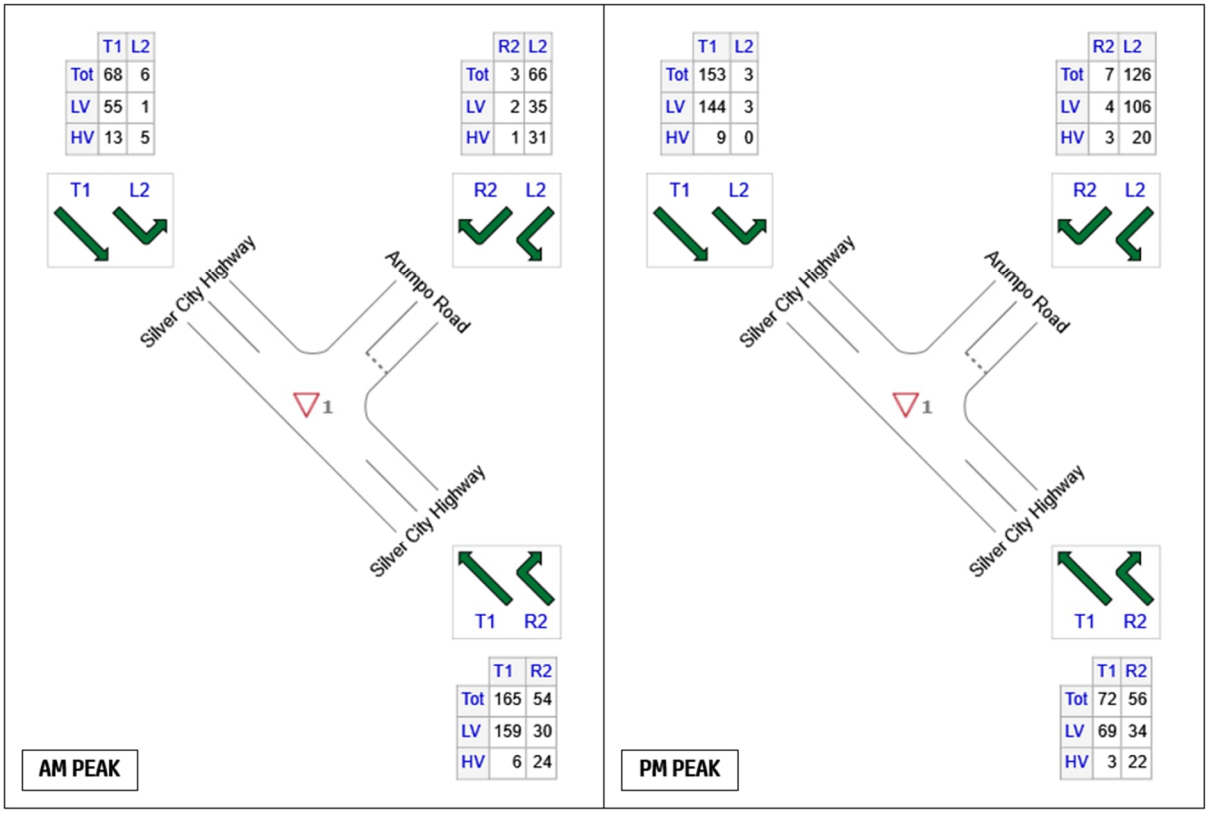

Figure 47 Peak Construction (2028) AM & PM (Network) Peak, Silver City Highway / Arumpo Road Intersection

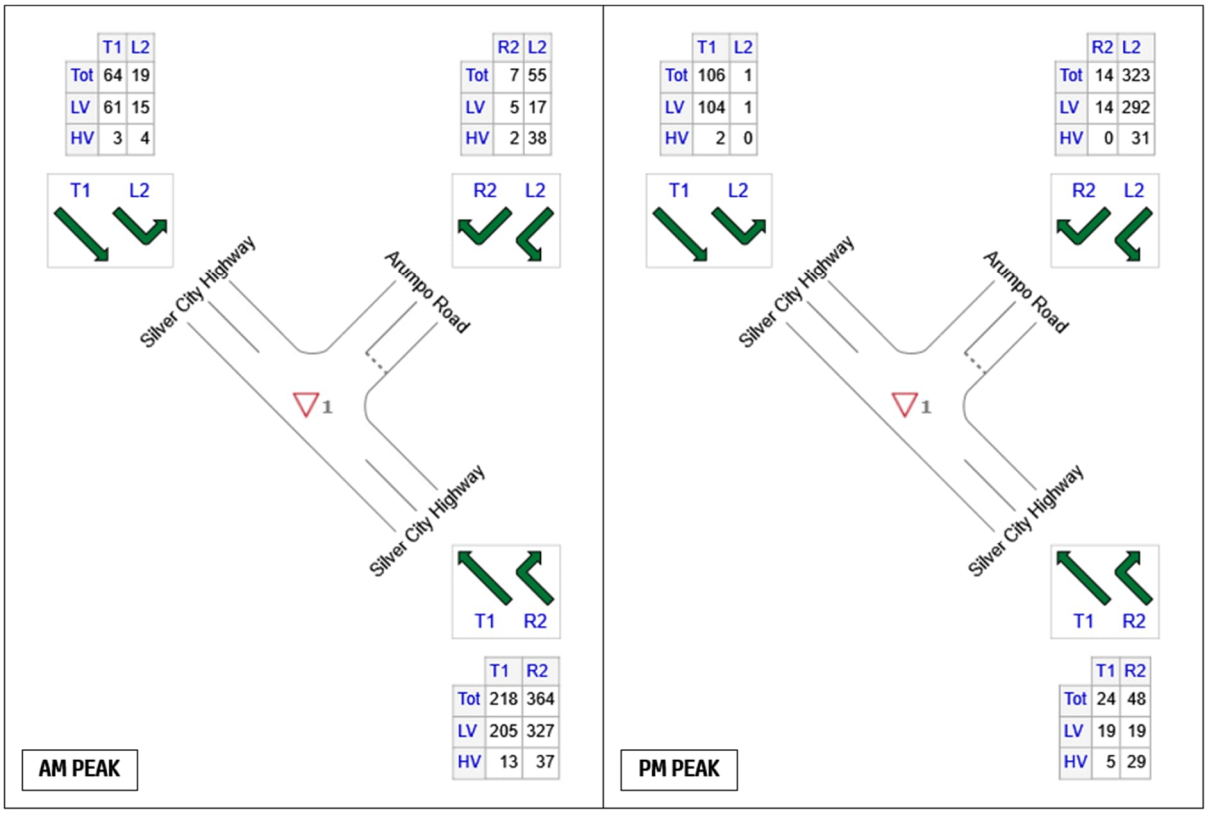

Figure 48 Cumulative Construction (2028) AM & PM (Project) Peak, Silver City Highway / Arumpo Road Intersection

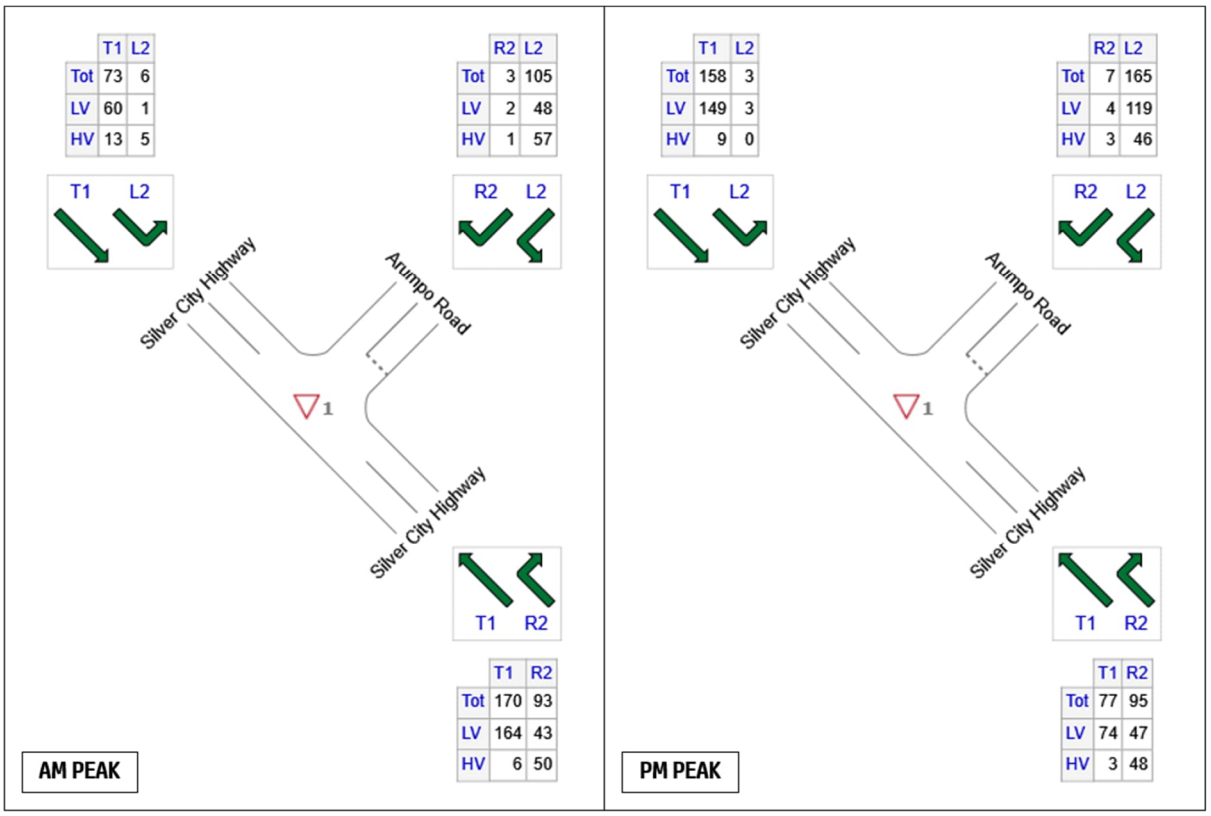

Figure 49 Cumulative Construction (2028) AM & PM (Network) Peak, Silver City Highway / Arumpo Road Intersection

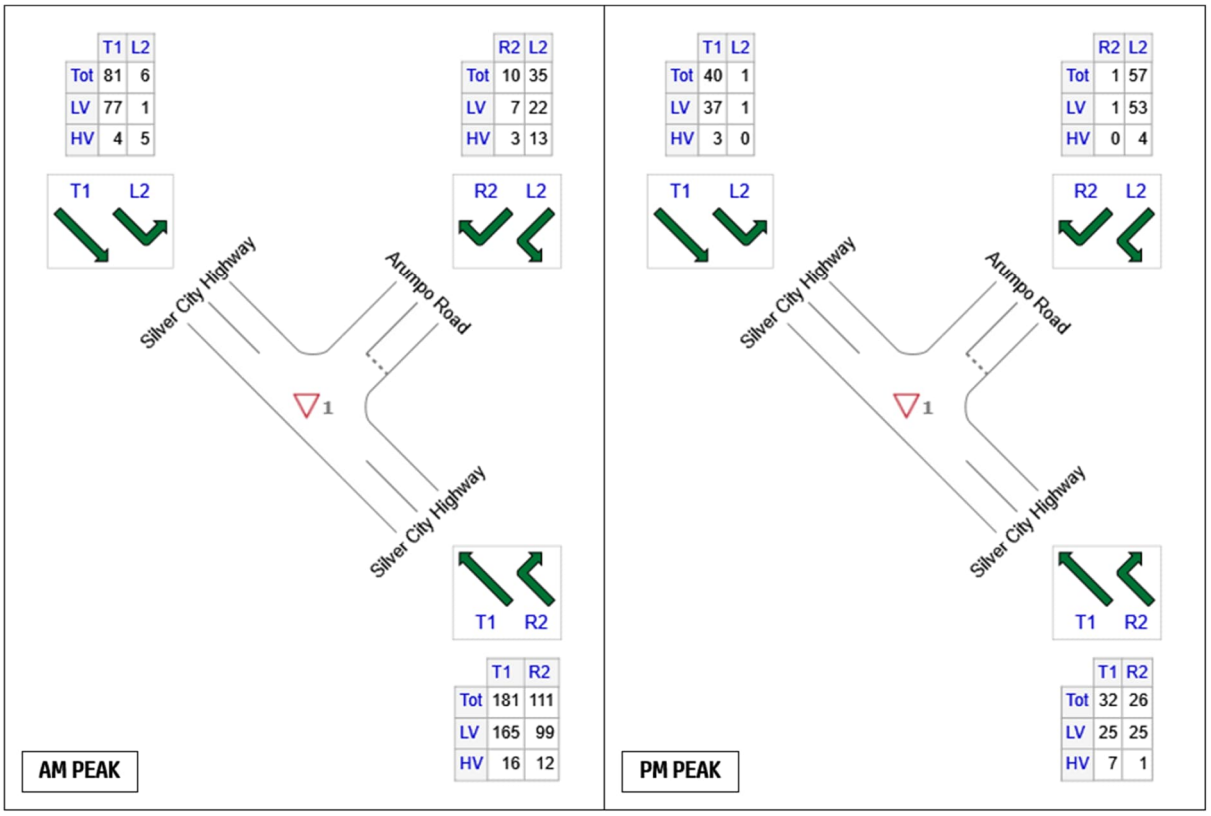

Figure 50 Operations (2040) AM & PM (Project) Peak, Silver City Highway / Arumpo Road Intersection

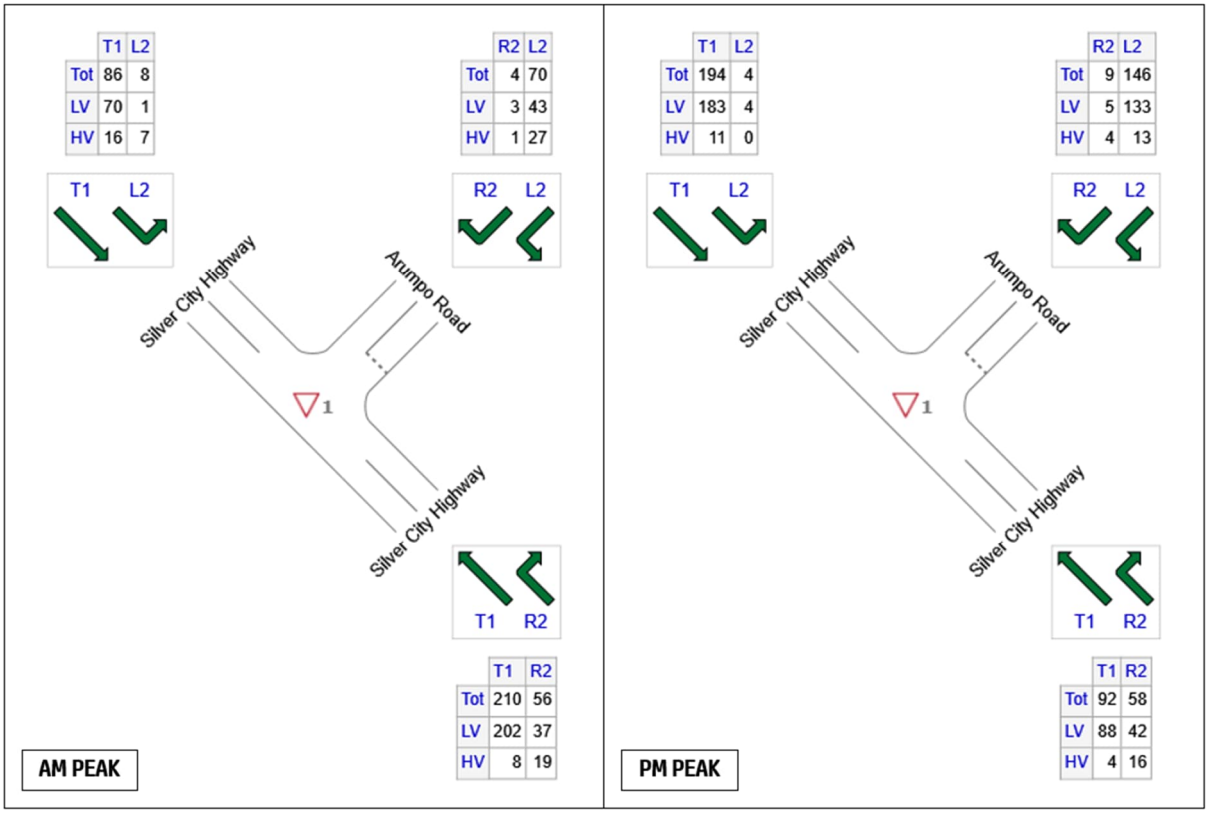

Figure 51 Operations (2040) AM & PM (Network) Peak, Silver City Highway / Arumpo Road Intersection

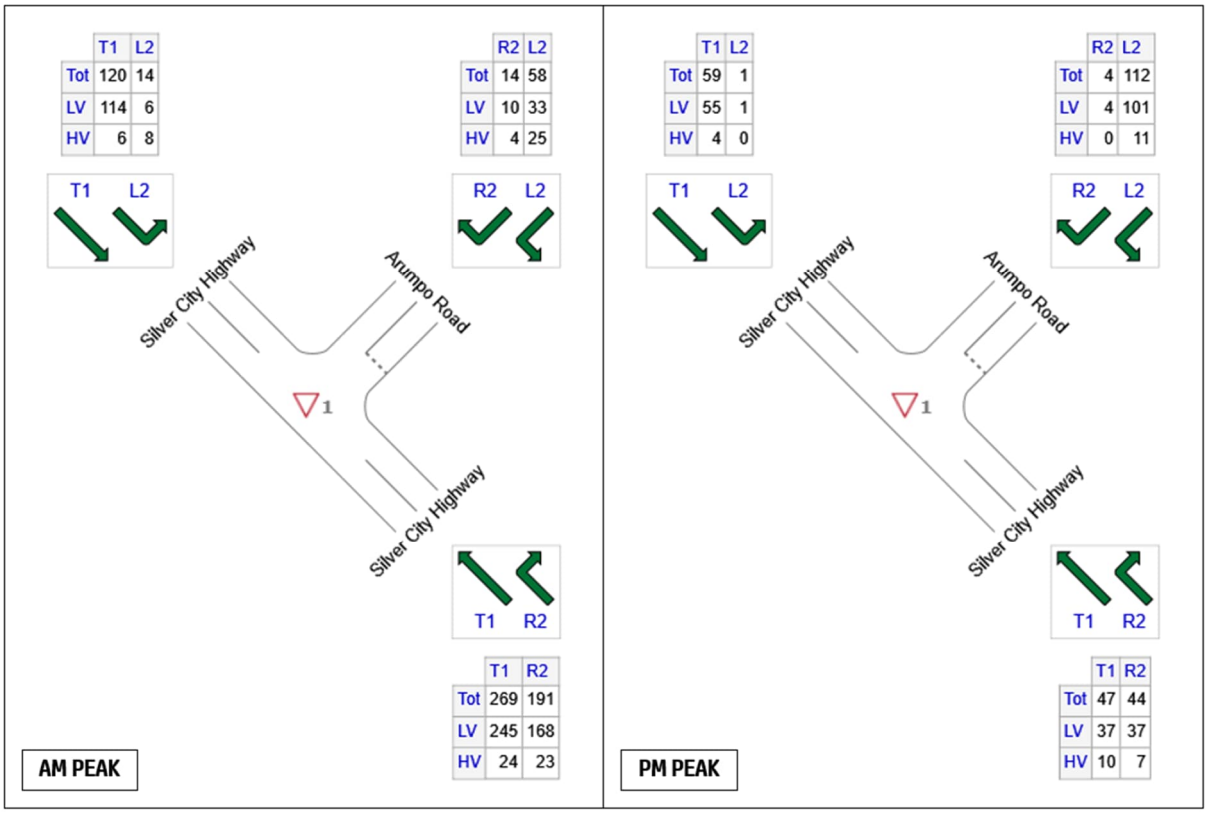

Figure 52 Decommissioning (2060) AM & PM (Project) Peak, Silver City Highway / Arumpo Road Intersection

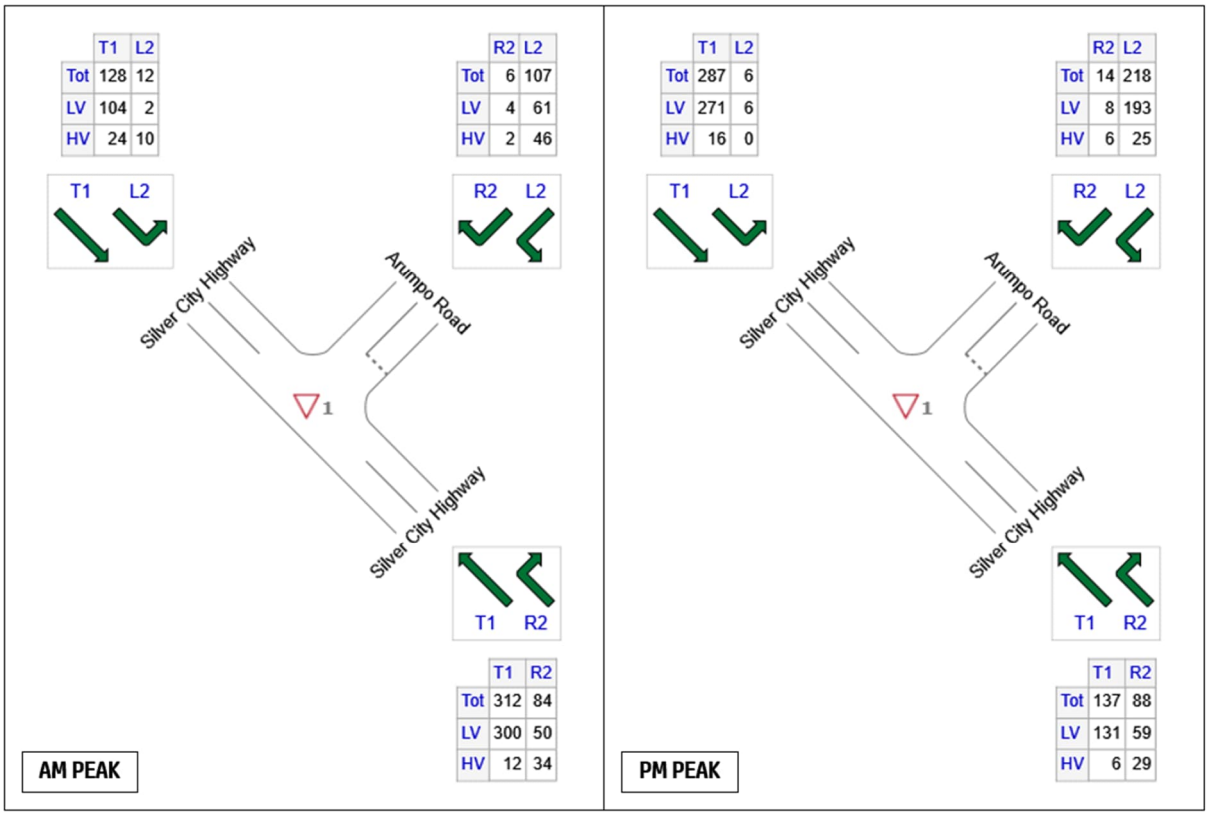

Figure 53 Decommissioning (2060) AM & PM (Network) Peak, Silver City Highway / Arumpo Road Intersection

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 relevant AM and PM peak periods of the pre-construction minor works, peak construction, operations and decommissioning phase of the Project (both Project only and cumulative scenarios) as identified in **Figure 42** to **Figure 53** above have been used as the basis of this assessment, with a summary of the resultant turn warrants from the assessment shown in **Table 24**. Further details of the turn warrant calculations for each of the identified traffic scenarios is also included for reference as **Appendix H**.

From the results in **Table 24**, it was shown that the based on the forecast peak hour intersection volumes for the various Project traffic scenarios, the required intersection treatments at the Silver City Highway / Arumpo Road intersection to cater for the anticipated traffic volumes were a basic left (BAL) and a full channelised right (CHR) treatments.

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 pre-construction minor works, peak construction (including cumulative assessments), operations and decommissioning phases of the Project.

Table 24 Intersection Turn Warrants Assessment – Silver City Highway / Arumpo Road Intersection

Project Traffic Scenario	Recommended Turn Warrants	
	Left Turn Treatment	Right Turn Treatment
Pre-Construction Minor Works		
2027 AM Peak (Project)	BAL	**CHR**
2027 PM Peak (Project)	BAL	BAR
2027 AM Peak (Network)	BAL	CHRs
2027 PM Peak (Network)	BAL	CHRs
Pre-Construction Minor Works - 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
Peak Construction		
2028 AM Peak (Project)	BAL	**CHR**
2028 PM Peak (Project)	BAL	BAR
2028 AM Peak (Network)	BAL	CHRs
2028 PM Peak (Network)	BAL	CHRs
Peak Construction - Cumulative		
2028 AM Peak (Project)	BAL	**CHR**
2028 PM Peak (Project)	BAL	BAR
2028 AM Peak (Network)	BAL	**CHR**
2028 PM Peak (Network)	BAL	**CHR**
Project Operations (10-year Design Horizon from End of Construction)		
2040 AM Peak (Project)	BAL	**CHR**
2040 PM Peak (Project)	BAL	BAR
2040 AM Peak (Network)	BAL	**CHR**
2040 PM Peak (Network)	BAL	**CHR**
Project Decommissioning		
2060AM Peak (Project)	BAL	**CHR**
2060 PM Peak (Project)	BAL	BAR
2060 AM Peak (Network)	BAL	**CHR**
2060 PM Peak (Network)	BAL	**CHR**
Recommended Intersection Turn Treatments	**BAL**	**CHR**

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 pre-construction minor works, peak 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 25**, with detailed SIDRA output summaries included for reference in **Appendix C**.

Table 25 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 ***
Pre-Construction Minor Works				
2027 AM Peak (Project)	0.125	LOS A	12.9	4.0
2027 PM Peak (Project)	0.100	LOS A	8.6	2.8
2027 AM Peak (Network)	0.084	LOS A	12.1	2.2
2027 PM Peak (Network)	0.123	LOS A	12.7	3.7
Pre-Construction Minor Works - Cumulative				
2027 AM Peak (Project)	0.262	LOS B	16.8	9.7
2027 PM Peak (Project)	0.247	LOS A	9.2	8.2
2027 AM Peak (Network)	0.091	LOS A	12.7	3.4
2027 PM Peak (Network)	0.153	LOS A	13.4	5.0
Peak Construction				
2028 AM Peak (Project)	0.133	LOS A	13.2	4.4
2028 PM Peak (Project)	0.106	LOS A	8.7	3.1
2028 AM Peak (Network)	0.086	LOS A	12.4	2.6
2028 PM Peak (Network)	0.133	LOS A	13.0	4.1
Peak Construction - Cumulative				
2028 AM Peak (Project)	0.290	LOS B	20.1	11.1
2028 PM Peak (Project)	0.298	LOS A	10.0	10.3
2028 AM Peak (Network)	0.116	LOS A	13.5	4.5
2028 PM Peak (Network)	0.183	LOS A	14.3	6.3
Project Operations (10-year Design Horizon from End of Construction)				
2040 AM Peak (Project)	0.097	LOS A	13.2	2.8
2040 PM Peak (Project)	0.047	LOS A	8.7	1.3

Analysis Scenario	Intersection Degree of Saturation	Level of Service**	Average Delay ** (sec)	Maximum 95% Back of Queue Length (m)
2040 AM Peak (Network)	0.109	LOS A	12.8	2.6
2040 PM Peak (Network)	0.158	LOS A	14.3	4.7
Project Decommissioning				
2060 AM Peak (Project)	0.163	LOS B	17.9	5.5
2060 PM Peak (Project)	0.098	LOS A	9.1	2.8
2060 AM Peak (Network)	0.162	LOS B	17.9	4.8
2060 PM Peak (Network)	0.277	LOS B	19.4	8.9

** 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 pre-construction minor works, peak construction, operations and decommissioning phases of the Project, as well as the identified cumulative traffic volumes from the relevant adjacent Projects.

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 pre-construction minor works, 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 pre-construction minor works, peak construction, operations and decommissioning phase traffic (refer **Table 22** and **Table 23** above) from the Project is shown in **Table 26**, with further details of the calculations undertaken provided in **Appendix I**.

Based on the results provided in these tables, the following conclusions can be made regarding the impact of the Project on the external road network, including the state-controlled links of the Highway and Silver City Highway and the local government controlled Arumpo Road:

- The addition of traffic from the pre-construction minor works phase of the Project was shown to lead to minor increases (<10%) on the relevant sections of the Sturt Highway and Silver City Highway and

higher increases (20-56%) in daily traffic volumes calculated for 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.

- The addition of traffic from the peak construction phase of the Project was shown to lead to minor increases (<10%) on the majority of sections of the Sturt Highway and Silver City Highway, with the short section between Corbett Avenue and Arumpo Road having a slightly higher (12.1%) increase. Again higher increases (28-91%) were calculated for the daily traffic volumes on Arumpo Road.
- The addition of traffic from the operations phase of the Project was shown to only lead to minor (10%) increases on all sections of Sturt Highway, Silver City Highway and Arumpo Road.
- The addition of traffic from the decommissioning phase of the Project was shown to lead to minor increases on Sturt Highway, Silver City Highway and the southern section of Arumpo Road, with the higher increases (35%) shown on Arumpo Road north of the PEC Camp Access.

In addition to the Project only scenarios, a review of the forecast increase in daily traffic volumes as a result of the cumulative pre-construction minor works and peak construction phase scenarios were also undertaken, with the following results identified:

- The cumulative increase in traffic from both the Project and the identified adjacent external Projects during the pre-construction minor works phase of the Project was shown to lead to minor increases (<10%) on the sections of the Sturt Highway between Mildura and the Silver City Highway, with slightly higher increases (12-16%) identified for the section between the Silver City Highway and Euston as a result of the expected staff movements east of Mildura associated with the Euston Mineral Sands, Euston Wind Farm and Koorakee Energy Park projects.

  Additionally, increases in daily volumes of 13-27% are expected on the section of the Silver City Highway between the Sturt Highway and Arumpo Road, with higher calculated increases in the order of 56-75% along Arumpo Road
- The cumulative increase in traffic during the peak construction phase of the Project was also shown to lead to minor increases (<10%) on the sections of the Sturt Highway between Mildura and the Silver City Highway, with higher increases (15-17%) again shown for the section between the Silver City Highway and Euston (again expected to be as a result of forecast staff movements associated with the Euston Mineral Sands, Euton Wind Farm and Koorakee Energy Park projects).

  Increases in daily volumes of 17-38% were calculated for the section of the Silver City Highway between the Sturt Highway and Arumpo Road, while increases in the order of 78-93% were identified on Arumpo Road

Notwithstanding this, it is noted that with Project volumes identified for the various Project traffic scenarios in **Table 22** and **Table 23** 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.

6.4.1 OSOM Transport Route

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 Route 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 three (3) OSOM vehicles) will have a significant ongoing impact on the operation or capacity of the roads forming the proposed OSOM Transport Route.

Notwithstanding this, it is noted that a detailed 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 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.

Table 26 Road Link Daily Traffic Volume Comparison (Pre and Post Project)

Road Segment	Seg ID	% Increase in Daily Traffic from Background Traffic Volumes																	
		Pre-Construction Minor Works 2027			Cumulative Pre-Construction Minor Works 2027			Peak Construction 2028			Cumulative (Peak) Construction 2028			Project Operations 2040			Decommissioning 2060		
		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	3.4%	3.4%	3.4%	12.6%	12.4%	12.5%	5.5%	5.6%	5.6%	17.7%	17.8%	17.4%	0.6%	0.6%	0.6%	2.1%	2.0%	2.0%
Corbett Avenue to Arumpo Road	-	7.3%	7.6%	7.5%	26.8%	27.8%	27.3%	11.8%	12.5%	12.1%	37.6%	39.8%	37.9%	1.2%	1.3%	1.3%	4.4%	4.5%	4.4%
Arumpo Road to Wentworth	-	0.4%	0.4%	0.4%	1.0%	1.0%	1.0%	0.4%	0.4%	0.4%	6.8%	7.0%	6.9%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%
Sturt Highway (A20)																			
Mildura to River Drive	98063	1.4%	1.4%	1.4%	7.5%	7.5%	7.5%	2.1%	2.2%	2.2%	9.5%	9.7%	9.5%	0.3%	0.3%	0.3%	0.8%	0.8%	0.8%
River Drive to Silver City Highway	98063	1.4%	1.4%	1.4%	7.7%	7.8%	7.7%	2.3%	2.3%	2.3%	9.8%	10.1%	9.8%	0.3%	0.3%	0.3%	0.8%	0.8%	0.8%
Silver City Highway to Gol Gol	-	1.1%	1.1%	1.1%	12.2%	12.2%	12.2%	3.2%	3.2%	3.2%	14.8%	15.1%	14.8%	0.0%	0.0%	0.0%	1.2%	1.2%	1.2%
Gol Gol to Euston	98064	0.0%	0.0%	0.0%	16.2%	15.9%	16.0%	0.7%	0.7%	0.7%	16.7%	16.8%	16.7%	0.0%	0.0%	0.0%	0.3%	0.3%	0.3%
Arumpo Road (431)																			
Silver City Highway to Landfill Access	-	19.4%	21.4%	20.4%	62.9%	69.2%	65.9%	26.2%	29.4%	27.7%	75.4%	84.6%	78.0%	3.2%	3.5%	3.3%	9.7%	10.7%	10.2%
Landfill Access to Quarry Access	-	19.6%	21.5%	20.5%	63.3%	69.5%	66.2%	26.4%	29.6%	27.9%	75.8%	85.0%	78.4%	3.2%	3.5%	3.3%	9.8%	10.8%	10.3%
Quarry Access to PEC Camp	-	19.6%	21.5%	20.5%	71.5%	78.6%	74.9%	31.3%	35.1%	33.1%	90.0%	101.0%	93.1%	3.2%	3.5%	3.3%	11.6%	12.8%	12.2%
PEC Camp to Access Point 1	98156	53.8%	56.8%	55.3%	53.8%	56.8%	55.3%	88.0%	94.7%	91.2%	252.9%	272.2%	239.4%	9.0%	9.5%	9.2%	32.7%	34.5%	33.6%
Access Point 1 to Access Point 2	98156	50.5%	53.3%	51.8%	50.5%	53.3%	51.8%	86.5%	93.1%	89.7%	248.7%	267.7%	235.4%	9.0%	9.5%	9.2%	32.1%	33.9%	33.0%

Note: Gaz = Gazettal Direction or direction of travel, A-Gaz = Against Gazettal Direction or against direction of trave, Bi-Dir = Bi-Directional (both directions combined).

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 27** overpage, with further details of the Project pavement loading calculations undertaken included for reference in **Appendix J**.

The results in **Table 27** 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 all sections of the state-controlled Sturt Highway and the section of the Silver City Highway to the north-west of Arumpo Road.

The results did however indicate higher increases (>10%) in pavement loading as a result of Project traffic on the section of the Silver City Highway between the Sturt Highway (at Buronga) and Arumpo Road, and the full length of the Council-controlled Arumpo Road (between the Silver City Highway and the Project Area.

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 either the Silver City Highway or Arumpo Road.

Further to this, both links are 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 isrecommended 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 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 27 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	1,662,624	1,626,364	3,288,988	225,971	58,399	284,370	**13.59%**	3.59%	8.65%
Corbett Avenue to Arumpo Road	-	956,573	1,056,282	2,012,855	256,120	60,980	317,100	**26.77%**	5.77%	15.75%
Arumpo Road to Wentworth	-	544,964	644,814	1,189,779	0	0	0	0.00%	0.00%	0.00%
Sturt Highway (A20)										
Mildura to River Drive	98063	3,342,675	3,358,246	6,700,921	198,299	52,522	250,820	5.93%	1.56%	3.74%
River Drive to Silver City Highway	98063	3,342,675	3,358,246	6,700,921	203,781	53,089	256,870	6.10%	1.58%	3.83%
Silver City Highway to Gol Gol	-	3,149,877	3,164,550	6,314,427	66,690	183,326	250,016	2.12%	5.79%	3.96%
Gol Gol to Euston	98064	1,417,003	1,463,718	2,880,721	19,947	8,147	28,094	1.41%	0.56%	0.98%
Arumpo Road (431)										
Silver City Highway to Landfill Access	-	537,488	537,600	1,075,088	255,519	60,844	316,364	**47.54%**	**11.32%**	**29.43%**
Landfill Access to Quarry Access	-	537,488	537,600	1,075,088	255,756	63,130	318,886	**47.58%**	**11.74%**	**29.66%**
Quarry Access to PEC Camp	-	537,488	537,600	1,075,088	259,052	64,009	323,062	**48.20%**	**11.91%**	**30.05%**
PEC Camp to Access Point 1	98156	255,224	299,406	554,630	259,052	64,009	323,062	**101.50%**	**21.38%**	**58.25%**
Access Point 1 to Access Point 2	98156	255,224	299,406	554,630	209,616	52,112	261,728	**82.13%**	**17.41%**	**47.19%**

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 Decommissioning Phase

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 54** was utilised, with the results of the road safety risk assessment summarised in **Table 28.**

		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 54 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 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 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 28 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 generally 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) – four (4) times per day (Monday-Friday).
- Route 953 & 954 (Mildura – Gol Gol) – two (2) times per day (Monday-Friday).
- Route 955 & 956 (Dareton Loop) – two (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 (2) 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 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 TMP be developed for the Project as part of the 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 K**. 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 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 55** below, with further details of the implementation of the approach detailed in the following sections.

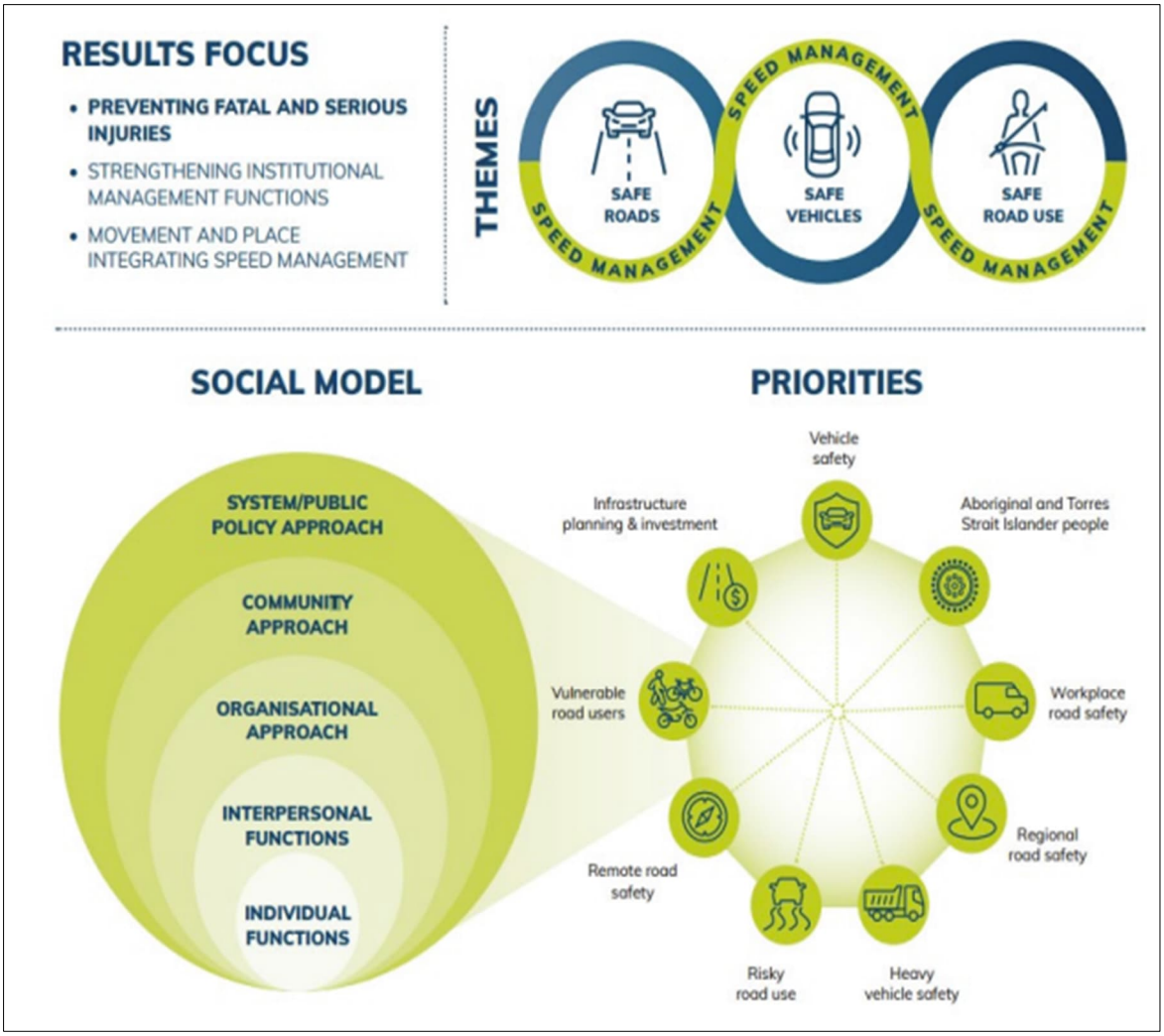

Figure 55 Safe Systems Approach Summary **[Source: National Road Safety Strategy 2021-30]**

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 K**).

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 K**).

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 the Amended Project Description in Appendix A, Appendix 1 of the Amendment Report (Umwelt, 2026).

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.

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