Burrendong Wind Farm Amendment Report

APPENDIX H.1

Revised Traffic and Transport Impact Assessment (TTIA)

Burrendong Wind Farm

Traffic and Transport Impact Assessment

Prepared for: Burrendong Wind Farm Pty Ltd

Ref: 300305882 | Date: 10 March 2025

Revision

Revision	Date	Comment	Prepared By	Approved By
A	1 November 2021	Working Draft	Chris White	Hayden Calvey
B	8 March 2022	Final	Chris White	Hayden Calvey
C	29 April 2022	Final Text Adjustments	Chris White	Hayden Calvey
D	16 August 2023	Updated Draft	Chris White	Bayzid Khan
E	25 August 2023	Updated Final	Chris White	Bayzid Khan
F	17 October 2023	Updated Final	Chris White	Bayzid Khan
G	22 November 2024	Updated Final – Post Submission	Chris White	Bayzid Khan
H	10 March 2025	Updated Final – Incorporating TWAF	Darren Cheng John Lim	Dave Salangsang

Dave Salangsang

For and on behalf of

Stantec Australia Pty Ltd

Level 9, The Forum, 203 Pacific Highway, St Leonards NSW 2065

Acknowledgment of Country

In the spirit of reconciliation, Stantec acknowledges the Traditional Custodians of country throughout Australia and their connections to land, sea and community. We pay our respect to their Elders past and present, and extend that respect to all Aboriginal and Torres Strait Islander peoples.

Limitations

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TRAFFIC AND TRANSPORT IMPACT ASSESSMENT

Burrendong Wind Farm

Executive Summary

Stantec has been engaged by Burrendong Wind Farm Pty Ltd to undertake a Traffic and Transport Impact Assessment as part of an Environmental Impact Statement (EIS) in support of the proposed State Significant Development (SSD) at Burrendong Wind Farm (the Project). The Project Site is to be located approximately 30km south-east of Wellington, just east of Lake Burrendong.

The Project will involve the construction, operation, maintenance and decommissioning of 70 Wind Turbine Generators (WTGs) and associated ancillary infrastructure, as well as over 79km of access tracks and roads, approximately 60km of underground electrical cabling, overhead powerlines and up to 2 collector substations.

In response to feedback from the Department of Planning, Housing and Infrastructure (DPHI), a Temporary Workforce Accommodation Facility (TWAF) is proposed within the construction site.

The wind turbine components will be sourced from overseas and shipped to the Port of Newcastle, where they will be stored until they are ready to be transported via the road network to the Project Site. Due to the over-sized nature of the wind turbine components, they will be transported using over-size over-mass (OSOM) vehicles. The blade lengths are anticipated to be 82 metres in length, and the heaviest project component is anticipated to be approximately 175 tonnes.

From the Port of Newcastle, the OSOM vehicles will travel north-west via the Golden Highway towards Dubbo. From Dunedoo, the OSOM vehicles transporting the wind turbine blades will take a different route (via Golden Highway and Saxa Road) to the OSOM vehicles transporting the remaining wind turbine components (via Castlereagh Highway), due to the latter route not being able to accommodate the vehicles transporting the 82 metre blades. The routes will recombine north of the Project Site, with all OSOM transport vehicles then using Twelve Mile Road, Yarrabin Road and Burrendong Dam Road to reach the Project Site.

A detailed route study (from the Port of Newcastle to the Project Site) has been undertaken to outline all the potential road and intersection upgrades that will be required to accommodate an OSOM transport vehicle carrying an 82-metre blade. The route study identified numerous shortfalls at a number of locations which will need to be addressed post-EIS approval during the detailed design stage, assuming the SSD is approved.

Traffic Impacts

The initial 24-30 month construction phase will have the most significant impact on traffic generation, with minimal traffic movements expected over the operational life of the Project, and to a lesser extent, the decommissioning phase after 25-30 years of operation.

As a result of the Temporary Workforce Accommodation Facility (TWAF), on average, the construction period is anticipated to generate 33 one-way vehicle trips per day, fluctuating month-to-month between 26 vehicles/day and 70 vehicles/day. Construction months 9 and 10 are expected to generate the highest traffic flow, consisting of 13 light vehicles/day and 57 heavy vehicles/day.

The delivery of wind turbine components using OSOM vehicles will only occur during months 15 to 21, at an average rate of 3 vehicles/night. OSOM deliveries are likely to occur overnight and be grouped together to minimise the impact to drivers on the road network.

The origins of light vehicle traffic generated by employees and heavy vehicle deliveries are assumed to be distributed as follows:

- Mudgee, Gulgong and Rylstone – 70%
- Dubbo and Wellington – 30%.

Traffic originating from Mudgee, Gulgong and Rylstone will access the Project Site via Hill End Road, Yarrabin Road and Burrendong Dam Road. Traffic originating from Dubbo and Wellington will access the Project Site via Mitchell Highway, Goolma Road, Twelve Mile Road, Yarrabin Road and Burrendong Dam Road. The route for traffic accessing the western side of the Project Site is via Burrendong Way, Fashions Mount Road and Tara Road.

Construction months 9 and 10 are expected to generate 13 peak hour vehicle movements, split between four routes. During the busiest construction months, each impacted road is predicted to retain a Level of Service of LOS C or higher, indicating that these roads have capacity to cater for the highest traffic flows generated by the Project.

The major developments which may impact the Project are Uungula Wind Farm and Maryvale Solar Farm. In the unlikely scenario that the peak construction months from Burrendong Wind Farm, Uungula Wind Farm and Maryvale Solar Farm all occur simultaneously, Goolma Road may be slightly impacted. Burrendong Wind Farm is expected to add 64

vehicles/hour to Goolma Road's existing peak hour traffic volume of 203 vehicles/hour (inclusive of Uungula Wind Farm traffic) between 6:00pm – 7:00pm.

At the intersection of Goolma Road/ Twelve Mile Road, the cumulative right turn volumes from Goolma Road into Twelve Mile Road indicate that only a Basic Right Turn (BAR) intersection treatment is warranted.

At the intersection of Hill End Road/ Yarrabin Road, the cumulative right turn volumes from Hill End Road into Yarrabin Road indicate that only a Basic Right Turn (BAR) intersection treatment is warranted. The current intersection arrangement of a BAR permits passing of right turning vehicles on Hill End Road and is considered satisfactory, however if the intersection is altered, a BAR will need to be considered.

At the intersection of Mitchell Highway/ Goolma Road, the cumulative left turn volumes from Mitchell Highway into Goolma Road currently has a CHR treatment (right-turn lane) and BAL treatment (which is assumed to be able to accommodate the swept path of the largest design vehicle).

It is suggested that these observations be taken into consideration during the detailed design stage.

Other Transport Considerations

- School bus routes and times have been listed and identified in the report. School bus companies should be consulted regarding the Project, with all OSOM and heavy vehicle deliveries scheduled outside of these times to increase safety for school children and to eliminate any potential delays for school buses.
- Heavy vehicle travel conditions for OSOM vehicles and B-double trucks have been listed and identified in the report. All deliveries from these vehicles should comply with the identified conditions.
- Railway level crossings which may be impacted have been listed and identified in the report. All crossings are located on OSOM vehicle transport routes, with none of the crossings to be impacted by an increase in light or heavy vehicle traffic generation. Due to the highly controlled nature of the OSOM vehicle transportation process, they are considered a low safety risk in traversing over the crossings.
- Locations of Crown Land have been identified in the report. Crown Land NSW should be consulted to ascertain if any licences, acquisitions or easements are required for these identified locations.

Traffic Management Plan

A high-level traffic management strategy has been developed for the Project's critical areas / activities, in terms of minimising traffic safety impacts, minimising disruption to local road users, driver code of conduct, stakeholder management plan, internal site management, construction hours, parking and signage.

A detailed Traffic Management Plan should be prepared post-EIS approval to specifically address the impact of the development on traffic throughout the life of the Project, including the construction, maintenance, operation and decommissioning stages.

1. Introduction

1.1 Background

Burrendong Wind Farm Pty Ltd (the Proponent) are seeking approval to construct, maintain and operate a 70 Wind Turbine Generator (WTG) Wind Farm and associated infrastructure collectively known as Burrendong Wind Farm (the Project). The Project Site is located approximately 30km south-east of Wellington, just east of Lake Burrendong, and within the Dubbo Regional Council and Mid-Western Regional Council Local Government Areas (LGAs).

The proposed development exceeds the $30 million capital investment value for electricity generating works under Schedule 1 Clause 20(a) of the State Environmental Planning Policy (Plannings Systems) 2021 and hence has been declared as a state significant development. This Traffic & Transport Impact Assessment (TTIA) has been prepared in support of the Environmental Impact Statement (EIS) to be submitted by Eco Logical Australia (ELA) in 2023.

This TTIA provides an assessment of the potential transport impacts during the construction, operation and decommissioning phases of the Project. In addition to the proposed WTGs, this TTIA also considers the associated operation and maintenance buildings, civil works and electrical infrastructure required to connect the Project to the existing transmission network.

This TTIA provides an assessment of the existing road network and its condition, identification of current and potential safety issues that may arise during construction and operation, and descriptions of potential mitigation strategies to address any issues.

Additionally, a Temporary Workforce Accommodation Facility (TWAF) is proposed within the construction site. This is in response to the feedback received from the Department of Housing, Planning and Infrastructure (DPHI). The TWAF is expected to accommodate up to 90% of the total construction workforce on-site, significantly reducing daily commuting traffic. Provision for on-site parking will also be included as part of the facility.

Burrendong Wind Farm Pty Ltd commissioned Stantec to develop a Transport Impact Statement, dated 2 July 2025, to address the proposed on-site temporary workforce accommodation facility and is incorporated into this latest version of this TTIA.

1.2 Scope of Report

Stantec's scope of work to prepare this TTIA includes:

- Address all of the Secretary's Environmental Assessment Requirements (SEARs)
- Review relevant background documents and information, including previously completed traffic impact assessments undertaken in the surrounding area
- Review of planning requirements, supporting policy documentation and initial reports for the Project
- Consult with local Councils and / or TfNSW on any relevant local policies, road / asset management information, local circumstances (including school bus routes) and local knowledge relevant to local haulage routes and roads used to access the Project Site
- Review existing traffic count data and/or undertake traffic counts in areas where data is not available
- Review the potential transportation routes for safe movement of over-sized loads to the Project Site. This assessment will consider the construction, operation and decommissioning phases of the Project
- Conduct a road safety assessment to investigate and identify potential safety deficiencies with the road alignment along the designated construction access routes for the Project
- Assess the likely Project only and cumulative traffic impacts during the construction, operational and decommissioning phases of the Project (including intersection performance, capacity, safety and site access)
- Identify necessary mitigation and management measures to minimise the impact of the Project.
- Incorporation of the Transport Impact Statement by Stantec dated 2 July 2025 discussing the proposed TWAF proposed within the Burrendong Wind Farm construction site, resulting in a reduction of commuting traffic to and from the site.

1.3 Environmental Assessment Requirements

The Project is deemed a SSD by Clause 20(a) of Schedule 1 of the State Environmental Planning Policy (Planning Systems) 2021. Consent is required under Clause 2.7 of Chapter 2 of the SEPP to carry out the Project.

To guide the preparation of the EIS, the Department of Planning and Environment (DPE) releases the SEARs. Within the SEARs, key traffic and transport issues related to the Project are identified and listed. **Table 1.1** reproduces this list and identifies where each item is addressed in the report, while **Table 1.2** lists the TTIA requirements as requested by TfNSW.

Table 1.1 – List of SEARS to be addressed

Item	Section
An assessment of the construction, operational and decommissioning traffic impacts of the development on the local, regional and State road network.	• Section **3** • Section **4** • Section **5**
Provide details of the peak and average traffic volumes (including light, heavy and over-mass / over-dimensional vehicles) and transport and haulage routes during construction, operation and decommissioning, including traffic associated with sourcing raw materials (water, sand and gravel).	• Section **5.1** • Section **5.2** • Section **0**
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.	• Section **3.2** • Section **4.1** • Section **5.5**
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 to site) during construction, operation and decommissioning.	• Section **4** • Section **5.5**
An assessment of the likely transport impacts to the site access and haulage routes, site access point, any rail safety issues, any Crown land (including the existing Travelling Stock Route network), 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 underbridges and overbridges.	• Section **3.4** • Section **3.7** • Section **4** • Section **5.6**
A cumulative impact assessment of traffic from nearby developments.	• Section **0**
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.	• Section **4.3** • Appendix B

Source: SEARS

Table 1.2 – List of TfNSW Requirements

Item	Section
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 to be utilised and any indicative pinch points within the network vertically, horizontally and laterally and the potential civil works required to accommodate the OSOM vehicles.** • **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.** • **The design vehicle templates used with the swept path analysis software are also requested in order for TfNSW to review the performance within the software (e.g. Autodesk Vehicle Tracking or Transoft AutoTURN).** • **Provide the following measurements parameters of the OSOM components / materials to be moved:** – **Identify all the types of OSOM vehicles proposed to be used for the project.** – **Overall combination length, width, height and mass** – **Maximum component length (e.g. blade length, blade overhang length, etc.)** – **Maximum component widths (e.g. turbine tower, battery component, pipes, etc.)** – **Maximum load heights (clearance to overhead obstructions such as structures, utilities and vegetation),** – **Wheelbase dimensions,**	• Section **4.3** • Appendix B

Item	Section
– **Maximum trailer articulation angle(s),** – **Minimum overhang heights above the road surface,** – **Axle loads and axle group loads in terms of both tonnes and Equivalent Standard Axles (refer to Austroads Guide to Pavement Technology).**	
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.** • **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. The TIA should identify the source for input materials and quantify the traffic generation associated with the haulage of the source materials.**	• Section **2.2** • Section **5.2.2**
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.** • **An assessment should be undertaken as a part of the EIS and TIA to identify the projects that will have overlapping construction periods and assess the cumulative traffic impacts with emphasis on the following:** • **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.**	• Section **0**
Heavy vehicle and OSOM routes: • **Identify the return routes for OSOMs.** • **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.** • **The TIA is required to include details on the number of OSOM movements, the intended time for OSOM movements to occur and identify the location of rest areas required along the OSOM routes.**	• Section **3.3** • Section **4.1** • Section **5.1** • Section **6.5**
Project schedule: • **Hours and days of work, number of shifts and start and end times.** • **Phases and staging of the project, including construction, operation and decommissioning.**	• Section **6.4** • Section **5.1**
Traffic volumes including: • **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.**	• Section **3.5** • Section **5.1** • Section **0**
Traffic characteristics including: • **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 projected-related traffic.**	• Section **3.5** • Section **5.1**
The origins, destinations and routes for: • **Commuter (employee and contractor) light vehicles and pool vehicles.** • **Heavy (haulage) traffic.** • **OSOM vehicles.**	• Section **4.1** • Section **5.2**
Road safety assessment of key haulage route/s.	• Section **4.3** • Appendix B
Identify the necessary road network infrastructure upgrades that are 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 and/or intersection treatments). In this regard, preliminary concept drawings should be submitted with the SSD application for any identified road infrastructure upgrades. It should be noted that any identified road infrastructure upgrades will need to be to the satisfaction of TfNSW and Council.	• Section **4.3** • Appendix B

Item	Section
Proposed road facilities, access and intersection treatments are to be identified and be in accordance with Austroads Guide to Road Design including provision of Safe Intersection Sight Distance (SISD).	• Section **5.5**
Consideration of local climate conditions that may affect road safety during the life of the project (e.g. fog, wet and dry weather, icy road conditions).	• Section **3.6**
The layout of the internal road network, parking facilities and infrastructure.	• Section **2.2**
Impact on rail corridors and level crossings detailing any proposed interface treatments. Note, the rail authority for rail corridors in the vicinity of the site and likely OSOM route is UGLRL.	• Section **3.4** • Section **5.6**
Impact on public transport (public and school bus routes) and consideration for alternative transport modes such as carpooling and shuttle buses during construction	• Section **3.2** • Section **5.1**
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.	• Refer to 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.	• Refer to EIS
A draft Traffic Management Plan (TMP) that could be implemented following approval of the EIS, in consultation with relevant Councils and TfNSW. The TMP would need to identify strategies to manage the impacts of project related traffic, including any community consultation measures for peak haulage periods.	• Section **6**
Propose a Driver Code of Conduct for haulage operations which could include, but not be limited to: • **Safety initiatives for haulage through residential areas and/or school zones.** • **An induction process for vehicle operators and regular toolbox meetings.** • **A public complaint resolution and disciplinary procedure.**	• Section **6**

Source: TfNSW

1.4 References

In preparation of this report, the following documents were reviewed:

- Austroads 2020, *Guide to Traffic Management Part 3: Transport Studies and Analysis Methods*, Austroads, Sydney
- Austroads 2020, *Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments*, Austroads, Sydney
- Cardno 2020, *Traffic & Transport Impact Assessment – Bowmans Creek Windfarm Environment Impact Statement*, Cardno, Sydney
- CWP 2020, *Environmental Impact Statement – Uungula Wind Farm*, CWP Renewables Pty Ltd, Newcastle
- Eco Logical Australia 2020, *Burrendong Wind Farm Scoping Study. Prepared for Epuron Projects Pty Ltd*
- i3 consulting 2020, *Burrendong Wind Farm – External Route Assessment*
- Moovit 2021, *School Buses – Schedules, Route and Stops*, <https://moovitapp.com/index/en-gb/public_transportation-lines-Sydney-442-1684140>, accessed 25 October 2021
- Ogden's Coaches 2021, *Timetables*, <https://www.ogdenscoaches.com.au/timetables/>, accessed 25 October 2021
- Rex J Andrews 2024, *Lake Burrendong Wind Farm Ex Port of Newcastle*
- RTA 2002, *Guide to Traffic Generating Developments*, Transport for NSW, Sydney
- Samsa Consulting 2020, *Uungula Wind Farm Project – Transport Assessment*, Samsa Consulting, Sydney; and
- Transport for NSW 2013, *Guide to Traffic Generating Developments – updated traffic surveys*, Technical Direction TDT 2013/04a, Transport for NSW, Sydney.
- Stantec 2025, *Transport Impact Statement – Temporary Workforce Accommodation Facility*, Stantec Australia Pty Ltd, Sydney
- Barnson 2025, TWAF Site Plans, by Barnson, Sydney

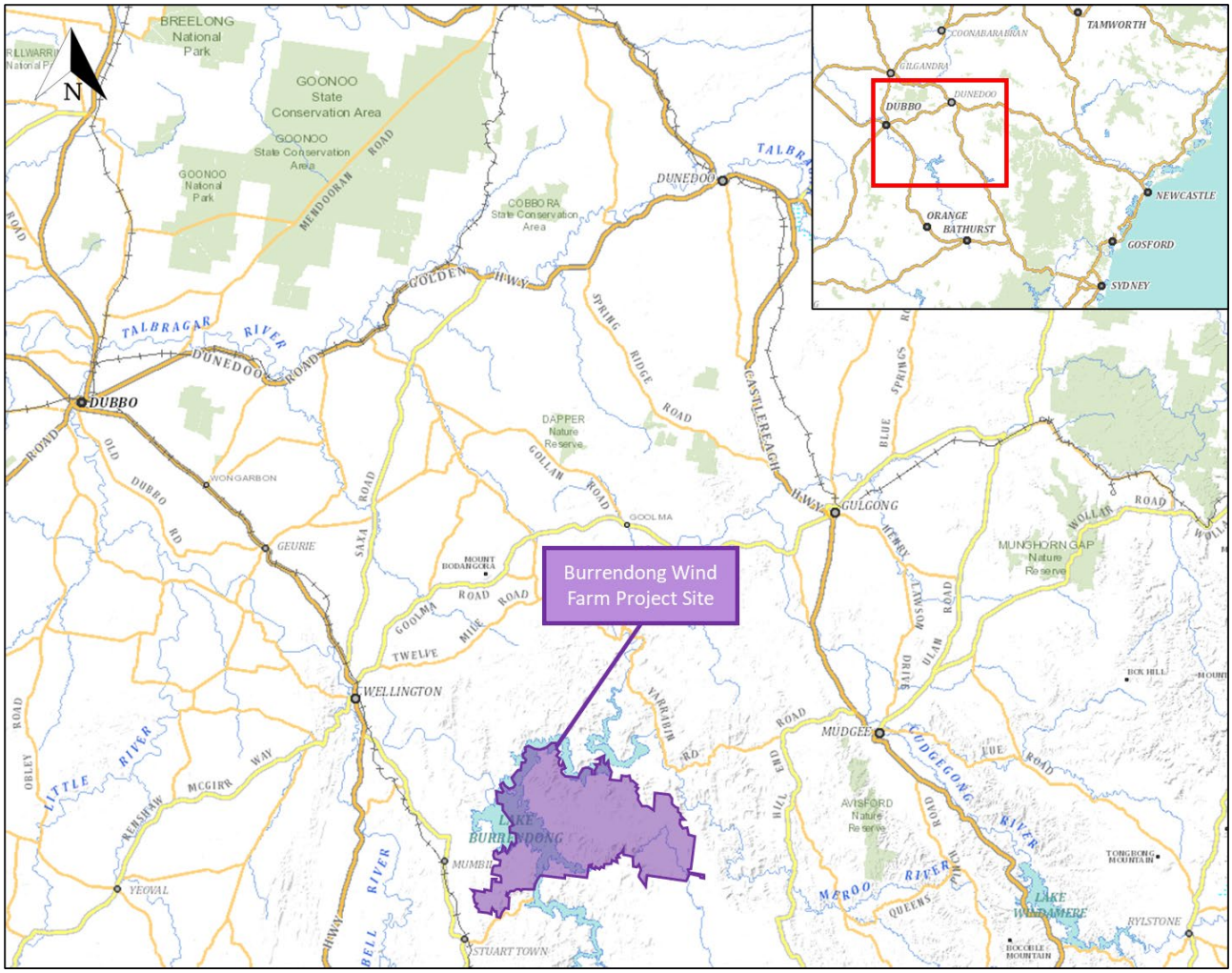
- Ethos Urban 2024, Appendix N – New Construction Workforce Accommodation Strategy, by Ethos Urban, dated 11 November 2024

2. Development Proposal

2.1 Site Location

The Project Site is located in Yarrabin, NSW, which is approximately 230km north-west of Sydney. The site is located on the local government border between Dubbo Regional Council and Mid-Western Regional Council, and between the towns of Wellington and Mudgee in Western NSW. The Project Site is currently primarily used for agriculture, including farming and grazing operations, and also lies within the Lake Burrendong catchment. Its location is shown below in **Figure 2.1**.

Figure 2.1 – Site Location



Base image source: SIX Maps

2.2 Project Description

The Project will involve the construction, operation, maintenance and decommissioning of 70 WTGs, associated ancillary infrastructure and the construction of the Temporary Workforce Accommodation Facility (see Section 2.3).

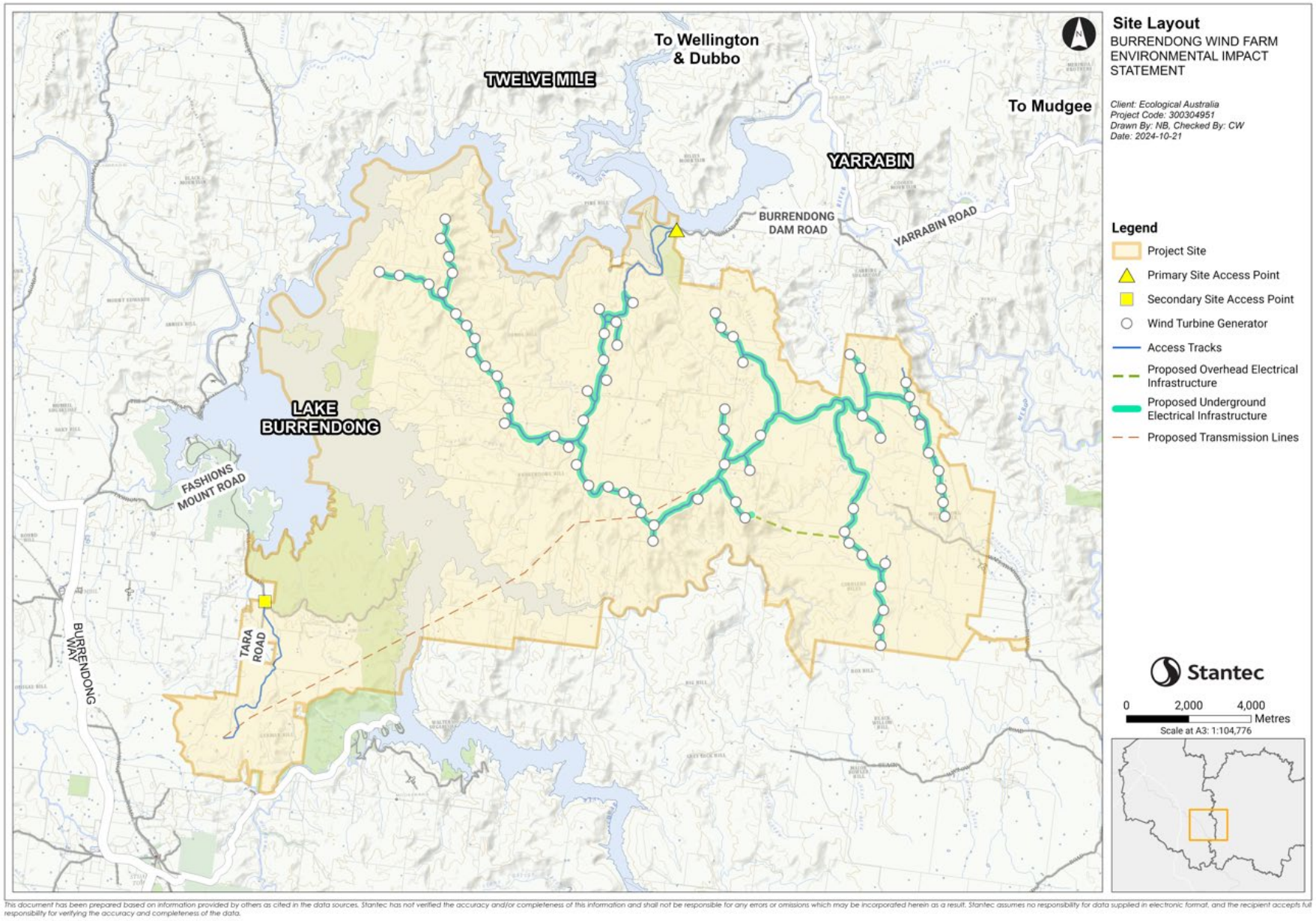
The scope of the project includes:

- 70 WTGs, each consisting of:
  - A three-bladed rotor and nacelle mounted onto a tubular steel tower and concrete foundation
  - A crane hardstand and laydown area for assembly of the wind turbine generator
  - A wind turbine generator transformer located either in the nacelle or adjacent to the wind turbine generator.
- Roads and tracks:
  - Upgrades to the existing public road network to provide access to the Project Site and enable safe delivery of the oversize/overmass components from the Port of Newcastle

    - New access tracks within the Project Site providing access to the WTG locations and other infrastructure.
- Electrical infrastructure:
    - Medium voltage (usually 33kV) electrical connections between the WTGs and the collector substations, which will include a combination of underground cabling and overhead powerlines
    - Up to two collector substations
    - A high voltage (330kV) power line to connect the collector substations to the connection switchyard
    - A connection switchyard to connect the Project powerline to the existing TransGrid 330 kV transmission network.
- Ancillary infrastructure:
    - A permanent Operations and Maintenance facility
    - A temporary construction compound and site office
    - Temporary storage facilities and laydown areas
    - Temporary construction facilities (including concrete batching plant, material stockpiles and rock crushing plant)
    - Two temporary wind monitoring masts (110m tall) and the installation of up to four permanent wind monitoring masts (hub height)
    - Minor works including fencing, gates, drainage structures, erosion & sediment control measures, rehabilitation works, boundary adjustments and land subdivision.
    - Temporary Workforce Accommodation Facility

The Project Site layout is shown in **Figure 2.2**. This TTIA generally applies to the Proposed Site Boundary unless otherwise stipulated in this TTIA and the EIS Project Description.

Figure 2.2 – Project Site Layout



2.3 Temporary Workforce Accommodation Facility

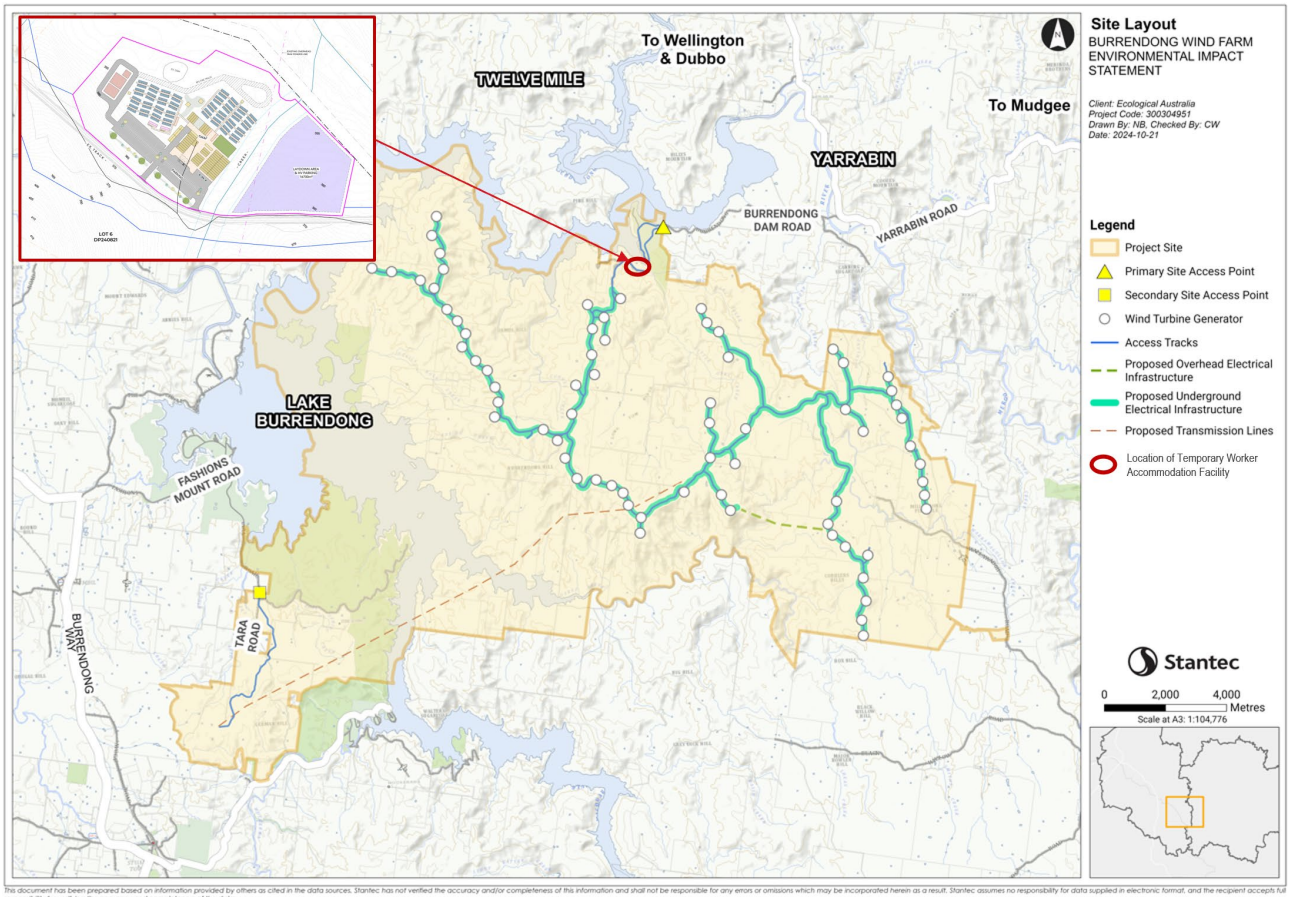
A Temporary Workforce Accommodation Facility (TWAF) will be constructed and is expected to accommodate up to 90% of the total construction workforce on-site, which will significantly reduce daily commuting traffic to and from the site.

The preliminary TWAF plan considers an average of 130 full-time equivalent (FTE) workers (per month). The workers will be accommodated within the TWAF throughout the construction phase, which is expected to span 24 months, however, actual workforce numbers will vary from month to month depending on the intensity of construction at the time. The project's peak period is estimated to last for four (4) weeks (i.e. above average number of on-site workers), with 250 FTE positions supported by on-site construction activities in the peak month.

For the purposes of assessing the TWAF and in line with the Construction Workforce Accommodation Strategy (CWAS) by Ethos Urban, there are 225 non-local FTE positions for peak workforce numbers.

Figure 2.3 displays the location of the TWAF relative to the Project Site.

Figure 2.3 – Location of TWAF relative to Project Site



Source: Site Layout, by Stantec, dated 21 October 2024, updated 19 June 2025 (to include location of TWAF)

A summary of the project's workforce requirement is summarised below in **Table 2.1**.

Table 2.1 – Project Workforce Requirements (Full Time Equivalent)

Project Phase	Local (10%)	Non-local (90%)	Total (100%)
Average (monthly)	13	117	130
Peak (1 month duration)	25	225	250

Source: Appendix N, Construction Workforce Accommodation Strategy, by Ethos Urban, dated 11 November 2024

The anticipated employment distribution is as follows:

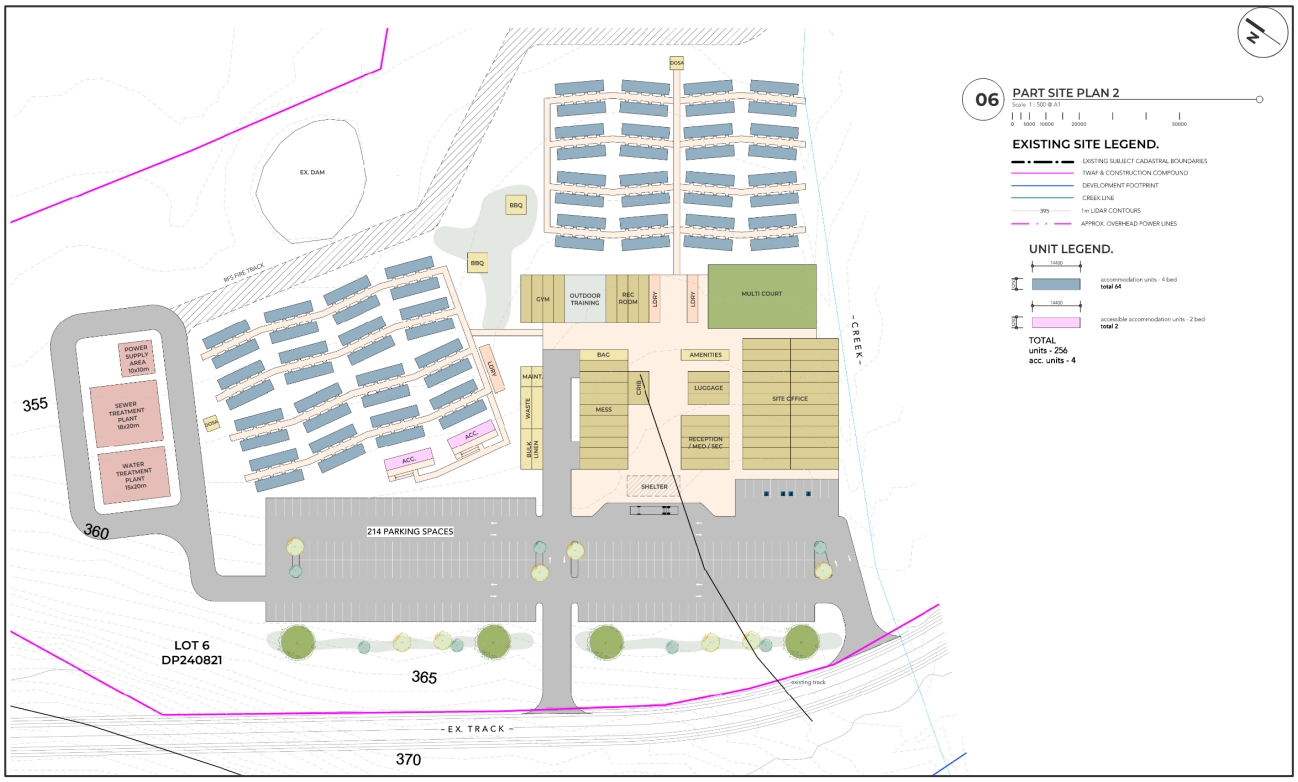
- Local Employment: Approximately 10% of the workforce, equating to an average of 13 full-time equivalent (FTE) workers, is expected to be sourced from within the Study Area. This number may increase to 25 FTE workers at

peak construction. These individuals will commute daily to the wind farm site, with minimal impact anticipated on local traffic due to the relatively low volume of commuter movements.

- Non-Local Employment: The remaining 90% of the workforce, averaging 117 FTE workers and peaking at 225, is expected to be sourced from outside the Study Area. These workers will be accommodated on-site, significantly reducing daily travel requirements and thereby mitigating potential traffic congestion on surrounding local roads.

Figure 2.4 displays a site plan of the TWAF.

Figure 2.4 – Temporary Workforce Accommodation Facility, Site Plan



Source: Temporary Workforce Accommodation Facility, Part Site Plan 2, drawing no. 47568-AC6, Rev D, by Barnson.

2.3.1 Site Accessibility

With the implementation of the Temporary Workforce Accommodation Facility (TWAF), approximately 90% of the construction workforce, who were originally expected to commute from outside the study area, will now be housed on-site. The remaining 10% of workers are anticipated to travel from areas outside the immediate study area, thereby reducing the overall volume of daily commuter traffic and enhancing site accessibility.

2.3.2 Internal trips between TWAF and construction site

Access to various parts of the wind farm site is proposed via internal site access tracks (see **Figure 2.3**). It is assumed that the workers who reside at the TWAF are expected to use a combination of private vehicles or shuttle buses to access site.

An internal network of informal access roads and tracks is available to facilitate vehicle movement within the construction site. This includes a connecting track that links the parking bay located within the TWAF to the existing site access track, ensuring efficient and direct access for construction vehicles.

As part of the future Green Travel Plan and site induction process, carpooling and car-sharing initiatives will be implemented to promote higher vehicle occupancy (targeting 2 to 3 people per car) and to minimise internal vehicle movements within the site.

2.3.2.1 External trips to the TWAF

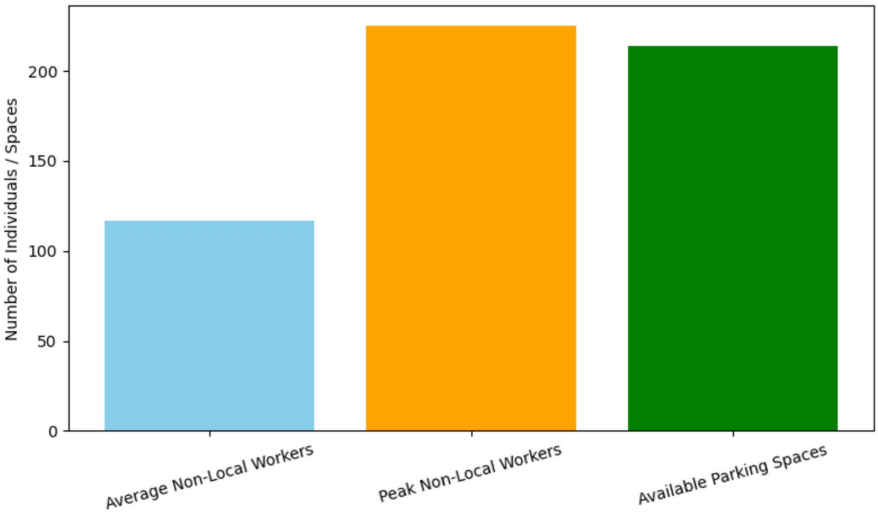
Access to and from the TWAF and car parking area is proposed via Burrendong Dam Road located on the northern side of the construction site as shown in **Figure 2.3.**

2.3.2.2 Parking Provision

Parking provisions are detailed in the preliminary TWAF site plans (refer to Figure 2.4), which include a total of 214 car parking spaces. This provision is considered more than sufficient to accommodate the anticipated workforce residing on-site during the construction phase. At peak, up to 225 non-local workers are expected; however, the majority will remain on-site for extended periods, significantly reducing daily vehicle turnover and parking demand.

Figure 2.5 below illustrates the comparison between the average and peak non-local workforce and the available parking spaces, supporting the conclusion that the proposed parking capacity is adequate.

Figure 2.5 – Comparison of Non-Local Workers and TWAF Parking Provision



All parking spaces will be designed in accordance with the relevant provisions of AS2890 standards and will be subject to further review during the detailed design phase. The access driveway to the parking area will be engineered to accommodate the largest design vehicles anticipated within the TWAF site.

2.4 Transport Routes

All WTG components for the Project will be shipped and stored at the Port of Newcastle until they are ready to be transported to the Project Site. Three OSOM transport routes have been assessed in 2024 by Rex J Andrews in a Route Study.

Routes 1, 2 and 3 all generally follow the same path from the Port of Newcastle to the intersection of Golden Highway/ Castlereagh Highway, Dunedoo, except for a slight detour for Route 2 to avoid the height restrictions of Denman Bridge. The maximum loaded height over the bridge (Routes 1 and 3) is 5.3 metres.

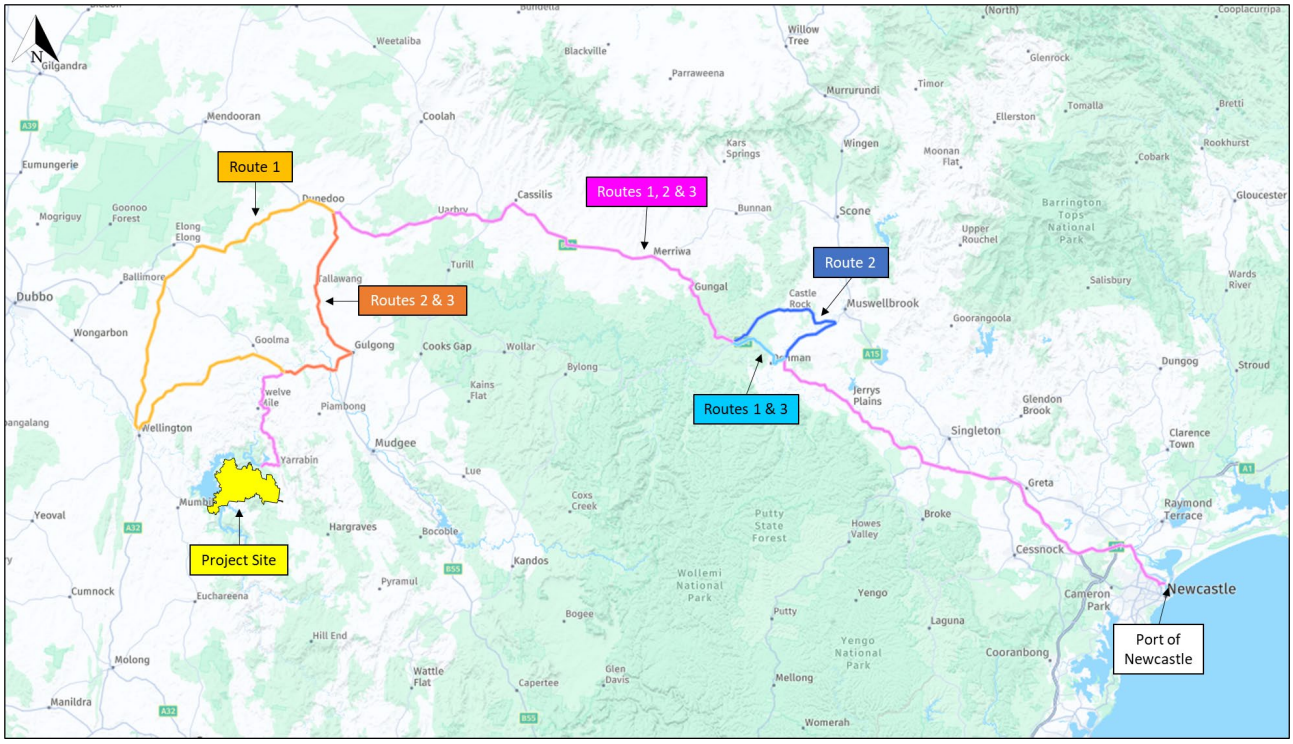
From the Golden Highway/ Castlereagh Highway intersection, the over-size over-mass (OSOM) vehicles transporting the wind turbine components will have two route options due to the length of the WTG blades (82.0m).

- Route 1 (Blades): 469.0km – the blades will be transported via Saxa Road and OSOM vehicles will approach the intersection of Goolma Road / Twelve Mile Road intersection from a westerly direction.
- Routes 2 and 3 (All other components): 389.0km – all other components will be transported via Castlereagh Highway and approach the intersection of Goolma Road / Twelve Mile Road intersection from an easterly direction.

Routes 1, 2 and 3 recombine at the intersection of Goolma Road / Twelve Mile Road, Two Mile Flat, with all OSOM transport vehicles then using Twelve Mile Road, Yarrabin Road and Burrendong Dam Road to reach the Project Site.

This is shown below in **Figure 2.6**.

Figure 2.6 – OSOM Transport Routes 1, 2 and 3



Base image source: Nearmap

In addition to the OSOM vehicles, traffic impacts from the Project will be generated by:

- Light and heavy vehicles used to deliver construction materials and personnel during the 2-year construction phase.
- Light vehicles used by onsite personnel and visitors during the 30-year operation phase.

3. Existing Conditions

3.1 Road Network

All roads in NSW are categorised by TfNSW based on their role in the road network and for road management responsibilities:

- State roads link urban and rural centres for the movement of people and freight across the state
- Regional roads are secondary roads that provide connectivity between towns or places of interest within a region
- Local roads are low-capacity roads that provide local access to residences and businesses within a town or locality.

State roads are managed and financed by TfNSW. Regional and local roads are managed and financed by councils, however TfNSW may provide financial assistance to councils for the management of regional roads due to their network significance.

Roads can also be classified functionally by the traffic volume they are expected to convey and their typical characteristics:

- Arterial roads are major roads that connect one region to another
- Sub-arterial roads are secondary roads the connect different areas within a region
- Collector roads are minor roads that link local areas to sub-arterial and arterial roads
- Local roads are minor roads that provide access to houses and carry low traffic volumes.

Table 3.1 provides the expected daily and peak hour traffic volume limits, vehicle operating speeds, heavy vehicle load restrictions and types of pedestrian crossings found on each functional classification of road.

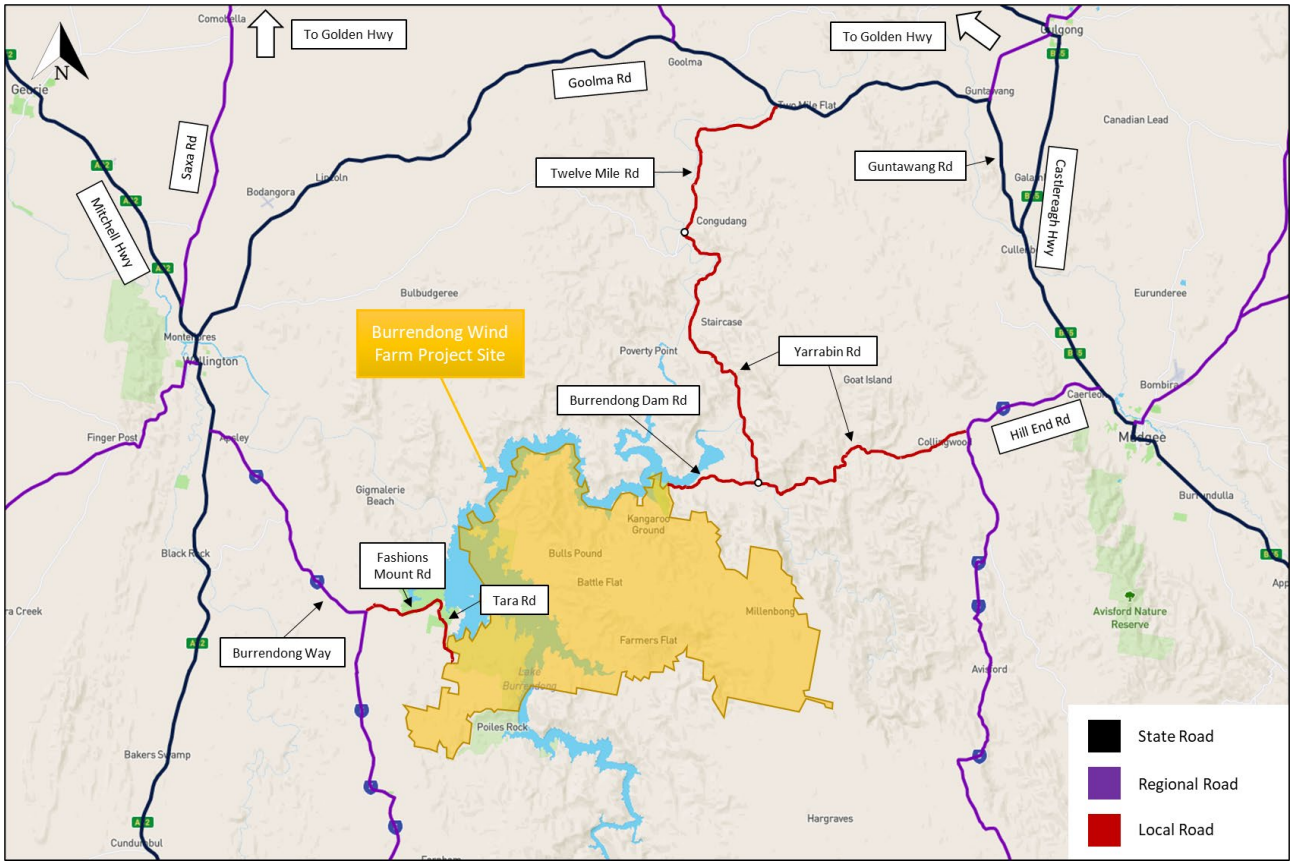
Table 3.1 – Road Hierarchy Descriptions for Rural Areas

Road characteristic	Arterial	Sub-arterial	Collector	Local
Daily traffic volume	No limit	Up to 20,000 vpd	Up to 10,000 vpd	Up to 4,000 vpd
Peak hour traffic volume* ***assumed based on 10% of daily traffic volume**	> 2,000 vph	Up to 2,000 vph	Up to 1,000 vph	Up to 400 vph
Vehicle operating speed	60-110km/h	60-80 km/h	40-60 km/h	40 km/h
Heavy vehicle load restrictions	None	Preferably none	Yes	Yes
Types of pedestrian crossings	Grade-separated or signals	Signals or refuge	Marked crossing or refuge	Marked crossing or refuge

Adapted from source: Road Design Guide (RTA, 1991)

Figure 3.1 shows the locations of the roads that are likely to be impacted by the Project. The following sections will outline the existing conditions of each individual road impacted by the Project.

Figure 3.1 – Map of Existing Road Network



Base image source: TfNSW Road Network Classifications Map

3.1.1 Mitchell Highway

The Mitchell Highway is an east-west rural highway (HW7) in western NSW that connects Bathurst to Nyngan. It is classified as a State Road with a posted speed limit of 80km/h just outside the township of Wellington. The Mitchell Highway will be used by OSOM vehicles for 2.5km as a link between Saxa Road and Goolma Road in Wellington, and between Dubbo and Wellington for any light or heavy vehicles originating from Dubbo.

3.1.2 Castlereagh Highway

The Castlereagh Highway is a north-south rural highway (HW18) in western NSW that connects Lithgow to the Queensland border. It is classified as a State Road with a posted speed limit of 100km/h between Gulgong and Caerleon. The road has one travel lane in each direction and the carriageway is approximately 9.0m-9.5m wide, inclusive of a shoulder on each side.

A 42km section of Castlereagh Highway has been identified as part of OSOM Haulage Routes 2 and 3 linking the Golden Highway, Dunedoo, to Goolma Road, Gulgong. A short 2-4km section of Castlereagh Highway just north of Mudgee will also be used by any light or heavy vehicles originating from Mudgee.

3.1.3 Golden Highway

The Golden Highway is an east-west rural highway (HW27) which links Dubbo to the Hunter region, and eventually the Port of Newcastle via New England Highway and Hunter Expressway. It is classified as a State Road with a posted speed limit of 100km/h. The highway predominantly has one lane of travel in each direction, with segments where overtaking lanes exist. The Golden Highway will be the main highway used to transport OSOM freight from the Port of Newcastle to within close proximity of the site.

3.1.4 Goolma Road

Goolma Road is a State Road (MR633) between Wellington and Mudgee in western NSW. The road has a single lane of travel in each direction and has a posted speed limit of 100km/h. The road has varying widths, often between 6.0m-7.0m, and most sections have a small shoulder and edge linemarking.

A 42km section of Goolma Road between Mitchell Highway and Twelve Mile Road (the western end) will be used by OSOM vehicles on Haulage Route 1, as well as light and heavy vehicles originating from Wellington and Dubbo. A 21km section of Goolma Road between Castlereagh Highway and Twelve Mile Road (the eastern end) will be used by OSOM vehicles on Haulage Routes 2 and 3.

3.1.5 Hill End Road

Hill End Road is a classified regional road (MR216) which connects the Castlereagh Highway to the town of Hill End. The road has a single lane of travel in each direction and has a posted speed limit of 100km/h. The road carriageway is approximately 6.0m-7.0m in width and there are no shoulders or edge linemarking.

A 9.5km section of Hill End Road linking Castlereagh Highway, Caerleon, to Yarrabin Road, Collingwood, will be used by light and heavy vehicles originating from Mudgee.

3.1.6 Saxa Road (formerly Cobbora Road)

Saxa Road is a classified regional road (MR353) linking the Golden Highway at Elong Elong to the Mitchell Highway at Wellington, and this road allows haulage vehicles to bypass the town of Dubbo. For roads not in an urban area, the default speed limit is 100km/h. The carriageway is narrow at approximately 6.0m in width with no hard shoulder on the road edges, which may create difficulty for vehicles travelling in the opposite direction to pass OSOM vehicles. Saxa Road will be used by OSOM vehicles on Haulage Route 1.

3.1.7 Burrendong Way

Burrendong Way is a classified regional road (MR573) linking the Mitchell Highway at Appley to the Mitchell Highway at Orange. The road has a single lane of travel in each direction and has a posted speed limit of 100km/h. The road carriageway is approximately 6.0m-7.5 in width and there are no shoulders or edge linemarking.

Either a 7.5km section or 16.5km section of Burrendong Way will be used by light and heavy vehicles associated with works on the western side of Burrendong Lake, originating from Wellington.

3.1.8 Twelve Mile Road

Twelve Mile Road is a local road off Goolma Road, only providing local access to rural properties. The road is predominantly unsealed and features multiple cattle grids and a variable road width. For unsealed roads, the default speed limit is assumed to be 80km/h.

A 12.5km section of Twelve Mile Road has been identified on all OSOM Haulage Routes (i.e. 1, 2 and 3) linking Goolma Road, Two Mile Flat, to Yarrabin Road, Twelve Mile. Light and heavy vehicles originating from Wellington and Dubbo will also use Twelve Mile Road.

3.1.9 Yarrabin Road

Yarrabin Road is a local road only providing local access to rural properties. The road has a mixture of sealed and unsealed sections and there is a variable road width. For sealed rural roads, the default speed limit is 100km/h. For unsealed rural roads, the default speed limit is assumed to be 80km/h.

A 20km section of Yarrabin Road (running north-south) has been identified on all OSOM Haulage Routes (i.e. 1, 2 and 3) linking Twelve Mile Road, Twelve Mile, to Burrendong Dam Road, Yarrabin. Light and heavy vehicles originating from Wellington and Dubbo will also use this section of Yarrabin Road.

A 16.5km section of Yarrabin Road (running east-west) linking Hill End Road, Collingwood, to Burrendong Dam Road, Yarrabin, will be used by light and heavy vehicles originating from Mudgee.

3.1.10 Burrendong Dam Road

Burrendong Dam Road is a local road only providing local access to rural properties. The road is predominantly unsealed and there is a variable road width. For unsealed roads, the default speed limit is assumed to be 80km/h. Burrendong Dam Road will be used by all OSOM vehicles, light vehicles and heavy vehicles accessing the site.

3.1.11 Fashions Mount Road

Fashions Mount Road is a local road providing access to a botanic garden, caravan park and local rural properties. The road is sealed and has a road carriageway width of approximately 5.0m-6.0m. For sealed rural roads, the default speed limit is 100km/h.

Fashions Mount Road may be used by light and heavy vehicles associated with works on the western side of Burrendong Lake, originating from Wellington.

3.1.12 Tara Road

Tara Road is a local road providing access to a sport and recreation centre, and local rural properties. The road has a mixture of sealed and unsealed sections and has a road carriageway width of approximately 5.0m-6.0m. For sealed rural roads, the default speed limit is 100km/h. For unsealed rural roads, the default speed limit is assumed to be 80km/h.

Tara Road may be used by light and heavy vehicles associated with works on the western side of Burrendong Lake, originating from Wellington.

Table 3.2 – Road Classifications and Conditions

Road	Classification	Speed Limit (km/h)	Road Width (m)	Sealed/ Unsealed
Mitchell Highway	State	80	Variable	Sealed
Castlereagh Highway	State	100	9.0 – 9.5	Sealed
Golden Highway	State	100	Variable	Sealed
Goolma Road	State	100	6.0 – 7.0	Sealed
Hill End Road	Regional	100	6.0 – 7.0	Sealed
Saxa Road	Regional	100	6.0	Sealed
Burrendong Way	Regional	100	6.0 – 7.5	Sealed
Twelve Mile Road	Local	80	Variable	Unsealed
Yarrabin Road	Local	100 / 80	Variable	Sealed/ unsealed
Burrendong Dam Road	Local	80	Variable	Unsealed
Fashions Mount Road	Local	100	5.0 – 6.0	Sealed
Tara Road	Local	100 / 80	5.0 – 6.0	Sealed/ unsealed

3.2 School Bus Routes

Regional school travel in rural NSW is important to ensure that children are able to receive an education irrespective of where they live. Bus companies run charter services in regional areas so that students are picked up at / near their rural properties and transported to their school on school mornings and dropped off again in the afternoons. In the morning, buses will generally arrive at the schools between 8.30am – 9am, and in the afternoon, buses will generally pick up from the schools between 3pm – 3.30pm.

The towns of Dubbo, Wellington, Goolma and Mudgee all run regional school bus services that travel on roads likely to be impacted by the Project. These school bus routes and their bus times are detailed in **Table 3.3**, and shown on **Figure 3.2**.

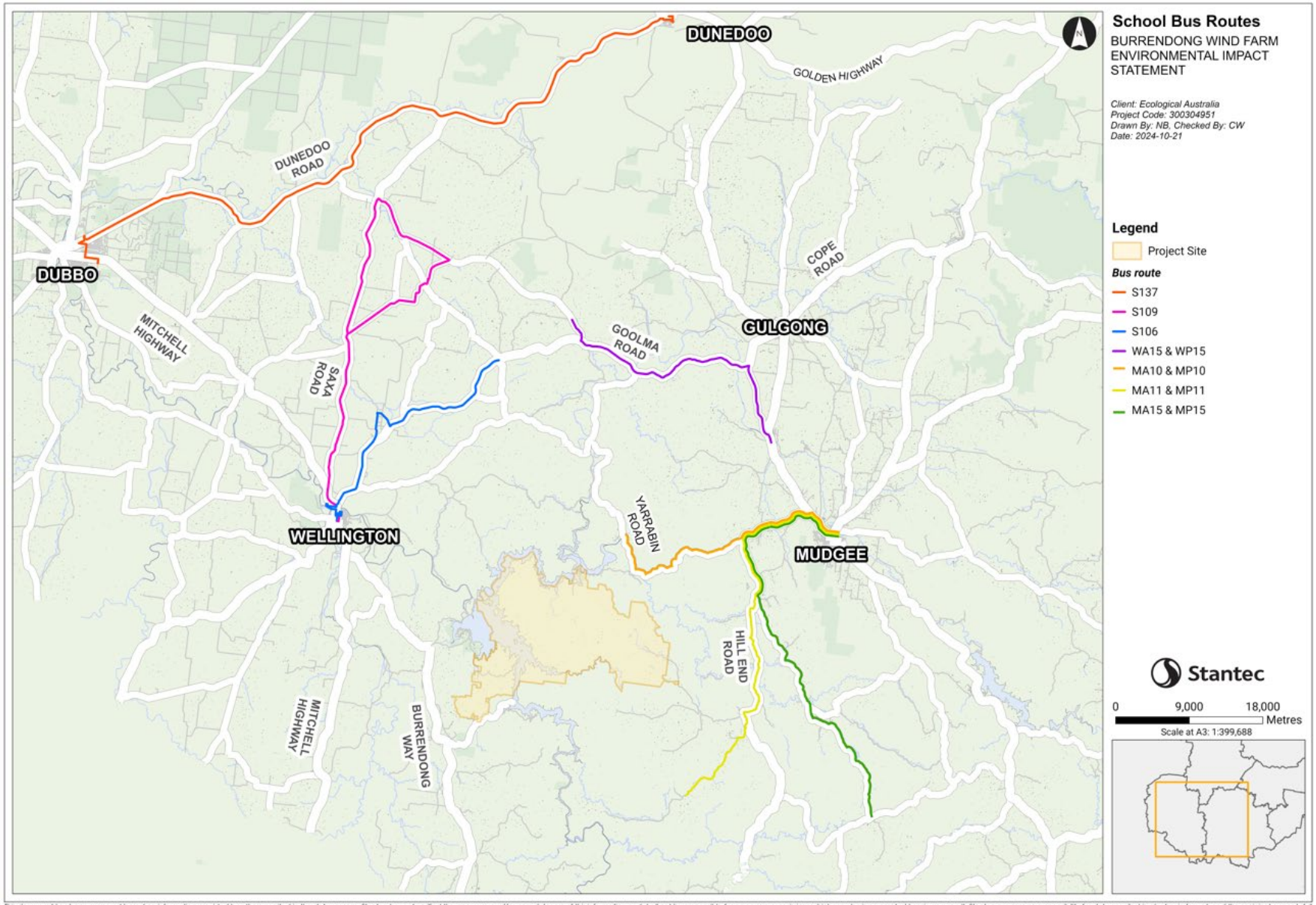
Table 3.3 – School Bus Routes

Bus Route	Road/s Affected	Origin and Destination	Morning Bus Time	Afternoon Bus Time
S137	Golden Highway	Dunedoo to Dubbo schools	07:25 – 08:49	15:30 – 17:05
S109	Saxa Road	Saxa Road to Wellington schools	07:10 – 08:45	15:10 – 16:35

Bus Route	Road/s Affected	Origin and Destination	Morning Bus Time	Afternoon Bus Time
S106	Goolma Road	Mt Bodangora to Wellington schools	08:05 – 08:46	15:07 – 16:05
WA15 & WP15	Goolma Road	Cullenbone to Goolma schools	07:25 – 09:00	15:10 – 16:40
MA10 & MP10	Yarrabin Road & Hill End Road	Yarrabin to Mudgee schools	08:03 – 08:53	15:30 – 16:20
MA11 & MP11	Hill End Road	Hargraves to Mudgee schools	07:33 – 08:46	15:28 – 16:50
MA15 & MP15	Hill End Road	Windeyer to Mudgee schools	07:25 – 08:50	15:30 – 16:48

Source: Moovit (2021) and Ogden's Coaches (2021)

Figure 3.2 – School Bus Routes Map



3.3 Heavy Vehicle Travel Conditions

Reference is made to TfNSW Restricted Access Vehicles (RAV) roads as well as Higher Mass Limits (HML) routes, both of which permit specific vehicle types for travel. Generally speaking, the RAV routes are for vehicles or vehicle combinations which exceed the overall dimensions of vehicles defined in the Heavy Vehicle National Law (HVNL) which is defined based on the width, height, length and internal dimensions. HML routes permit operators to utilise road freight transport vehicles achieving significant increase in productivity.

The heavy vehicle or vehicle combinations that operate on approved RAV and HML routes generally include the following:

- B-Doubles
- 4.6m High Vehicles
- Road Trains.

An OSOM vehicle is defined as a Class 1 vehicle under the HVNL and is considered to be OSOM if it exceeds any general access mass or dimension limits.

Table 3.4 identifies both the OSOM vehicle and B-double travel conditions on roads which will be used during the Project.

Figure 3.3 shows the OSOM vehicle routes identified in the Rex J Andrews Route Study (2024) and the locations of any heavy vehicle travel conditions. These have been identified from TfNSW's OSOM Load Carrying Vehicles Network Map and TfNSW's RAV Map.

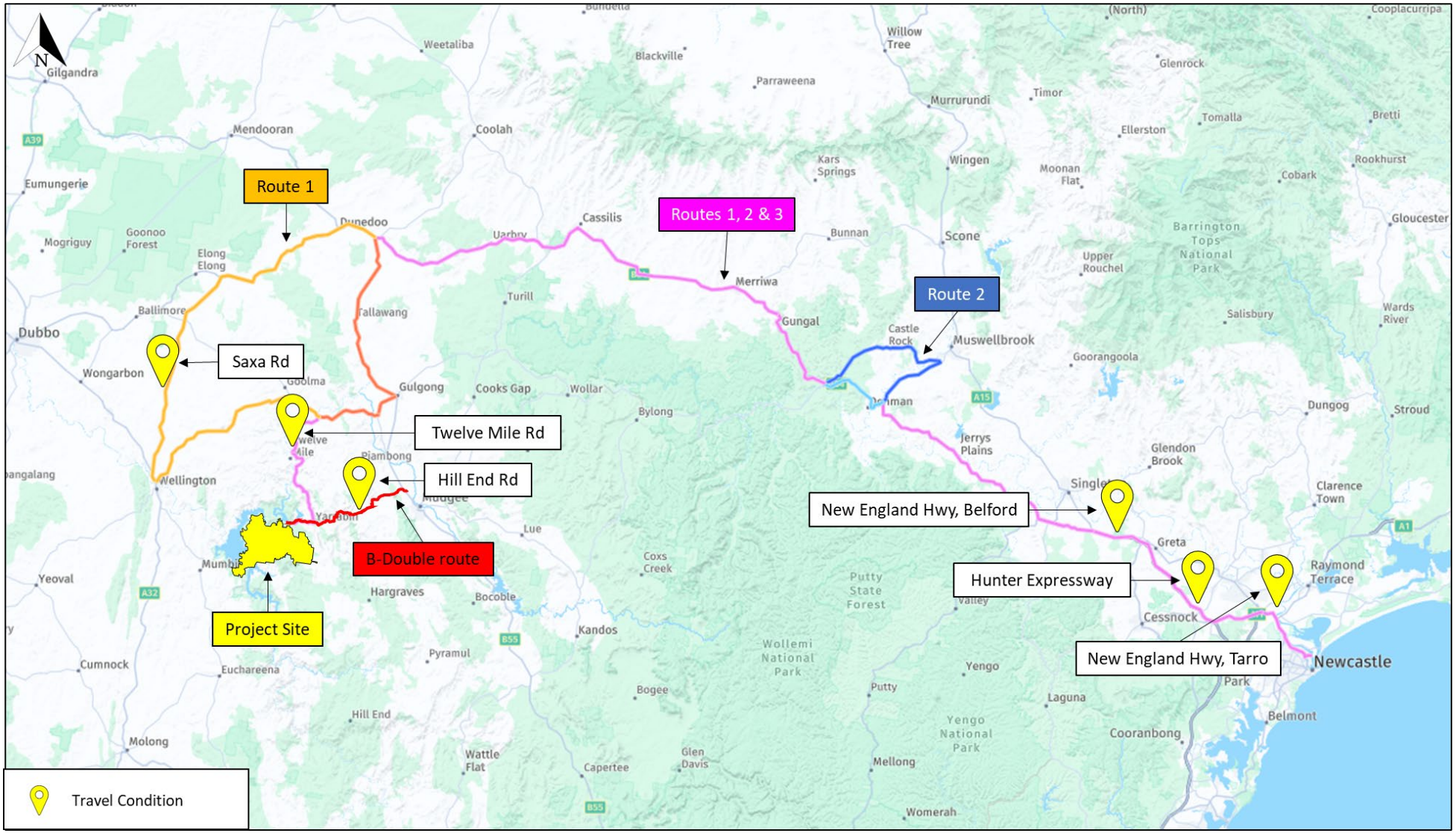
If the Project sought an exception to any of the travel restrictions, it is suggested that the applicant liaise with the TfNSW OSOM Road Access Unit and/or NHVR to apply for an exception permit.

Table 3.4 – OSOM and B-Double Travel Conditions

Road	Route	Travel Conditions
New England Highway, Tarro	Routes 1, 2 & 3	• B-double vehicles approved, no travel conditions. • OSOM vehicles approved under the following travel conditions: – Between Hexham and Weakleys Drive, vehicles or combinations exceeding 3.5 metres wide or 25.0 metres long are not permitted to travel between 8:30am and sunset on weekends or a state-wide public holiday.
Hunter Expressway, Buchanan	Routes 1, 2 & 3	• B-double vehicles approved, no travel conditions. • OSOM vehicles approved under the following travel conditions: – Vehicles or combinations exceeding 3.2 metres wide are not permitted to travel from Monday to Friday from 5:00am to 9:00am and from Monday to Friday from 4:00pm to 6:00pm (except on state-wide public holidays).
New England Highway, Belford	Routes 1, 2 & 3	• B-double vehicles approved, no travel conditions. • OSOM vehicles approved under the following travel conditions: – Between Weakleys Drive and Singleton side of the traffic lights at Magpie Street (Bunning's corner) (north of Singleton), vehicles or combinations exceeding 3.2 metres wide are not permitted to travel from Monday to Friday from 5:00am to 9:00am and from Monday to Friday from 3:00pm to 6:00pm (except on state-wide public holidays).
Saxa Road	Route 1	• OSOM vehicles approved, no travel conditions. • B-double vehicles approved under the following travel conditions: – No travel permitted 7.30am – 9.00am and 3.30pm – 5.00pm on school days.
Twelve Mile Road	Routes 1, 2 & 3	• OSOM vehicles approved, no travel conditions. • B-double vehicles approved under the following travel conditions: – A maximum speed limit of 60km/h applies.
Hill End Road	B-Double Route Only	• B-double vehicles approved under the following travel conditions: – 80km/h B-Double speed limit. Outside school bus operation times. • Not approved route for OSOM vehicles.

Source: TfNSW OSOM Load Carrying Vehicles Network Map and RAV Map (2022)

Figure 3.3 – Locations of Heavy Vehicle Travel Conditions



3.4 Railway Level Crossings

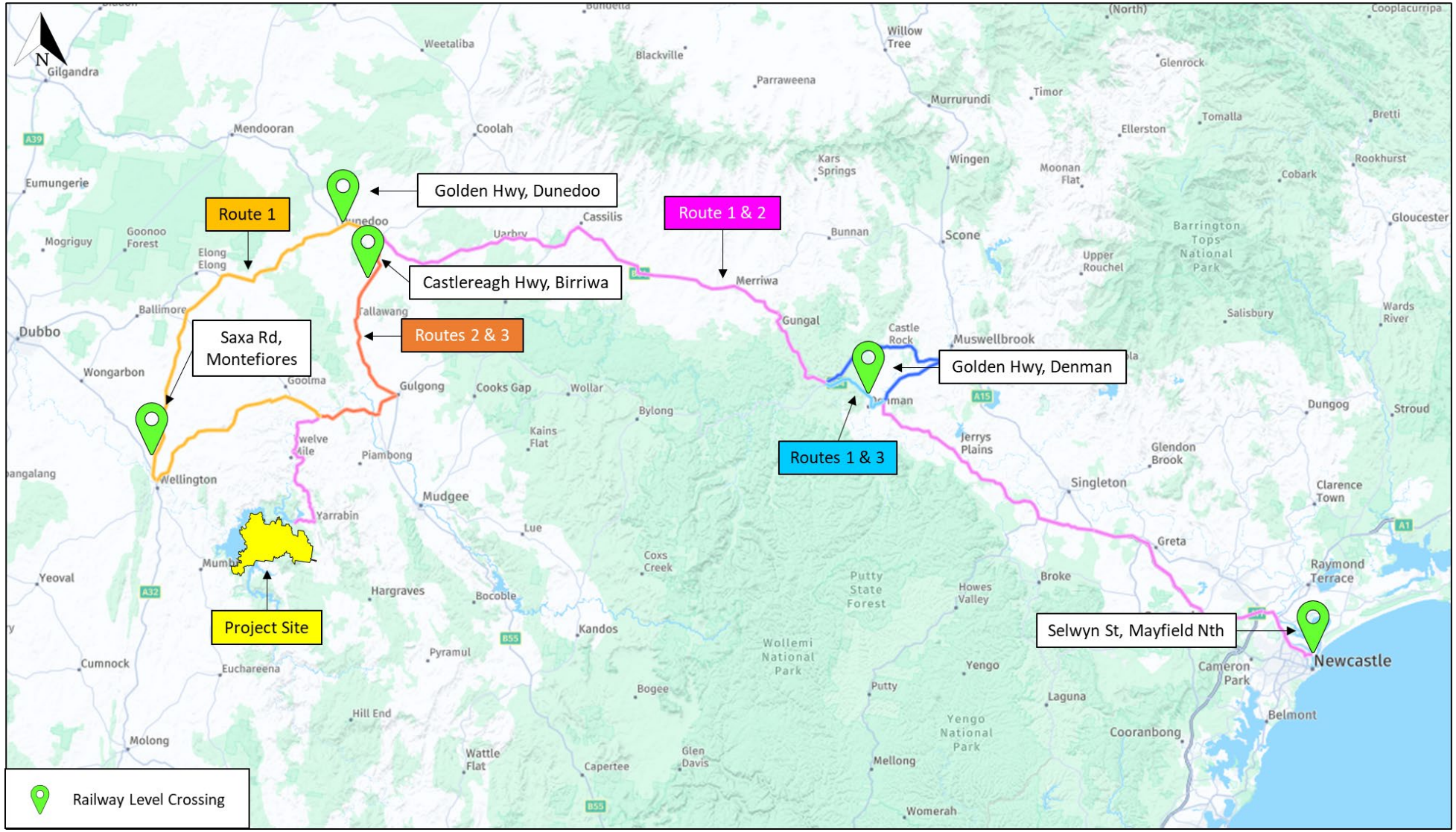
The locations of railway level crossings along the OSOM transport route are listed below in **Table 3.5**, with their locations shown in **Figure 3.4**.

Table 3.5 – Railway Level Crossing Access Conditions

Location	Route	LXM ID	Controls	Access Conditions
Selwyn Street, Mayfield North	Routes 1, 2 & 3	1659	Active – boom gates & flashing lights	None (privately owned).
Golden Highway (Merriwa Road), Denman	Routes 1 & 3	1285	Active – boom gates & flashing lights	• Vehicle must approach and traverse the designated level crossings at a speed not less than 35km/h. If the vehicle cannot comply with this condition, the operator must contact Rail Infrastructure Manager. • The Ulan rail line section is owned by Australian Rail Track Corporation (ARTC).
Golden Highway, Dunedoo	Route 1	1428	Active – flashing lights	• Vehicle must approach and traverse the designated level crossings at a speed not less than 35km/h. If the vehicle cannot comply with this condition, the operator must contact Rail Infrastructure Manager. • The rail line section from Wallerawang to Gwabegar is owned by ARTC.
Saxa Road, Montefiores	Route 1	699	Active – boom gates & flashing lights	• None (owned by JHR). • Recommended to contact the Rail Infrastructure Manager.
Castlereagh Highway, Birriwa	Routes 2 & 3	1425	Active – flashing lights	• Vehicle must approach and traverse the designated level crossings at a speed not less than 35km/h. If the vehicle cannot comply with this condition, the operator must contact Rail Infrastructure Manager. • The rail line section from Wallerawang to Gwabegar is owned by ARTC.

Source: TfNSW Level Crossing Finder (2022)

Figure 3.4 – Locations of Railway Level Crossings



3.5 Traffic Volumes

The roads likely to be impacted by the Project are identified in **Section 3.1**. Traffic count data for these roads has been obtained from multiple sources including Mid-Western Regional Council, MetroCount data supplied by TfNSW and previously submitted SSD traffic assessments within close proximity to the Project Site.

Where conflicting traffic volume data was obtained, the most accurate dataset was selected based on source, reliability and survey year. Where no traffic volume data could be obtained (i.e. for Burrendong Way, Fashions Mount Road, Tara Road and Burrel Creek Road), it was assumed that these roads would carry similar traffic volumes to a comparable road.

The data sources range from between 2011 to 2022 and as such, the nearest TfNSW Traffic Volume counter on Mitchell Highway has been analysed (Station ID: T6172S) to determine background traffic growth. The growth rate trends on Mitchell Highway are assumed to be similar to those on Goolma Road.

The results generally show a declining background traffic growth rate of approximately 1-2% per year (excluding the Covid years of 2020-2021). Given this, an assumed background traffic growth rate of 1% per year is considered conservative and appropriate for the region.

Table 3.6 below shows the average daily and peak hour traffic volumes from each data source, heavy vehicle percentages, and the estimated daily and peak hour traffic volumes in the opening construction year of 2025.

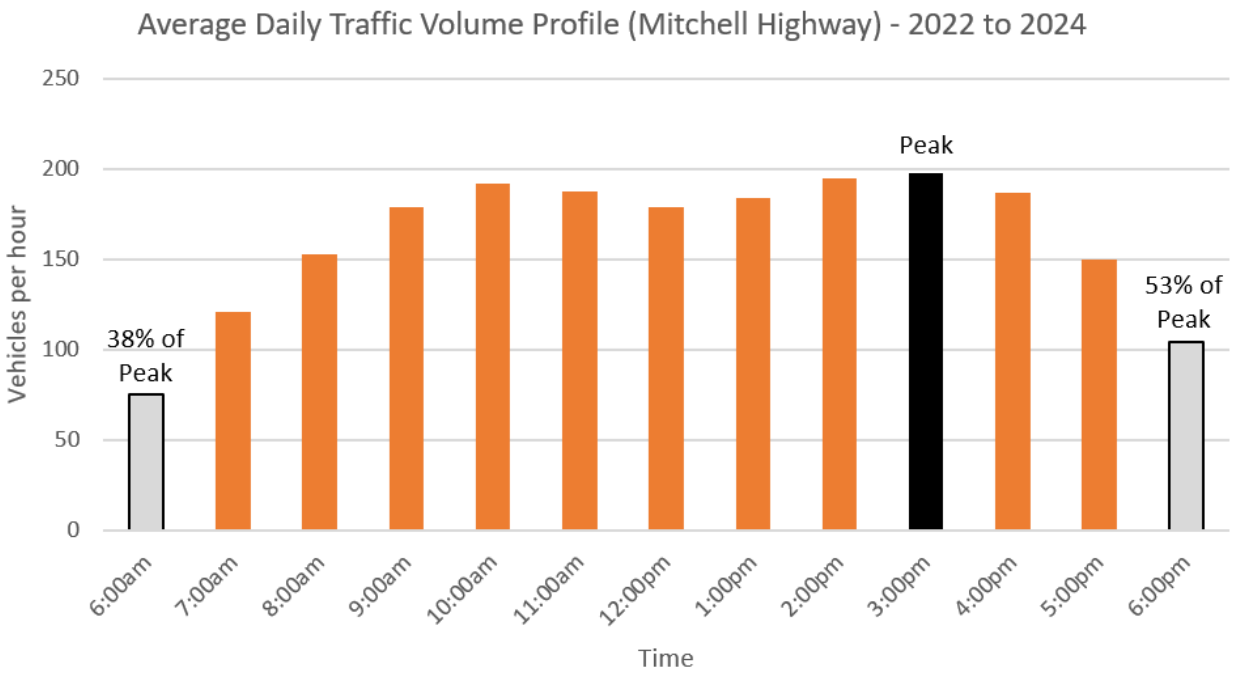
Table 3.6 – Anticipated 2023 Daily Traffic Volumes and Peak Hour Volumes

Road/ Location	Average Daily Traffic Volume (vpd)	Peak Hour Volume (vph)	Heavy Vehicle Percentage	Traffic Volume Source	2026 Average Daily Traffic Volume (vpd)	2026 Peak Hour Volume (vph)
Mitchell Highway	2520	230	15%	Uungula Wind Farm (Samsa, 2019)	2696	246
Castlereagh Highway	3289	300	12%	MetroCount Data (TfNSW, 2011)	3782	321
Golden Highway	2050	170	15%	Uungula Wind Farm (Samsa, 2019)	2194	182
Goolma Road	870	120	14%	Uungula Wind Farm (Samsa, 2019)	931	128
Hill End Road	1444	200	10%	Crudine Ridge Wind Farm (Samsa, 2013)	1632	214
Saxa Road	485	49	25%	Wellington North Solar Farm (GHD, 2018)	519	52
Burrendong Way	*1444**	*200**	*10%**	**Assumed to be similar to Hill End Road*	*1632**	*214**
Twelve Mile Road	90	14[1]	5%[2]	Mid-Western Regional Council (2022)	94	15
Yarrabin Road	201	31[1]	5%[2]	Mid-Western Regional Council (2022)	209	33
Burrendong Dam Road	73	11[1]	5%[2]	Mid-Western Regional Council (2022)	76	12
Fashions Mount Road	*201**	*31**	*5%**	**Assumed to be similar to Yarrabin Road*	*209**	*33**
Tara Road	*201**	*31**	*5%**	**Assumed to be similar to Yarrabin Road*	*209**	*33**

[1] Peak hour volume assumed to be 15% of the daily traffic volume
[2] Assumed values

To establish a daily traffic volume profile, the same TfNSW Traffic Volume counter on Mitchell Highway has been analysed. As shown in Figure 3.5 below, the peak hour of the day occurs between 3:00pm – 4:00pm. During the anticipated AM construction peak of 6:00am – 7:00am, the hourly traffic volume is approximately 38% of the network peak hour volume. During the anticipated PM construction peak of 6:00pm – 7:00pm, the hourly traffic volume is approximately 53% of the network peak hour volume.

Figure 3.5 – Daily Traffic Volume Profile



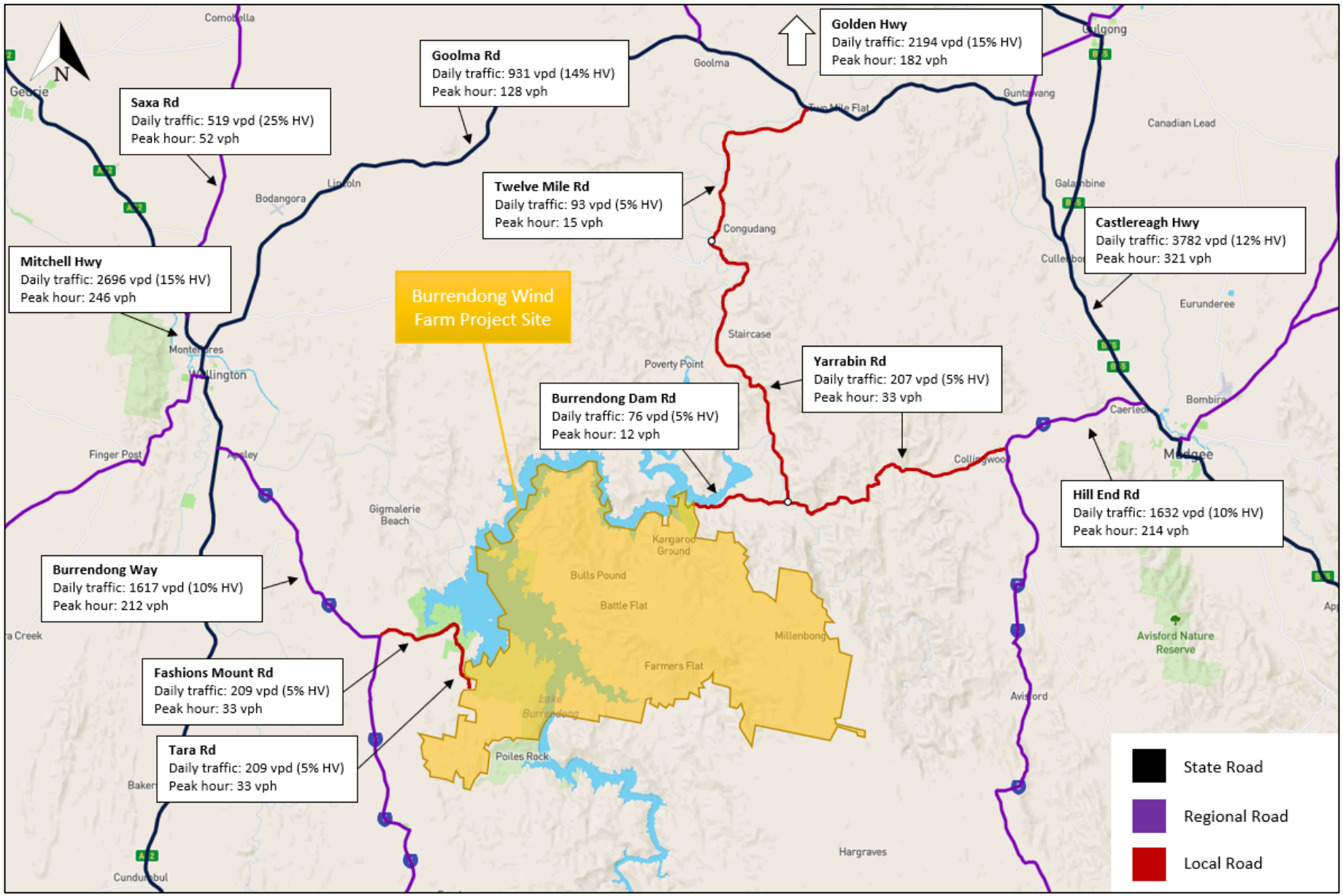
Source: TfNSW Traffic Volume Viewer (2022 – 2024)

A summary of the estimated background traffic volumes during the AM and PM site construction peak hours in 2025 is shown below in **Table 3.7**.

Table 3.7 – Estimated 2026 Background Traffic Volumes during Peak Hours for Construction Traffic

Road/ Location	2026 Peak Hour Volume (vph)	2026 Traffic Volume between 6:00am – 7:00am	2026 Traffic Volume between 6:00pm – 7:00pm
Mitchell Highway	246	93 vph	129 vph
Castlereagh Highway	321	122 vph	169 vph
Golden Highway	182	69 vph	96 vph
Goolma Road	128	49 vph	67 vph
Hill End Road	214	81 vph	112 vph
Saxa Road	52	20 vph	28 vph
Burrendong Way	214	81 vph	112 vph
Twelve Mile Road	15	6 vph	8 vph
Yarrabin Road	33	13 vph	17 vph
Burrendong Dam Road	12	4 vph	6 vph
Fashions Mount Road	33	13 vph	17 vph
Tara Road	33	13 vph	17 vph

Figure 3.6 – Map of Traffic Volumes



3.6 Crash History

TfNSW provides details of all recorded crashes in NSW within the latest 5-year reporting period (2020 – 2024) on the NSW Centre for Road Safety website.

The history of crashes on the regional and local roads which may be used by vehicles accessing the site are summarised below in **Table 3.8**.

Table 3.8 – Crash History (2020 – 2024) on Regional and Local Roads

	Non-casualty	Minor Injury	Moderate Injury	Serious Injury	Fatal	Total
Saxa Road	1	1	5	3	0	**10**
Burrendong Way	3	2	2	5	0	**12**
Fashions Mount Road	0	0	0	1	0	**1**
Tara Road	0	0	0	0	0	**0**
Yarrabin Road	0	0	2	0	0	**2**
Hill End Road	0	2	2	2	0	**6**
Twelve Mile Road	0	0	1	0	0	**1**
Burrel Creek Road	1	0	0	0	0	**1**
Burrendong Dam Road	0	0	1	0	0	**1**

Source: NSW Centre for Road Safety

The full details of these crashes are included in **Table 3.9**, with their locations depicted in **Figure 3.7**.

Of the 10 recorded crashes on Saxa Road, eight were off-road types of accidents (five on a straight section of road and three on a curve). The two remaining crashes comprised a right-angle crash at an intersection and a rear-end crash.

On Saxa Road, three crashes occurred around the Saxa Road/ Muronbung Road intersection, and the remaining crashes occurred at separate locations. The off-road types of accidents occurring at these locations in particular indicate that drivers on Saxa Road may be misjudging the bends in these locations and not slowing down to appropriate speeds to navigate the curves.

There are no apparent trends relating to the recorded crashes on Burrendong Way or Hill End Road, and there have been no recorded accidents within the latest 5-year reporting period (2020 - 2024) on Tara Road.

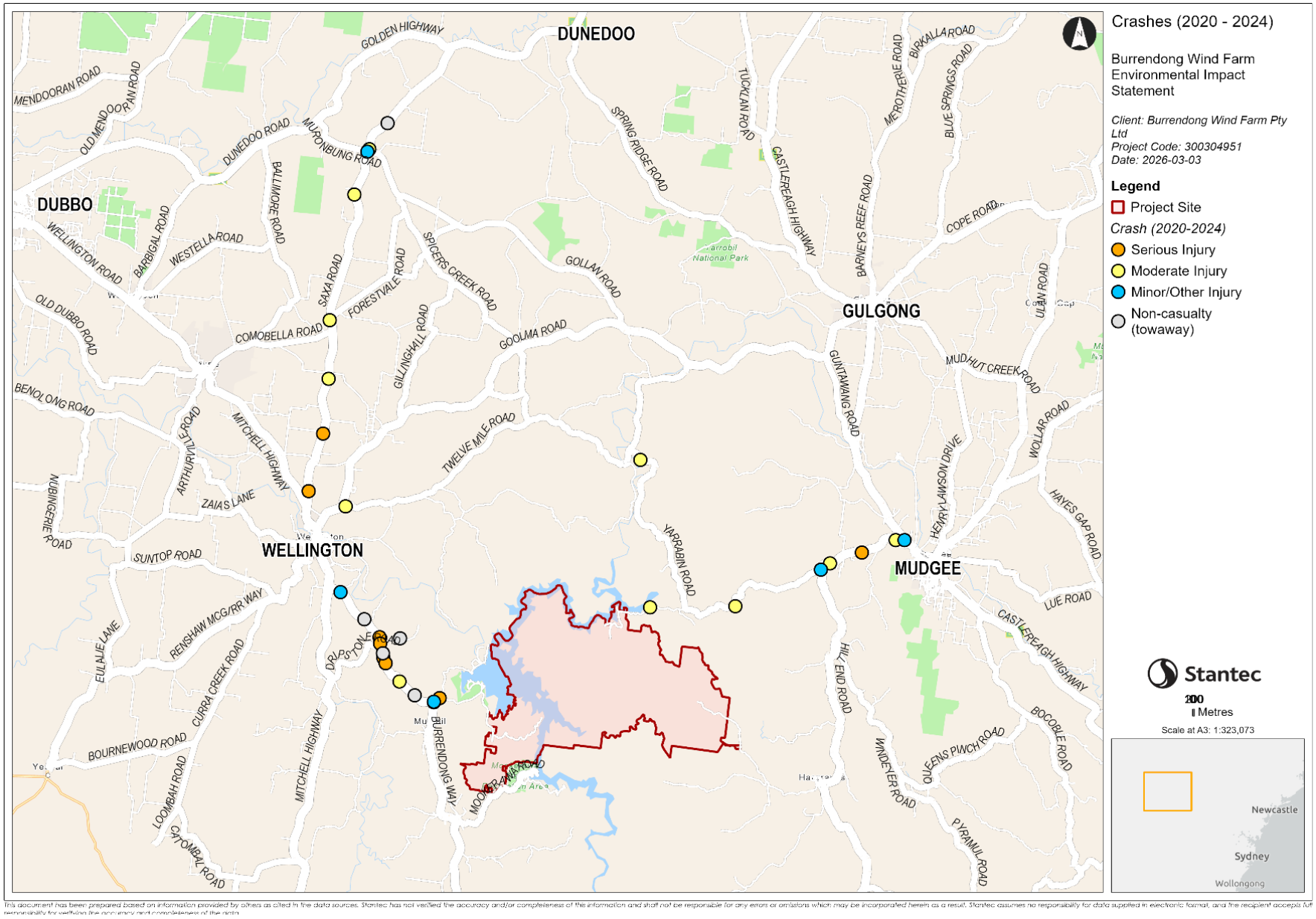
Table 3.9 – Crash History (2020 - 2024)

Reporting Year	Crash ID	Degree of Crash	RUM Code	RUM description	Type of location	Natural lighting	Latitude	Longitude	No. killed	No. injured
Saxa Road										
2021	1274239	Moderate Injury	71	Off rd left => obj	2-way undivided	Daylight	-32.245	148.9945	0	1
2021	1275621	Non-casualty (towaway)	67	Struck animal	2-way undivided	Daylight	-32.1827	149.032	0	0
2021	1275810	Minor/Other Injury	75	Off end of road	T-junction	Darkness	-32.2074	149.0096	0	1
2021	1279873	Moderate Injury	83	Off rt/rt bnd=>obj	2-way undivided	Darkness	-32.3562	148.9637	0	1
2021	1280206	Moderate Injury	75	Off end of road	T-junction	Dawn	-32.2074	149.0096	0	2
2022	1285301	Serious Injury	72	Off road to right	2-way undivided	Daylight	-32.4569	148.9523	0	1
2022	1290187	Moderate Injury	81	Off left/rt bnd=>obj	T-junction	Darkness	-32.2052	149.0119	0	1
2022	1294932	Serious Injury	70	Off road to left	2-way undivided	Daylight	-32.2066	149.0102	0	1
2024	1354453	Moderate Injury	84	Off right/left bend	2-way undivided	Daylight	-32.4083	148.9603	0	1
2024	1364285	Serious Injury	88	Out of cont on bend	2-way undivided	Darkness	-32.5076	148.9348	0	2
Burrendong Way										
2020	1224149	Moderate Injury	71	Off rd left => obj	2-way undivided	Daylight	-32.6994	149.0579	0	2
2020	1239596	Serious Injury	87	Off lft/lft bnd=>obj	2-way undivided	Daylight	-32.6584	149.0068	0	3
2020	1256063	Minor/Other Injury	20	Head on	T-junction	Daylight	-32.699	149.058	0	1
2021	1272339	Non-casualty (towaway)	85	Off rt/lft bnd=>obj	2-way undivided	Darkness	-32.6541	149.0064	0	0
2021	1273334	Serious Injury	81	Off left/rt bnd=>obj	2-way undivided	Daylight	-32.6399	149.0033	0	1
2022	1297393	Non-casualty (towaway)	67	Struck animal	2-way undivided	Darkness	-32.6234	148.9881	0	0
2022	1298012	Moderate Injury	82	Off right/right bend	2-way undivided	Daylight	-32.6799	149.0225	0	1
2022	1300631	Minor/Other Injury	81	Off left/rt bnd=>obj	2-way undivided	Daylight	-32.5983	148.9643	0	1
2022	1300637	Serious Injury	73	Off rd rght => obj	2-way undivided	Daylight	-32.663	149.0087	0	1
2022	1304183	Serious Injury	70	Off road to left	2-way undivided	Daylight	-32.6234	148.9881	0	3
2023	1328860	Serious Injury	83	Off rt/rt bnd=>obj	T-junction	Darkness	-32.6455	149.0037	0	1
2023	1330051	Non-casualty (towaway)	81	Off left/rt bnd=>obj	2-way undivided	Unknown	-32.6928	149.0381	0	0
Fashions Mount Road										

Reporting Year	Crash ID	Degree of Crash	RUM Code	RUM description	Type of location	Natural lighting	Latitude	Longitude	No. killed	No. injured
2022	1283420	Serious Injury	83	Off rt/rt bnd=>obj	2-way undivided	Daylight	-32.6959	149.0643	0	1
Yarrabin Road										
2021	1276363	Moderate Injury	67	Struck animal	2-way undivided	Daylight	-32.6237	149.3785	0	1
2022	1291023	Moderate Injury	71	Off rd left => obj	2-way undivided	Daylight	-32.4904	149.284	0	1
Hill End Road										
2020	1249819	Moderate Injury	71	Off rd left => obj	2-way undivided	Darkness	-32.5883	149.4794	0	1
2020	1250287	Serious Injury	83	Off rt/rt bnd=>obj	2-way undivided	Daylight	-32.5695	149.5493	0	1
2022	1292597	Minor/Other Injury	90	Fell in/from vehicle	2-way undivided	Daylight	-32.5698	149.5584	0	1
2023	1314629	Serious Injury	83	Off rt/rt bnd=>obj	2-way undivided	Darkness	-32.5795	149.5132	0	1
2023	1319381	Minor/Other Injury	83	Off rt/rt bnd=>obj	2-way undivided	Daylight	-32.5936	149.4696	0	1
2024	1340492	Moderate Injury	82	Off right/right bend	2-way undivided	Daylight	-32.5694	149.5492	0	3
Twelve Mile Road										
2020	1233541	Moderate Injury	82	Off right/right bend	2-way undivided	Daylight	-32.5222	148.973	0	1
Burrel Creek Road										
2024	1365732	Non-casualty (towaway)	87	Off lft/lft bnd=>obj	2-way undivided	Dusk	-32.6415	149.0248	0	0
Burrendong Dam Road										
2022	1291507	Moderate Injury	20	Head on	2-way undivided	Daylight	-32.622	149.2888	0	2

Source: NSW Centre for Road Safety

Figure 3.7 – Map of Crash History (2020 to 2024)



3.7 Crown Land

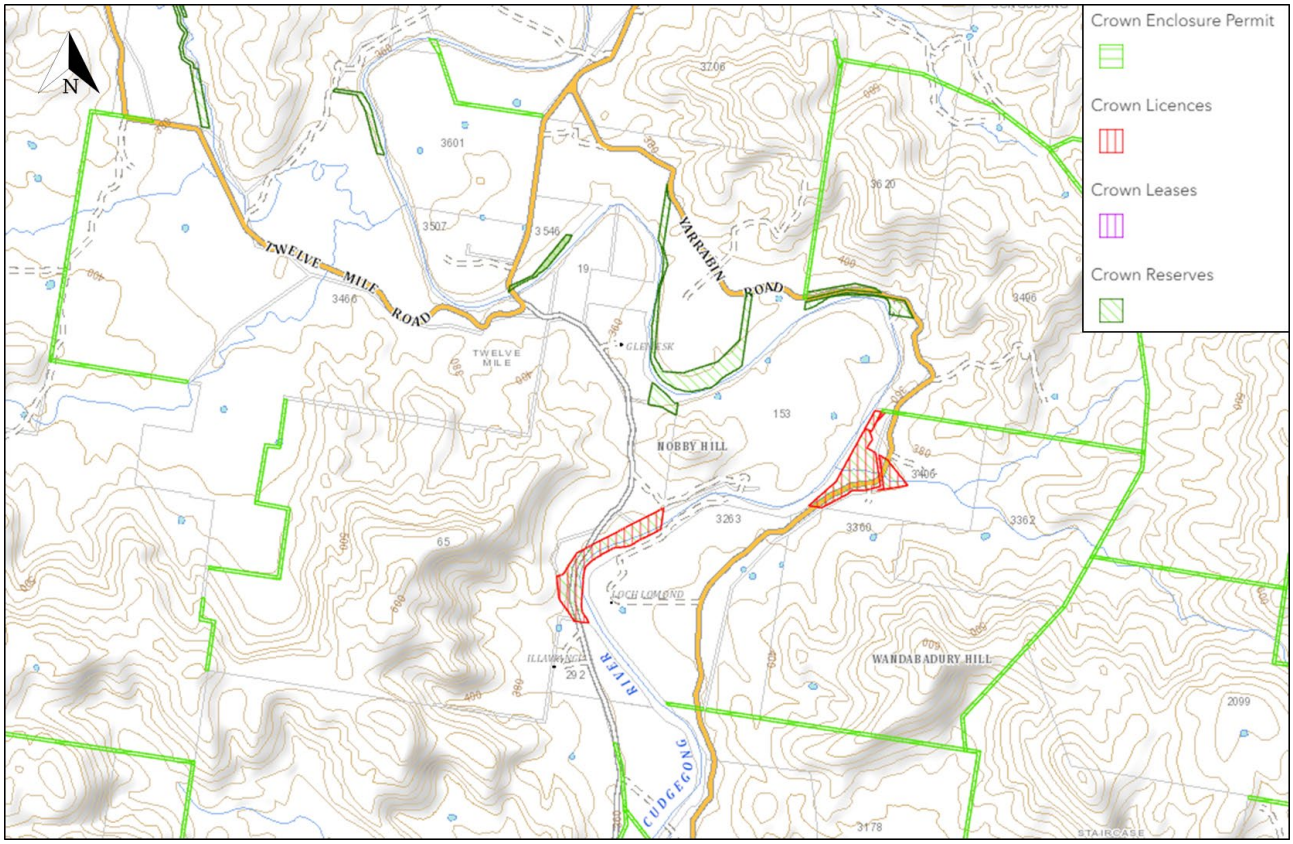
Crown roads were established during the settlement of NSW and are part of the state's public road network. Generally, Crown public roads provide access to freehold and leasehold land where little or no subdivision has occurred since the original Crown subdivision of NSW in the early nineteenth century.

As per the advice from Crown Land NSW in the SEARS requirements, crown land that will be impacted by the development will initially require consent to occupy by way of a Crown land licence, but power-lines will require an easement. Consent of the NSW Aboriginal Land Council is required before any licence/acquisition/easement can be considered. For Crown land already under Tenure or with Land Managers, all discussions for works/occupation will need to be with the Land Manager.

Locations of significance along the OSOM route on Yarrabin Road and Burrendong Dam Road are highlighted in **Figure 3.8** and **Figure 3.9**. The images show any existing crown enclosure permits, crown licenses, crown leases and crown reserves.

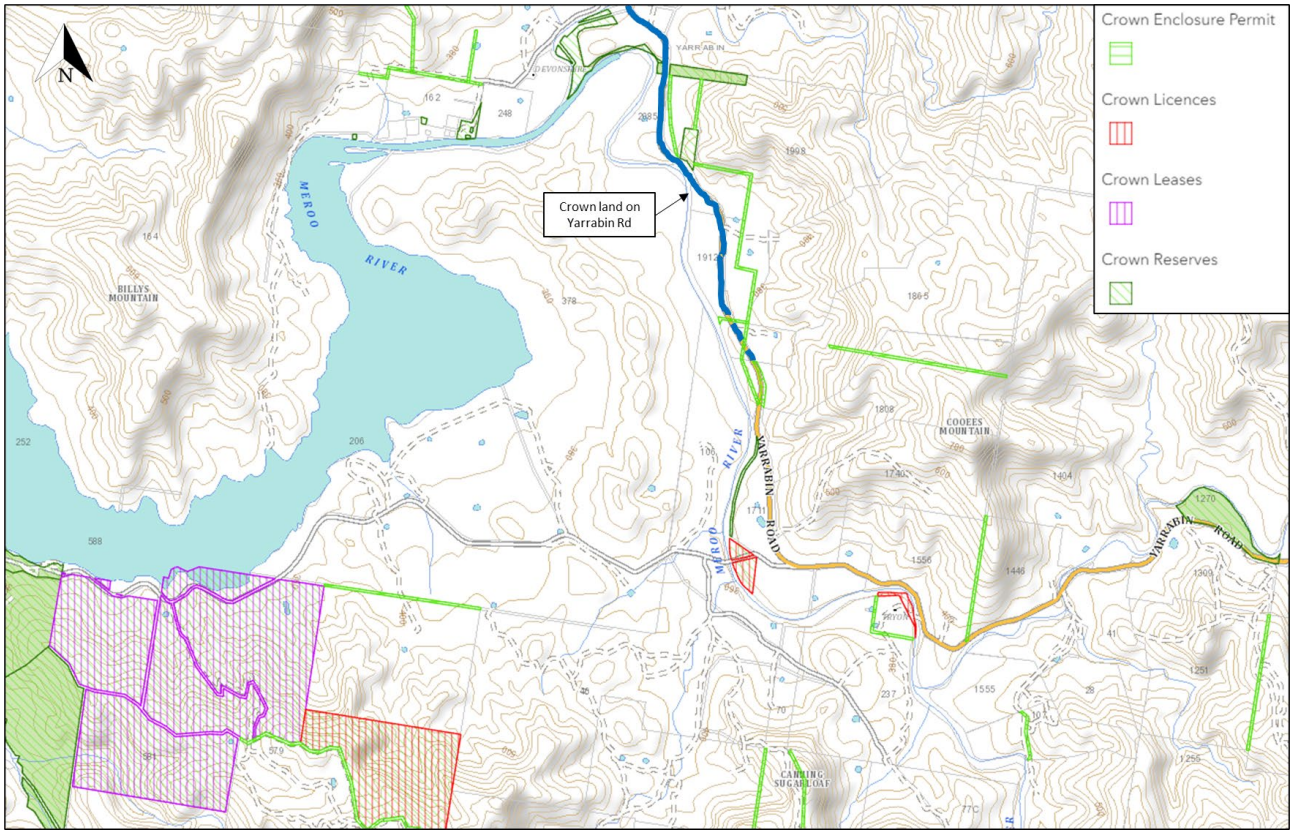
There is a section of crown land of particular significance without any permits or licenses on Yarrabin Road, north of Burrendong Dam Road, shown in **Figure 3.9**.

Figure 3.8 – Crown Land – Yarrabin Road, just south of Twelve Mile Road



Source: NSW Planning Portal Spatial Viewer

Figure 3.9 – Crown Land – Yarrabin Road, just north of Burrendong Dam Road



Source: NSW Planning Portal Spatial Viewer

4. Over-Size Over-Mass Transport Route Assessment

4.1 Overview

As discussed in **Section 2.3**, all wind turbine components for the Project will be shipped and stored at the Port of Newcastle until they ready to be transported to the Project Site.

Routes 1, 2 and 3 generally follow the same path from the Port of Newcastle to the intersection of Golden Highway/ Castlereagh Highway, Dunedoo, except for a slight detour for Route 2 to avoid the height restrictions of Denman Bridge. At the Golden Highway/ Castlereagh Highway intersection OSOM vehicles transporting the WTG blades (Route 1) will take a different route to OSOM vehicles transporting the remaining WTG components (Routes 2 and 3). This is due to Routes 2 and 3 not being able to accommodate the vehicles transporting the 82m blades.

Routes 1, 2 and 3 then recombine at the intersection of Goolma Road/ Twelve Mile Road, Two Mile Flat, situated north of the Project Site. Both routes use Twelve Mile Road, Yarrabin Road and Burrendong Dam Road to reach the site from the nearest State Road (Goolma Road – MR633).

The construction of the TWAF also involves oversize (but not over mass) vehicle deliveries for prefabricated accommodation units (see **Table 4.1**). However, these movements are expected to be limited in number and duration. Therefore, no significant impact is anticipated on the designated OSOM route. Coordination with relevant authorities and compliance with approved oversized travel conditions will ensure these movements are managed effectively and without disruption to the broader OSOM network.

The OSOM transport routes are shown in **Figure 4.1**.

It is assumed that OSOM vehicles will use the same routes on their return journey that were used to access the Project Site.

Table 4.1 – TWAF Vehicle Delivery Specifications

Vehicle Details	Weight (t)	Length (m)	Width (m)	Height (m)
Flatbed Trailer with "Wide Load" Notification and a Pilot Truck	6.5	14.4	3.25	**3**

Source: Ark Energy, 2026

4.2 Non-Approved OSOM Roads

In NSW, the National Heavy Vehicle Regulator (NHVR) has three separate gazette notices under which OSOM load carrying vehicles can operate. These are:

- Part A – NSW Class 1 Load Carrying Vehicles Notice (up to 3.5m wide, 4.6m high, 25.0m long, 5.5m rear overhang and total mass of 49.5t)
- Part B – NSW Schedule of the Multi-State Class 1 Load Carrying Vehicles Dimension Exemption Notice (up to 5.0m wide, 5.0m high, 30.0m long and 7.5m rear overhang)
- Part C – NSW Schedule of the Multi-State Class 1 Load Carrying Vehicles Mass Exemption Notice (up to 115.0t for rows of 8 tyres low loaders and up to 77.5t for rows of 4 tyres low loader combinations).

NHVR publishes the approved roads for OSOM vehicles on the OSOM Load Carrying Vehicles Network Map which is publicly available online.

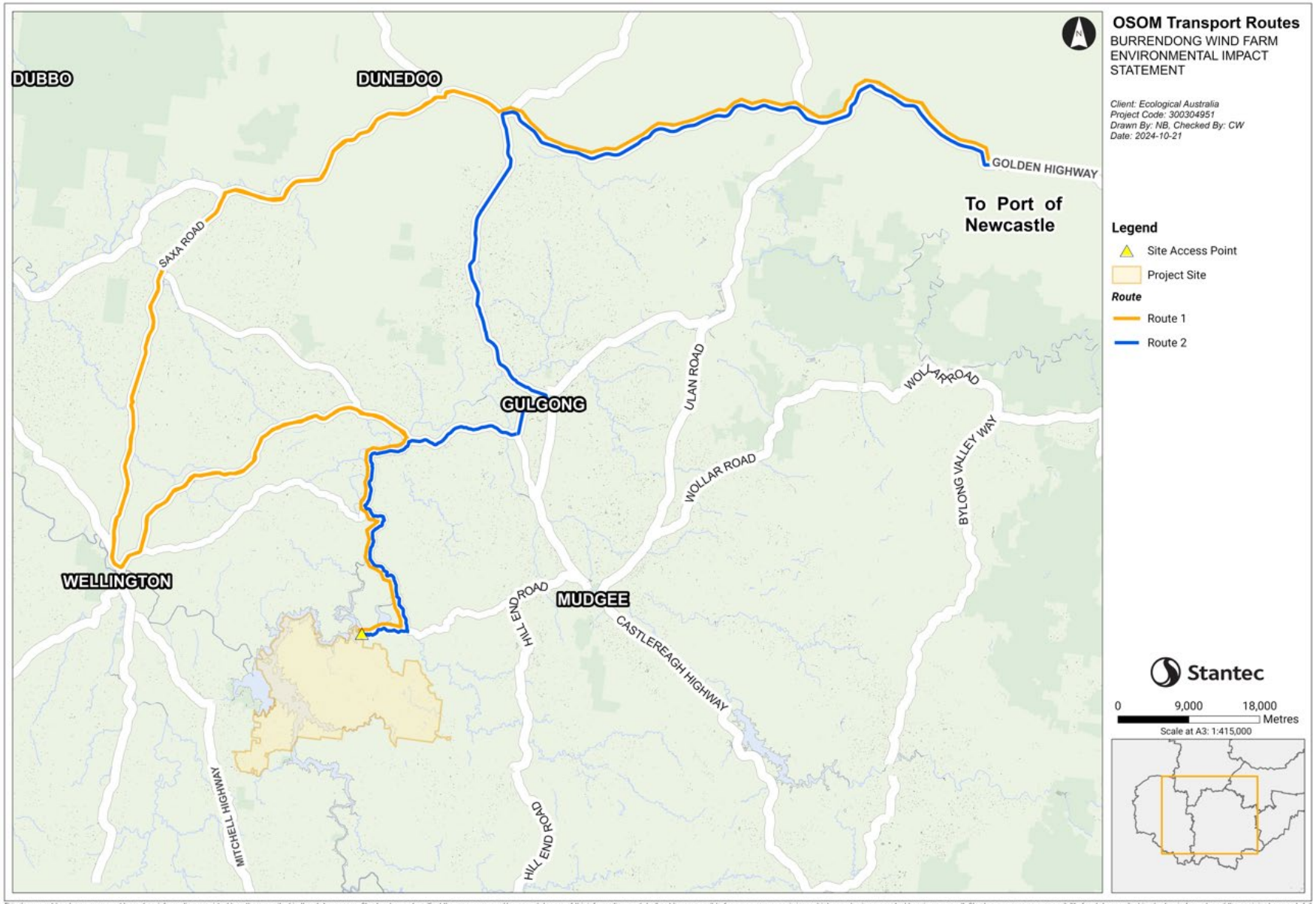
To gain approval to use non-approved OSOM roads for the Project, the impacted local Council should first be contacted and consulted, and then a Class 1 permit application should be submitted through the NHVR Portal.

Table 4.2 outlines the non-approved OSOM roads that are proposed to be used by OSOM vehicles for the Project, why they need to be used, and the impacted local Council.

Table 4.2 – List of Non-Approved OSOM Roads

Town	Impacted Local Government Area	Issue	Route	Detour Roads	Action/s Required
Denman	Muswellbrook Shire	Denman Bridge over Hunter River has a maximum height clearance of 5.6m and width clearance of 6.5m. Vehicles over these dimensions cannot travel across the bridge.	Route 2	• Bengalla Rd • Wybong Rd	Council to be consulted & permit application to NHVR.
Gulgong	Mid-Western Regional	Goolma Road is not an approved OSOM route between Fisher Street and Guntawang Road	Routes 2 and 3	• Goolma Rd	Council to be consulted & permit application to NHVR.
Twelve Mile & Yarrabin	Mid-Western Regional	Site access from the State Road Network.	Routes 1, 2 and 3	• Twelve Mile Rd • Yarrabin Rd • Burrendong Dam Rd	Council to be consulted & permit application to NHVR.

Figure 4.1 – OSOM Transport Routes near Project Site



4.3 Vehicle Specifications

Indicative dimensions and weights of the wind turbine components used in the swept path analysis from the Port of Newcastle to the Project Site are outlined below in **Table 4.3**. The table differentiates between the actual dimensions of the components and the dimensions of the possible transportation vehicles for each component.

The OSOM vehicles listed below cannot travel under any of the Class 1 Load Carrying Vehicle Exemption Notices, given they are all over 5.0 metres in height (Part B) and/or over 115 tonnes in weight (Part C).

Table 4.3 – OSOM Transport Vehicle Specifications

Component (Route)	Component Dimensions				Possible Transport Configuration	Transport Dimensions			
	L (m)	W (m)	H (m)	Weight (t)		L (m)	W (m)	H (m)	Weight (t)
Nacelle (3)	13.4	4.8	4.2	98.0	Prime mover with 10x8 platform trailer and backup truck	39.0	4.8	5.2	199.5
Drivetrain (3)	7.4	3.3	3.2	82.0	Prime mover with 8x8 platform trailer	32.0	4.5	4.9	144.5
Generators (3)	5.49	5.49	4.16	127.8	Prime mover with 10x8 platform trailer	30.0	5.5	5.3	183.5
Hubs (3)	4.6	4.1	3.8	50.0	Prime mover with 2x8 4x8 Low Loader	28.0	4.2	5.0	97.5
Blades (1)	82.0	4.5	3.8	30	Prime mover with 3x8-3x8 Extending blade trailer	94.0	4.5	5.3	84.5
Door tower section (2)	11.2	5.5	5.0	76	Prime mover with 2x8-4x8 Bookend	39.0	5.6	5.7	120.5
Mid Tower E (2)	15.1	5.0	5.0	76.5	Prime mover with 8x8 low platform	35.0	5.1	5.7	144.5
Mid Tower D (2)	17.4	5.0	4.6	75	Prime mover with 8x8 low platform	35.0	5.1	5.4	144.5
Mid Tower C (2)	18.2	4.6	4.3	71	Prime mover with Extending 8x8 Platform	37.0	4.7	5.6	144.5
Mid Tower B (3)	19.9	4.3	4.3	75	Prime mover with Extending 8x8 Platform	39.0	4.5	5.2	144.5
Mid Tower A (3)	28.9	4.3	4.3	73.5	Prime mover with 3x4 Dolly 3x8 Jinker	45.0	4.3	5.2	102.5
Top Towers (2)	36.8	4.3	3.7	64	Prime mover with 3x4 Dolly 3x8 Jinker	49.0	4.3	5.2	92.5
LG1750 carrier (3)	19.2	3.0	4.0	96	Prime mover with 10x8 platform trailer and backup truck	36.0	4.2	5.2	174.5
LTM1500 carrier (3)	21.0	3.0	4.0	96	Prime mover with 10x8 platform trailer and backup truck	36.0	5.0	5.2	174.5
Transformer A (3)	9.2	4.0	4.35	175	Prime mover with 10x8-10x8 Beamset and 4 backup trucks	120	6.5	5.2	324.5
Transformer B (2)	9.2	4.0	4.35	130	Prime mover with 12x8 Platform trailer and backup truck	45.0	4.3	5.4	222.5
Switchroom (2)	30.0	6.0	4.4	90.0	N/A	45.0	6.0	5.4	180.5

Source: Rex J Andrews, 2024

Table 4.3 also highlights which transport vehicles are considered as High Risk. To be classified as High Risk, the OSOM vehicle either exceeds 40 metres in length, 6 metres in width or 150 tonnes in total weight. The transport vehicles carrying the nacelle, generators, blades, tower sections, erection cranes, transformers and switchroom are considered to be High Risk.

4.4 Swept Path Route Study

Rex J Andrews has conducted a detailed swept path Route Study from the Port of Newcastle to the Project Site using an indicative transport vehicle carrying an 82m blade. The profile of the indicative 82m blade transport vehicle used in the assessment is shown in **Figure 4.3**.

Table 4.4 summarises the main findings of the Route Study and lists potential works required along the OSOM routes. The locations of the works are shown in **Figure 4.2**.

Some of these works have been proposed in previous EIS submissions. As detailed in Appendix M of Squdron Uungula Wind Farm EIS submission in May 2020, the OSOM vehicles transporting the 82m blades are proposed to follow an almost identical route from the Port of Newcastle to the Uungula Wind Farm site. The works required for the Project which have been previously considered for Uungula Wind Farm OSOM vehicles are noted in **Table 4.4**.

Upgrades on the route from the Port of Newcastle to Elong Elong and Beryl began in April 2025 and cover nineteen key locations to support transport of oversize components, including blades more than 85 metres long. The works are funded by the NSW and Australian governments and are expected to be mostly finished within twelve months. These upgrades are therefore likely to be in place before construction of the Burrendong Wind Farm which is still yet to be approved, however is predicted to commence in late 2027 or 2028.

Existing wind farms within close proximity to Project Site (notably Crudine Ridge Wind Farm and Bodangora Wind Farm) use blades less than 82m in length and as such, the proposed works for the Project were not required during the transport of the WTG components for these other wind farms.

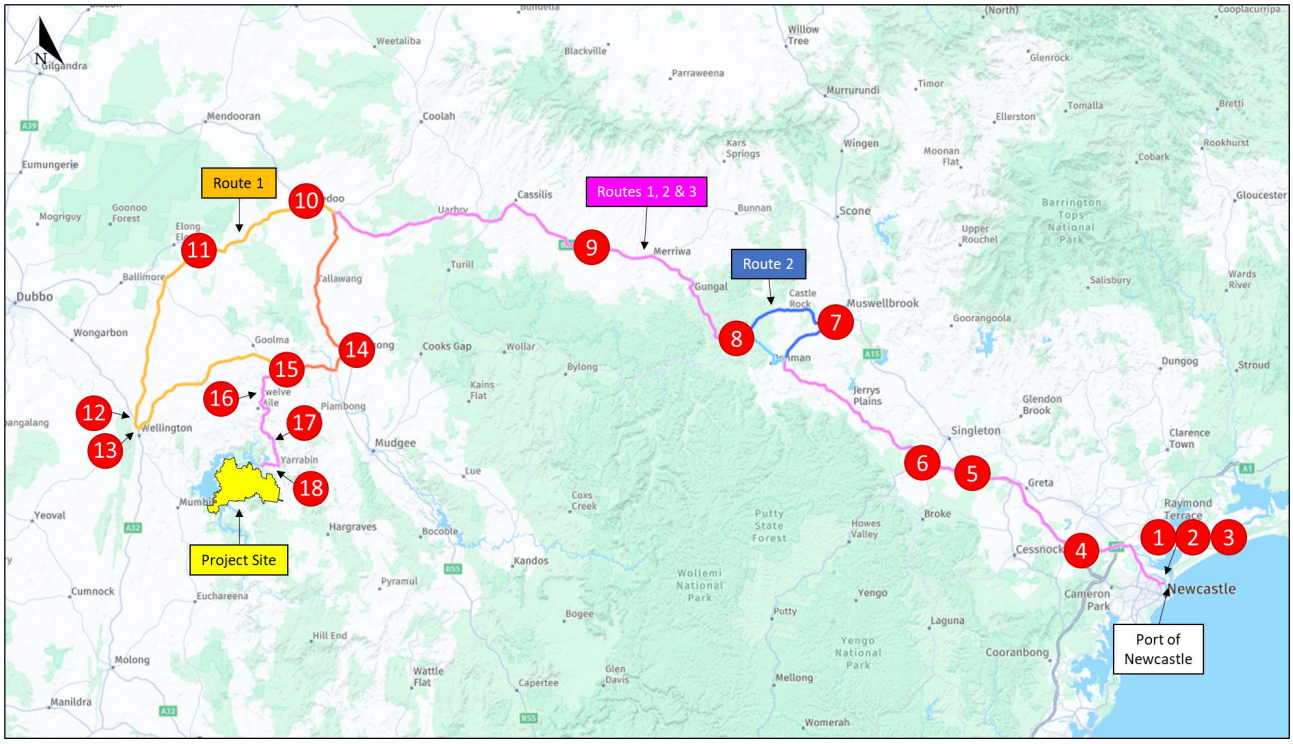
Table 4.4 – Summary of Works Required on OSOM Routes

#	Location	Potential Issues/ Works Required	Route/s	Proposed in Approved Project	To be undertaken by Port to REZ
1	Port of Newcastle	Fence and gate to be modified. Culvert to be extended and hardstand installed on outside of corner on entry and exit.	Routes 1, 2 & 3	Yes – Uungula Wind Farm	Yes, early 2026
2	George Street / Industrial Drive, Mayfield	Island to be made trafficable/replaced with painted lines.	Routes 1, 2 & 3	Yes – Uungula Wind Farm	Yes, early 2026
3	Industrial Drive / Maitland Road	Island to be made trafficable/replaced with painted lines. Signs relocated or made removable with flush bases.	Routes 1, 2 & 3	Yes – Uungula Wind Farm	Yes, early 2026
4	John Renshaw Drive / Hunter Expressway	Vegetation to be trimmed for blade oversail clearance. Traffic control and or police will be required to perform this procedure.	Routes 1, 2 & 3	Yes – Uungula Wind Farm	Yes, early 2026
5	New England Highway / Golden Highway	Light pole & signs to be relocated out of swept path. Roundabout to be made trafficable.	Routes 1, 2 & 3	Yes – Uungula Wind Farm	Yes, early 2025
6	Golden Highway / Putty Road	Signs to be relocated or made removable with flush bases. Island to be made trafficable/replaced with painted lines.	Routes 1, 2 & 3	Yes – Uungula Wind Farm	Yes, early 2025
7	Denman Road / Bengalla Road	Hardstand to be installed on inside of corner.	Route 2	No	Yes, mid 2026
8	Wybong Road / Golden Highway	Sign to be relocated or made removable with flush base & hardstand installed on inside of corner.	Route 2	No	Yes, mid 2026

#	Location	Potential Issues/ Works Required	Route/s	Proposed in Approved Project	To be undertaken by Port to REZ
9	Golden Highway	Several corners require vegetation to be trimmed for blade oversail clearance. Signs need to be relocated out of swept path and traffic control and police will be required on outsides of corners.	Routes 1, 2 & 3	Yes – Uungula Wind Farm	No
10	Golden Highway / Wargundy Street, Dunedoo	A no parking area will need to be placed on the exit of the corner. Blade to oversail rail signals or signals to be modified/relocated.	Routes 1, 2 & 3	Yes – Uungula Wind Farm	Yes, early 2026
11	Golden Highway / Saxa Road	Signs to be relocated. Culvert pipe to be extended and hardstand installed on outside of corner.	Route 1	Yes – Uungula Wind Farm	Yes, early 2026
12	Saxa Road / Mitchell Highway	Signs to be relocated out of swept path. Blade to oversail rail signals or signals to be modified.	Route 1	Yes – Uungula Wind Farm	No
13	Mitchell Highway / Goolma Road, Wellington	Signs to be relocated out of swept path. Hardstand to be installed on inside of corner.	Route 1	Yes – Uungula Wind Farm - mod 3	No
14	Castlereagh Highway / Goolma Road	The pole on the inside of the turn needs to be temporary removed. Spotter to guide load through this pinchpoint. Police and pilots to supply traffic control as per the procedure for this section of road.	Route 2 & 3	No	No
15	Goolma Road / Twelve Mile Road	Landholder permission required for blade oversail. Vegetation to be removed and hardstand installed on inside and outside of corners.	Routes 1, 2 & 3	No	No
16	Twelve Mile Road	Twelve Mile Road in its current condition is not suitable for the transport of wind turbine components. Twelve Mile Road requires upgrading in order to accommodate the swept path, vertical curve, weight and height requirements for all wind turbine components. A detailed survey and design is required. Landholder permissions and vegetation removal will be required.	Routes 1, 2 & 3	No	No
17	Yarrabin Road	Yarrabin Road in its current condition is not suitable for the transport of wind turbine components. Yarrabin Road requires upgrading in order to accommodate the swept path, vertical curve, weight and height requirements for all the wind turbine components. A detailed survey and design is required. Landholder permissions and vegetation removal will be required.	Routes 1, 2 & 3	No	No
18	Burrendong Dam Road	Burrendong Dam Road in its current condition is not suitable for the transport of wind turbine components. Burrendong Dam Road requires upgrading in order to accommodate the swept path, vertical curve, weight and height requirements for all wind turbine components. A detailed survey and design will be required. Landholder permissions and vegetation removal will be required. At entry to Burrendong, entry boom gates will need to be widened to at least 6.0 metres.	Routes 1, 2 & 3	No	No

Source: Rex J Andrews, 2024 | Ark Energy, 2026

Figure 4.2 – Locations of Works Required on OSOM Routes

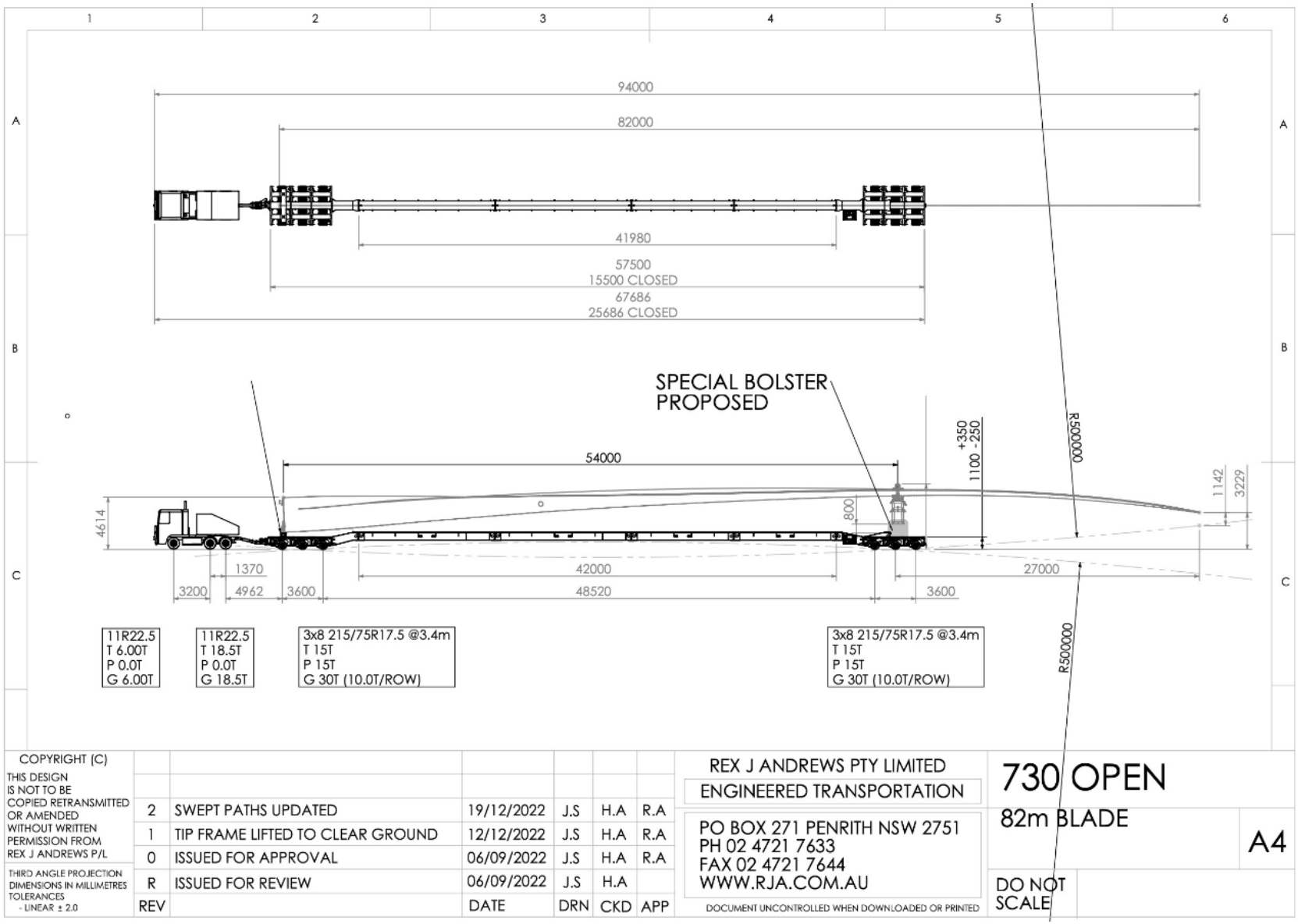


Base image source: Nearmap

The potential issues noted above will need to be addressed as part of the post-EIS Traffic Management Plan (TMP) and in the detailed design stage. Of particular significance is the road pavement width and quality along Twelve Mile Road, Yarrabin Road and Burrendong Dam Road. Mid-Western Regional Council have suggested that these roads be sealed and widened to 7.2m (6.2m for travel lanes and 0.5m shoulders on each side) to align with rural road width guidelines contained in *Austroads Guide to Road Design Part 3* (2021).

The 2024 Rex J Andrews Route Study is preliminary and uses indicative blade lengths and transport vehicle dimensions. A full route study, vertical curve study, vegetation assessment, floodway assessment, bridge assessment and overhead utilities scoping assessment would be required once the actual dimensions, weights and transport frames have been determined.

Figure 4.3 – Indicative Transport Vehicle for 82m Blade



Source: Rex J Andrews, 2024

5. Traffic Impact Assessment

5.1 Traffic Generation

Traffic generation for the Project can be broken down into four phases of the Project lifecycle – construction of TWAF, construction of wind turbines, operation, and decommissioning. The second construction phase will have the most significant impact on traffic generation, with minimal traffic movements expected over the operational life of the Project.

5.1.1 Phase 1 - Construction of TWAF

The TWAF is planned to be constructed over a two-month period prior to the commencement of the main wind farm construction works, extending the initial total project duration from 24 to 26 months. This phase will involve approximately 25 personnel and depending on the final design and selected contractor may involve the delivery of prefabricated accommodation units, each classified as oversize (not over mass) and details are summarised in **Table 4.1**.

During the second month, up to 68 truck deliveries are expected. Combined with daily worker travel, the total estimated traffic generation during this period is approximately 53 vehicle movements per day. This estimate is based on the following assumptions:

- 25 workers commuting to and from the site each day, however, assuming an average carpooling rate of two (2) workers per vehicle, generating 26 light vehicle movements (13 arrivals and 13 departures)[1]
- 68 truck deliveries spread over 22 working days (on month 2 of TWAF construction which is the worst case), resulting in an average of approximately six (6) oversize (not over mass) vehicle movements (three (3) arrivals and three (3) departures).

This level of traffic is considered moderate, short-term, and manageable, with no anticipated impact on the operational efficiency of the TWAF or the surrounding road network.

5.1.1.1 Internal TWAF

he internal traffic generation has been estimated during the weekdays (after typical working hours) and weekend scenarios and are summarised below.

Typical Weekday

- During the majority of the construction phase, a peak workforce of 225 non-local workers are expected, as outlined in **Table 2.1**. Based on industry experience from similar wind farm projects, an average carpooling rate of two workers per light vehicle is assumed, with some use of minibuses and utility vehicles (UTEs). It is also assumed that each UTE can accommodate up to three workers. This carpooling arrangement is expected to reduce daily vehicle trips between the TWAF and the construction site by approximately 75 movements.
- A proportion of workers (peak workforce) are also expected to make after-work trips to nearby towns such as Wellington for personal needs including groceries and dining. For this assessment, it is assumed that 35% to 40% of the workforce will undertake such trips, with an average of two people per vehicle. This results in an estimated 40 to 45 one-way vehicle trips over the weekday period which is conservative as peak workforce numbers are considered.
- These after-hours trips are anticipated to occur outside of peak traffic periods and are therefore not expected to have a significant impact on the surrounding road network.

Typical Weekend

- Weekend trips by TWAF residents are expected to be primarily non-work-related, such as visits to nearby towns including Wellington. For the purpose of this assessment, it is assumed that approximately 60 to 70% of the workforce may undertake such trips, with an average vehicle occupancy of two persons per car. This results in an estimated 68 to 79 one-way vehicle trips over the weekend period which is conservative as peak workforce numbers are considered.

5.1.2 Phase 2 – Construction of Project

The construction of a Project comprising of 70 WTGs is expected to take 24 months following the construction of the TWAF, and up to a maximum of 30 months. On average, this phase was estimated to generate approximately 151 one-way vehicle

[1] Note 13 vehicles have been rounded up from 12.5 vehicles (half of 25), which increases the total daily estimated light vehicle trips to 26 (each direction).

trips per day during the typical construction months (months 1-8, 11-14 and 22-24), and approximately 139 one-way vehicle trips per day during the OSOM transport period months (months 15-21). Across the entire 24-month construction program the average is 155 one-way vehicle trips per day (37% lower than the peak traffic generation rate during months 9-10) as summarised in

Table 5.2.

Across the construction phase, these traffic generation rates were expected to vary between a minimum of 88 vehicles/day at the start of construction, up to a maximum of 245 vehicles/day during months 9-10.

An indicative analysis of the construction traffic generation is shown in **Figure 5.1**, with **Figure 5.2** outlining the traffic generation on a daily and monthly basis. **Figure 5.3** shows the indicative two-year construction schedule used for the purpose of this analysis.

Light Vehicles (EIS)

It was anticipated that the average workforce on-site will be approximately 250 employees. During peak construction periods, this may increase up to a maximum of 375 employees. From previous experience in wind farm projects, the average carpooling rate is approximately 2 employees per light vehicle over 6 days a week, with a small number of minibuses used as well. On average, this would result in 125 vehicles going to and from the site each day.

As shown in

Table 5.2, light vehicles are estimated to make up approximately 83% of the total traffic generated during construction. The modal split between vehicle classes will fluctuate between various construction months.

Table 5.1 – Average Modal Split of One-Way Traffic Generation

Vehicle type	Average excluding OSOM transport period (months 1-8, 11-14 & 22-24)		Average during OSOM transport period (months 15-21)		Peak construction (months 9-10)	
	Average one-way trips	Percentage of traffic generation	Average one-way trips	Percentage of traffic generation	Average one-way trips	Percentage of traffic generation
Light vehicles	125 veh/day	83%	120 veh/day	86%	188 veh/day	77%
Heavy vehicles	26 veh/day	17%	16 veh/day	11%	57 veh/day	23%
Over-size over-mass vehicles	0 veh/day	0%	3 veh/day	3%	0 veh/day	0%
Total	**151 veh/day**	**100%**	**139 veh/day**	**100%**	**245 veh/day**	**100%**

Light Vehicles without TWAF (based CWAS workforce for TWAF)

However, since the EIS the proponent has reviewed the workforce numbers required for construction as outlined in New Construction Workforce Accommodation Strategy proposed by Ethos Urban in 2024, it is anticipated that the workforce on-site is approximately 130 employees. During peak construction periods, this may increase up to a maximum of 250 employees. From previous experience in wind farm projects, the average carpooling rate is approximately two employees per light vehicle over six days a week, with a small number of minibuses used as well. On average, this would result in 65 vehicles going to and from the site each day.

Table 5.2 summarises that light vehicles are estimated to make up approximately 81% and 69% on average and peak respectively of the total traffic generated during construction. The modal split between vehicle classes will fluctuate between various construction months.

Table 5.2 – Average Modal Split of One-Way Traffic Generation (based CWAS workforce, without TWAF)

Vehicle type	Average excluding OSOM transport period (months 1-8, 11-14 & 22-24)		Average during OSOM transport period (months 15-21)		Peak construction (months 9-10)	
	Average one-way trips	Percentage of traffic generation	Average one-way trips	Percentage of traffic generation	Peak one-way trips	Percentage of traffic generation
Light vehicles	65 veh/day	81%	120 veh/day	86%	125 veh/day	69%

Vehicle type	Average excluding OSOM transport period (months 1-8, 11-14 & 22-24)		Average during OSOM transport period (months 15-21)		Peak construction (months 9-10)	
	Average one-way trips	Percentage of traffic generation	Average one-way trips	Percentage of traffic generation	Peak one-way trips	Percentage of traffic generation
Heavy vehicles	26 veh/day	19%	16 veh/day	11%	57 veh/day	31%
Over-size over-mass vehicles	0 veh/day	0%	3 veh/day	3%	0 veh/day	0%
Total	**91 veh/day**	**100%**	**139 veh/day**	**100%**	**182 veh/day**	**100%**

Based on the above, during construction of the Project, the average and peak light vehicles generated without the TWAF within the surrounding road network is approximately 65 and 125 vehicles per day, respectively.

Light Vehicles with TWAF

As summarised in **Section 2.3**, the preliminary TWAF plan considers an average and peak of 130 and 250 FTE respectively and as based on the CWAS by Ethos Urban, the Project's non-local workforce which are anticipated to stay at the TWAF can be summarised:

- 90% of average workforce of 130 FTE = 117 FTE
- 90% of peak workforce of 250 FTE = 225 FTE

On the basis of the CWAS, it is concluded that there is a reduction of 90% of light vehicle trips on the surrounding road network as a result of the TWAF.

Summary of Traffic Generation

Table 5.3 shows the updated trip generation on the external road network considering the proposed TWAF with the assumption that 90% of workers reside in the TWAF site.

Table 5.3 – Comparison of One-Way Traffic Generation based on TWAF

Project Phase	Construction LV (excluding TWAF)	Trip Reduction due to Proposed TWAF (90% of Construction LV)	Resultant LV Generation (10% of Construction LV)
Average	65	**-58**	**7**
Peak	125	**-112**	**13**

Based on the above, during construction of the Project (i.e. Phase 2 following the first two months of constructing the TWAF), the average and peak light vehicles generated with the TWAF within the surrounding road network is approximately 7 and 13 vehicles per day, respectively.

Table 5.4 summarises the updated modal splits as a result of using the workforce numbers proposed in the CWAS by Ethos Urban with the TWAF being operational.

Table 5.4 – Average Modal Split of One-Way Traffic Generation (based CWAS workforce, with TWAF)

Vehicle type	Average excluding OSOM transport period (months 1-8, 11-14 & 22-24)		Average during OSOM transport period (months 15-21)		Peak construction (months 9-10)	
	Average one-way trips	Percentage of traffic generation	Average one-way trips	Percentage of traffic generation	Peak one-way trips	Percentage of traffic generation
Light vehicles	7 veh/day	21%	120 veh/day	86%	13 veh/day	19%
Heavy vehicles	26 veh/day	79%	16 veh/day	11%	57 veh/day	81%
Over-size over-mass vehicles	0 veh/day	0%	3 veh/day	3%	0 veh/day	0%
Total	**33 veh/day**	**100%**	**139 veh/day**	**100%**	**70 veh/day**	**100%**

Based on the above, the proposed TWAF is expected to reduce the traffic generation of LVs significantly on the external surrounding road network during the construction period by:

- an average of 7 light vehicle trips → average of 33 total vehicle one-way trips during construction,
- a peak of 13 light vehicle trips → peak of 70 total vehicle one-way trips during construction.

Figure 5.1 – Indicative Construction Traffic Generation for Trips Approaching the Site

Operation	Purpose	tonnes / load	total tonnage	Delivery Vehicle	Trips: as per all construction materials sourced externally
	General				
Construction Operations	Water delivery	15	na	Truck Tanker	6,240
	Fuel delivery	15	na	Truck Tanker	208
	Skip delivery	3	na	SM Flat Bed	156
	Portaloo Deliveries	12	na	L Low Loader	260
	Wind Farm Construction				
Site Set-Up	Miscelaneous Establishment Deliveries	5	na	L Low Loader	40
	Earthworks equipment delivery	30	na	H Low Loader	30
Road & Hard standings	Imported material for site roads capping (200mm)	30	87,690	Truck and Dog	3,215
	Imported material for crane hardstands (300mm)	30	27,195	Truck and Dog	997
	Imported material for construction site compound (350mm)	30	3,497	Truck and Dog	128
	Imported material for batching plant (350mm)	30	6,475	Truck and Dog	237
	Lime / Cement Stabilisation	60	3,746	Cement Delivery	62
	Subgrade improvement material / fill	30		Truck and Dog	-
Foundation Construction	Heavy equipment delivery	30	na	H Low Loader	10
	Misc works	5	na	SM Flat Bed	10
	Aggregate delivery to batching plant	30	75,600	Truck and Dog	2,520
	Concrete binder for batching	60	12,754	Cement Delivery	213
	Water delivery to batching plant	15	5,443	Truck Tanker	363
	Reinforcing steel delivery	30	3,710	HT Flat bed	124
	Foundation bolts or steel insert delivery	12	na	L Low Loader	70
	Concrete delivery to site (m3)	17	TBC	Redimix Concrete Truck	-
Turbine Components	Tool container delivery	15	na	L Low Loader	15
	WTG container delivery	25	na	SM Flat bed	88
	Tower container delivery	25	na	SM Flat bed	88
	Delivery of 2 top sections	50	na	Low loader - Towers	70
	Delivery of 2 middle top sections	50	na	Low loader - Towers	70
	Delivery of 2 middle bottom sections	50	na	Low loader - Towers	70
	Delivery of 2 bottom sections	50	na	Low loader - Towers	70
	Blades delivery - single blade transport	10	na	Low loader - Blade	210
	Nacelle and Transformer	80	na	Low loader - Nacelle	70
	Drive Train	80	na	Low loader - Drive Train	70
	Hubs + Spinner	15	na	L Low Loader	70
	Power module	24	na	H Low Loader	70
	Return Containers	25	na	HT Flat bed	350
	Escort Vehicles	na	na	4WD and commercial	1,540
Cable Installation	Cable delivery	15	na	L Low Loader	70
	Excavator delivery	30	na	H Low loader	8
	Cable laying equipment	15	na	L Low loader	2
	Cable Bedding Sand	30	8,940	Truck and Dog	298
Cranage	Terrain crane (130t)	130	na	H Low Loader	3
	Terrain crane (220t)	220	na	H Low Loader	4
	Terrain crane (500t)	500	na	H Low Loader	13
	Main Crane	30	na	H Low Loader	24
Overhead Transmission Line	Pole delivery	2	na	Semi trailer	138
	Associated work OHTL vehicles	5	na	Semi trailer	25
	Associated work OHTL vehicles	60	na	Medium rigid	25
	Associated work OHTL vehicles	3	na	Medium rigid	25
	Internal Sub Station Construction				
Sub Station Civils	Lime / Cement Stabilisation	17	83	Redimix Concrete Truck	2
		30	2,775	Truck and Dog	62
	Imported Stone for substation compound	30	7,516	Truck and Dog	62
Sub Station Electrical	Transformer delivery - substation	130	130	Low loader - Trans	2
	Switchgear etc.	15	na	L Low Loader	4
	Misc electrical equipment	5	na	SM Flat Bed	1
	Switchgear cable and pylon delivery	24	450	H Low Loader	2
	Operations building	15	12	L Low Loader	3
	Operational Infastructure				
Operational Structures			na	Six axle articulated	16
			na	L Low Loader	8
			na	4WD and commercial	44
Decommission of Temprary Structures			na	Six Axle Articulated	16
			na	L Low Loader	8
			n/a	4WD and commercial	44
Light vehicle traffic	Workers and Visitors			Vans, cars	78,000
	Misc small tools etc.			Light goods van	200
OSOM traffic	Total estimated OD Traffic (one-way)				770
Heavy vehicle traffic	Total estimated HV Traffic (one-way)				16,197
	Total estimated traffic for project (one way delivery)				**96,639**

Notes: (1) OSOM vehicle calculations based on 70 wind turbines.
(2) One-way trips over the two-year construction period are shown. Total trips over the construction period will be double.

Figure 5.2 – Indicative Daily and Monthly Construction Traffic Generation

Access Route	Vehicle Type		Access per month (Trips)																							
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
All	Truck Tanker	Heavy Vehicle - MRV / HRV	269	269	269	269	269	269	269	321	321	321	321	321	321	321	269	269	269	269	269	269	269	269	269	269	6811
	SM Flat Bed	Heavy Vehicle - MRV	7	7	7	7	7	7	7	8	8	8	8	8	8	8	32	32	32	32	32	32	32	7	7	7	341
	HT Flat Bed	Heavy Vehicle - HRV	0	0	0	0	0	0	0	18	18	18	18	18	18	18	50	50	50	50	50	50	50	0	0	0	474
	L Low Loader	Heavy Vehicle - HRV	11	11	11	11	11	11	11	21	21	21	21	31	31	31	23	23	23	23	15	15	15	12	12	11	425
	H Low Loader	Heavy Vehicle - 19m Semi Trailer	10	10	10	0	0	0	6	8	8	8	8	9	9	3	11	11	11	11	10	10	10	0	0	0	162
	Truck and Dog	Heavy Vehicle - 19m Truck & Dog	0	0	0	654	654	654	654	1032	1032	1032	378	420	420	420	43	43	43	43	0	0	0	0	0	0	7520
	Low Loader Towers	OSOM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	40	40	40	40	40	40	0	0	0	280
	Low Loader Blade	OSOM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	30	30	30	30	30	30	0	0	0	210
	Low Loader Nacelle	OSOM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	10	10	10	10	10	10	0	0	0	70
	Low Loader Drive Train	OSOM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	10	10	10	10	10	10	0	0	0	70
	Cement Delivery	Heavy Vehicle - HRV	0	0	0	9	9	9	9	39	39	39	30	30	30	30	0	0	0	0	0	0	0	0	0	0	275
	Redimix Concrete Truck	Heavy Vehicle - HRV					2																				2
	4WD and Commercial	Light Vehicle - B99	1989	1998	1998	4013	4052	4013	4052	4845	4884	4884	3805	3896	3896	3896	3479	3128	3128	3128	2955	2955	2955	2007	2007	1989	79953
	Semi Trailer	Heavy Vehicle - 19m Semi Trailer	0	0	0	0	0	0	0	0	23	23	23	23	23	23	23	0	0	0	0	0	0	0	0	0	163
	Medium Rigid	Heavy Vehicle - MRV	0	0	0	0	0	0	0	0	7	7	7	7	7	7	7	0	0	0	0	0	0	0	0	0	50
	Six axle articulated	Heavy Vehicle - 19m Semi Trailer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	9	9	5	32
	Daily Total (Assuming 26 operating days per month)		88	88	88	191	192	191	193	242	245	245	178	183	183	183	155	140	140	140	132	132	132	89	89	88	
	Monthly Total		2285	2294	2294	4962	5003	4962	5007	6291	6360	6360	4618	4763	4763	4757	4027	3645	3645	3645	3423	3423	3423	2303	2303	2280	96838

Notes: (1) One-way trips over the two-year construction period are shown. Total trips over the construction period will be double.

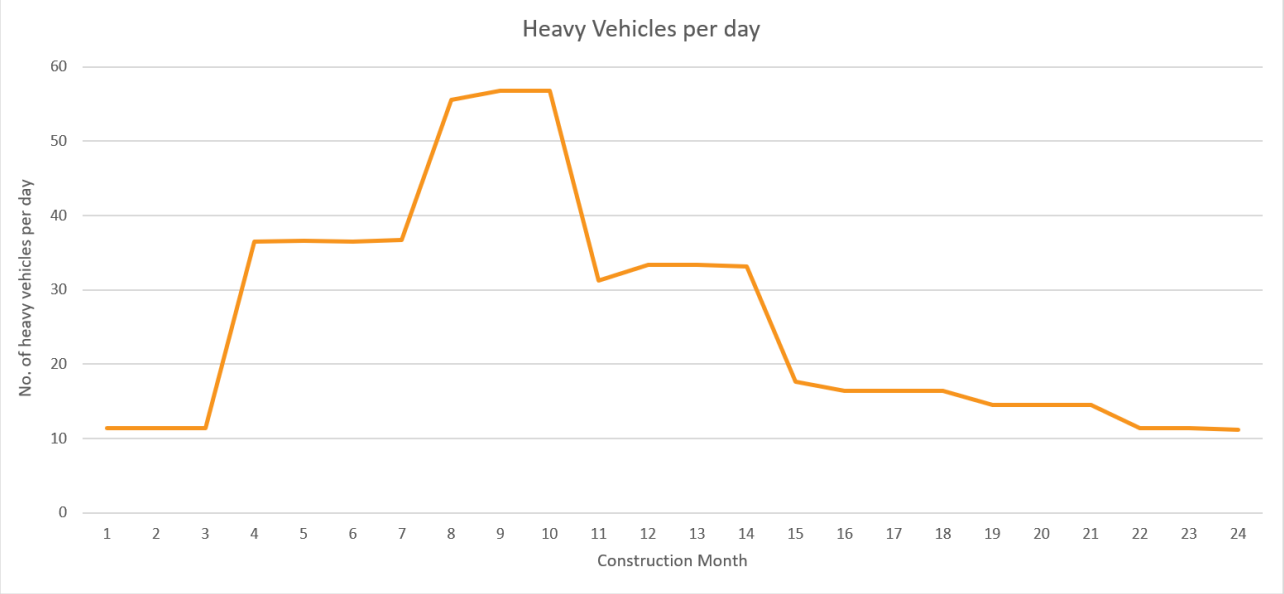
Figure 5.3 – Indicative Two-Year Construction Schedule

Access Route	Category	Purpose	Construction Month																								
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
All	Construction Operations	General	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	24
	Preliminary Transport	Management	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	24
		Employee		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
	Wiind Farm Construction	Site Set Up	✓	✓	✓																						3
		Establish Site Access	✓	✓	✓	✓	✓																				5
		Roads and Hard Standings				✓	✓	✓	✓	✓	✓	✓															7
		Foundation Construction								✓	✓	✓	✓	✓	✓	✓											7
		Cables and Reticulation												✓	✓	✓	✓	✓	✓	✓							7
		Turbine Components															✓	✓	✓	✓	✓	✓	✓				7
		Cranage															✓	✓	✓	✓	✓	✓	✓				7
	Sub-Station Construction	Sub Station Civils							✓	✓	✓	✓	✓	✓	✓												7
		Sub Station Electrical								✓	✓	✓	✓	✓	✓	✓											7
		Transmission Lines									✓	✓	✓	✓	✓	✓	✓										7
	Operational Infastructure	General																			✓	✓	✓	✓	✓		5
		Decommision of Temprary Structures																						✓	✓	✓	3

Heavy Vehicles

Heavy vehicle deliveries will also fluctuate over the 24-month construction period. Months 9-10 are expected to generate the most heavy vehicle deliveries for the construction of the Project foundations and electrical substations. It is anticipated that there will be 245 daily one-way traffic movements during this period, 57 of which will be heavy vehicles (23%).

Figure 5.4 – Daily Heavy Vehicle Traffic Generation of Phase 2 (Construction)



Over-size Over-mass (OSOM) Vehicles

The delivery of the WTG components on OSOM vehicles typically only occurs during a subset of the overall construction period, approximately between months 15-21. To minimise the impact on the road network, OSOM deliveries are likely to be grouped together on particular nights to avoid peak hours and local traffic during the day (subject to Council and TfNSW approval). Similar WTG transportation journeys in the past have occurred between 10pm – 5am. On average, it is estimated that there will be 3 OSOM vehicle journeys on 6 nights per week over a 7-month period.

5.1.3 Phase 3 - Operational Phase

The operational phase of a Project is generally between 25-30 years. Routine maintenance is likely to be carried out by 10-15 employees during project operations, typically utilising local professionals or professionals relocating to the region to fill these roles.

Assuming each employee drives themselves to and from the Project Site, the daily traffic generation would equate to 20-30 trips. Inbound trips are likely to coincide with the network AM peak period, whilst outbound trips are likely to coincide with the network PM peak period.

5.1.4 Phase 4 - Decommissioning Phase

The decommissioning phase after 25-30 years of operation would conceptually generate a similar or lesser number of trips than the construction phase. This phase would have a significantly reduced workforce and less traffic generation of heavy vehicles. For example, heavy vehicles required for concrete pours during the construction phase will not be required in the decommissioning phase.

Traffic management controls will need to be considered at the decommissioning stage to mitigate any traffic and transport impacts. This may include the timing of inbound and outbound heavy vehicle and OSOM trips to avoid network peak periods.

5.2 Distribution and Assignment

5.2.1 Construction Traffic Routes

Both light and heavy vehicles will be able reach the primary site access point via two routes. From Mudgee, vehicles will turn off from Castlereagh Highway (State Road No. 18) and reach the site via Hill End Road, Yarrabin Road and Burrendong Dam Road. From the Dubbo/ Wellington direction, vehicles will turn off from Goolma Road (State Road No. 633) and reach the Project Site via Twelve Mile Road, Yarrabin Road and Burrendong Dam Road.

There will also be a small number of light and heavy vehicles needing to access the western side of Lake Burrendong to construct a switchyard and gantry structures to support powerlines (i.e. the secondary site access). From Mudgee, vehicles will use Castlereagh Highway, Goolma Road, Mitchell Highway, Burrendong Way, Fashions Mount Road and Tara Road. From the Dubbo/ Wellington direction, vehicles will use a similar route via Mitchell Highway and Burrendong Way.

Regarding the operation of the TWAF, no change is proposed to the distribution, except for light vehicle trip distribution. The 10% local workers that will be sourced from the study area will be commuting to the site using light vehicle.

- Light vehicles for the workers coming from outside the wind farm and heavy vehicles will access the site via Hill End Road, Yarrabin Road, and Burrendong Dam Road from Mudgee, and via Goolma Road, Twelve Mile Road, and Burrendong Dam Road from Dubbo/Wellington.
- Light vehicles for the workers within the wind farm boundary will access various parts of the wind farm site via internal site access tracks.

These routes are shown in **Figure 5.5**.

5.2.2 Sourcing of Materials

It is assumed that 50% of raw materials needed for the construction of roads, hardstands and foundations (such as sand and gravel) will be sourced from the Project Site, predominantly coming from the WTG foundation excavation. The other 50% of raw materials will be imported from a number of suitable quarries in the local area.

Potable water may be treated on site from non-potable water sources located close to site or sourced from the municipal water supply and transported to the site using road registered water trucks. Water that does not need to be of potable quality will be sourced from water storages in the region and transported to the Project Site using road registered water trucks.

Overall, the majority of materials will be sourced locally wherever possible.

5.2.3 Origins and Destinations

As discussed previously, the Project is anticipated to require 130 Full-Time Equivalent (FTE) employees on average. Based on similar-sized wind farm projects, it is estimated that 10% of these workers (13 FTE workers) will be sourced from the local area (within a 120-minute drive of the site) and the other 90% would stay at the TWAF.

Table 5.5 provides estimated origin and destination locations for local employees in the area based on 2023 labour force figures, with approximately 70% of the local workforce expected to come from Dubbo Local Government Area (LGA) and 30% to come from Mid-Western LGA.

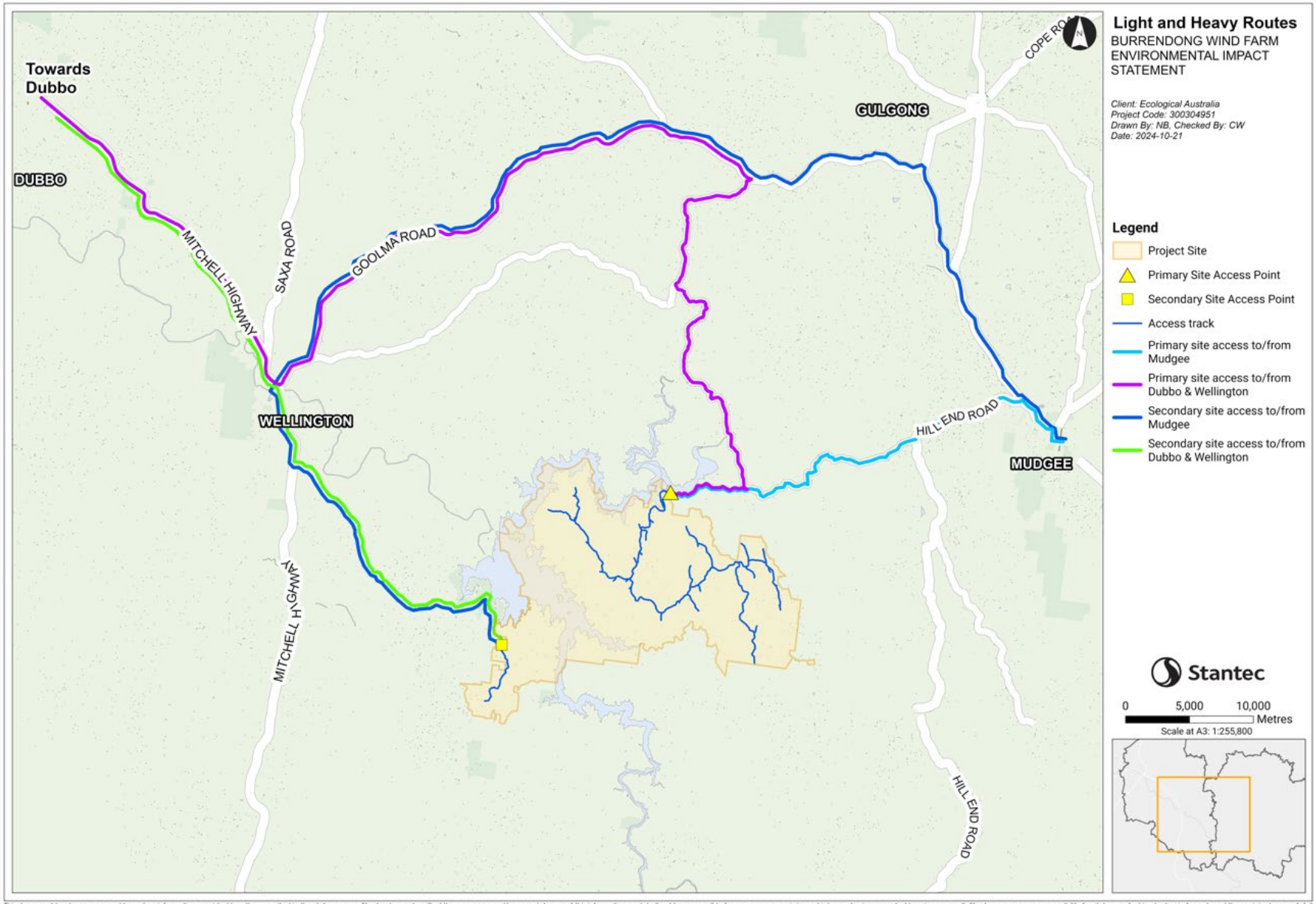
Table 5.5 – Origin/ Destinations of Local Employees

Local Government Area	Township/s	Travel Route	Labour Force[1]	% Local Staff	Local Staff
Dubbo	Dubbo, Wellington	Twelve Mile Road	31,190	70.0	67
Mid-Western	Mudgee	Hill End Road	13,290	30.0	28
		Total	**44,480**	**100%**	**95**

[1] Source: Australian Government Department of Education, Skills and Employment, Small Area Labour Markets, March Quarter 2023

For the purpose of this study, it has been assumed that all non-local staff will be accommodated within the TWAF and hence there will be minimal to no construction worker traffic anticipated to come from the surrounding local townships other than the ones identified in **Table 5.5**. Additionally, while it is highly likely that a fraction of workers from the local townships will be accommodated within the TWAF as well, it has been assumed that 100% of the local workers will reside in their usual place of residence and travel to the site daily.

Figure 5.5 – Light and Heavy Vehicles Trip Distribution



5.2.4 Traffic Assignment

Assuming construction hours of 7:00am – 6:00pm, the majority of employees (in light vehicles) would be expected to be travelling towards the site in the hour before construction commences (i.e. 6:00am – 7:00am) and departing the site in the hour after construction finishes for the day (i.e. 6:00pm – 7:00pm). For the purpose of this site peak hour assessment, 100% of light vehicles are assumed to be inbound in the AM site peak hour, with 100% of light vehicles outbound in the PM site peak hour.

Heavy vehicles deliveries are assumed to be evenly distributed throughout an 11-hour working day due to material arrivals scheduled over the course of a day.

As shown in **Figure 5.2**, the period with the highest traffic generation will be months 9 and 10, with 245 trips entering the Project Site and 245 trips leaving the Project Site in a single day (total of 490 trips).

However, following the introduction and operation of the TWAF, the trips entering and exiting the Project Site has decreased to 70 trips entering/ leaving the site which results in an updated total of 140 trips.

Table 5.6 outlines the peak hour traffic generation for light and heavy vehicles during months 9 and 10.

Table 5.6 – Peak Hour Traffic Generation (Months 9-10) with TWAF

Vehicle Type	Total Trips / day	Peak Hour Factor	Total Peak Hour Movements
Light vehicles	26	50% (1)	13
Heavy vehicles	114	9.1% (2)	10
Total	**140**		

Notes: (1) Worst case scenario, assuming all one-way trips occur during the peak hour
(2) Assuming heavy vehicle movements are spread evenly over an 11-hour work day

It is noted, however, that the site peak hours are unlikely to overlap with the network peak hours. The site peak hours will consist of only light vehicles travelling to/ from the site in the hours before and after construction. The breakdown of site peak hour traffic generation is shown below in **Table 5.7**.

Table 5.7 – Site Peak Hour Traffic Generation (Months 9-10) with TWAF

Vehicle Type	Total Peak Hour Movements	AM Peak (In / Out)	PM Peak (In / Out)
Light vehicles	13	13 in / 0 out	0 in / 13 out

In the network peak hours (likely to be within construction work hours), it is anticipated there may be up to 10 heavy vehicle peak hour movements (assumed to be 5 inbound, 5 outbound). During these network peak hours, it is also assumed there would be a negligible number of light vehicle movements (<5%), given most employees would already be on-site. Given this low amount of traffic generated by the site during the network peak hours, this assessment will focus on the site AM and PM peak hours.

It is assumed that the AM and PM peak hour traffic generation rates will be assigned to the impacted roads based on the origin / destination split outlined in **Section 5.2.3**. These calculations are detailed below in **Table 5.8**. It has also been assumed that during Months 9-10, 10% of the traffic generation will access the western side of the development, with the remaining 90% accessing the primary access point on the eastern side.

Table 5.8 – Peak Hour Traffic Generation on Impacted Roads (Months 9-10)

Road	Origin %	AM Peak (In / Out)	PM Peak (In / Out)	Total Peak Hour Traffic Generation
Burrendong Way	10%	1 veh / 0 veh	0 veh / 1 veh	1 veh/h
Mitchell Highway	30%	3 veh / 0 veh	0 veh / 3 veh	3 veh/h
Goolma Road	34%	4 veh / 0 veh	0 veh / 4 veh	4 veh/h
Twelve Mile Road	27%	3 veh / 0 veh	0 veh / 3 veh	3 veh/h
Hill End Road	63%	6 veh / 0 veh	0 veh / 6 veh	6 veh/h

Road	Origin %	AM Peak (In / Out)	PM Peak (In / Out)	Total Peak Hour Traffic Generation
Burrendong Dam Road	90%	9 veh / 0 veh	0 veh / 9 veh	9 veh/h
Fashions Mount Road	10%	1 veh / 0 veh	0 veh / 1 veh	1 veh/h
Tara Road	10%	1 veh / 0 veh	0 veh / 1 veh	1 veh/h

Notably, that the traffic generation itemised in **Table 5.9** takes into consideration the TWAF that accommodates non-local workers within the project site.

5.3 Cumulative Traffic Impacts

There are a number of major renewable energy projects in close proximity to the Project Site which may result in cumulative traffic impacts.

5.3.1 Construction Stage

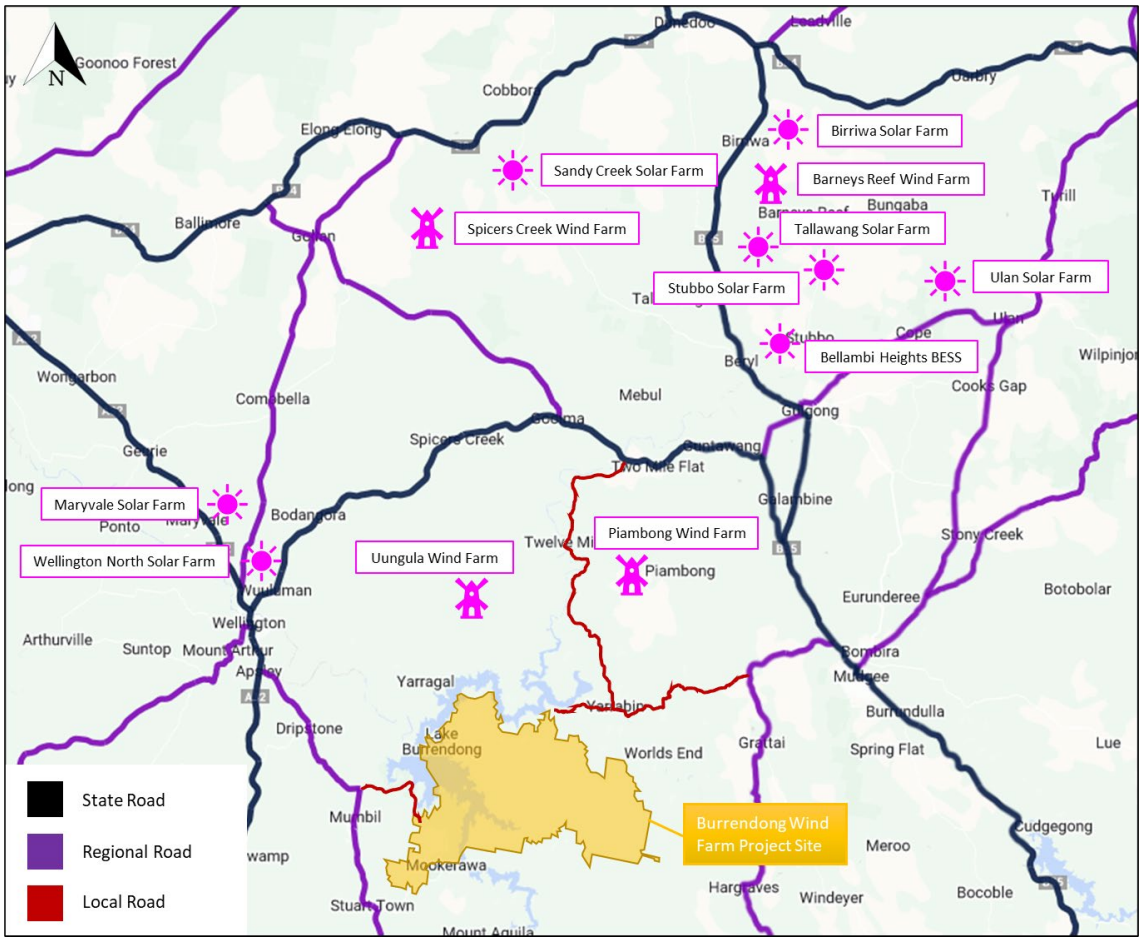
Light and Heavy Vehicles

Known renewable energy projects in the region that are either under construction or in the pre-construction stage include:

- Piambong Wind Farm (indicatively 93 wind turbines) – initial planning stage (construction expected to commence in 2026).
- Spicers Creek Wind Farm (122 wind turbines) – approved.
- Sandy Creek Solar Farm (up to 750 MW) – under assessment by DPHI.
- Ulan Solar Farm (up to 50 MW) – EIS being prepared.
- Bellambi Heights Battery Energy Storage System – approved.
- *Burrendong Wind Farm (70 wind turbines) – under assessment.*
- Birriwa Solar Farm (up to 600 MW) – approved.
- Tallawang Solar Farm (up to 500 MW) – approved (expected completion in 2026).
- Maryvale Solar Farm – construction commenced 28 July 2025.
- Uungula Wind Farm – currently under construction (expected completion in 2026).
- Stubbo Solar Farm – construction complete.
- Wellington North Solar Farm – operational.

The locations of these major development sites are shown in **Figure 5.6**.

Figure 5.6 – Major Renewable Energy Sites near the Project



Base image source: TfNSW Road Network Classifications Map

As Burrendong Wind Farm is yet to be approved, it is predicted that construction may commence later in late 2027 or 2028.

Both Ungula Wind Farm and Maryvale Solar Farm commenced construction on 31 March 2025 and 25 July 2025 respectively and it is likely that these sites will be close to operational by the time Burrendong Wind Farm commences construction. Though for the purposes of a cumulative traffic assessment, we have assessed a worst-case scenario and assumed that the construction of Ungula Wind Farm and Maryvale Solar Farm will coincide with the Project's construction months with the highest traffic generation (months 9 and 10).

Assuming the overlap of construction periods, Goolma Road (between Mitchell Highway and Twelve Mile Road) and Mitchell Highway (between Dubbo and Wellington) may experience a cumulative construction traffic increase from Burrendong Wind Farm, Uungula Wind Farm and Maryvale Solar Farm. Based on previous traffic assessments, Uungula Wind Farm will generate 240 light vehicle trips per day on Goolma Road and 120 light vehicle trips per day on Mitchell Highway (on average). Maryvale Solar Farm will generate 150 light vehicle trips per day, with only half of those trips assumed to travel on Mitchell Highway to/from Dubbo (i.e. the other half would be generated from other origins such as Wellington).

The cumulative traffic impacts are shown in **Table 5.9**.

Table 5.9 – Cumulative Traffic Generation

Road	2026 traffic volume between 6:00pm – 7:00pm (1)	Traffic generated by Uungula Wind Farm (2)	Traffic generated by Maryvale Solar Farm (3)	Traffic generated by the Project	Cumulative traffic volume	Percentage Increase
Peak Hour Traffic (vehicles per hour)						
Goolma Rd	67 vph	136 vph	None	4 vph	**207 vph**	2%
Mitchell Highway	129 vph	75 vph	40 vph	3 vph	**247 vph**	1.2%

Notes: (1) As per **Table 3.7**
(2) Source: Uungula Wind Farm Project – Transport Assessment, Samsa Consulting (2020)
(3) Adapted from source: Solar Farm Project, Maryvale NSW – Traffic Assessment Report, SECA solution (2018)

The table above shows that the cumulative impacts are expected to be minor, with the Project adding 4 vehicles per hour to Goolma Road during the project PM peak hour and 3 vehicles per hour to Mitchell Highway during the project PM peak hour. It is also reiterated that these are the highest traffic generation months for the Project (Months 9-10) and hence the impact would only be experienced over 2 months.

Given Mitchell Highway's road conditions, it is assumed that Mitchell Highway will have sufficient capacity to cater for construction traffic generated by Burrendong and Uungula Wind Farms as well as Maryvale Solar Farm. Goolma Road has an estimated existing traffic volume of 67 veh/h between 6:00pm – 7:00pm, with Uungula Wind Farm construction traffic generating 136 veh/h and construction traffic from the Project generating 4 veh/h during peak construction months. This would give a combined peak hour traffic flow of 207 veh/h, meaning that Goolma Road would continue to operate well with minimal delays at LOS B.

Three are multiple other known renewable energy projects in the region (listed above) that are currently being assessed by others / yet to be assessed in terms of their traffic generation and impact. Piambong Wind Farm will be of particular significance given its close proximity to Burrendong Wind Farm, with both light and heavy vehicle construction traffic potentially using Twelve Mile Road, Goolma Road and Hill End Road to access the site. This project is still in the early planning stages and the EIS is yet to be lodged. It is expected that a cumulative traffic assessment would be undertaken by the applicant to include the impacts of Burrendong Wind Farm.

OSOM Vehicles

The delivery of wind farm turbines and associated infrastructure using OSOM vehicles is a highly meticulous process which takes time to coordinate and plan, given the slower travelling speeds and larger sizes of OSOM vehicles.

At this stage, it is too early to definitively determine if other wind farms in the region (including Spicers Creek Wind Farm, Piambong Wind Farm and Barneys Reef Wind Farm) will have similar OSOM transport timelines to Burrendong Wind Farm. However it is recommended that consultation take place with the other wind farms post-EIS approval to see if the OSOM transport deliveries can be coordinated to occur at the same time / on the same nights to minimise impacts on the road network.

5.3.2 Operational Stage

Given the traffic impacts during the operational stage of Burrendong Wind Farm are expected to be minor (in the order of 20-30 trips per day), it is anticipated there will be a negligible cumulative traffic impact with other wind farms and solar farms in the region which are already operational.

Known renewable energy projects that already operational in the region include:

- Beryl Solar Farm
- Bodangora Wind Farm
- Burrendong Hydro Power Station
- Crudine Ridge Wind Farm
- Dubbo Solar Farm
- Suntop Solar Farm
- Wellington Solar Farm.

5.4 Road Capacity

The thresholds which define two-way rural road capacities are outlined in Section 4.2.4 of the Guide for Traffic Generating Developments (RMS, 2002) and Section 8 of the Highway Capacity Manual – Special Report 209 (TRB, 1985). Factors which influence the assessment of a rural road capacity include heavy vehicle percentage, terrain, percentage of no passing zones, lane width, shoulder width, design speed and directional distribution.

The general formula used in the HCM to calculate total service flow rate for each Level of Service, is as follows:

$$SF = 2800 \times (v/c) \times f_d \times f_w \times f_{HV}$$

where

$$f_{HV} = \frac{1}{1 + P_T(E_T - 1)}$$

The values of v/c, f_d, f_w and E_T are sourced from Tables in Section 8 of the HCM.

The input values for each of the most impacted roads are shown below in **Table 5.10**. All values in 'metres' and 'kilometres per hour' have been converted from 'feet' and 'miles per hour' respectively.

Table 5.10 – Existing Road Conditions and Characteristics

	Goolma Rd	Hill End Rd	Burrendong Way	Twelve Mile Rd, Yarrabin Rd, Burrendong Dam Rd, Fashions Mount Rd and Tara Rd
Heavy vehicle percentage, P_T (%) (1)	14	10	10	5
Terrain (2)	Rolling	Rolling	Rolling	Mountainous
Percentage of no passing zones (%) (2)	40	40	40	60
Lane width (m) (3)	3.35	3.35	3.35	3.05
Shoulder width (m) (3)	1.2	0	0	0
Design speed (km/h) (3)	100	100	100	80
Directional distribution (2)	60/40	60/40	60/40	50/50

Notes: (1) As per **Table 3.6** of this report
(2) Assumed values
(3) Approximate values based on desktop assessment

Based on these road conditions and characteristics, each road has individual thresholds to define its road capacity. Each Level of Service threshold is shown in **Table 5.11**.

Table 5.11 – Peak Hour Service Flow Rates on Two-Way Rural Roads (veh/h)

	LOS A	LOS B	LOS C	LOS D	LOS E
Goolma Rd	111	273	502	746	1429
Hill End Rd	93	233	428	636	1419
Burrendong Way	93	233	428	636	1419
Twelve Mile Rd	50	146	258	420	1111
Yarrabin Rd	50	146	258	420	1111
Burrendong Dam Rd	50	146	258	420	1111
Fashions Mount Rd	50	146	258	420	1111
Tara Rd	50	146	258	420	1111

Based on the expected Project traffic generation during its busiest months (months 9-10), the anticipated construction peak hour flows are assessed in **Table 5.12**. Given that the 2026 background traffic volume is higher in the PM construction peak (6:00pm – 7:00pm) than the AM construction peak (6:00am – 7:00am), level of service has only been assessed for the PM construction peak.

5.4.1 Impacts on Surrounding Road Capacity

The implementation of the Temporary Workforce Accommodation Facility (TWAF) is expected to significantly reduce traffic volumes on the external road network by housing the majority of the construction workforce on-site. This reduction in daily commuter traffic is anticipated to lessen the overall impact on the surrounding transport infrastructure when compared to the original traffic projections.

Without the consideration for the TWAF, this assessment concluded that key roads would operate at a Level of Service (LOS) of C or better during peak construction periods. However, with the revised traffic scenario which reflects a substantial decrease in vehicle trips due to the TWAF, the current assessment indicates that the surrounding road network is expected to operate at LOS A or B (see **Table 5.12**), consistent with existing baseline conditions. This represents a marked improvement in network performance and confirms that the proposed changes would result in no material impacts on road capacity.

Table 5.12 presents a comparative analysis of mid-block capacity and performance for the external road network, both with and without the TWAF in place. As illustrated, the inclusion of the TWAF leads to a measurable reduction in traffic volumes and improved LOS across the network. Notably, Hill End Road and Burrendong Dam Road, which were previously projected to operate at LOS C, are now expected to perform at LOS A or B under the revised scenario. Similar improvements are observed across other key road segments, further supporting the effectiveness of the proposed accommodation strategy in mitigating traffic impacts.

A comparison between each road's level of service in 2026 with and without development traffic is shown. Some roads are expected to experience changes to their existing level of service during the peak construction months, but these changes will be temporary and only last for a few months during the peak (i.e. months 9-10).

Table 5.12 – 2026 Level of Service during Construction Months 9-10 with and without TWAF

Location	2026 PM Peak (6:00pm – 7:00pm – no Project				2026 PM Peak (6:00pm – 7:00pm) – Project without TWAF				2026 PM Peak (6:00pm – 7:00pm) – Project with TWAF		
	Actual Flow Rate (veh/h)	Service Flow Rate (veh/h) (1)	Existing LOS	Project Peak Hour Traffic Generation (veh/h)	Actual Flow Rate (veh/h)	Service Flow Rate (veh/h) (1)	Future LOS	Project Peak Hour Traffic Generation (veh/h)	Actual Flow Rate (veh/h)	Service Flow Rate (veh/h) (1)	Future LOS
Goolma Rd	67	81	A	+64	131	145	B	+7	74	88	A
Hill End Rd	112	128	B	+118	230	246	C	+12	124	140	B
Burrendong Way	112	128	B	+19	131	147	B	+2	114	130	B
Twelve Mile Rd	8	10	A	+51	59	69	B	+5	13	15	A

Location	2026 PM Peak (6:00pm – 7:00pm – no Project				2026 PM Peak (6:00pm – 7:00pm) – Project without TWAF				2026 PM Peak (6:00pm – 7:00pm) – Project with TWAF		
	Actual Flow Rate (veh/h)	Service Flow Rate (veh/h) (1)	Existing LOS	Project Peak Hour Traffic Generation (veh/h)	Actual Flow Rate (veh/h)	Service Flow Rate (veh/h) (1)	Future LOS	Project Peak Hour Traffic Generation (veh/h)	Actual Flow Rate (veh/h)	Service Flow Rate (veh/h) (1)	Future LOS
Yarrabin Rd	17	21	A	+51	68	72	B	+5	22	26	A
Burrendong Dam Rd	6	8	A	+169	175	177	C	+17	23	25	A
Fashions Mount Rd	17	21	A	+19	36	40	A	+2	19	23	A
Tara Rd	17	21	A	+19	36	57	A	+2	19	23	A

Notes: (1) $Service\ flow\ rate\ (for\ peak\ 15\ \min\ period), v = \frac{Actual\ flow\ rate\ (full\ hourly\ volume), V}{Peak\ hour\ factor, PHF}$

A cumulative assessment of level of service in 2025 is shown below in **Table 5.13** with the inclusion and consideration of the TWAF, and considers the impact of Uungula Wind Farm and Maryvale Solar Farm. Level of service on Goolma Road is anticipated to be LOS C, which is a satisfactory level of service. It is also noted this would only potentially occur during the busiest two months of construction.

There are no cumulative impacts anticipated on other roads near the site.

Table 5.13 – Cumulative Assessment of 2025 Level of Service during Construction Months 9-10

Location	2025 PM Peak (6:00pm – 7:00pm) – Project with TWAF			Peak Hour Traffic Generation from other projects (veh/h)	2025 PM Peak (6:00pm – 7:00pm) – with Project + Uungula Wind Farm + Maryvale Solar Farm		
	Actual Flow Rate (veh/h)	Service Flow Rate (veh/h) (1)	Existing LOS		Actual Flow Rate (veh/h)	Service Flow Rate (veh/h) (1)	Future LOS
Goolma Rd	74	89	A	+136	210	225	C
Hill End Rd	No cumulative impacts						
Burrendong Way							
Twelve Mile Rd							
Yarrabin Rd							
Burrendong Dam Rd							
Fashions Mount Rd							
Tara Rd							

Notes: (1) $Service\ flow\ rate\ (for\ peak\ 15\ \min\ period), v = \frac{Actual\ flow\ rate\ (full\ hourly\ volume), V}{Peak\ hour\ factor, PHF}$

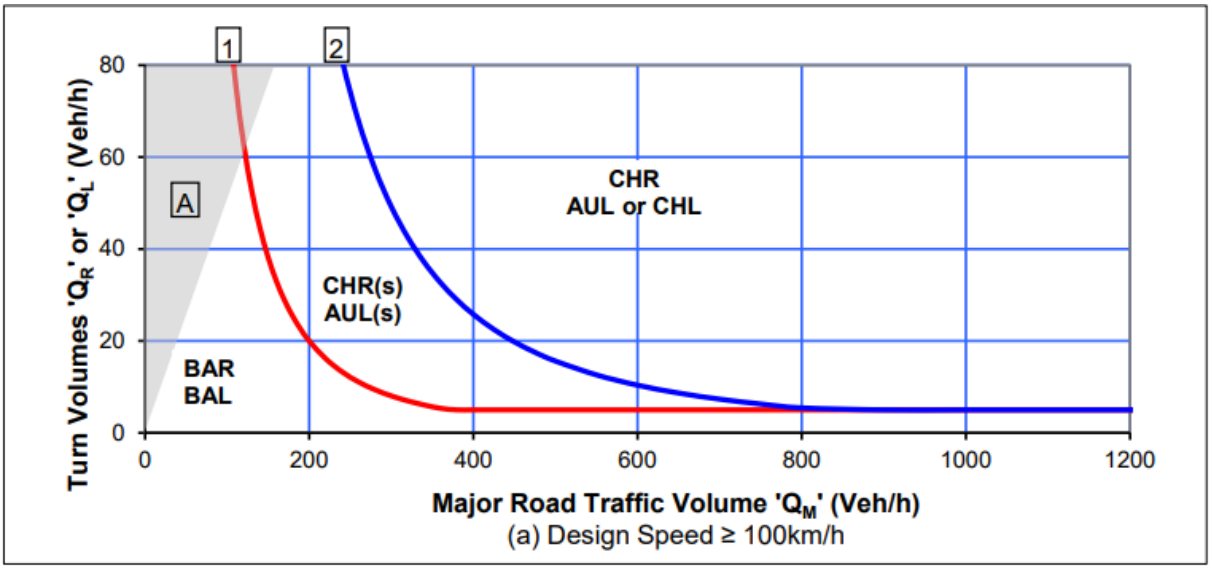
5.5 Intersection Considerations

Based on the traffic generation and likely routes for contractors and heavy vehicles, the following junctions have been further considered with regard to their existing arrangement:

- Goolma Road/ Twelve Mile Road (eastern location)
- Castlereagh Highway/ Hill End Road
- Hill End Road/ Yarrabin Road
- Mitchell Highway/ Goolma Road.

Reference is made to Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossing Management, which outlines the intersection turning warrants for intersection treatments. The intersections listed above operate within 100km/h speed zones. The corresponding turning warrant criteria is shown in **Figure 5.7** below.

Figure 5.7 – Austroads Turn Warrant Criteria

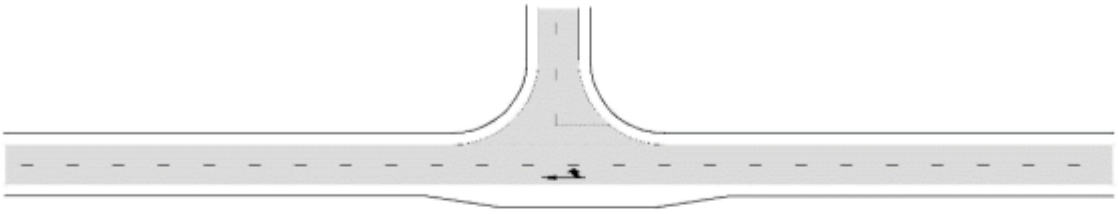


Source: Austroads Guide to Traffic Management Part 6

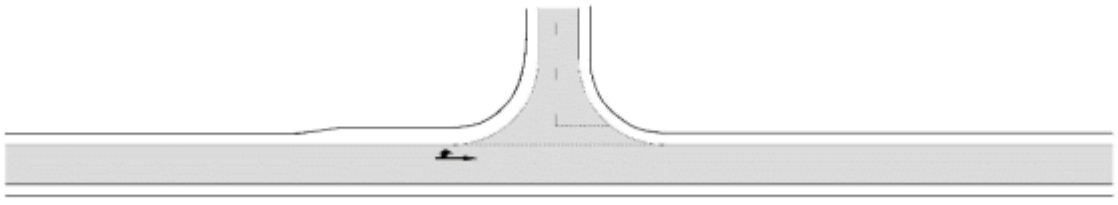
The general arrangement for Basic Right and Left turn (BAR and BAL), Auxiliary Right and Left turn (AUR and AUL) and Channelised Right and Left turn (CHR and CHL) are outlined below.

Any resulting intersection upgrades would include a Safe Intersection Sight Distance check when designed during the detailed design stage of the project.

Figure 5.8 – General BAR and BAL treatments



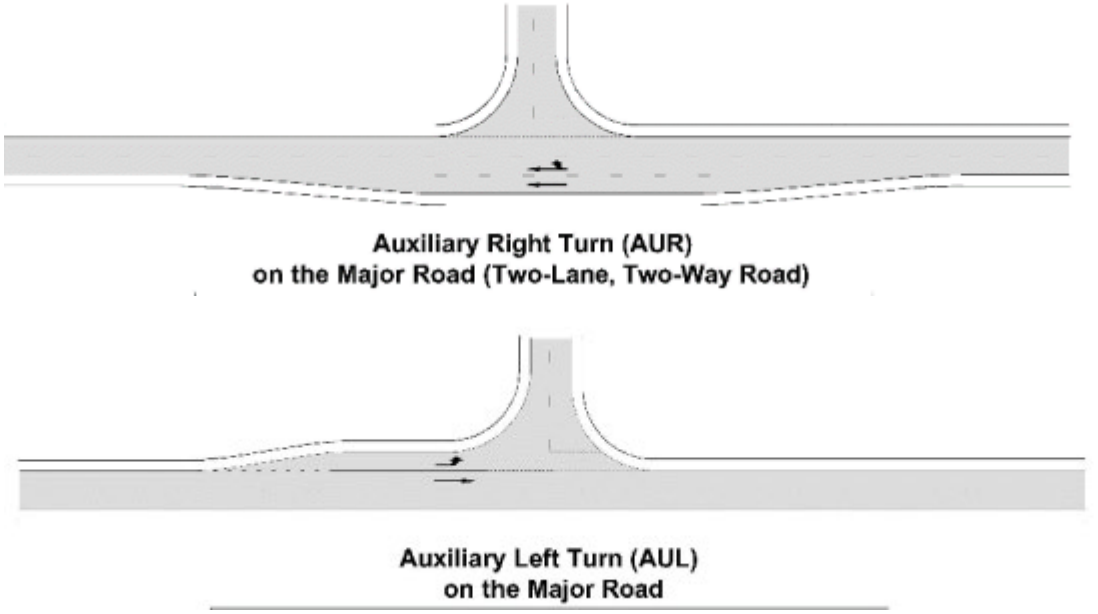
Basic Right Turn (BAR)
on the Major Road (Two-Lane, Two-Way Road)



Basic Left Turn (BAL)
on the Major Road

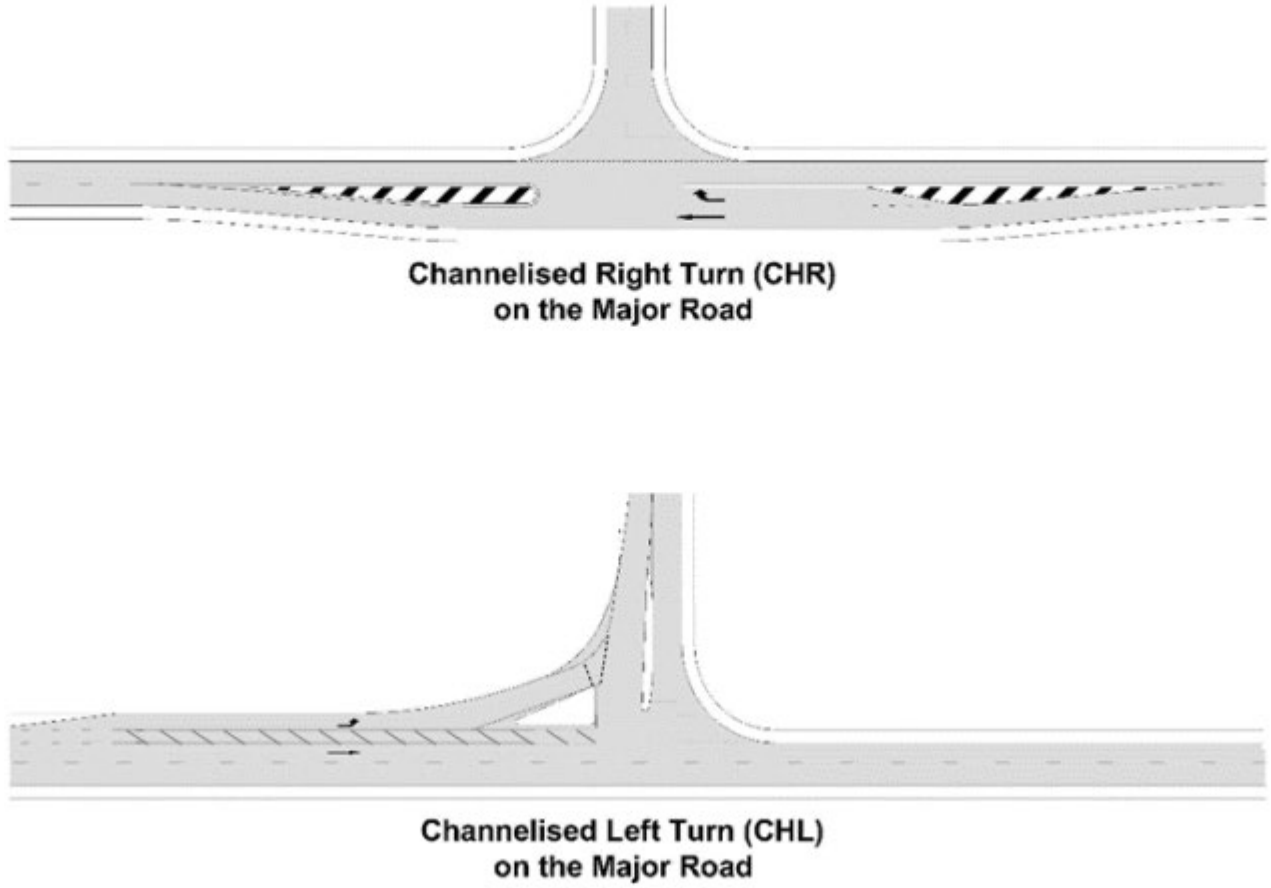
Source: Austroads Guide to Traffic Management Part 6

Figure 5.9 – General AUR and AUL treatments



Source: Austroads Guide to Traffic Management Part 6

Figure 5.10 – General CHR and CHL treatments



Source: Austroads Guide to Traffic Management Part 6

5.5.1 Goolma Road/ Twelve Mile Road

The intersection of Goolma Road/ Twelve Mile Road is signposted as a give-way priority-controlled intersection, whereby Goolma Road has the priority. The intersection currently has no turning lanes on Goolma Road.

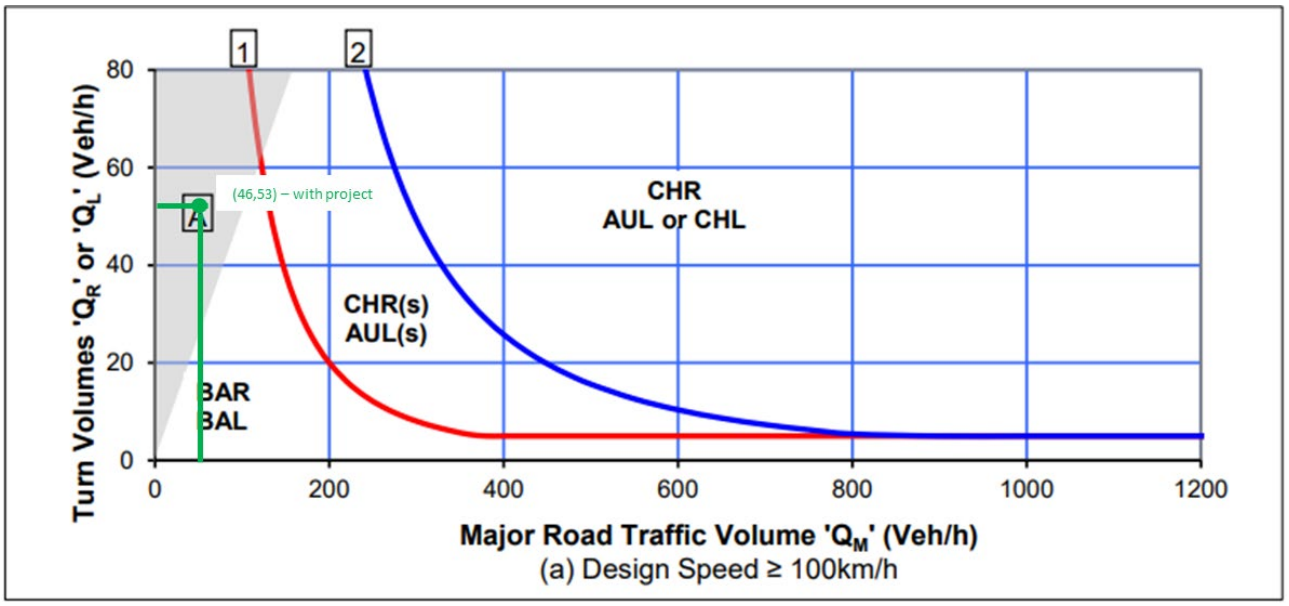
The key movement at this intersection are the right turns from Goolma Road to Twelve Mile Road associated with traffic generated from the townships of Dubbo and Wellington in the AM construction peak. The OSOM route also includes this intersection. The OSOM route will require this intersection to be upgraded to accommodate the vehicle path.

A summary of the key traffic volumes using Goolma Road and Twelve Mile Road in the AM construction peak hour (6:00am – 7:00am) are summarised below:

- Existing 2026 Goolma Road traffic volume: 48 veh/h (based on data in **Table 3.7**)
- Existing 2026 traffic volume turning right from Goolma Road into Twelve Mile Road: 2 veh/h
- Project traffic volume turning right from Goolma Road into Twelve Mile Road (with TWAF): +7 veh/h (as per **Table 5.4**).

The turn warrants indicate that a BAR treatment is required during the AM construction peak hour (6:00am – 7:00am) for the right turn movements (at a minimum). It is recommended that a BAR treatment be incorporated into the upgrade design of the intersection.

Figure 5.11 – Turn Treatment Warrants – Goolma Road/ Twelve Mile Road



Base image source: Austroads Guide to Traffic Management Part 6

5.5.2 Castlereagh Highway/ Hill End Road

The intersection of Castlereagh Highway/ Hill End Road is sign posted as a give-way priority-controlled intersection, whereby Castlereagh Highway has the priority. The intersection is constructed with an AUR and AUL treatment.

The key movement at this intersection associated with the Project traffic generation is the left turn from Castlereagh Highway to Hill End Road in the AM construction peak hour (6:00am – 7:00am).

The Project is estimated to add up to 118 additional vehicles on Hill End Road. This is in addition to the 80 peak hour vehicles that currently utilise Hill End Road between 6:00am – 7:00am. Castlereagh Highway is estimated to carry approximately 120 vehicles between 6:00am – 7:00am.

As the current AUL arrangement is the best turn treatment available, no further upgrades would be required.

5.5.3 Hill End Road/ Yarrabin Road

The intersection of Hill End Road/ Yarrabin Road is signposted as a give-way priority-controlled intersection, whereby Hill End Road has the priority. The intersection currently has no turning lanes on Hill End Road.

The key movement at this intersection are the right turns from Hill End Road to Yarrabin Road associated with traffic generated from the township of Mudgee in the AM construction peak. The OSOM route does not include this intersection.

A summary of the key traffic volumes using Hill End Road and Yarrabin Road in the AM construction peak hour (6:00am – 7:00am) are summarised below:

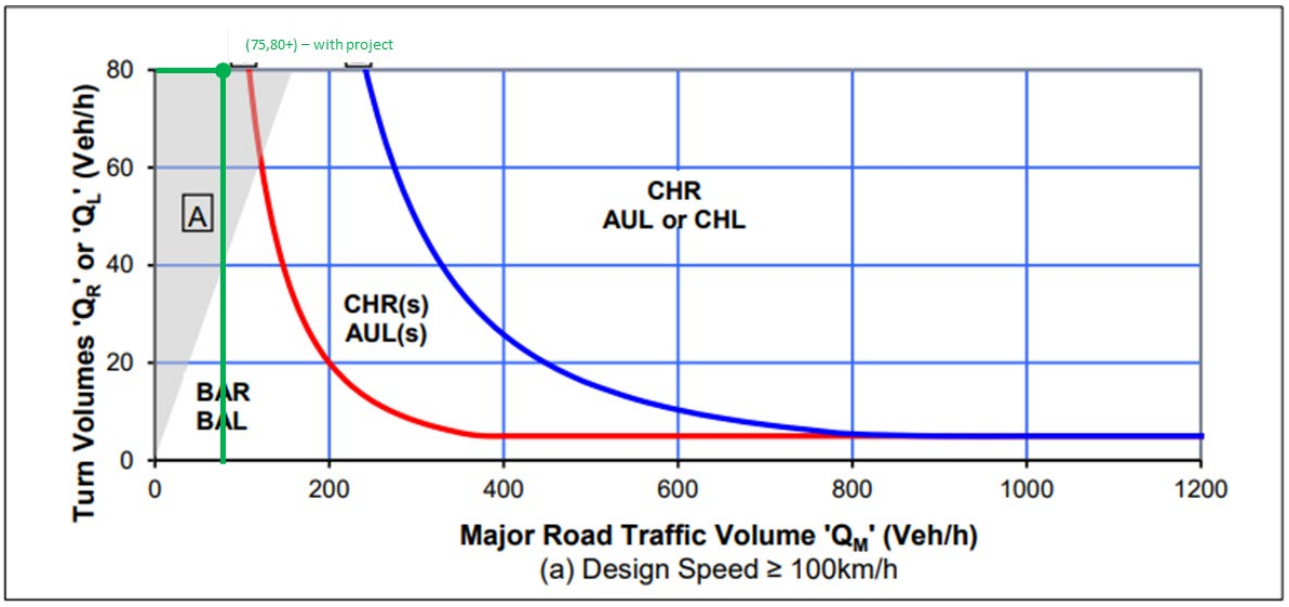
- Existing 2025 Hill End Road traffic volume: 80 veh/h (based on data in **Table 3.7**)

- Existing 2025 traffic volume turning right from Hill End Road into Yarrabin Road: 5 veh/h
- Project traffic volume turning right from Hill End Road into Yarrabin Road (with TWAF): +7 veh/h (as per **Table 5.4)**.

The turn warrants indicate that a BAR treatment is required during the AM construction peak hour (6:00am – 7:00am) for the right turn movements (at a minimum).

The current intersection arrangement of a BAR permits passing of right turning vehicles on Hill End Road and is considered satisfactory.

Figure 5.12 – Turn Treatment Warrants – Hill End Road/ Yarrabin Road



Base image source: Austroads Guide to Traffic Management Part 6

5.5.4 Mitchell Highway/ Goolma Road

The intersection of Mitchell Highway/ Goolma Road is signposted as a give-way priority-controlled intersection, whereby Mitchell Highway has the priority. The intersection currently has a CHR treatment (right-turn lane) and BAL treatment (which is assumed to be able to accommodate the swept path of the largest design vehicle).

The key movement at this intersection are the left turns from Mitchell Highway to Goolma Road associated with traffic generated from the townships of Dubbo in the AM construction peak. The OSOM route also includes this intersection. The OSOM route will require this intersection to be upgraded to accommodate the vehicle path.

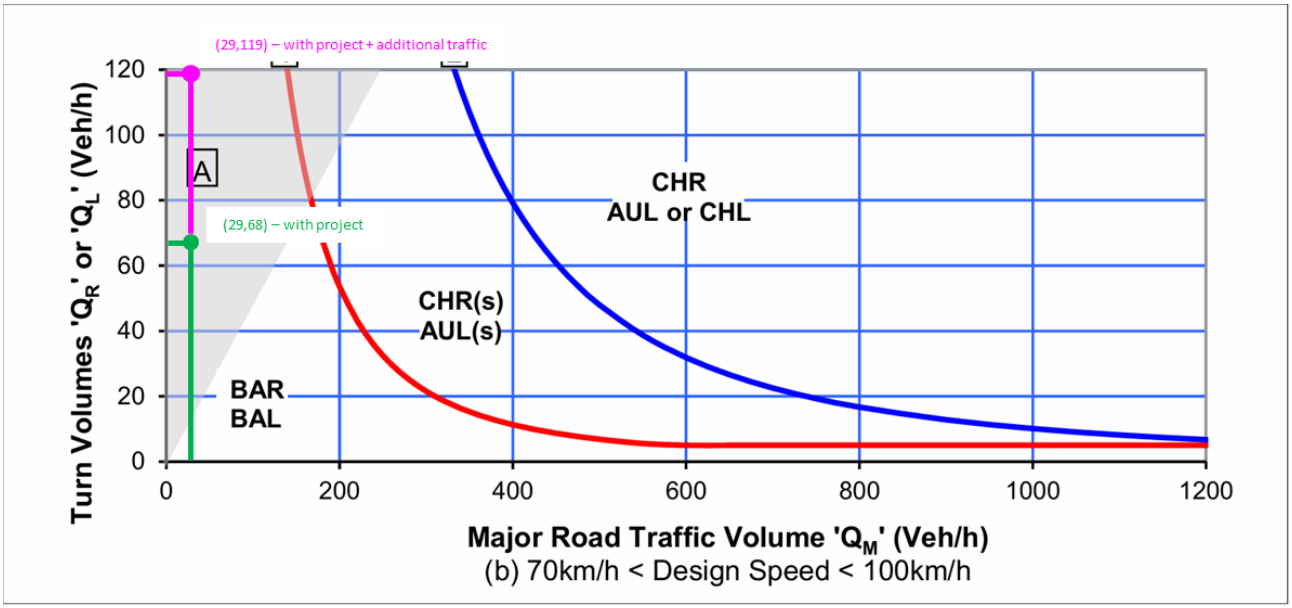
Notably, Uungula wind farm will upgrade this intersection which is approved under SSD-6687-Mod-3. Works are expected to be complete prior to Burrendong Wind Farm being constructed.

A summary of the key traffic volumes using Mitchell Highway and Goolma Road in the AM construction peak hour (6:00am – 7:00am) are summarised below:

- Existing 2025 Mitchell Highway southbound traffic volume: 46 veh/h (based on data in **Table 3.7**)
- Existing 2025 traffic volume turning left from Mitchell Highway into Goolma Road: 17 veh/h
- Additional Project traffic volume turning left from Mitchell Highway into Goolma Road: +51 veh/h (as per **Figure 5.13**)
- Traffic volume from other projects turning left from Mitchell Highway into Goolma Road: +7 veh/h (as per **Table 5.4)**.

The turn warrants indicate that a BAL treatment is required during the AM construction peak hour (6:00am – 7:00am) for the left turn movements (at a minimum). It is recommended that the existing BAL be maintained in any proposed upgrades.

Figure 5.13 – Turn Treatment Warrants – Mitchell Highway/ Goolma Road



Base image source: Austroads Guide to Traffic Management Part 6

5.6 Traffic Impact on Railway Level Crossings

All identified railway level crossings (refer to **Section 3.4**) are located on the OSOM transport routes only. In considering that Saxa Road is the nearest railway level crossing to the Site (approximately 1.5 hours away), it is unlikely that light and heavy vehicles generated by the Project will significantly impact the condition of crossings on the OSOM routes.

The OSOM vehicle transportation process is a highly controlled process with a number of escort vehicles leading and trailing behind the OSOM vehicles at relatively low speeds.

As typically required post approval of a wind farm SSD application, a TMP covering OSOM transportation and consultation with the relevant road authorities will also introduce a level of management and mitigation when traversing railway level crossings. Due to this, it is anticipated that the OSOM vehicles are a low safety risk in traversing over the crossings.

6. Traffic Management

In order to mitigate the impact of the Project on the local road network, a high-level traffic management strategy has been developed for the Project's critical areas / activities. This strategy is outlined below.

6.1 Traffic Management Plan

A TMP should be prepared to address the impact of the development on traffic throughout the life of the Project, including the construction, maintenance, operation and decommissioning stages. The TMP should be prepared in accordance with the consent conditions, and may include the following components:

- Measures to minimise the traffic safety impacts of the development and disruptions to local road users during construction and decommissioning of the development, such as:
    - temporary traffic controls, including detours and signage
    - notifying the local community about development-related traffic impacts
    - minimising potential conflict between development-related traffic and:
        - stock movements
        - domestic animals
        - school buses, in consultation with local schools
        - mining related traffic.
    - implementing measures to minimise development-related traffic on the public road network outside of standard construction hours
    - ensuring development-related traffic does not track dirt onto the public road network
    - ensuring loaded vehicles entering or leaving the site have their loads covered or contained
    - providing sufficient parking within the Project Site for all development-related traffic
    - responding to any emergency repair requirements or maintenance during construction and/or decommissioning
    - a traffic management system for managing over-dimensional vehicles
    - fatigue management.
- Suitable rest stop areas (for OSOM vehicle drivers) that are spaced no more than 2 hours apart. Refer to the 2024 Rex J Andrews Route Study for suggested fatigue break locations.
- A Driver Code of Conduct which addresses:
    - travelling speeds
    - procedures to ensure that drivers to and from the development adhere to the designated over dimensional and heavy vehicle routes
    - procedures to ensure that drivers to and from the Project implement safe driving practices.
- A detailed program to monitor and report on the effectiveness of these measures and the code of conduct.
- Consultation with TfNSW and relevant stakeholders to consider future projects in the region with a similar timeframe to the Project, and the combined impact they may have on traffic management.

6.2 Stakeholder Management Plan

A Stakeholder Management Plan, inclusive of a Communications Plan, is to be developed to provide relevant information to the public, general stakeholders (including Cudgegong River Holiday Park), other major nearby developments and affected landowners. This should include, but not be limited to, the following:

- Issues that have been raised, inclusive of method of resolution and achievement of resolution
- A communications matrix that clearly defines responsibility of each party including individuals and companies
- A product delivery campaign which will include truck volumes and durations.

Communications methods to key stakeholders to inform them of heavy vehicle haulage routes and project progress should include, but not be limited to:

- Notifications in local newspapers
- Notifications in online news outlets and local news social media pages
- Notifications via local radio stations.

Key stakeholder communications will detail that in the event of any complaints, a contact phone number (or other communication method technologically relevant at the time) be made available.

6.3 Internal Management

An internal management strategy will be established within the Project Boundary. This strategy will form part of the site's induction that will be undertaken by all personnel on-site.

The following key items are to be implemented:

- 40 km/h speed limit on internal access roads
- Radio communication between construction vehicles available at all times
- All loads to be correctly restrained
- Warning signage to be provided at critical areas and intersection points.

The on-site parking within the construction compound is required to provide a dedicated safe area where personnel can access their vehicles.

Once a transport contractor has been nominated, they will be required to produce a Job Safety Assessment (or similar) specific to the Project.

6.4 Work Hours

The NSW Interim Construction Noise Guideline recommends that the standard hours of a normal construction site are:

- Monday to Friday 7am to 6pm
- Saturday 8am to 1pm
- No work on Sundays or public holidays.

These guidelines are not mandatory and variations to these hours may be approved by the local council. Construction sites must adhere to the approved hours for construction work as set out in the relevant development application.

6.5 Code of Conduct

During construction of the site and ongoing operation, a code of conduct should be issued to all contractors to ensure impacts to surrounding residents and general road users is minimised.

6.5.1 Driver Induction

Prior to commencing construction activities, regular and returning drivers of semi-trailers, rigid vehicles and/or B-Double and OSOM vehicles that will access and egress the site for pick-up and delivery of material will be required to undertake a driver induction. The induction course will need to be developed early to ensure that it is ready prior to construction activity (including any site preparation works) commencing. Irregular and one-off drivers of pick-ups and deliveries would be considered exempt to this induction requirement. The induction course would cover:

- Suitable routes to and from the site
- Suitable times of travel (i.e. outside of school bus times)
- Applicable traffic management procedures that will need to be in place prior to approaching or departing the site (if required)
- Communications and notification procedures
- Speed restrictions (on the road network and the site)

- Environmental procedures
- Safety procedures (during transportation and in the evident of an incident / emergency).

6.5.2 Contractor Liaison

A nominated contractor will be responsible for liaising with appropriate contractor(s) responsible for delivery of materials to/from the site to ensure that they comply with the TMP, including adherence to specified construction traffic routes. It will be the contractor's responsibility to ensure routes are satisfactory and that appropriate measures (traffic management or other mitigation measures as well as liaison with relevant local authorities) are in place to ensure safe movement of vehicles to/from the site.

6.5.3 Vehicle Access

Construction Vehicle Access

All vehicle access during the construction phase will be via the identified site access locations and haulage routes described in **Section 5.2.1**.

Vehicle Height Specifications

Generally, all vehicles accessing the Project Site (with exception of OSOM vehicles) will operate within the permitted height requirements. If necessary, the applicable approvals will be sought in instances where vehicle height exceeds that which is permitted on the public road network.

Oversized Vehicles

OSOM vehicles will access the site via the identified site access locations and OSOM routes described in **Section 4.1**. The OSOM routes are subject to the separate permit and approval processes which will be undertaken by accredited transport providers.

Local residents would be informed of such activities via letter drop or by electronic communications at least 1 week in advance.

Emergency Services

Emergency service vehicles will be permitted unrestricted access to the Project Site.

Construction Staging / Parking

All car parking will be provided within the confines of the site and will therefore not encroach on the local road network. There will be sufficient area within the Project Site during differing phases of construction to accommodate vehicle parking, including construction traffic deliveries and on-site manoeuvring as and when required.

A nominated contractor will continually monitor parking provisions within the Project Boundary, as well as the staging of construction vehicles into and out of the Project Site, to ensure no impact on the local road network occurs. If required, the day-to-day vehicle parking demands could be reduced via the promotion and consideration of car sharing and mini-bus services.

Signage

Construction vehicle signage is to be considered and implemented prior to any works being undertaken. There may potentially be the need to further reduce speed limits on some local roads to facilitate safe vehicle access around sites. Appropriate signage will be required in these instances to inform road users. This is to be developed following nominated contractor commission and agreed with key stakeholders.

7. Mitigation Measures

The proposed TWAF is expected to significantly reduce construction-related traffic volumes by accommodating the majority of the workforce on-site. While the construction of the TWAF will generate a short-term increase in vehicle movements, including OSOM deliveries, these activities are limited in duration and scale and are not anticipated to result in any significant impacts on the surrounding road network. Therefore, no additional major mitigation measures (such as intersection upgrades, etc.) as part of the TWAF are proposed.

However, to further support safe and efficient traffic operations, a Traffic Management Plan (TMP) should be developed to guide vehicle movements during both the TWAF and wind farm construction phases. The TMP should include provisions for shuttle bus services between the TWAF, the construction site, and nearby towns, as well as initiatives to promote carpooling through a Green Travel Plan. It should also include scheduling measures to avoid OSOM vehicle movements during peak traffic periods or sensitive times. In addition, the road and intersection upgrades identified in the original traffic assessment, such as road widening and intersection treatments, should be implemented to ensure safe access for all vehicle types. All parking and access infrastructure should be designed in accordance with AS 2890 standards and accommodate the largest vehicles expected to operate within the TWAF site. Collectively, these measures will ensure that traffic impacts remain minimal, and that the TWAF operates safely and efficiently throughout the project lifecycle.

8. Conclusion

This report has presented and detailed the Project on behalf of Burrendong Wind Farm Pty Ltd and assessed the impact to the existing road network during the construction, operational and decommissioning phases. All SEARs requirements related to traffic and transport issues as listed in **Section 1.3** have been addressed throughout the report.
The key findings of this TTIA are:

- The three routes in the detailed swept path Route Study (Rex J Andrews, 2024) from the Port of Newcastle to the Project Site contain shortfalls in accommodating an OSOM vehicle transporting an 82-metre wind turbine blade. The route will require improvement works before being deemed suitable for transportation of the WTG components.
  - Major works required include road widening on Twelve Mile Road, Yarrabin Road and Burrendong Dam Road, modification of several floodways and culverts, crest removals and vegetation clearance for vertical envelopes. These items will be addressed during detailed design.
- The construction phase of the Project is likely to generate the highest levels of vehicle movements. Prior to the introduction of the Temporary Workforce Accommodation Facility (TWAF), the peak construction period was expected to generate approximately 70 one-way daily trips (including 57 heavy vehicles). However, with the adoption of the TWAF, the size of the commuting workforce has been significantly reduced, resulting in a substantial reduction in daily light-vehicle movements on the surrounding road network.
- Under the revised workforce accommodation strategy, the majority of workers (approximately 90%) will be accommodated on-site, with only a small remaining portion commuting from surrounding towns such as Mudgee, Gulgong, Rylstone, Dubbo and Wellington.
- The key roads accessing the Project Site will continue to be Twelve Mile Road, Yarrabin Road and Burrendong Dam Road from the north, and Hill End Road, Yarrabin Road and Burrendong Dam Road from the east.
- To access the western side of the Site, a small number of light and heavy construction vehicles will utilise Fashions Mount Road. No OSOM vehicles will travel via this route.
- During the operational phase, approximately 10-15 personnel will be on-site. Traffic generated during the operation of the Project will be significantly lower than during construction and is not expected to adversely affect road performance.
- Decommissioning traffic volumes will also remain lower than construction-phase volumes, with reduced requirements for material deliveries and heavy construction services.
- Midblock capacity assessments indicate that key regional roads, including Goolma Road and Mitchell Highway, will continue to operate satisfactorily, even under the conservative assumption that construction overlaps with Uungula Wind Farm and Maryvale Solar Farm.
- Intersection assessments show that the Castlereagh Highway / Hill End Road junction will operate satisfactorily during construction. BAR and BAL treatments are recommended at Goolma Road / Twelve Mile Road (east) and Mitchell Highway / Goolma Road respectively to accommodate OSOM movements.
- A traffic management strategy has been prepared for all critical areas and activities. This includes a Traffic Management Plan, Stakeholder Management Plan and Driver Code of Conduct covering construction hours and internal traffic controls.

Appendix A. Response to Submissions Letter

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10 March 2026

Enquiries: Dave Salangsang
Project No: 300306150

Burrendong Wind Farm Pty Ltd

Attention: Emma Bathgate (Senior Environmental Consultant – Renewables)

Dear Emma

RE: Burrendong Wind Farm
Traffic and Transport Response to Submissions

Background

A Traffic and Transport Impact Assessment (TTIA) was submitted as part of a State Significant Development Application (SSD-8950984) for the proposed Burrendong Wind Farm development[1].

Transport for NSW (TfNSW), UGL Regional Linx (UGLRL), Mid-Western Council and Dubbo Regional Council all issued submissions with comments on the TTIA, outlining a number of issues that needed to be addressed to allow progression of the application.

The following sections respond to the agency comments raised on the TTIA (note – numbering based on numbering provided in each submission). Other transport-related comments which were not associated with the TTIA have not been included in this letter and will be addressed by others.

TfNSW Comments

Comment 3: *It should be noted that the Port to REZ project being undertaken by EnergyCO for the common route to the Golden Highway have incorporated an 85m blade as the design component dimensions. The design parameters for the Port to REZ project should be reviewed to understand if there is any opportunity to leverage the work completed for the Port to REZ OSOM upgrades for the common route can be leveraged for this project. The Port to REZ OSOM upgrades to be completed by 2025 for the common route to the Golden Highway.*

Response 3: It has been noted in Section 4.4 of the updated TTIA that the route upgrades to accommodate an 85-metre blade length design vehicle from Port of Newcastle to Golden Highway in Elong Elong and Castlereagh Highway in Beryl may be completed by EnergyCo by the time Burrendong Wind Farm construction commences, anticipated to be late 2027 to 2028.

Comment 4: *It is noted that in the TIA there is an expectation to utilise the OSOM road infrastructure upgrades being completed by Squadron Energy for the 82m blade for the Burrendong Wind Farm project. Five points to note regarding this approach:*

a) The upgrades have not yet commenced for Uungula Wind Farm for the entirety of the route from Port of Newcastle to Twelve Mile Road.

b) The intersection of Goolma Road/Twelve Mile Road are currently subject to a WAD and will likely be completed in 2024. The design of this intersection has been based on the configuration for the 82m blade length and not the proposed blade length subject to this application of 90m). Further upgrades may be required to be able to achieve the turning movements required for the design OSOM subject to this application at this intersection.

c) All pinch points that have been reviewed as a part of the Uungula Wind Farm development consent and Traffic Management Plan have been assessed for an 82m blade length and not the blade length

[1] Burrendong Wind Farm Traffic and Transport Impact Assessment (Stantec, 17 October 2023)

proposed as a part of the Burrendong Wind Farm application. Therefore, it is unlikely that the upgrades undertaken for Uungula Wind Farm will be suitable for Burrendong Wind Farm. The OSOM route and pinch points should be reviewed, and strategic designs provided as a part of the RTS response, to ensure that the EIS and development consent captures the required scope of works for the OSOM upgrades.

d) The upgrades will only occur along the shared route identified within the TIA and Route Assessment as Route 2A (to the point of the Goolma Road/Twelve Mile Road intersection).

e) The route identifies as route 2B will not be used or upgraded by Uungula Wind Farm and therefore would not benefit from any of the upgrades required for OSOM subject to the Uungula Wind Farm. The pinch points, culverts and bridges should be reviewed for the high risk OSOM that will be required to utilise this route and strategic designs must be prepared for the road infrastructure upgrades required for Route 2B and will be required to accompany the RTS submission.

Response 4: Squadron Energy started construction of the Uungula Wind Farm in early 2024 and it is assumed that the road upgrades would be completed by the time Burrendong Wind Farm construction commences, anticipated to be late 2027 to 2028.

It is confirmed that Burrendong Wind Farm proposes an 82-metre blade length, not a 90-metre blade length.

As per the TTIA, it is understood that road upgrades would be addressed post-EIS approval during the detailed design stage, assuming the SSD is approved.

Comment 13: Twelve Mile Road/Goolma Road-100km/hr speed zone currently subject to a WAD which was required as a part of the Uungula Wind Farm approval the nature of the work is to realign Goolma Road and Twelve Mile Road and provide a CHR(s) and an AUL. Squadron Energy will be undertaking this road upgrade during 2024. The key aspects and additional information required for this intersection have been identified below:

a) The cumulative traffic volumes including the through and turning traffic volumes associated with the other nearby projects, existing background traffic (plus growth rate) volumes and the project traffic volumes should be reassessed as a part of the RtS, in relation to the LoS and Turn Warrant Assessment for Goolma/Twelve Mile Road. It is noted that the geometry of the realigned intersection prohibits the provision of a full-length CHR.

b) However, measures should be proposed to ensure that the traffic volumes are mitigated to comply with the proposed intersection treatments such as ensuring traffic is occurring in intervals, how the construction traffic will occur outside of the AM/PM project peaks and increasing the carpooling and providing shuttle buses to reduce the overall traffic volumes.

c) The light, heavy vehicles, High Risk OSOM and general OSOM cannot utilise the existing intersection of Goolma/Twelve Mile Road and will have to wait until the completion of the realignment of Goolma/Twelve Mile Road that is currently being undertaken by Squadron for Uungula Wind Farm.

d) The intersection should be reviewed for the vehicle configuration for the High Risk OSOM design vehicle as the intersection has been designed for an 80.4m blade with overall laden load length of 91.86m.

Response 13: The Twelve Mile Road/ Goolma Road intersection referenced above (near Wellington) and used by vehicles accessing Uungula Wind Farm is a different intersection to the Twelve Mile Road/ Goolma Road intersection (near Two Mile Flat) which is proposed to be used by vehicles accessing Burrendong Wind Farm.

Comment 14: Mitchell Highway/Burrendong Way- 100km/hr- existing four-way intersection consisting of an AUL southbound and a BAL for the northbound opposing intersection. 10% of traffic all turning left into the intersection via the existing intersection treatment. Swept paths (based on the HV design vehicle) should be provided to ensure that the existing treatments are sufficient to allow for passing and through traffic movements for the Mitchell Highway/Burrendong Way intersection and the Mitchell Highway/Spillsbury Lane intersection.

Response 14: Swept paths have been completed to show the satisfactory passing of 19m truck-and-dog vehicles turning left in and right out of Burrendong Way from Mitchell Highway. It is noted this is not an OSOM route.

There are no concerns for southbound through traffic on Mitchell Highway, given there is an existing left turn deceleration lane on Mitchell Highway for vehicles turning left into Burrendong Way.

Figure 1: 19m truck-and-dog left turn swept path into Burrendong Way from Mitchell Highway

Figure 2: 19m truck-and-dog right turn swept path from Burrendong Way into Mitchell Highway

Comment 15: *Mitchell Highway/Goolma Road- existing CHR(s) and BAL 50km/hr.*

a) The LoS and turn warrant assessment is required to form part of the RTS response and be based on the cumulative traffic volumes, background traffic volumes (plus growth) and project traffic volumes at this intersection. This is important as most of the construction traffic volumes associated with surrounding projects with a coinciding timeframe will occur between 6-7am and 5-6pm as per the defined construction hours.

b) Based on this review of the LoS and turn warrants assessment measures should be proposed as a part of the RTS to ensure that the traffic volumes are mitigated to comply with the existing treatments.

c) Alternatively, road infrastructure upgrades may be required for this intersection if traffic mitigation measures cannot be implemented. In this event Strategic designs will be required as a part of the RTS.

d) Swept paths should be provided for the High Risk OSOM based on the vehicle configuration and load and any road upgrades required because of the High Risk OSOM review at this intersection should form part of the RTS response.

Response 15: A turn warrant assessment has been completed in Section 5.5.4 of the updated TTIA for the Mitchell Highway/ Goolma Road intersection, inclusive of cumulative traffic volumes and background traffic growth. Following a meeting with TfNSW on 25 July 2024, it was agreed that LoS assessment through traffic modelling was not required.

The intersection currently includes BAL treatment (which is assumed to be able to accommodate the swept path of the largest design vehicle and any upgrades to the intersection should maintain the BAL treatment.

The swept path for the 82-metre blade High Risk OSOM has been completed by Rex J Andrews (RJA). The RJA Route Study (Appendix B) proposes road modifications including hardstand on the inside corner and signs to be temporarily relocated. These proposed modifications are summarised in Section 4.4 of the updated TTIA.

Comment 16: The traffic assumptions do not appear to be supported by a traffic count survey. Further information is required in the form of the tube counts or data source for the traffic count assumptions for background traffic volumes identified within the TIA prepared by Stantec. As the Goolma Road traffic volumes do not appear to reflect recent traffic count surveys cited in other developments.

Response 16: To support the assumed background traffic growth rates, the nearest available TfNSW Traffic Volume Permanent Classifier on Mitchell Highway has been analysed (Station ID: T6172S). This analysis has been included in Section 3.5 of the updated TTIA. The growth rate trends on Mitchell Highway are assumed to be similar to those on Goolma Road, given both roads are key regional links in the region.

The results generally show a declining background traffic growth rate of approximately 1-2% per year (excluding the Covid years of 2020-2021). Given this, the assumed background traffic growth rate of 1% per year is considered to be conservative and appropriate for the region.

Comment 17: The AM/PM peak hour for the network peak have not been defined with the TIA prepared by Stantec. It is noted that the AM/PM peak for Goolma Road is closely aligned with the construction hours set for each Major Project of 6-7am and 5-6pm. The background AM/PM peak should be defined for each intersection requiring reassessment as a part of this RTS response.

Response 17: To establish a daily traffic profile, the nearest TfNSW Traffic Volume Permanent Classifier on Mitchell Highway has been analysed (Station ID: T6172S). This analysis has been included in Section 3.5 of the updated TTIA. The daily traffic profile trends on Mitchell Highway are assumed to be similar to those on Goolma Road.

The results show that:

- the peak hour of the day is 3:00pm – 4:00pm.
- the anticipated AM construction peak of 6:00am – 7:00am has an hourly traffic volume which is approximately 38% of the network peak hour volume.
- the anticipated PM construction peak of 6:00pm – 7:00pm has an hourly traffic volume which is approximately 53% of the network peak hour volume.

Comment 18: It is noted that month 9-10 require 375 employees and even based on a carpooling rate of 2 persons per a vehicle this would equate to 187.5 light vehicles as opposed to the assumption of 125 light vehicles which is based on the average and not the maximum traffic generation. The TIA should be revised where references are made to the 125 light vehicle volumes to the actual maximum light vehicles that will occur during the peak of construction month 9-10 based on a 2 person per a vehicle calculation.

Response 18: The TTIA has been updated to assess the worst-case scenario of a light vehicle traffic generation of 13 one-way daily vehicle trips for the busiest two months of construction. This is based on the updated workforce proposed in the CWAS by Ethos Urban and due to the operation of the Temporary Workforce Accommodation Facility (TWAF) located on-site. However as per Response 17, it is noted that this peak light vehicle traffic generation would likely occur between 6:00am – 7:00am and 6:00pm – 7:00pm, where network traffic is not at its peak.

Comment 19: Ensure that the heavy vehicle calculations have captured other OSOM that can travel under the class 1 exemptions and that are not categorised as high risk.

Response 19: All OSOM transport vehicles (as assessed by Rex J Andrews and reproduced in Table 4.2 of the updated TIA) cannot travel under any of the Class 1 Load Carrying Vehicle Exemption Notices, given they are all over 5.0 metres in height (Part B) and/or over 115 tonnes in weight (Part C).

Comment 20: There is a reference to reducing speed limits on some roads (s6.5.3 Vehicle Access-signage). Reducing speed limits on the state classified road network is not supported for developments, inclusive of renewable projects.

Response 20: Noted. This comment has been amended to clarify that reductions in speed limits would only be considered on local roads that site access points are situated on.

Comment 21: Include the growth rates to the year of peak of construction within the background traffic volume assumptions 1% for Castlereagh Highway and 1.5% for Goolma Road.

Response 21: As per Response 16, background traffic growth rates are generally declining in the region, and hence an assumed background traffic growth rate of 1% per year is considered to be conservative and appropriate for all roads within the region.

UGLRL Comments

Comment: UGLRL has reviewed the Environmental Impact Statement (EIS), Appendix I – Traffic and Transport Impact Assessment (TTIA), and Appendix J – External Route Study. The review found that proposed heavy vehicle and Over-Size Over-Mass (OSOM) route will be crossing the operational and non-operational rail corridors at several locations.

The TTIA does provide information and locations of a number of level crossing managed and operated by ARTC. In addition, TTIA also provide information for the railway level crossing located at Saxa Road, Montefiores, which is managed by UGLRL.

It should be noted that the proposed Heavy Vehicle and OSOM routes are crossing operational and non-operational railway corridor on CRN on seven (7) locations. These locations with aerial imagery are provided below from Figures 1 to 7.

The applicant must be aware of all crossings on CRN rail corridors located along the transport routes associated to the proposed development. Therefore, it is advised to include information on identified crossings on operational and non-operational CRN rail corridors in the EIS documents. In addition, if any adverse impacts to CRN corridor are identified in the EIS documents, the applicant shall seek approvals from UGLRL. Please also note that the applicant must adhere to the transport management and safety requirements of UGLRL and TfNSW for the matters involving CRN corridor.

Response: The TTIA identifies all active railway level crossings on the road network. Most of the seven CRN rail corridor locations identified by UGLRL do not have physical railway level crossings. Summaries of these locations are provided in Table 1.

No adverse impacts to the CRN corridor would be expected.

Table 1 – CRN Rail Corridor Locations

CRN Location	Summary	Streetview Image
1) Goolma Road near Gollan Road	No railway level crossing present.	

CRN Location	Summary	Streetview Image
2) Goolam Road near Budgalong Road	No railway level crossing present.	
3) Goolma Road near Mitchell Highway	No railway level crossing present. There is a bridge across the railway tracks.	
4) Saxa Road near Bella Vista Lane	Already identified in original TIA.	
5) Saxa Road	No side road given as a reference. Unable to locate.	
6) Castlereagh Highway near Old Mill Road	No railway level crossing present.	
7) Golden Highway near Maitland Street (Gungal)	No railway level crossing present.	

Mid-Western Council Comments

Comment 1: *The report only considers traffic generated by this project. A requirement of the SEARS was to consider cumulative traffic generated by this project and other nearby energy projects. Known nearby energy projects are Piambong Wind farm, Burrendong Hydroelectric, Uungula Wind Farm and Maryvale Solar*

Farm. Traffic generated by these projects and any other known projects in the area, together with existing traffic counts, will impact the extent of upgrades required for all access roads and intersections.

Response 1: Sections 5.3, 5.4 and 5.5 of the updated TTIA addresses the cumulative traffic impacts of Uungula Wind Farm and Maryvale Solar Farm. Construction of Uungula Wind Farm commenced in January 2024 and is anticipated to be finished by mid-2026. Construction of Maryvale Solar Farm is anticipated to commence in early 2025 and finish by late 2026. The back end of the construction programs for both these sites may overlap with the start of construction for Burrendong Wind Farm, anticipated to be late 2027.

The EIS submissions for Piambong Wind Farm and Yarrabin (Phoenix) Pumped Hydro (i.e. 'Burrendong Hydroelectric') are currently being prepared, meaning that traffic generated by these projects are unknown at this stage. As part of each of those EIS submissions, it is expected that a cumulative traffic assessment would be undertaken by the applicants to include the impacts of Burrendong Wind Farm.

Comment 2: *Appendix I Traffic & transport Assessment states that during peak periods you can expect 375 employees. Assuming the 2 employees per light vehicle this would give Average Daily Traffic (ADT) of light vehicles being 375. I flight vehicles make up 81-83% of traffic generated, then it follows that ADT for this project alone is **452** vehicle trips per day (two way). Notwithstanding ADT being underestimated throughout the report cumulative traffic impacts have not been considered in the critical calculations for pavement upgrades and intersection performance. As such the EIS underestimates vehicle trips generated by the project. The implications of this are that the proposed pavement width and intersection upgrades may likely be insufficient to support safe operation of the access roads and intersections during construction phase of the renewable energy projects.*

Response 2: As per the submitted TTIA and with the operation of the TWAF, the average daily traffic generation across the 24-month construction period is approximately 33 one-way vehicle trips per day (i.e. 66 two-way vehicle trips per day, excluding OSOM transport period). The average daily traffic generation is significantly less than the peak daily traffic generation which could be expected in the busiest two months of construction.

Nevertheless, the TTIA has been updated to assess the peak daily traffic generation which will only occur during the two peak months of construction. During these two months, the peak daily traffic generation is anticipated to be approximately 70 one-way vehicle trips per day (i.e. 140 two-way vehicle trips per day).

The intersection turning warrants are based on peak hour traffic volumes. As per TfNSW Response 17, peak light vehicle traffic generation would likely occur between 6:00am – 7:00am and 6:00pm – 7:00pm, where network traffic is not at its peak. The TTIA has been updated to assess the turning warrants for each intersection during these times, both with and without the cumulative impact of Uungula Wind Farm and Maryvale Solar Farm where applicable.

Comment 3: *Appendix I – Traffic & Transport Assessment table 4.3 provides for road pavement upgrades to Twelve Mile Rd and Yarrabin Rd to 5.5m and Burrendong Dam Rd to 5.5m – 6.5m. The Applicant has previously been advised during consultation that Council requires the traffic impact assessment must be done in accordance with Austroads guide to road design. Council will not accept the alternative methods to calculate road capacity considered in the Traffic Impact Assessment. Council's position is that the proponent must upgrade road pavement formation width and seal Yarrabin Rd, Twelve Mile Rd and Burrendong Dam Rd prior to the commencement of the project. This work must be done by Council, at the cost of the applicant, and not be done by other contractors. Austroads guide to road design part 3 Table 4.5 suggest that a minimum 7.0m seal is required where ADT accounts for more than 15% heavy vehicles (this report states 17-19%) and a total formation 9.2m with 7.2m wide seal (6.2m carriageway + 0.5m shoulder seals) is warranted for the traffic ADT 150-500 vehicles per day to be accommodated during construction and decommissioning. Pending proper assessment of cumulative ADT wider pavements may be warranted. Roadside drainage and other road associated infrastructure will also be required to be upgraded outside of the road pavement formation.*

Response 3: The road capacities assessed in Section 5.4 of the TTIA have been based on an approved transport guideline in NSW (2002 RMS Guide to Traffic Generating Developments) in order to determine the impact to Level of Service for each road affected the Project. This is a separate assessment to the road pavement upgrade assessment, which has been completed by Rex J Andrews in the Route Study.

Comment 4: *Appendix I – Traffic & Transport Assessment table 4.3 provides for intersection upgrades to Goolma Rd/Twelve Mile Rd only. Council requires the applicant to consider cumulative peak traffic volumes through intersections, that is it must include traffic volumes generated from existing local traffic, other nearby renewable energy projects during working hours and to/from workers camps out of work hours as well as consider the swept path for the largest OSOM (Over Size Over Mass) vehicle to access the roads. To that end the intersections of Goolma Rd/Twelve Mile Rd, Castlereagh Hwy / Hill End Rd, and Hill End Rd/Yarrabin Rd are to be reassessed.*

Response 4: As per Response 2 above, the TTIA has been updated to assess the turning warrants for each intersection during the peak light vehicle traffic generation times (6:00am – 7:00am and 6:00pm – 7:00pm), both with and without the cumulative impact of Uungula Wind Farm and Maryvale Solar Farm where applicable.

During the network peak hour of 3:00pm – 4:00pm, there is expected to only be a minor traffic volume generated by the Project during the peak two months of construction, consisting of 5 one-way heavy vehicle trips (i.e. 10 two-way heavy vehicle trips) and a negligible amount of light vehicle traffic (given most employees would be expected to depart the site at the end of the day between 6:00pm – 7:00pm).

Comment 6: *As workforce accommodation details remain undecided, the current traffic plans lack sufficient information to fully assess for the impact of the accommodation workforce traffic.*

Response 6: A more detailed analysis of construction worker origins and destinations has been undertaken in Section 5.2.3 of the updated TTIA, based on information and data provided in the Economic Impact Assessment for Burrendong Wind Farm (Ethos Urban, 2023).

Dubbo Regional Council Comments

Comment 1: *Dilapidation surveys shall be undertaken and agreed (with DRC) as the current condition of all affected sealed roads prior to the commencement of works. Repairing and returning affected roads to pre-works condition (based on the dilapidation survey) at the completion of the construction and commissioning phases of the project.*

Note: The dilapidation survey will be used at the end of the project as an objective tool to ensure the road is returned to Council in the pre-construction condition. However, waiting until the end of the project to undertake repairs is not practical.

Response 1: It is agreed that the applicant should undertake dilapidation surveys as part of the Project.

Comment 2: *Commitment to maintenance of affected roads both during and post construction works for damage of sealed roads that is deemed to be caused to by the additional development traffic.*

Note: This would be separate to the dilapidation survey requirement and is for routine maintenance that cannot wait until the end of the project.

Response 2: It is expected that the applicant would maintain and repair any damage to local roads within the vicinity of the site.

Comment 3: *Full length gravel resheeting to the selected unsealed sections of route 3A or 3B to a minimum width of 6 m and a minimum depth of 100mm.*

Response 3: Noted.

Comment 4: *A Driver Code of Conduct.*

Response 4: A preliminary Code of Conduct is included in Section 6.5 of the TTIA. A more detailed Code of Conduct would be expected to be included in a Traffic Management Plan to be completed post-EIS approval.

Comment 5: *Measures that will be taken to minimise traffic related incidents.*

Response 5: The preliminary requirements for a Driver Induction training are included in Section 6.5.1 of the TTIA. Further measures to minimise traffic related incidents (including the driver induction training) would be expected to be included in a Traffic Management Plan to be completed post-EIS approval.

I trust this letter provides the necessary information. Should you have any questions, please do not hesitate to contact me directly.

Yours sincerely

Stantec Australia Pty Ltd

Dave Salangsang
Principal Transport Engineer

Appendix B. Burrendong Wind Farm Ex Newcastle Port – Route Study (Rex J Andrews, 2024)

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