



Traffic & Transportation Direction

Macorna Wind Farm

Preliminary Traffic Impact Assessment

April 2026

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Macorna Wind Farm

Preliminary Traffic Impact Assessment

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Contact

Website: www.amberorg.com.au

E: info@amberorg.com.au

Phone: 1800 022 363

Executive Summary

Amber Organisation has been engaged by Atmos Renewables Pty Ltd to conduct a Traffic Impact Assessment of the proposed Macorna Wind Farm project located in Macorna, Victoria.

The Project includes the construction, operation and decommissioning of a wind farm and ancillary infrastructure with up to 114 wind turbine generators and a maximum installed capacity of approximately 820.8 megawatts.

The Project area extends across approximately 23,000 hectares and includes 26 landowner groups within the localities of Macorna, Macorna North, Loddon Vale, Tragowel, Mincha West and Macorna North. It is located within the Gannawarra Shire Council and the Loddon Shire Council Local Government Areas. The Project is also located within the draft North West Renewable Energy Zone (REZ).

Vehicular access to the Project area is proposed via several roads that connect with Loddon Valley Highway including Mincha-Canary Island Road, Mitiamo-Kerang Road, Campbells Road, Macorna Road and Old Echuca Road. Some vehicles may also access the Project via Leitchville-Kerang Road. Vehicles would utilise a number of other local roads within the Project area to access each of the wind turbine sites.

Traffic generated by the Project can be separated into three distinct phases: construction, operation and decommissioning. The peak traffic generating potential is during construction which generates vehicles associated with workers accessing the Project area and the delivery of materials and plant. During operation, the Project is expected to generate a low level of traffic associated with maintenance and operational functions. Decommissioning of the Project is anticipated to generate less traffic than the construction phase.

The construction period is expected to commence in 2029 and would take approximately 3.5 years. A construction workforce of up to 375 personnel would be on-site during the peak construction phase and would predominantly reside in Kerang, Echuca and Koondrook/Barham with a small proportion of personnel based in Cohuna and Bendigo. For the purpose of this assessment, it has been conservatively assumed that there will be no onsite accommodation facility. Further evaluation of a possible onsite accommodation facility may be undertaken as the project progresses and this report will be updated accordingly.

It is anticipated that during peak construction the Project would generate up to 500 light vehicle trips and 150 heavy vehicle trips per day. Up to 281 vehicle trips per hour are expected to be generated in the morning and evening peak hours during the peak construction period, with an average of 179 peak hour vehicle trips across the entire construction period.

Amber has undertaken an assessment of the key intersections that connect with Loddon Valley Highway that would be utilised by Project traffic. It is proposed to provide a Short Channelised Right Turn and Short Auxiliary Left Turn at the Macorna Road and Old Echuca Road intersections, and to provide Basic Right Turn and Basic Left Turn Treatments at the Campbells Road, Mitiamo-Kerang Road and Mincha-Canary Island Road intersections. Concept plans have been prepared for the proposed upgrades which have been designed for simultaneous B-double movement and the largest oversize/overmass vehicle expected to access the site.

In order to determine the potential traffic impact generated during the construction of the Project, an analysis of the operation of the key intersections with Loddon Valley Highway was carried out using SIDRA intersection modelling software. Overall, the construction traffic is expected to have a minimal impact on the operation of the roads. Accordingly, it is concluded that the road network is able to accommodate the volume of traffic generated by the Project during the construction period.

Construction materials and equipment will generally be sourced the surrounding area where practicable. Heavy vehicles may also be utilised for deliveries of ancillary parts/supplies and other large materials (e.g. steel reinforcement) from the Port of Geelong or the Melbourne metropolitan area. The heavy vehicle access route utilises roads that are designated for B-doubles as outlined within the National Heavy Vehicle Regulator Network Map which includes the relevant state-based heavy vehicle networks.

Many of the local roads within the Project Area currently provide road widths of less than 6.0m and are constructed with a dirt surface which restricts use to dry weather only. The internal road network within the Project area is proposed to be upgraded or constructed to a typical width of 6.0-7.0m to allow for two heavy vehicles to pass. It is also proposed to upgrade the 'dry weather only' roads to an all weather surface to ensure access is available year-round.

Deliveries of wind farm components will originate from the Port of Geelong utilising oversize or overmass vehicle combinations. Rex J Andrews has undertaken an assessment of the access routes between the Port and Loddon Valley Highway (refer Appendix G) which identified a number of road upgrades required in order to allow the transport vehicles to successfully access the site. An assessment has also been undertaken throughout the local road network which also identified a number of road upgrades.

In order to mitigate the potential impacts of the Project during construction, a Traffic Management Plan will be prepared which outlines a range of traffic management measures in order to ensure the construction traffic will have a minimal impact to the capacity and safety of the surrounding road network. The Traffic Management Plan will be prepared post-approval and prior to the construction of the Project.

Based on the assessment, it is concluded that the road network is able to accommodate the expected vehicle types and traffic volumes during the construction, operation, and decommissioning phases of the Project subject to the proposed road upgrades and traffic management measures. Further, the site access locations have been suitably designed to allow vehicles to safely enter and exit the site.

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1. Introduction

1.1 Overview

Amber Organisation has been engaged by Atmos Renewables Pty Ltd (Atmos) on behalf of Macorna SPV – Atmos MWV Pty Ltd as trustee for the Atmos MHV Trust to conduct a Traffic Impact Assessment of the proposed Macorna Wind Farm project in northern Victoria.

The Project includes the construction, operation and decommissioning of a wind farm and ancillary infrastructure with up to 114 wind turbine generators (WTGs) and a maximum installed capacity of approximately 820.8 megawatts (MW). The proposed layout of the Project is provided in Figure 1.

The Project is situated within the draft North West Renewable Energy Zone and occupies land around the Macorna township. It has an area of approximately 23,000 hectares which includes land within the Gannawarra Shire Council and Loddon Shire Council Local Government Areas.

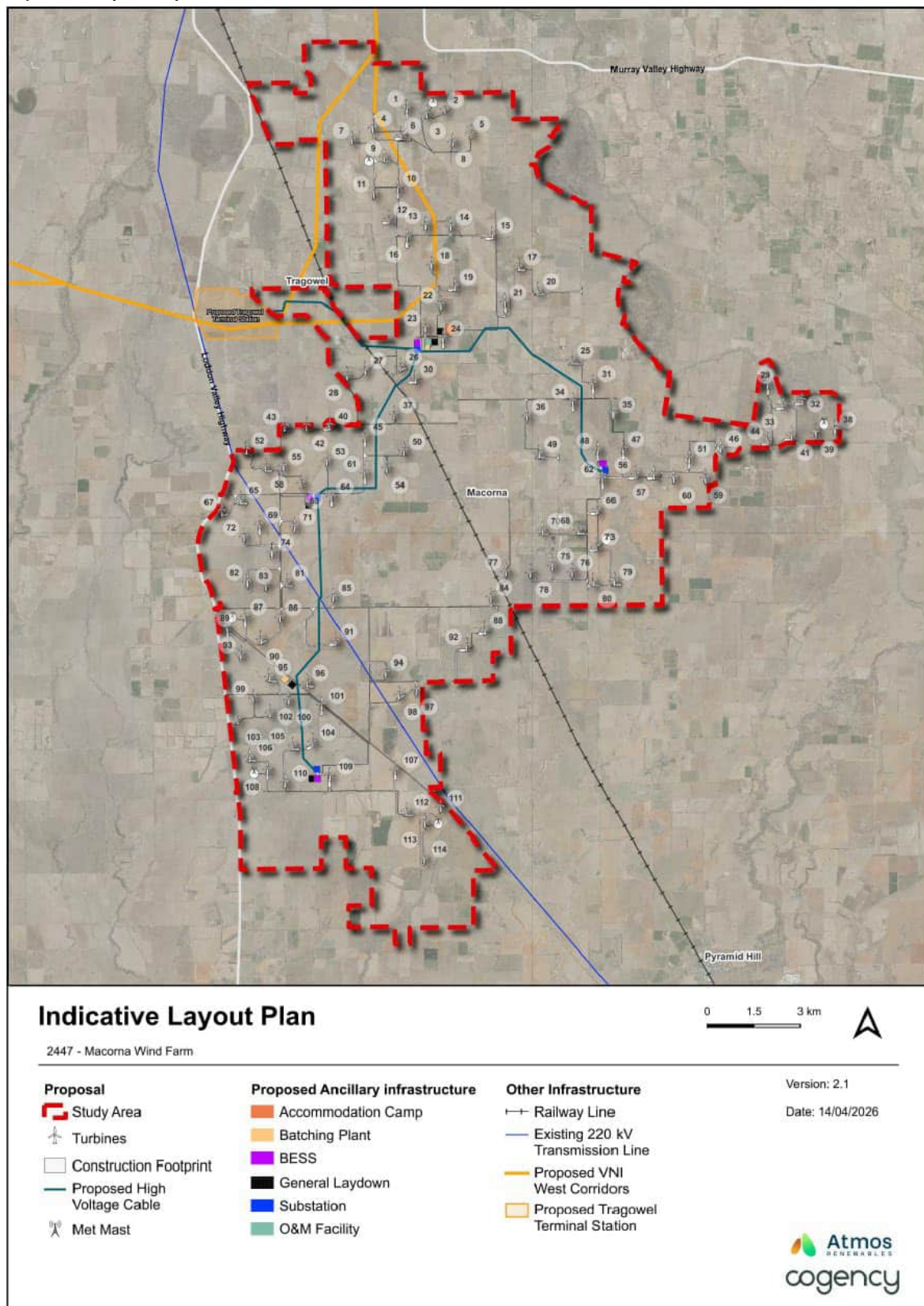
Vehicular access from the arterial network is primarily proposed from Loddon Valley Highway onto Mincha-Canary Island Road, Mitiamo-Kerang Road, Campbells Road, Macorna Road or Old Echuca Road. Light vehicles travelling from the east will likely access the site via Leitchville-Kerang Road. Vehicles will then utilise the local road network within the Project area to travel throughout the site to each turbine access.

The construction period is expected to commence in 2029 and would take approximately 3.5 years. A construction workforce of up to 375 personnel would be on-site during the peak construction phase and would predominantly reside in Kerang, Echuca and Koondrook/Barham with a small proportion of personnel based in Cohuna and Bendigo.

Deliveries of wind farm components are proposed to originate from the Port of Geelong while construction materials and equipment will generally be sourced from the surrounding area where practicable. Heavy vehicles may also be utilised for deliveries of ancillary parts/supplies and other large materials (e.g. steel reinforcement) from the Port of Geelong or the Melbourne metropolitan area.

The potential impacts and proposed mitigation for traffic generated by the proposed construction, operation and decommissioning phases of the Project are addressed in this report in accordance with relevant regulatory requirements and guidelines.

Figure 1: Project Layout



Source: Atmos and Cogency

1.2 Stakeholder Consultation

This Traffic Impact Assessment has been undertaken in consultation with relevant stakeholders with a summary provided in Table 1.

Table 1: Stakeholder Consultation

Stakeholder	Method	Correspondence / Matters Discussed
Loddon Shire Council <i>David Southcombe and Peter Hamilton</i>	Meeting with project team 12/01/26	Council provided the following comments: - Quality of roads in this area is likely to be an issue (Class 6 and 7 unlikely suitable, Class 5 would require investigation). - Council will review how road upgrades associated with wind farms have been managed in the past and provide any advice. - Council refers to the Infrastructure Design Manual (IDM) for access points/road upgrades. - Council would not maintain a 7m wide road in the long term (Council would let the road degrade back to current width). - There may be restrictions on waterway crossings, these are Goulburn Murray Water assets but Council can provide the details – generally 30 tonne loads.
Gannawarra Shire Council <i>Leigh Hollingworth</i>	Meeting with project team 22/01/26	Council provided the following comments: - Most local roads will be low traffic volumes. - Waterway crossings / bridges will be a restricting factor – Goulburn Murray Water will need to be contacted to provide data. - Council generally uses the IDM – only diversion is that Council accepts a table drain crossing an intersection. - Council will need to consider asset management implications of the proposed upgrade width of 7m, once proposed upgrades / road widening is confirmed. - Pre-condition and dilapidation surveys will be required prior to and during construction.

1.3 Purpose of Document

This Traffic Impact Assessment has been prepared to assess the potential construction, operational, and decommissioning traffic impacts and the access arrangements of the Project. It responds to the *Ministerial Guidelines for the Assessment of Environmental Effects under the Environment Effects Act 1978* which states the following under Table 1 in relation to referral criteria:

Potential for significant effects on the amenity of a substantial number of residents, due to extensive or major, long-term changes in visual, noise and traffic conditions.

More specifically, this report addresses the following key matters:

- Details of both light and heavy vehicle traffic volumes and proposed transport routes during construction, operation, and decommissioning.
- An assessment of the potential traffic impacts of the Project on road network function and safety.
- An assessment of the capacity of the existing road network to accommodate the type and volume of traffic generated by the Project, including oversize/overmass (OSOM) vehicles.
- Details of measures to mitigate and/or manage potential impacts, including construction traffic control, road dilapidation surveys and measures to control dust generated by traffic volumes.
- Details of access roads and how these connect to the existing road network and ongoing operational maintenance.

The traffic assessment has been based on surveys and observations at the site and has been undertaken in accordance with relevant Austroads Guidelines.

2. Existing Conditions

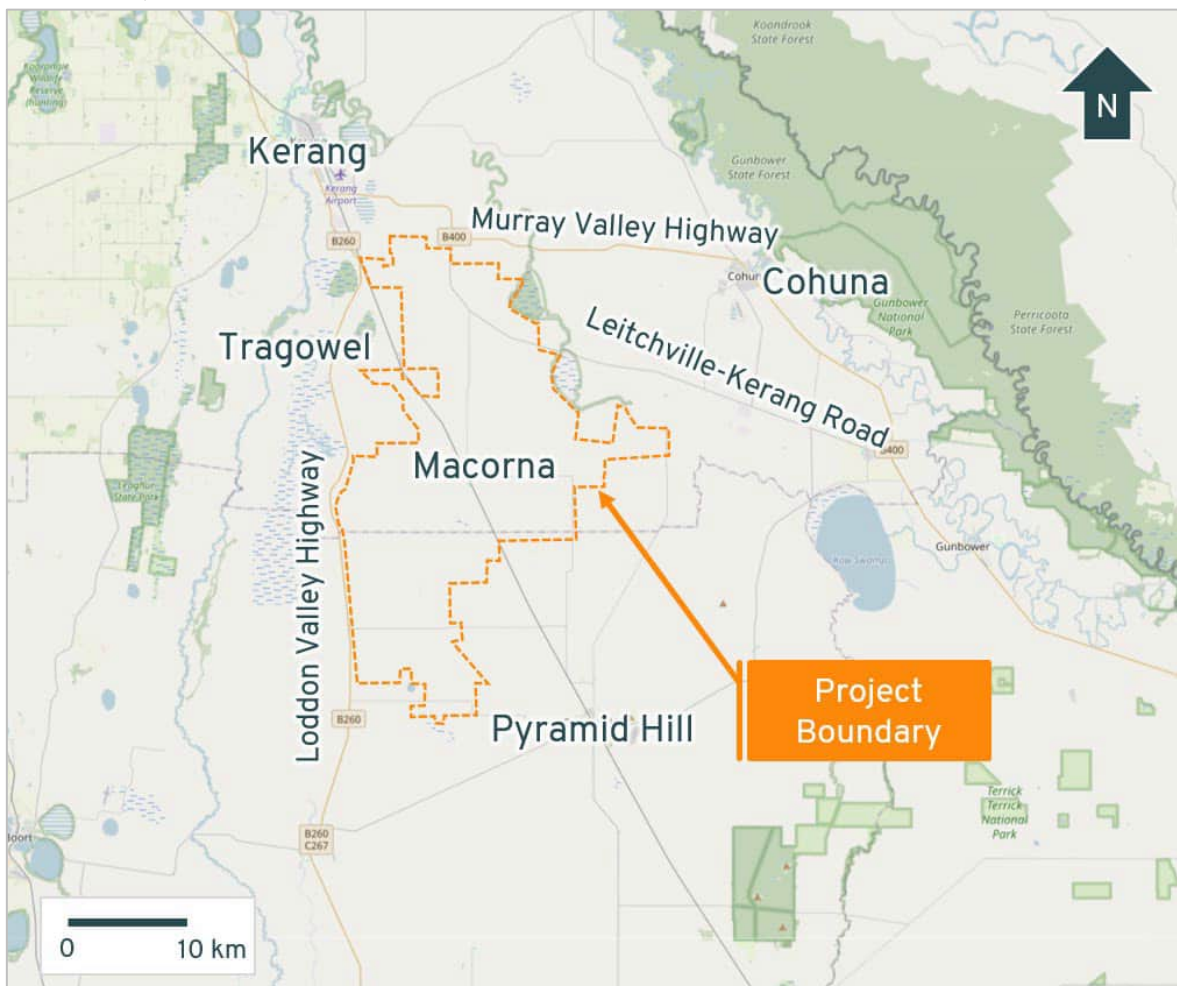
2.1 Site Location

The Project is partially situated within the draft North West Renewable Energy Zone and occupies land around the Macorna township. It has an area of approximately 23,000 hectares which includes land within the Gannawarra Shire Council and Loddon Shire Council Local Government Areas.

The Project comprises approximately 26 landowner groups, within the localities of Macorna, Macorna North, Loddon Vale, Tragowel, Mincha West and Macorna North.

Figure 2 shows the location of the Project in relation to the surrounding transport network.

Figure 2: Project Location



Source: OpenStreetMap

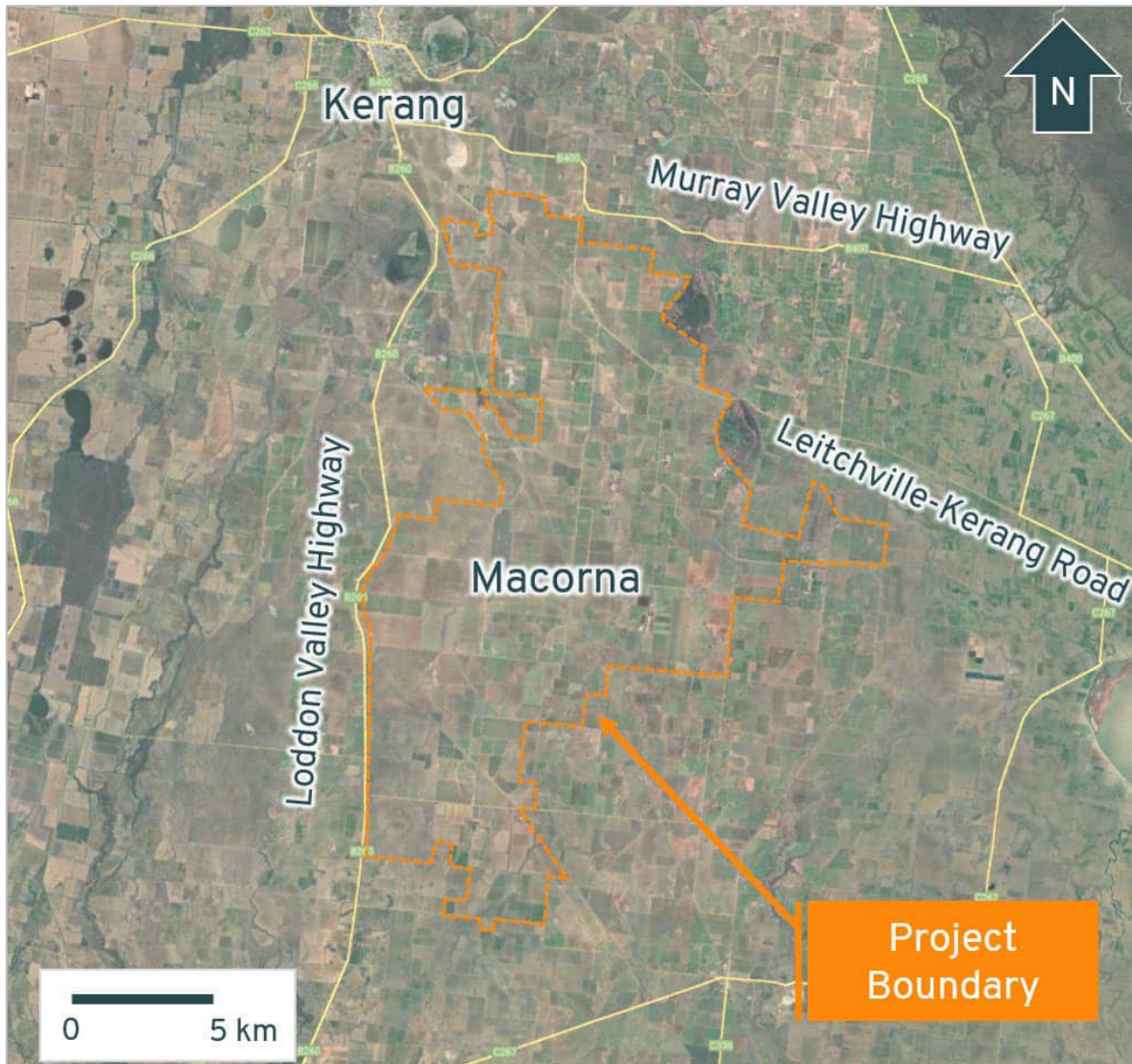
The figure shows the Project is connected with the surrounding Primary State Arterial Road network via Loddon Valley Highway (Transport Zone 1) to the west and Murray Valley Highway (Transport Zone 2) to the north. Access is also provided to the Secondary State Arterial Road network via Leitchville-Kerang Road (Transport Zone 3) to the east. These roads provide access to a number of nearby towns including Kerang to the north, Bendigo to the south and Echuca to the

east. The figure also shows that there are a number of local roads that run through the Project Area.

The Project Area and surrounding land are largely zoned as Farming Zone (FZ), with some alternative land use zonings associated transport infrastructure, townships, and conservation.

Figure 3 provides an aerial photograph of the Project Area and the surrounding area. The figure shows the Project Area and surrounding area are occupied by agricultural land use. It also shows the location of the Macorna township near the centre of the Project Area.

Figure 3: Aerial Photograph of Project and Surrounding Area



Source: Google Maps

2.2 Road Network

Loddon Valley Highway is located to the west of the Project and runs in a general north-south alignment and provides a key link with Kerang to the north and Bendigo and Melbourne to the south. Murray Valley Highway operates in an east-west alignment to the north of the Project. Both of these roads have a sealed carriageway and provide one lane of traffic in each direction, with a speed limit of 100 km/hr.

The remaining roads within the Project Boundary and the surrounding area are local roads which are predominantly unsealed excluding Kerang-Macorna Road, Leitchville-Kerang Road and Macorna-Pyramid Road. Further details on each of the local roads are detailed in Section 6.1.3.

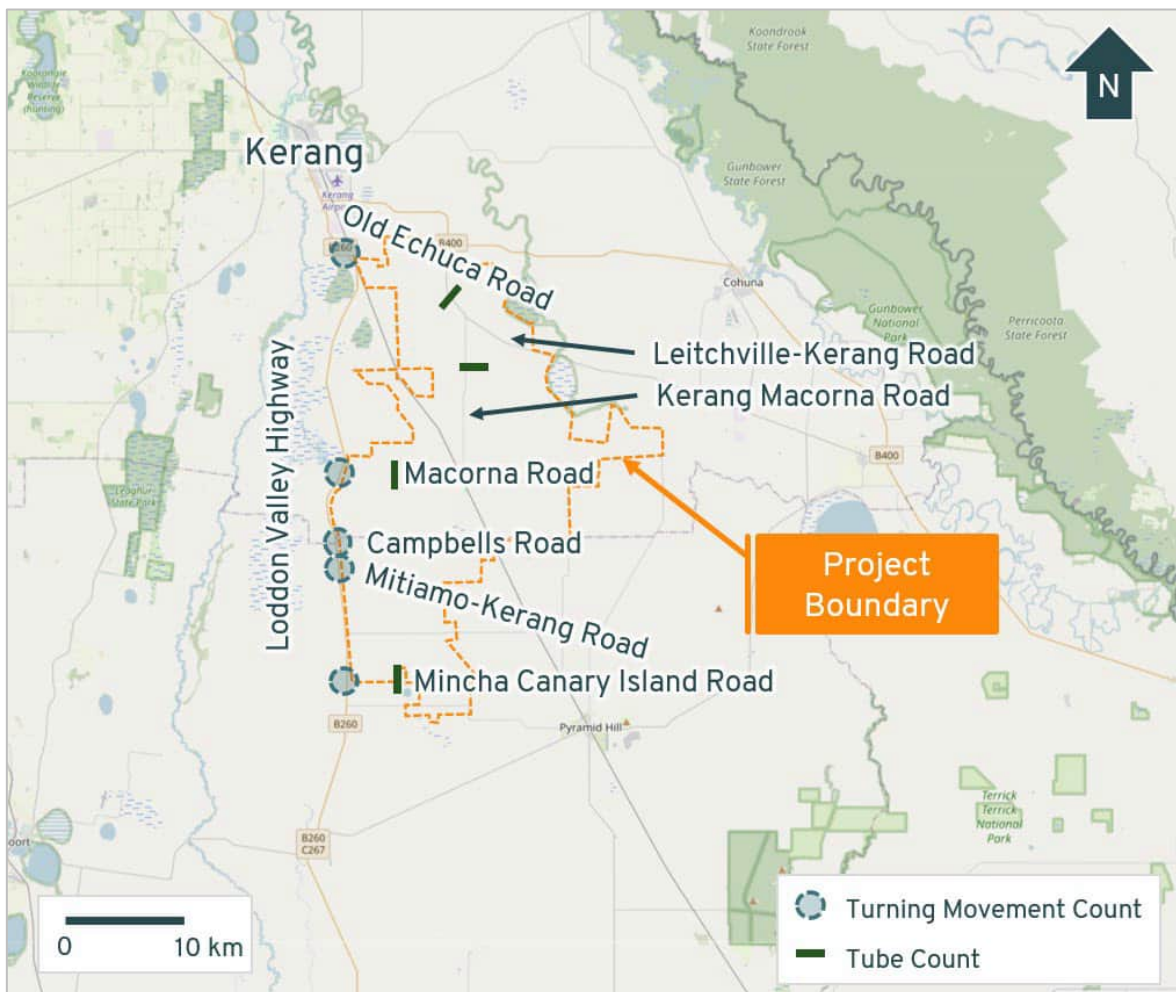
A number of channels, rivers, and streams run through the surrounding area, and there are a number of bridges provided to allow suitable vehicle access over these features. All of the channels are managed by Goulburn-Murray Water for irrigation purposes.

All intersections within the surrounding area are priority controlled and typically form T-intersections. Vehicles exiting the local roads onto the arterial network are required to give way and no turn treatments are provided on the road network.

2.3 Traffic Volumes

Traffic surveys of the road network surrounding the Project were undertaken to establish the existing traffic conditions. The surveys include turning movement count surveys at each intersection expected to be utilised by Project traffic from Loddon Valley Highway and 7-day tube counts surveys along key local roads. The survey locations are illustrated in Figure 4.

Figure 4: Traffic Survey Locations



Source: OpenStreetMap

2.3.1 Turning Movement Counts

Amber commissioned turning movement count surveys at the following intersections to determine the existing traffic volumes in the area:

- Loddon Valley Highway and Mincha-Canary Island Road
- Loddon Valley Highway and Mitiamo-Kerang Road
- Loddon Valley Highway and Campbells Road
- Loddon Valley Highway and Macorna Road
- Loddon Valley Highway and Old Echuca Road

The surveys were undertaken on Tuesday 9 December 2025 between 7:00am to 10:00am and 3:00pm to 6:00pm. A summary of the peak hour survey results is presented in Figure 5 to Figure 9 with the full data provided within Appendix A.

Figure 5: Peak Hour Survey Results - Loddon Valley Highway / Mincha-Canary Island Road

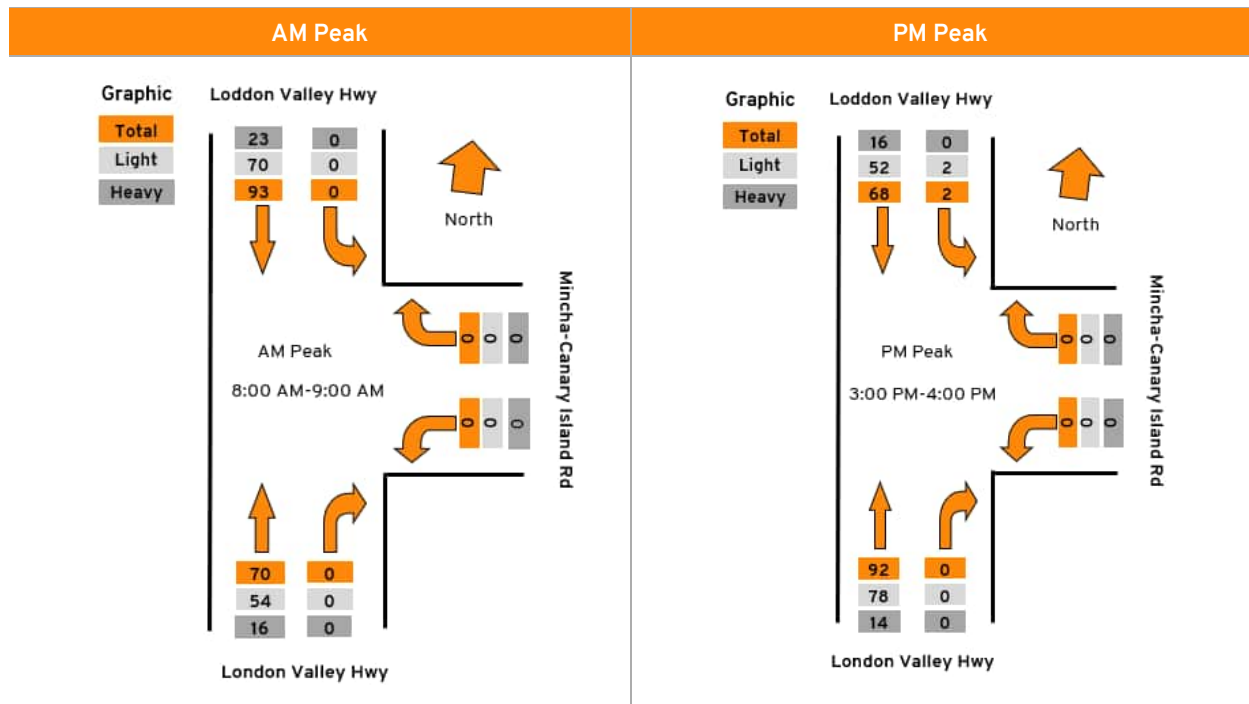


Figure 6: Peak Hour Survey Results - Loddon Valley Highway / Mitiamo-Kerang Road

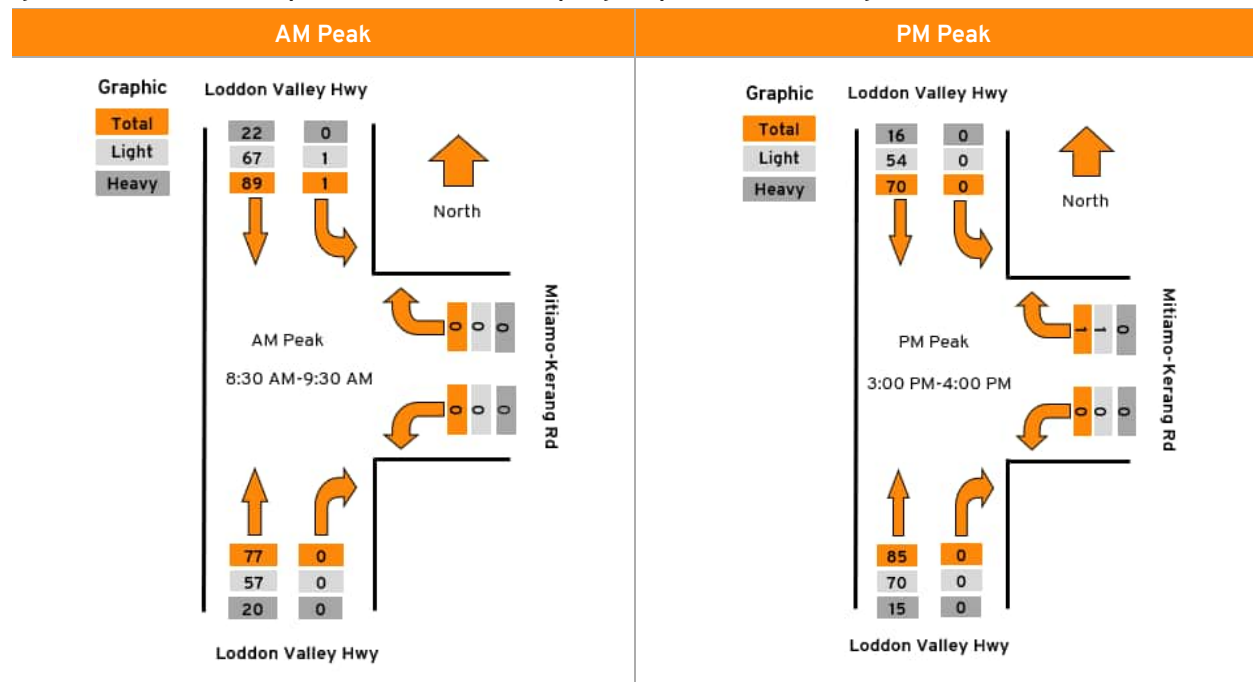


Figure 7: Peak Hour Survey Results - Loddon Valley Highway / Campbells Road

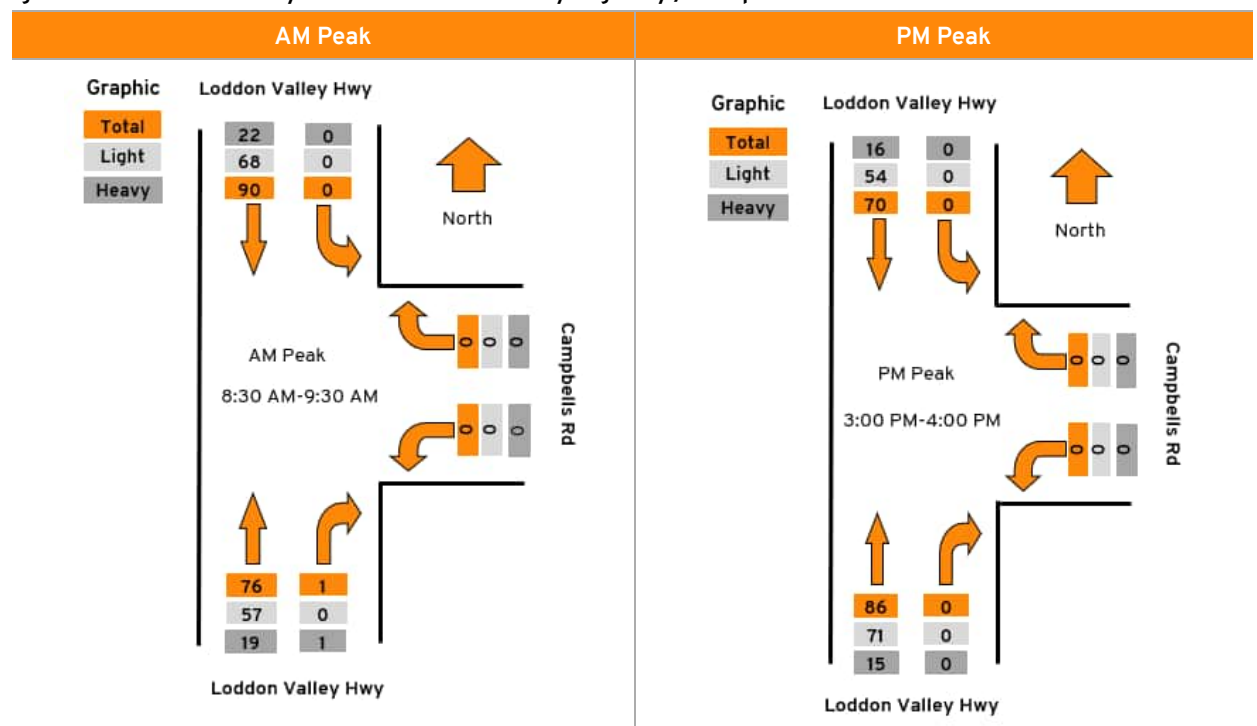


Figure 8: Peak Hour Survey Results – Loddon Valley Highway / Macorna Road

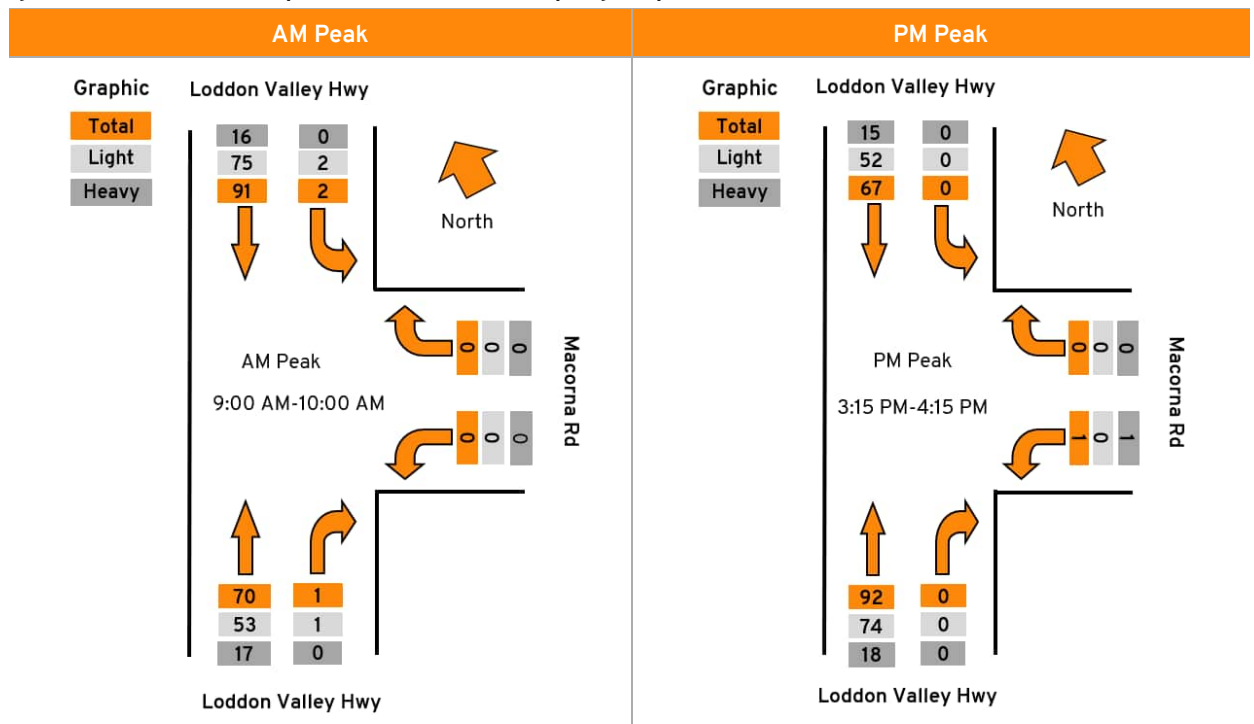
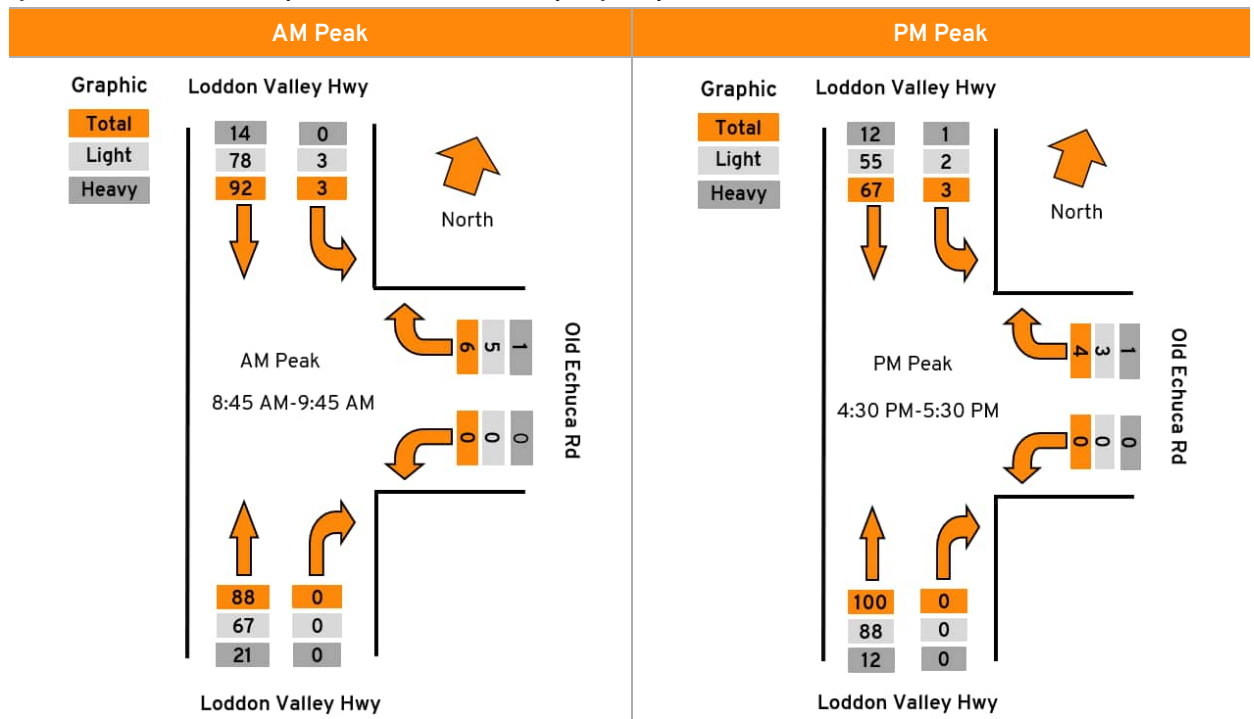


Figure 9: Peak Hour Survey Results – Loddon Valley Highway / Old Echuca Road



The peak hours for each intersection varied slightly, with the morning peak hours recorded between 8:00am-10:00am and the evening peak hours recorded between 3:00pm-5:30pm.

The majority of movements at each intersection were through movements along Loddon Valley Highway, with slightly higher southbound flow in the AM peak and northbound in the PM peak. Heavy vehicles made up approximately 23% of traffic in the AM peak and 19% of traffic in the PM peak.

Mincha-Canary Island Road, Mitiamo-Kerang Road, Campbells Road and Macorna Road recorded up to four vehicle movements during the survey period, indicating very low traffic volumes along the local roads. Old Echuca Road carried slightly more vehicles, with 16 recorded movements across the survey period, all travelling to/from the north on Loddon Valley Highway.

2.3.2 Tube Count Surveys

Amber commissioned tube count surveys on the following key local roads to determine the existing traffic volumes and speeds over a typical week in the area:

- Leitchville-Kerang Road – 200m south of Old Echuca Road
- Kerang-Macorna Road – 200m north of Kelly Road
- Mincha-Canary Island Road – 200m east of Loddon Vale Highway
- Macorna Road – 200m east of Loddon Vale Highway

The tube counts were completed between Monday 8 December and Monday 15 December 2025. The survey results are provided in Appendix B with a summary presented in Table 2 to Table 5.

Table 2: Leitchville-Kerang Road Traffic Volumes – 200m south of Old Echuca Road

Direction	Weekday Traffic (vpd)	Weekday AM Peak (vph) 9am-10am	Weekday PM Peak (vph) 4pm-5pm	85 th Percentile Speed (km/hr)	Heavy Vehicle Percentage
Northbound	290	23	27	95.3	25.2%
Southbound	263	21	24	92.7	24.0%
Both Directions	553	43	51	94.3	24.6%

Table 3: Kerang-Macorna Road Traffic Volumes – 200m north of Kelly Road

Direction	Weekday Traffic (vpd)	Weekday AM Peak (vph) 10am-11am	Weekday PM Peak (vph) 4pm-5pm	85 th Percentile Speed (km/hr)	Heavy Vehicle Percentage
Northbound	108	9	8	103.3	31.2%
Southbound	103	8	11	100.4	32.2%
Both Directions	211	17	19	101.9	31.7%

Table 4: Mincha-Canary Island Road Traffic Volumes – 200m east of Loddon Vale Highway

Direction	Weekday Traffic (vpd)	Weekday AM Peak (vph) 9am-10am	Weekday PM Peak (vph) 2pm-3pm	85 th Percentile Speed (km/hr)	Heavy Vehicle Percentage
Eastbound	18	2	3	44.5	25.6%
Westbound	17	1	2	52.5	21.7%
Both Directions	35	3	5	49.9	23.7%

Table 5: Macorna Road Traffic Volumes – 200m east of Loddon Vale Highway

Direction	Weekday Traffic (vpd)	Weekday AM Peak (vph) 9am-10am	Weekday PM Peak (vph) 4pm-5pm	85 th Percentile Speed (km/hr)	Heavy Vehicle Percentage
Eastbound	24	2	3	59.4	41.7%
Westbound	23	2	2	67.9	41.9%
Both Directions	47	4	5	62.7	41.8%

The peak hours for each intersection varied slightly, with the morning peak hours recorded between 9:00am-11:00am and the evening peak hours recorded between 2:00pm-5:00pm.

The survey data indicates that all of the surveyed roads currently experience a very low level of daily traffic, with the distribution of traffic in each direction relatively evenly split. The percentage of heavy vehicles is typically between 24% - 42%, with the highest proportion of heavy vehicles occurring along Macorna Road.

Key results for each road are summarised below:

- Leitchville-Kerang Road carries the highest volume of traffic given that it is sealed and provides for through traffic in addition to local traffic. The 85th percentile speed is slightly less than the posted speed limit of 100 km/hr.
- Kerang-Macorna Road carries the second highest volume of traffic given that it is sealed and is the primary connecting road for local traffic through the northern portion of the site. The 85th percentile speed of vehicles is slightly higher than the default speed limit of 100 km/hr.
- Mincha-Canary Island Road and Macorna Road provide access for local traffic only and are both unsealed. The 85th percentile speed for both roads was significantly lower than the default speed limit of 100 km/hr, likely due to the unsealed nature of the road.

2.4 Public Transport Services

No public transport services are provided within the vicinity of the Project.

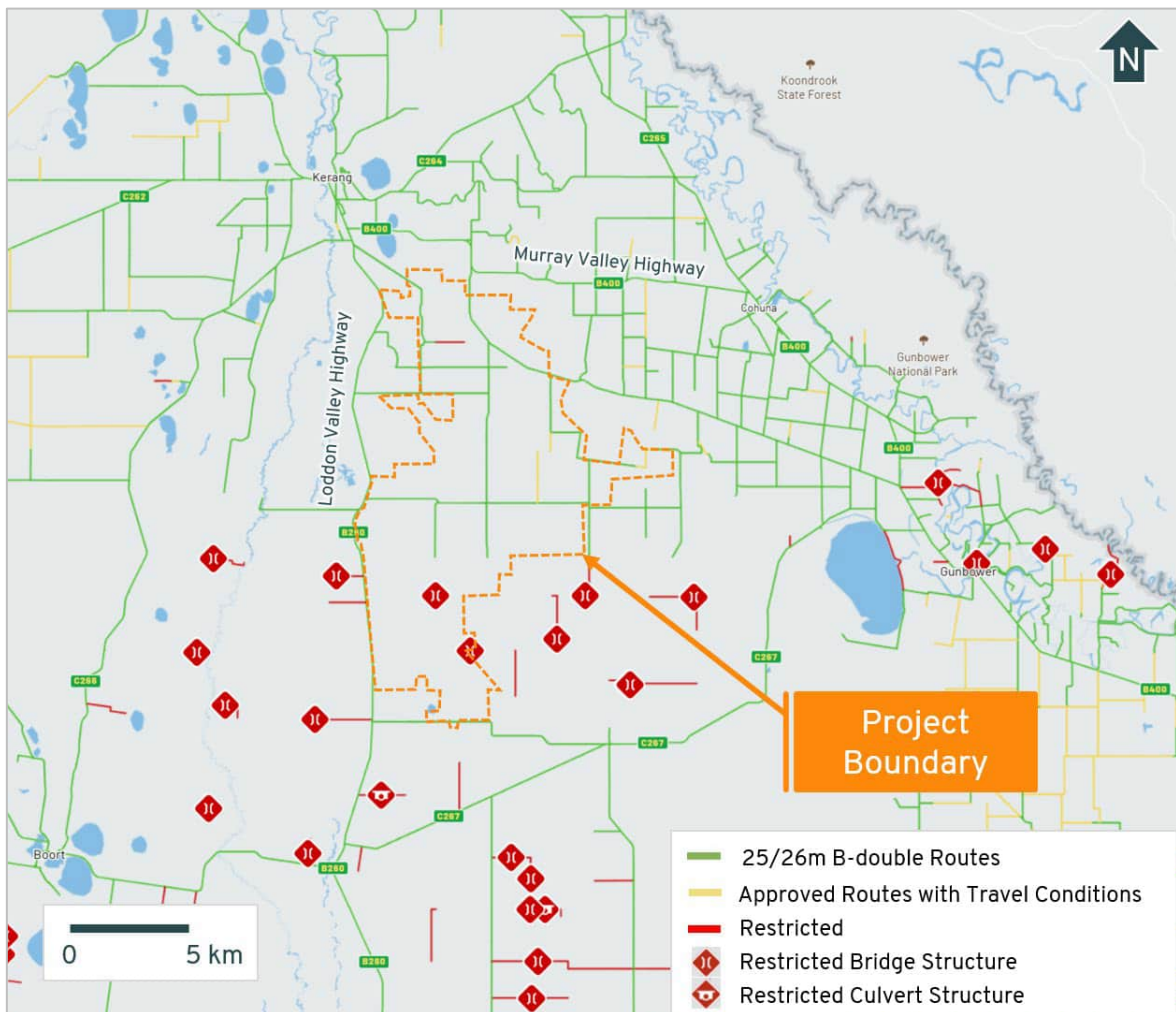
It is noted that no schools are located within the Project Area. However, it is understood that school buses operate within the wider area to provide access to schools located in Cohuna and Kerang and it is likely that school buses operate along Loddon Valley Highway. At this time, it is understood that the school buses do not operate within the Project Area.

2.5 Restricted Vehicle Access

2.5.1 B-doubles

The National Heavy Vehicle Regulator (NHVR) Restricted Access Vehicle Map for the surrounding area is provided within Figure 10.

Figure 10: NHVR 25/26m B-double Network Approved Roads



Source: NHVR Restricted Access Vehicle Map

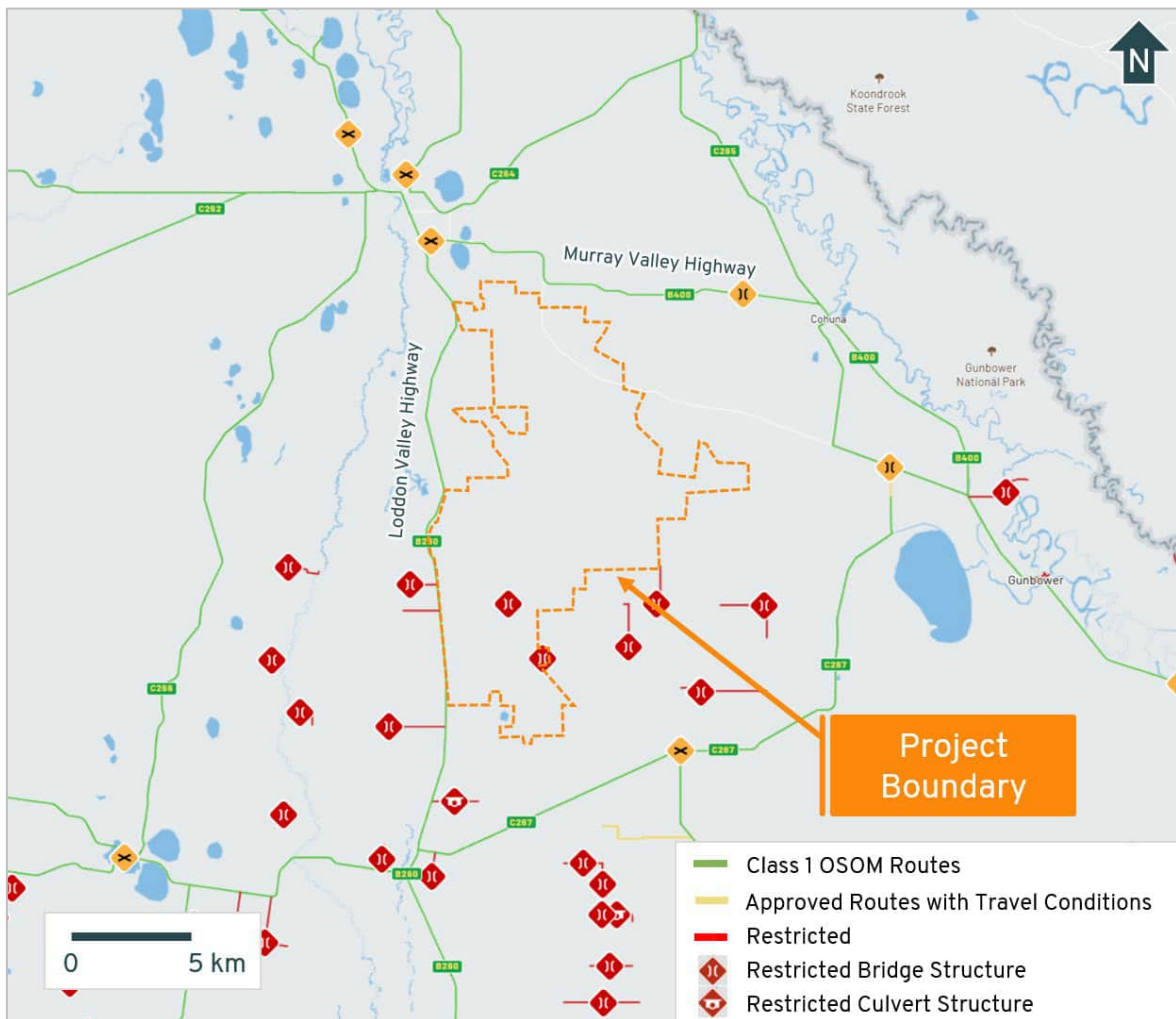
The green lines indicate approved B-double routes and the yellow lines indicate the road is approved with conditions. Subsequently the figure shows the surrounding arterial road network is rated to accommodate B-double vehicles. Some of the local roads within the Project boundary are rated to accommodate B-doubles but a number of the roads are not rated and subsequently would require further assessment to determine their suitability to accommodate Project traffic.

It is also noted that there are a number of bridges that are not suitable to accommodate B-double vehicles as shown with red symbols.

2.5.2 Class 1 OSOM

The NHVR Oversize Overmass Load Carrying Vehicles Network map for the surrounding area is provided within Figure 11. The map shows approved routes for eligible vehicles operating under the Multi-State Class 1 Load Carrying Vehicles Mass and Mass Exemption Notices. The green lines indicate approved Class 1 OSOM Vehicle routes and show the Project has access to the network via Loddon Valley Highway and Murray Valley Highway.

Figure 11: NHVR Class 1 Oversize Overmass Load Carrying Vehicles Network Approved Roads



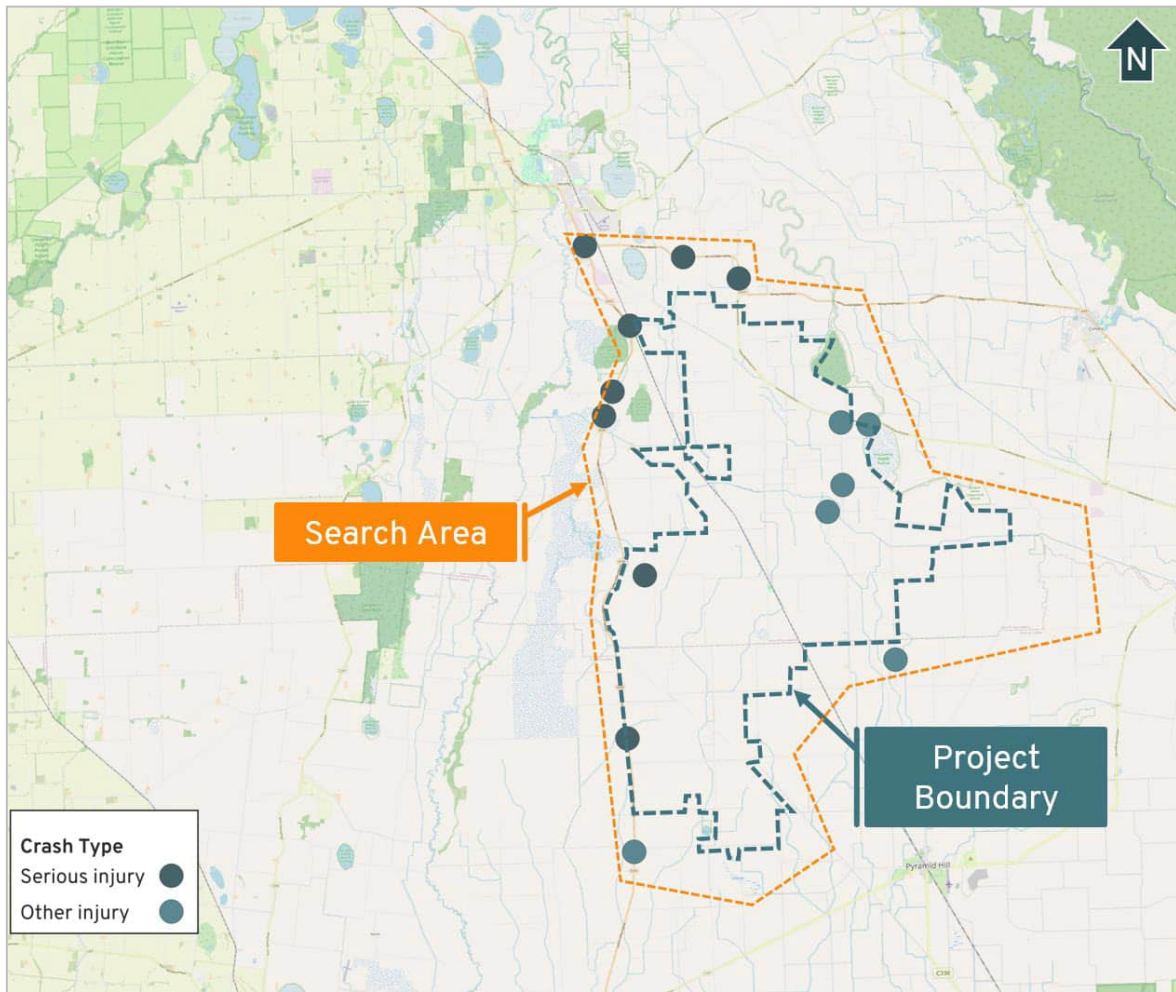
Source: NHVR Oversize Overmass Load Carrying Vehicles Network Map

Like the B-Double map, it is noted that there are a number of bridges that are not suitable to accommodate OSOM vehicles as shown with red symbols.

2.6 Crash History

A review has been completed of the DTP Crash Statistics database for all crashes within and near the Project boundary. The database provides crash data up to October 2025 and the review has been undertaken for all crashes within the five years prior. The search area and location of any crashes recorded are shown within Figure 12. The crash search revealed 12 crashes were recorded within the search area and are summarised in Table 6.

Figure 12: DTP Crash Search Results



Source: OpenStreetMap

Table 6: Crash Statistics

Road	Location	Severity	DCA Code and Crash Type	Date and Time	Light Conditions
Leitchville-Kerang Road	478m West of Dobson Road	Other injury	167 - Struck Animal	31/01/2024 (9:00 PM)	Dark No street lights
Loddon Valley Highway	23m South of Mcphail Road	Serious injury	180 - Off Carriageway On Right Bend	26/01/2024 (7:40 PM)	Day
	63m South of Murray Valley Highway	Serious injury	113 - Right Near (Intersections Only)	22/07/2022 (8:00 AM)	Day
	195m South of Canary Island-Leaghur Road	Serious injury	170 - Off Carriageway To Left	11/12/2021 (9:10 PM)	Dark No street lights
	34m North of Mountford Road	Serious injury	171 - Left Off Carriageway Into Object/Parked Vehicle	23/09/2021 (12:00 PM)	Day

Road	Location	Severity	DCA Code and Crash Type	Date and Time	Light Conditions
	1296m South of Mountford Road	Serious injury	173 - Right Off Carriageway Into Object/Parked Vehicle	9/05/2021 (10:28 AM)	Day
Mills Road	159m North of Borella Road	Other injury	170 - Off Carriageway To Left	16/05/2024 (1:15 PM)	Day
	264m South of Leitchville-Kerang Road	Other injury	170 - Off Carriageway To Left	4/11/2020 (9:19 PM)	Dark No street lights
Mincha West Road	1042m South of Campbells Road	Other injury	167 - Struck Animal	20/06/2023 (6:40 AM)	Dark No street lights
Murray Valley Highway	350m North of Kerang-Macorna Alt Road	Serious injury	167 - Struck Animal	23/05/2023 (5:45 AM)	Dark No street lights
	1119m West of Nancarrow Road	Serious injury	173 - Right Off Carriageway Into Object/Parked Vehicle	15/10/2020 (9:11 AM)	Day
Wishart Road	Intersection with Mcdougal Road	Other injury	175 - Off End Of Road/T-Intersection.	26/11/2020 (10:54 AM)	Day

Based on the above, seven of the 12 crashes occurred on the arterial road network include Loddon Valley Highway and Murray Valley Highway, with five occurring on the local road network.

No fatal crashes were recorded during the five-year search period. Given the large search area, the associated traffic volumes and road classifications, it is concluded that the road network is currently operating in a relatively safe manner.

It is noted that the crash search indicates a number of struck animal type crashes. The future Traffic Management Plan should include a process to convey this information to construction and operational staff to ensure they drive in an appropriate manner.

3. Project Description

3.1 Proposed Works

The Project would generally involve the construction, operation and decommissioning of the Macorna Wind Farm with an operating capacity of approximately 820.8 MW. The Project consists of the following key components:

- 114 Vestas V172 wind turbine units with a generating capacity of approximately 7.2 MW per unit and an approximate tower hub height of 166m.
- Foundations, crane hardstand, crane boom laydown blade laydown and a rotor assembly area.
- Access tracks, including:
 - new and upgraded tracks within Project Area generally comprising a nominal 6.5m wide access track for light vehicles.
 - 30-40 m wide corridor for oversize overmass (OSOM) vehicles within the Project Area.
- Upgrades to the proposed transport access route, as required.
- Underground cabling (low voltage (LV) and medium voltage (MV)) and overhead transmission lines (MV and high voltage (HV)) within the Project Area.
- Up to four collector substations, with associated battery energy storage systems (BESS) (size and duration to be determined).
- Connection to the grid via the adjacent proposed Victoria to New South Wales Interconnector (VNI) West Tragowel terminal station.
- Electrical switching station (noting that the switching station infrastructure will be constructed, owned and operated by the electricity provider rather than the Proponent).
- Up to seven permanent meteorological masts.
- Construction compounds and laydown areas.
- Concrete batching plants.
- Operational and maintenance facilities.
- Potential construction workers accommodation facility.
- Potential communications towers.
- Native vegetation removal and vegetation screening as required and identified by technical assessments.
- Fencing, gates and signage.

As the construction phase is completed, areas of temporary disturbance will be progressively rehabilitated in consultation with the landowners. During Project decommissioning, above ground infrastructure would be removed and the areas of disturbance would also be rehabilitated, returning the vast majority of the site to its current land capability, for ongoing agricultural or other use. No external transmission lines or associated easements are currently anticipated for the Project.

A construction workers accommodation facility may be incorporated as part of the Project, however this has not been confirmed at this stage. For a conservative traffic and transport assessment, it has been assumed that all staff will be accommodated off-site.

3.2 Construction Information

The physical construction of the Project is anticipated to commence in 2029 and take approximately 3.5 years to complete, with the proposed working hours as follows:

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

Any construction outside of these normal working hours would only be undertaken with prior approval from relevant authorities and consultation with impacted road users.

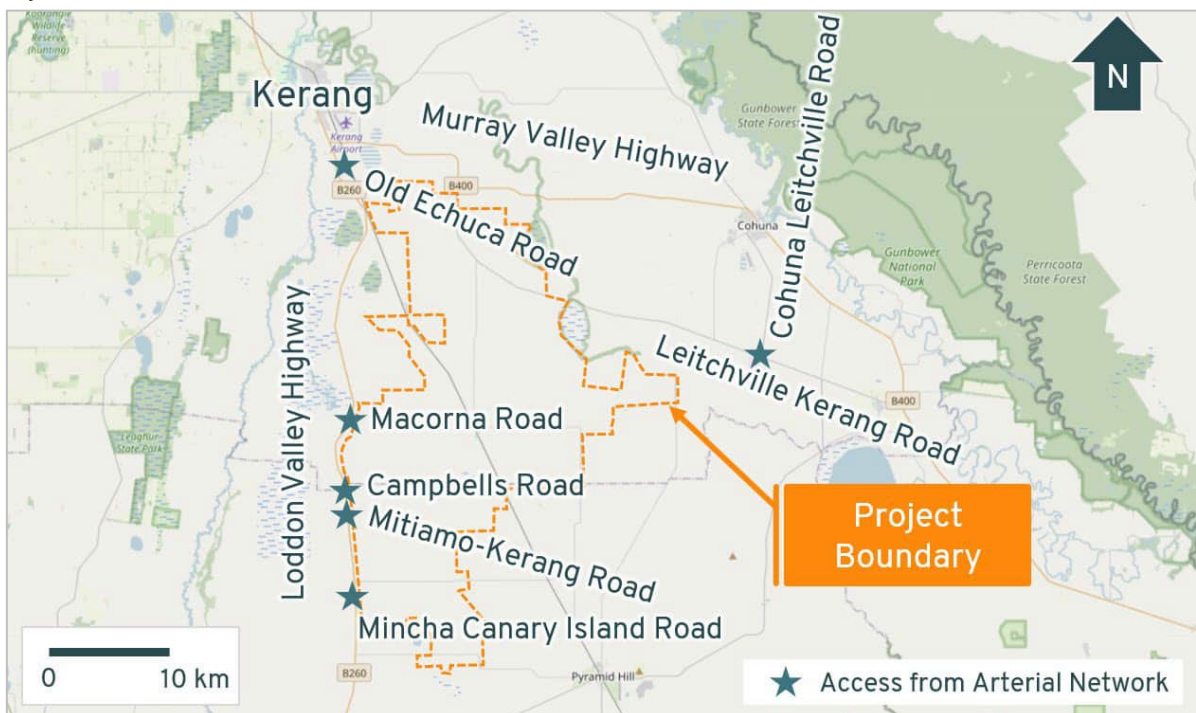
The peak construction period is expected to occur over the first 18 months. A construction workforce of up to 375 personnel would be on-site during the peak construction phase and would predominantly reside in Kerang, Echuca and Koondrook/Barham with a small proportion of personnel based in Cohuna and Bendigo.

Deliveries of wind farm components are proposed to originate from the Port of Geelong while construction materials and equipment will generally be sourced from the surrounding area where practicable. Heavy vehicles may also be utilised for deliveries of ancillary parts/supplies and other large materials (e.g. steel reinforcement) from the Port of Geelong or the Melbourne metropolitan area.

3.3 Site Access Locations

The site is proposed to be accessed from the arterial road network at six key locations as shown in Figure 13.

Figure 13: Access from the Arterial Road Network



Source: OpenStreetMap

It is noted that the Murray Valley Highway / Kerang-Macorna Road intersection would provide a route to the northern portion of the Project area from Kerang and other towns to the east. However, the intersection is not recommended for typical construction traffic due to the approach angles restricting driver sight lines.



4. Traffic Assessment

Traffic generated by the Project can be separated into three distinct phases: construction, operation and decommissioning. The peak traffic generating potential is during construction which generates vehicles associated with workers accessing the Project area and the delivery of materials and plant.

The following provides an assessment of the potential traffic impacts of the Project for each of the four phases.

4.1 Construction Phase

4.1.1 Traffic Generation

Construction traffic generated by the Project on a day-to-day basis can be broadly separated into the following categories as outlined in Table 7.

Table 7: Construction Traffic

Vehicle	Definition
General Access Vehicles (GAV)	
Light Vehicles	Light vehicles will be associated with transporting the workforce to/from the Project area. A conservative vehicle occupancy of approximately 1.5 occupants per car has been adopted to calculate the light vehicle traffic generation noting the workforce would be encouraged to carpool.
Rigid Trucks	Rigid trucks will be used to deliver raw materials including water and smaller plant and have a typical length between 8 and 13m.
Truck and Dog	Truck and Dog vehicles consist of a rigid truck towing either a dog trailer or a pig trailer and are up to 19m in length. A dog trailer is a trailer with axles at either end of the trailer, while a pig trailer has the axles centred on the trailer. These vehicles will be utilised to transport the majority of quarry materials to/from the site.
Semi-trailers	Semi-trailers will be used to transport larger equipment and materials. These vehicles consist of a truck and a single trailer with a total length of 19m.
Restricted Access Vehicles (RAV)	
B-doubles	B-doubles will also be used to transport larger plant. B-doubles consist of a truck with two trailers and have a maximum length of 26m.
Class 1 Vehicles	Class 1 vehicles include OSOM vehicles which can operate on the approved network outlined in Section 2.5.2 subject to travel conditions, as well as vehicles built for a purpose other than carrying goods such as a mobile crane, a concrete pump or drill rig which are defined as Special Purpose Vehicles (SPVs) and can also operate on the relevant approved networks subject to travel conditions.

OSOM vehicles will also be required to transport the wind turbine components and other large plant, with vehicle configurations likely to be classified as 'Superloads'. These vehicles are subject to separate permit applications and regulations, including the use of escort vehicles and travel outside peak periods. Further details on the 'Superloads' are provided in Section 7.

The construction traffic volumes for the Project have been estimated by the Applicant with a summary provided in Table 7. It is anticipated that during peak construction the Project would generate up to 500 light vehicle trips and 150 heavy vehicle trips per day. A vehicle trip is defined as a one way movement of people or goods (i.e. a vehicle servicing the Project would generate one inbound trip and another outbound trip for a total of two trips).

Table 8: Traffic Generation During Construction Period

Vehicle Type	Construction Period Average		Peak Construction Period	
	Vehicle Trips per Day (vpd)	Peak Hour Trips (vph)	Vehicle Trips per Day (vpd)	Peak Hour Trips (vph)
Light Vehicles	333	167	500	250
Heavy Vehicles (up to 26m long)				
Rigid Trucks	20	4	26	5
Truck and Dog	60	6	86	17
Semitrailers	10	2	28	6
B-doubles	0	0	2	1
Special Purpose	0	0	2	1
Heavy Vehicles Total			150	31
OSOM Vehicles	4	0	4	0
Total	423	179	650	281

Overall, the Project is expected to generate up to 281 vehicle trips per hour in the morning and evening peak hours during the peak construction period, with an average of 179 peak hour vehicle trips across the entire construction period.

Outside of the peak hours (i.e. throughout the middle of the day) the project traffic volumes are expected to be predominantly associated with heavy vehicles with an average of approximately 15 vehicle trips per hour (two-way total) during the peak construction period. However, for the purposes of the assessment, it is conservatively assumed that a maximum of up to 30 heavy vehicle trips would occur per hour to allow for fluctuations across the day.

It is considered that the light vehicle traffic volumes presented within Table 8 provide a conservatively high estimate of the traffic volumes expected to be generated by the Project. It is understood that an on-site accommodation camp may be constructed which would significantly reduce the number of light vehicle trips. Further, there is the potential to adopt shuttle buses to transport staff to/from key accommodation centres which would further reduce the light vehicle traffic numbers.

4.1.2 Traffic Distribution

Most traffic would access the Project area via Loddon Valley Highway, with some light vehicles expected to access the site from Leitchville-Kerang Road. The proposed access locations are shown in Figure 13. Vehicle distributions have been estimated based on the population and proximity of nearby towns/cities and availability of materials including aggregates, sands, water and steel reinforcement.

The following provides a breakdown of the estimated distributions for each of the vehicle classifications:

- **Light Vehicles:** The construction workforce would predominantly reside in Kerang (20%), Echuca (30%) and Koondrook/Barham (33%) with a small proportion of personnel based in Cohuna (8%) and Bendigo (9%). It is expected that light vehicles will take different routes from their origin to the various turbine access points, depending on which site they are working on and the most convenient route. Overall, it is expected that the following overall distributions may occur at each of the access points from the arterial network:
 - **Mincha-Canary Island Road:** 3.5% from south and 6% from north
 - **Mitiamo-Kerang Road:** 4.5% from south and 7% from north
 - **Campbells Road:** 1.5% from south and 9% from north
 - **Macorna Road:** 3.5% from south and 21% from north
 - **Old Echuca Road:** 2% from south and 12% from north
 - **Leitchville Kerang Road:** 30% from east
- **Heavy Vehicles:**
 - Construction materials and equipment will generally be sourced from the surrounding area where practicable. It is estimated that 50% of heavy vehicles would travel to/from the north with 50% travelling to/from the south.
 - Larger deliveries using B-doubles or Special Purpose vehicles are expected to transport more from the south. It is estimated that 20% of B-doubles and Special Purpose vehicles would travel to/from the north with 80% travelling to/from the south.
- **OSOM Vehicles:** Deliveries of wind farm components are expected to originate from the Port of Geelong while other larger vehicle combinations will travel from various suppliers. It is estimated that 100% of OSOM vehicles would travel to/from the south, noting these vehicles would travel outside of the peak hours.

The peak hour for construction traffic will occur at the start and end of the day when workers are transported to/from the Project area. Most workers are expected to arrive on-site between 6:00am and 7:00am and depart between 5:00pm and 7:00pm, noting workers generally have staggered finish times which results in the evening peak hour being less pronounced. However, for the purposes of this assessment it is conservatively assumed that the project traffic volumes during the evening peak hour are the same as the morning peak, and the peak hours coincide with the peak hours of the road network.

During the morning peak all vehicles would travel inbound towards the Project area and in the evening peak all vehicles would travel outbound away from the Project area. Heavy vehicles would be distributed throughout the day with an even split of inbound and outbound trips.

The resulting peak hour traffic volumes generated by the Project at the key intersections with Loddon Valley Highway are outlined in Figure 14 to Figure 18.

Figure 14: Project Traffic - Loddon Valley Hwy / Mincha-Canary Island Road

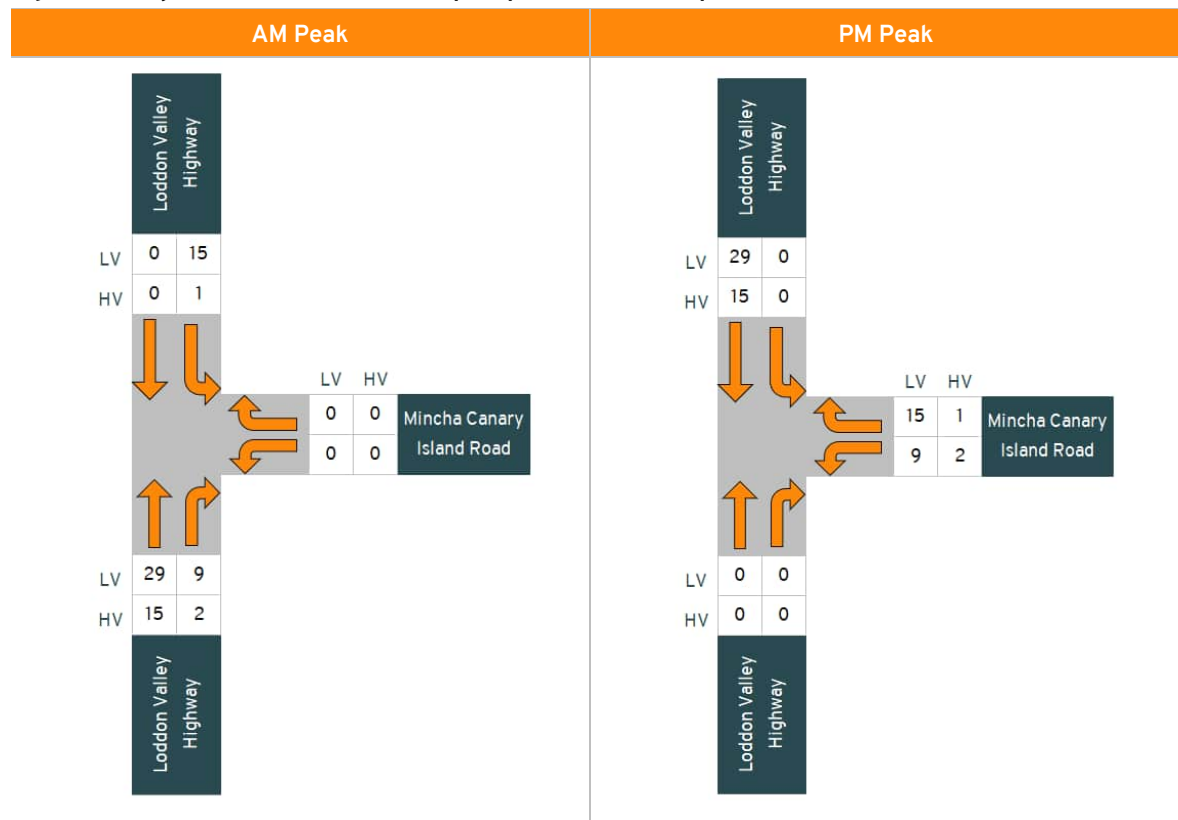


Figure 15: Project Traffic - Loddon Valley Hwy / Mitiamo-Kerang Road

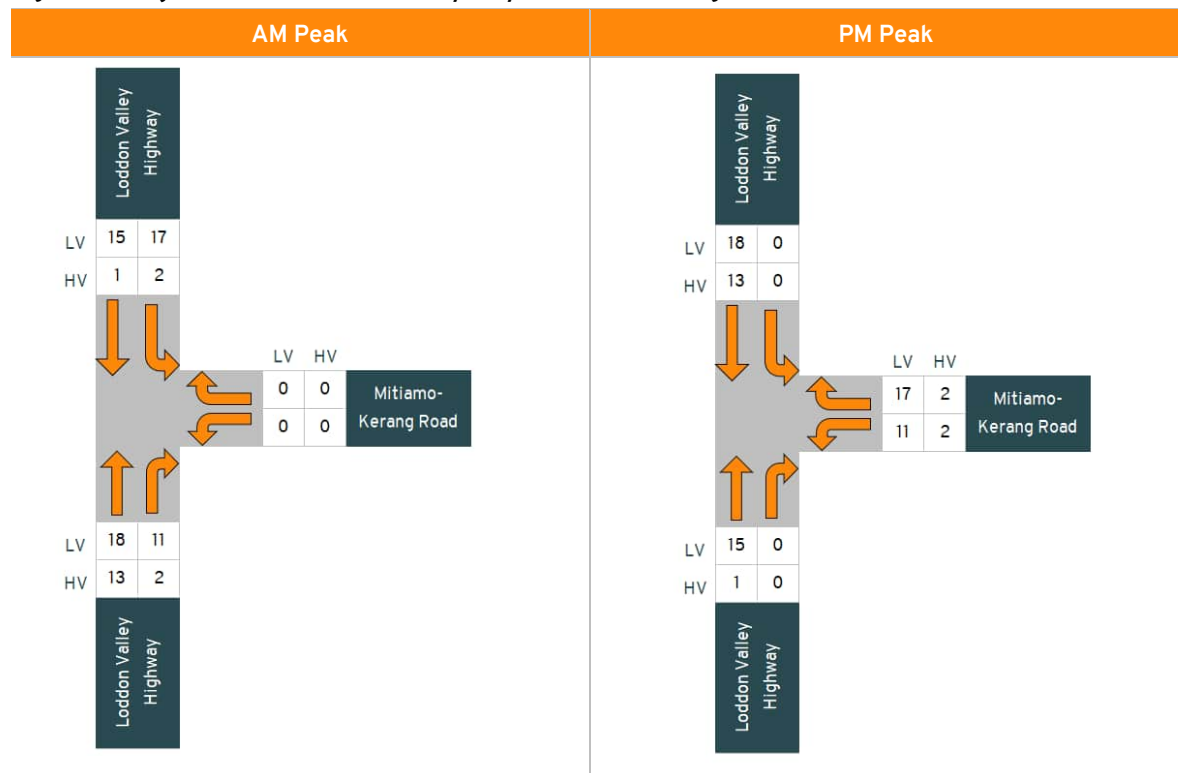


Figure 16: Project Traffic – Loddon Valley Hwy / Campbells Road

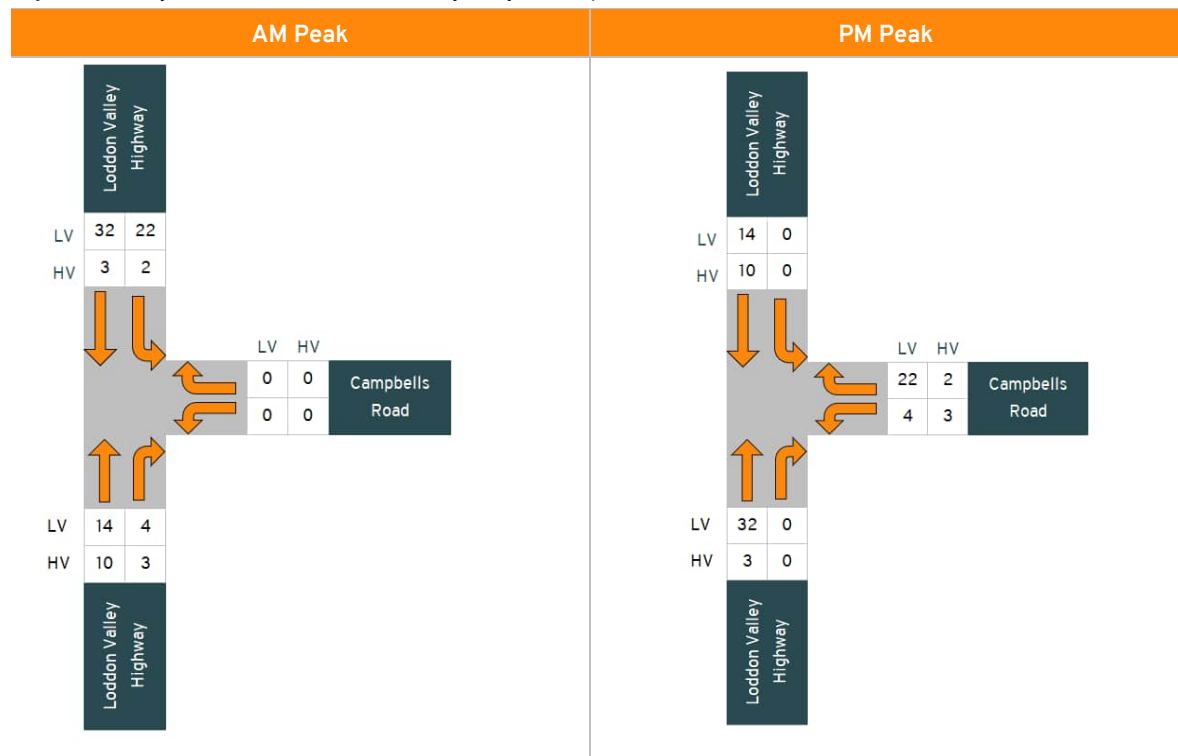


Figure 17: Project Traffic – Loddon Valley Hwy / Macorna Road

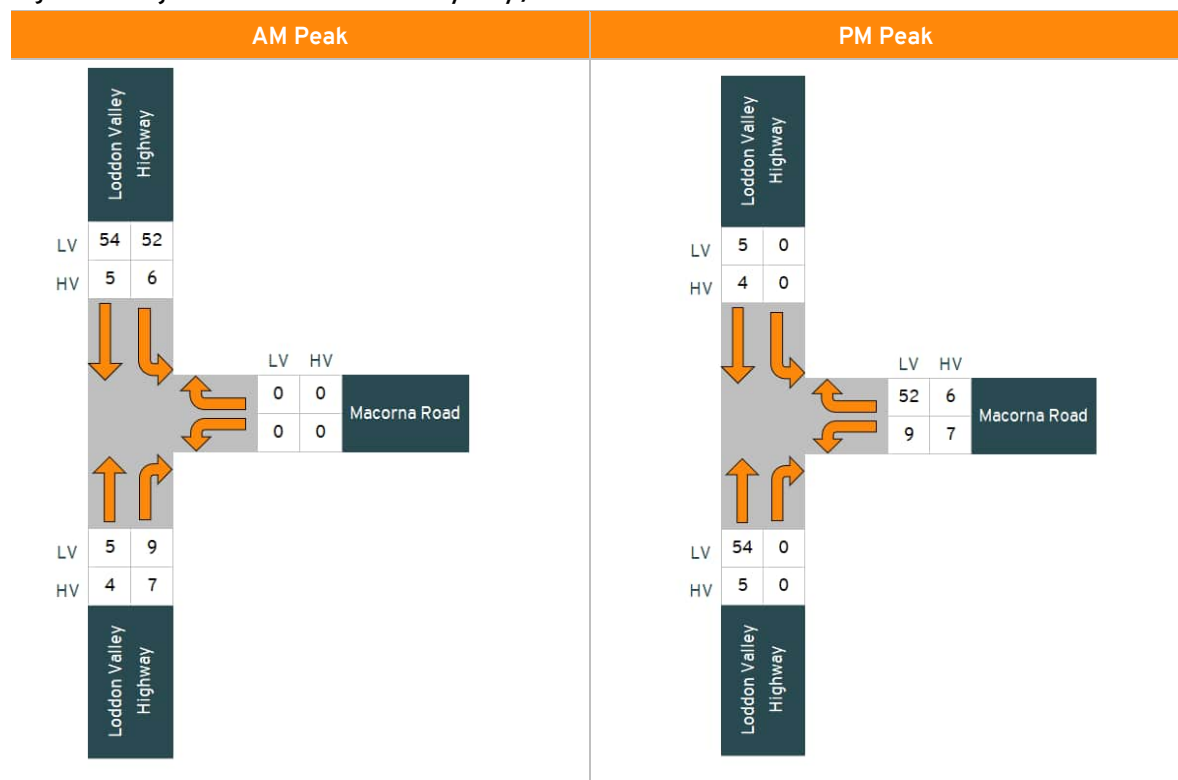
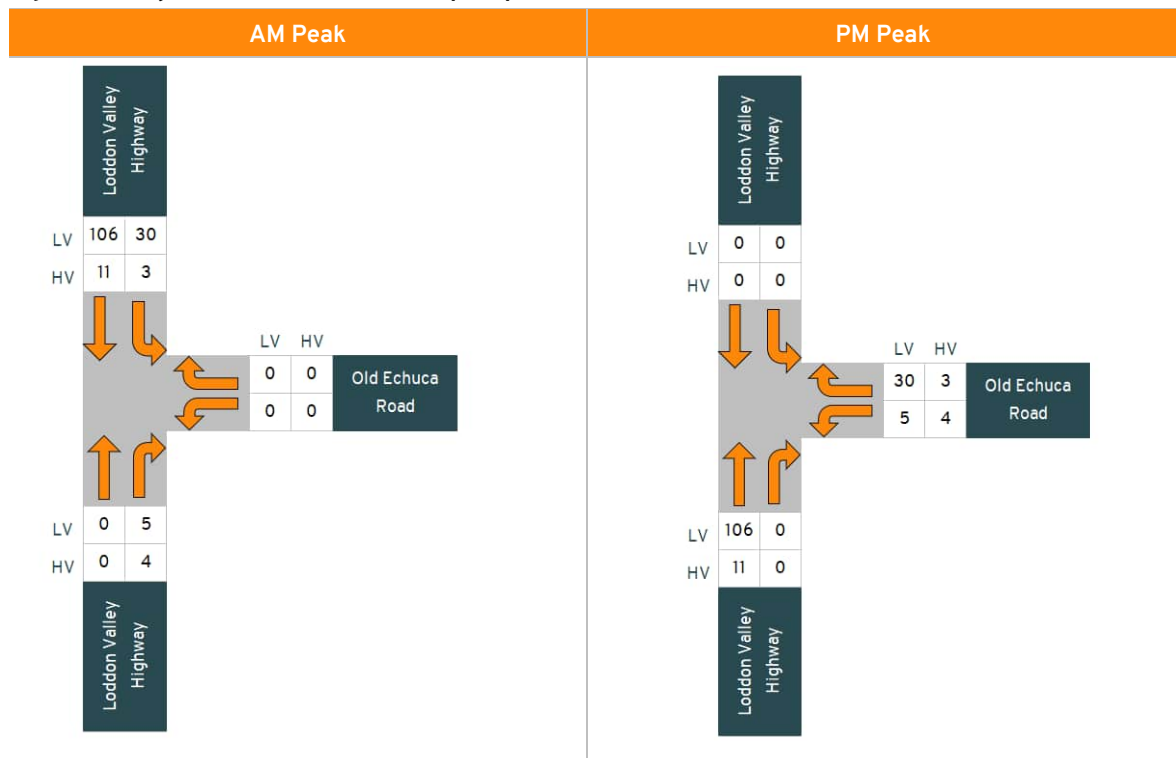


Figure 18: Project Traffic – Loddon Valley Hwy / Old Echuca Road



Vehicles travelling from the east would utilise Leitchville-Kerang Road. Near Leitchville the road is an arterial road and is a local road closer to the site. Between Leitchville and the site through vehicles are provided priority. It is expected to accommodate in the order of 75 vehicles in each of the AM and PM peak hours.

4.1.3 Cumulative Traffic Impacts

The primary potential traffic impacts of the Project are generated during construction which is anticipated to commence in 2029 and take approximately 3.5 years. A summary of the major projects proposed in the surrounding area, including an assessment of potential cumulative traffic impacts, is provided in Table 8.

The projects which are highlighted in the table have the potential to generate additional traffic along Loddon Valley Highway during the construction period. Other projects may generate additional traffic in nearby cities and townships which would be distributed across the road network and is expected to have a minimal cumulative impact.

Table 9: Assessment of Potential Cumulative Impacts of Nearby Developments

Project	Description	Potential Cumulative Impacts
Approved Projects		
Tragowel Solar Farm	Development of a 513 MW solar farm and associated infrastructure to the direct west of the site.	This project may also require the completion of the VNI West Transmission Line and Terminal Station (see below) and therefore, there is a possibility that construction timeframes may overlap. As such, there may be cumulative construction traffic impacts along Loddon Valley Highway.
Prairie Solar Farm	Development of a 240 MW solar farm and associated infrastructure approximately 26km south of the site	Construction has not yet commenced and therefore there is a possibility that construction timeframes may overlap. Due to its location, there is expected to be a negligible increase in traffic on Loddon Valley Highway, with most workers expected to be located in Bendigo rather than Kerang.
Kerang Solar Farm	Development of a 37 MW solar farm and associated infrastructure to the direct northwest of the site.	No overlap in construction timeframes is expected as construction commenced in 2024. Traffic generation during operational phase is insignificant.
Kerang Solar and BESS Hybrid	Development of a 55 MW / 110 MWh battery energy storage system and a 161 MW solar farm with associated infrastructure to the direct northwest of the site.	No overlap in construction timeframes is expected, with construction expected to commence in 2025. Traffic generation during operational phase is insignificant.
Planning Application Lodged		
Normanville Wind Energy Facility	Development of a 120 MW wind farm approximately 13km west of the site	No overlap in construction timeframes is expected, with construction expected to commence in 2027. Traffic generation during operational phase is insignificant.
Meering West Wind Farm	Development of a 1500 MW wind farm approximately 15km west of the site	No general construction traffic expected along the relevant section of Loddon Valley Highway. Travel is expected to be via Boort-Kerang Road.
EES Required		
Cannie Wind Farm	Development of a 1300 MW wind farm approximately 31km northwest of the site	Construction is expected to occur at a similar time to the Project, however due to its location, no construction traffic is expected to travel along the relevant section of Loddon Valley Highway.

Project	Description	Potential Cumulative Impacts
Scoping Requirements Finalised		
VNI West Transmission Line and Terminal Station	Development of a new transmission line and terminal station intersecting the site	The Project requires the completion of this transmission line. There may be a portion of construction traffic that overlaps with the Project. As such, there may be cumulative construction traffic impacts along Loddon Valley Highway.

The following projects (highlighted in the table) have the potential to generate additional vehicle movements along Loddon Valley Highway in the vicinity of the Project Area during the construction period:

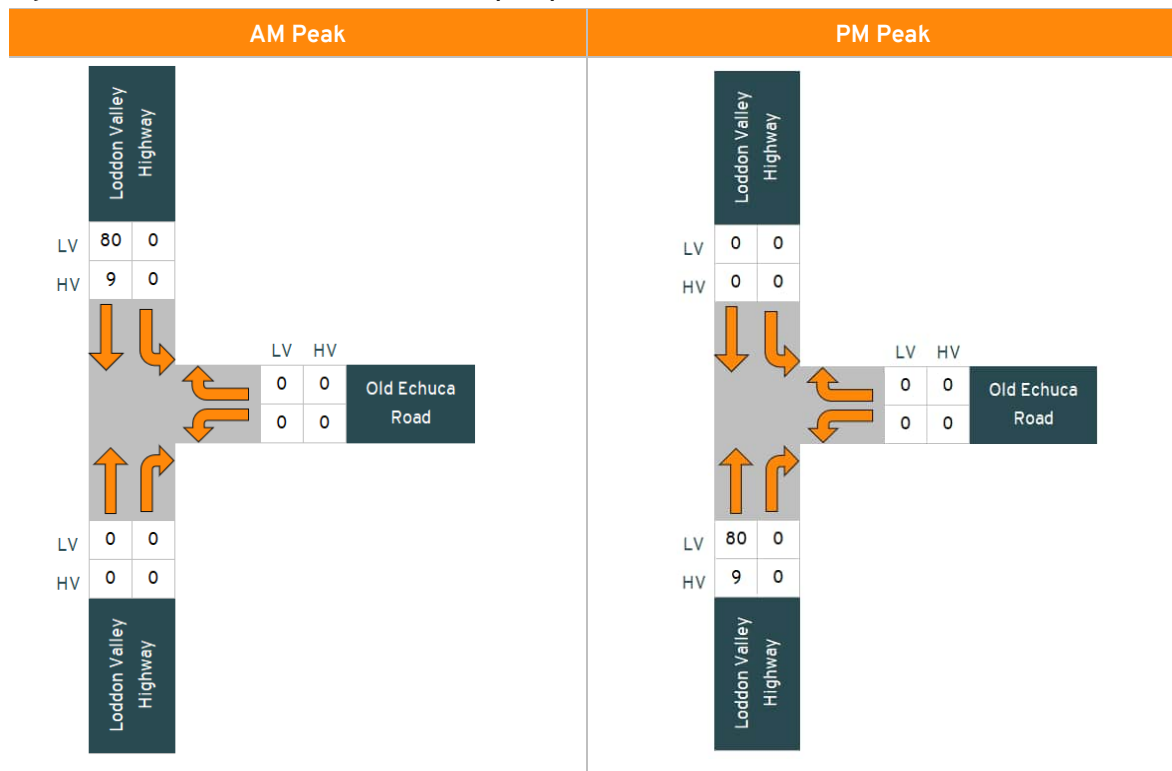
- Tragowel Solar Farm
- VNI West Transmission Line and Terminal Station

Peak construction traffic volumes are not currently publicly available for either project. For the purpose of this assessment, a high-level estimate has been prepared based on the following:

- Tragowel Solar Farm is expected to have in the order of 80 workers on site. This may equate to approximately 53 light vehicle movements and 6 heavy vehicle movements in the peak hour.
- Limited information is provided for the VNI West Transmission Line and Terminal Station. Any overlap with the Project is not expected to occur during the peak construction period. For the purpose of this assessment, it is estimated that there would be in the order of 40 workers on site. Based on the same traffic generation characteristics as Tragowel Solar Farm, this may equate to approximately 27 light vehicle movement and 3 heavy vehicle movements in the peak hour.

It is assumed that all workers will be located in nearby towns to the north and east of the site and will travel southbound on Loddon Valley Highway in the AM peak. Due to the location of the above projects, the only impacted intersection is expected to be Loddon Valley Highway / Old Echuca Road. The resulting additional traffic at this intersection is outlined in Figure 19. This assessment can be updated if further information becomes available. It is noted that Loddon Valley Highway currently carries relatively low traffic volumes and has sufficient capacity to accommodate additional demand.

Figure 19: Cumulative Traffic – Loddon Valley Hwy / Old Echuca Road



It is noted that OSOM movements may also be generated along Loddon Valley Highway or along sections of the OSOM routes proposed for Macorna Wind Farm. These vehicles would be subject to specific permits and would be expected to operate under pilot and/or police escort. It is recommended that OSOM transport associated with the Project is scheduled to avoid coinciding with other OSOM movements on the road network, thereby limiting the potential cumulative impacts (which can be addressed as part of the permit application).

4.1.4 Turn Treatment Assessment

Figure 3.25 of the *Austrroads Guide to Traffic Management Part 6: Intersections, Interchanges, and Crossings* specifies the turn treatments required on the major road approaches at unsignalised intersections. An assessment has been undertaken for the following intersections with the arterial network:

- Loddon Valley Highway / Mincha-Canary Island Road
- Loddon Valley Highway / Mitiamo-Kerang Road
- Loddon Valley Highway / Campbells Road
- Loddon Valley Highway / Macorna Road
- Loddon Valley Highway / Old Echuca Road

The traffic volumes for the assessment include the following:

- Existing AM peak traffic volumes presented in Section 2.3 adjusted by a 1.5% compounding annual growth rate for five years to reflect the peak construction period in 2030.
- Peak period Project morning construction traffic volumes presented within Figure 14 to Figure 18.

4.1.4.1 Loddon Valley Highway / Mincha-Canary Island Road

Figure 20: Total Peak Hour Volumes in Peak Construction – Loddon Valley Hwy/Mincha-Canary Island Rd

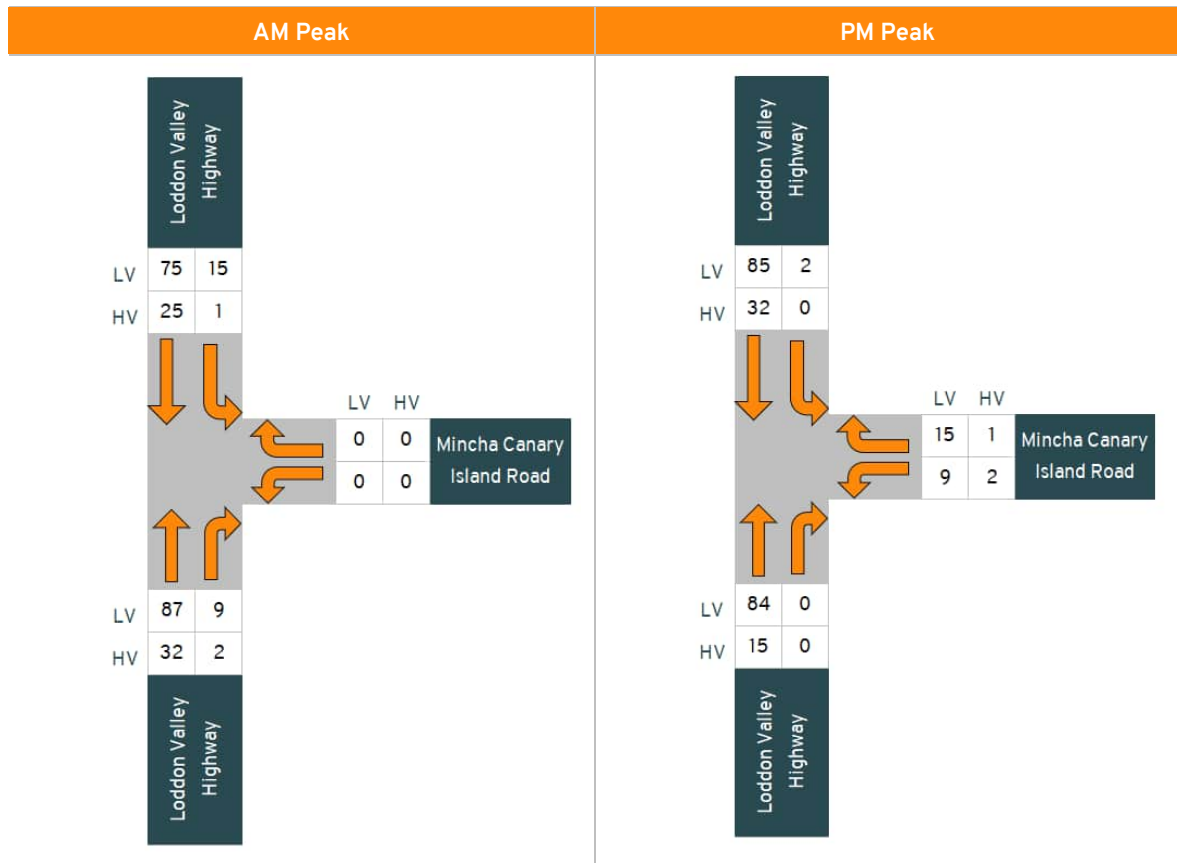
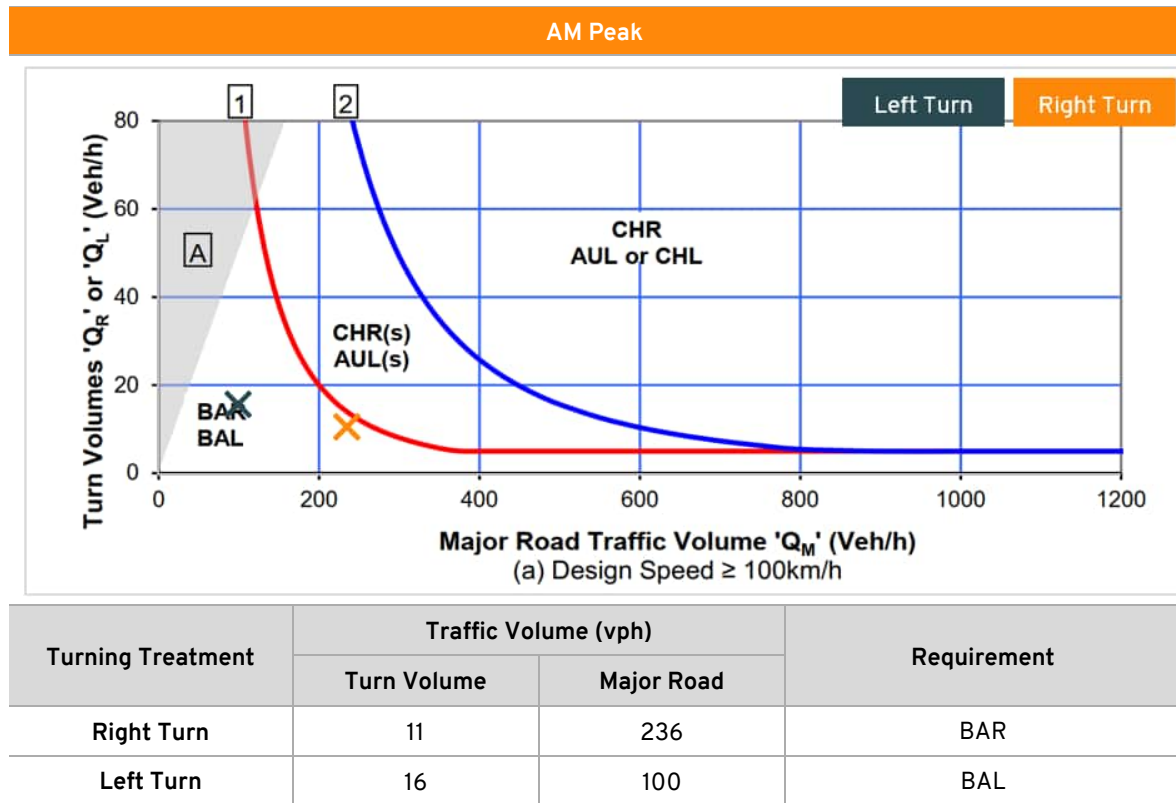


Figure 21: Austroads Turn Treatment Assessment- Loddon Valley Hwy / Mincha-Canary Island Rd



4.1.4.2 Loddon Valley Highway / Mitiamo-Kerang Road

The traffic volumes used for the assessment are provided in Figure 22 and have been plotted against the Austroads turn treatment warrants in Figure 23.

Figure 22: Total Peak Hour Volumes in Peak Construction - Loddon Valley Hwy / Mitiamo-Kerang Rd

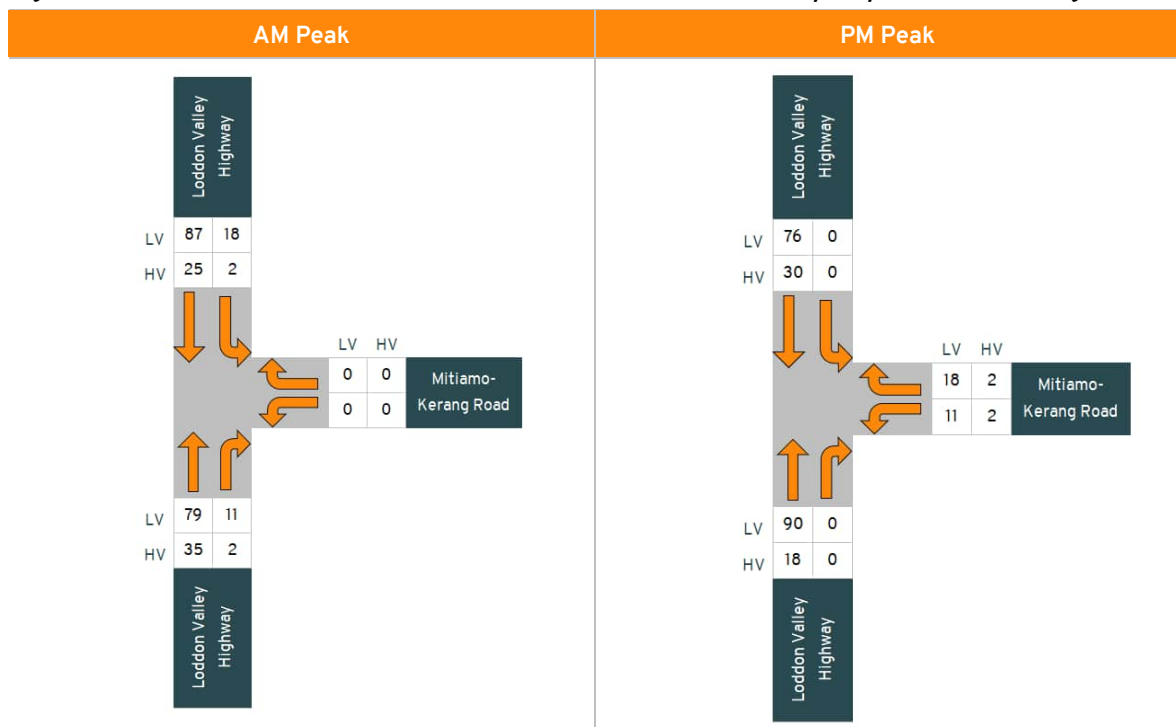
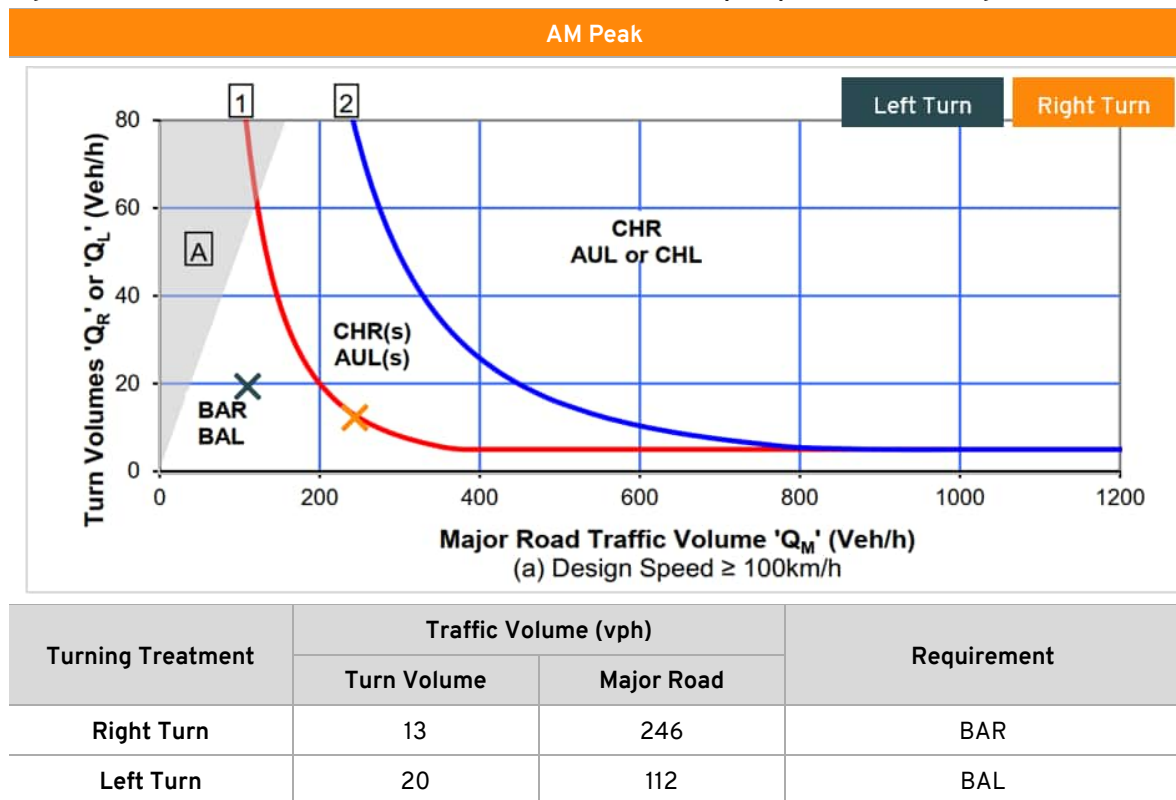


Figure 23: Austroads Turn Treatment Assessment- Loddon Valley Hwy / Mitiamo-Kerang Rd



4.1.4.3 Loddon Valley Highway / Campbells Road

The traffic volumes used for the assessment are provided in Figure 24 and have been plotted against the Austroads turn treatment warrants in Figure 25.

Figure 24: Total Peak Hour Volumes in Peak Construction – Loddon Valley Hwy / Campbells Rd

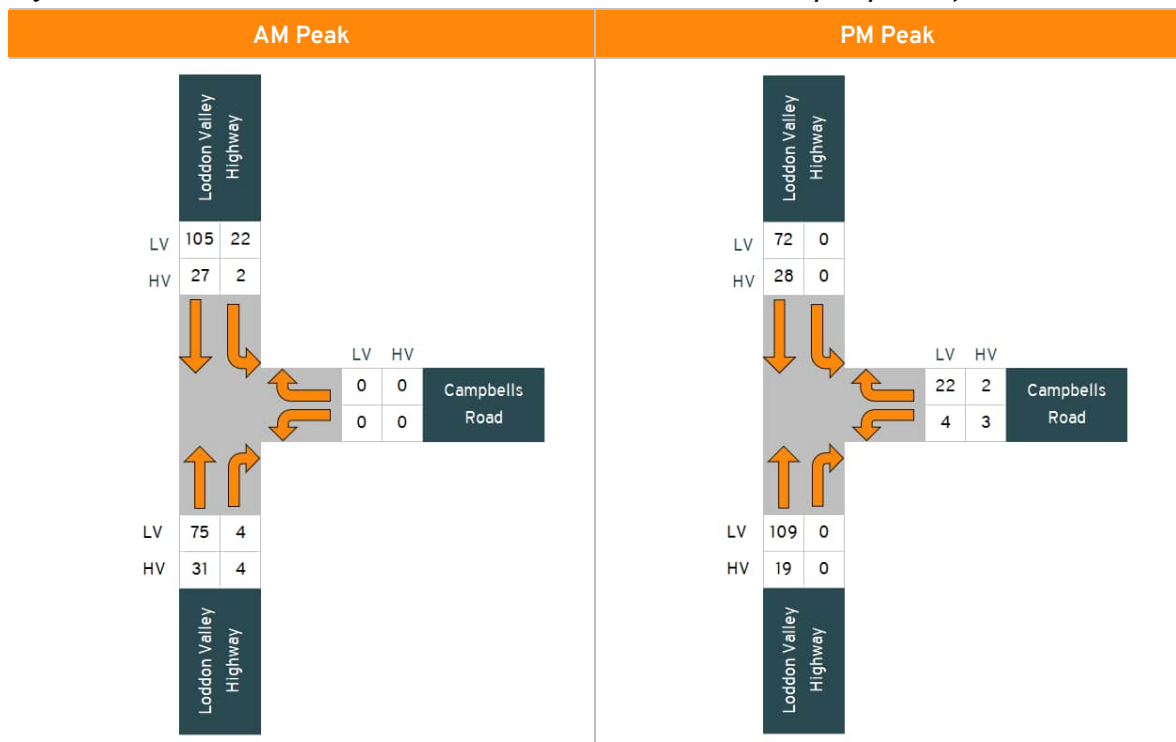
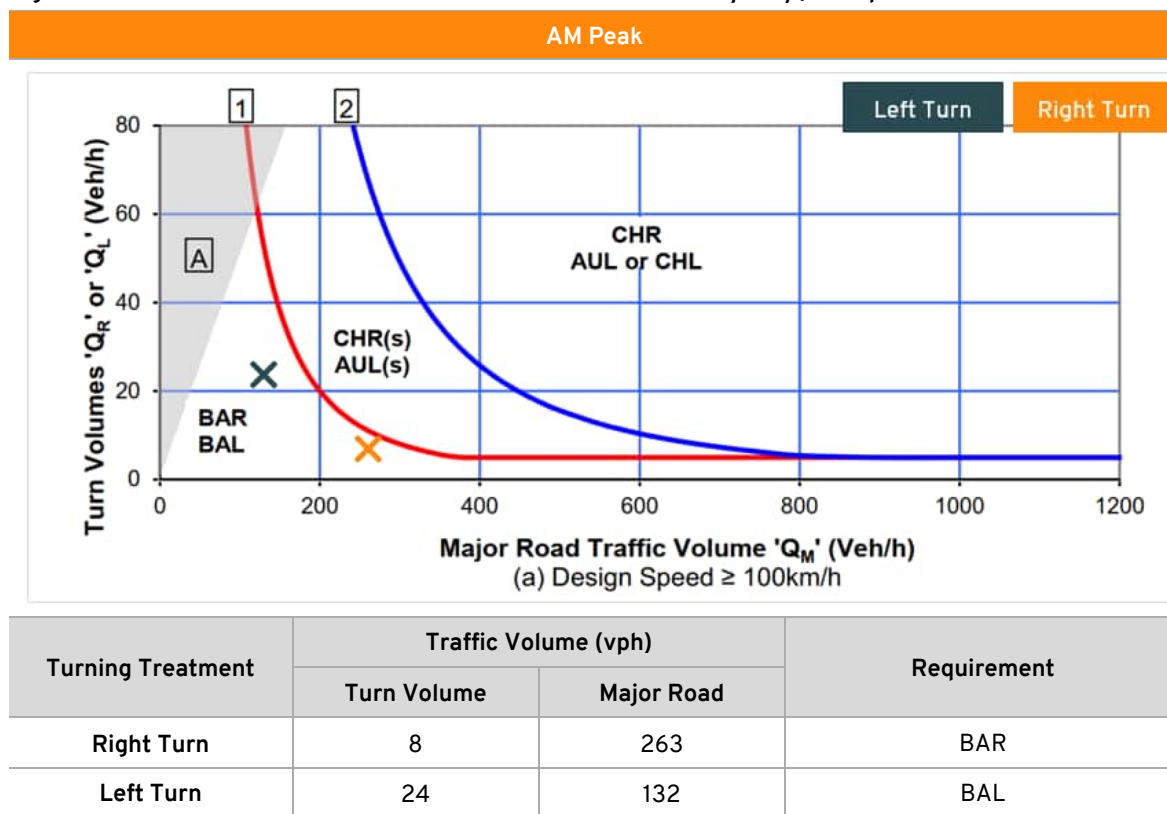


Figure 25: Austroads Turn Treatment Assessment – Loddon Valley Hwy / Campbells Rd



4.1.4.4 Loddon Valley Highway / Macorna Road

The traffic volumes used for the assessment are provided in Figure 26 and have been plotted against the Austroads turn treatment warrants in Figure 27.

Figure 26: Total Peak Hour Volumes in Peak Construction – Loddon Valley Hwy / Macorna Rd

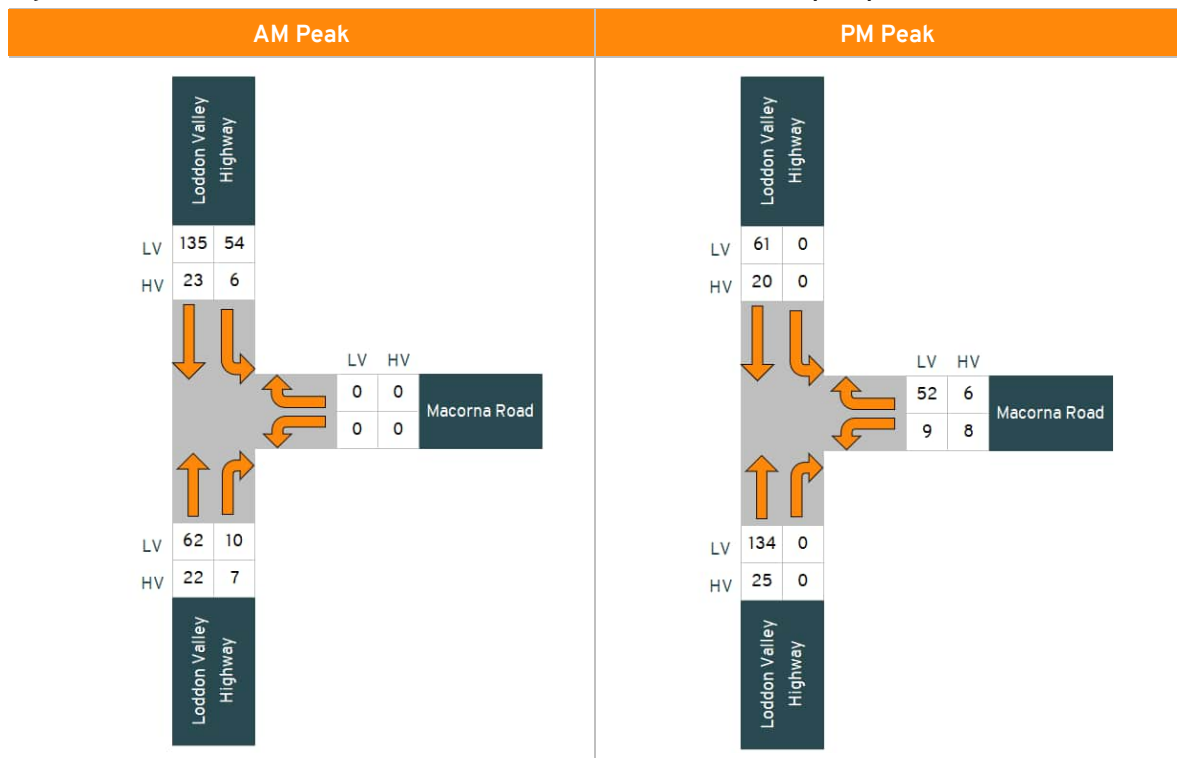
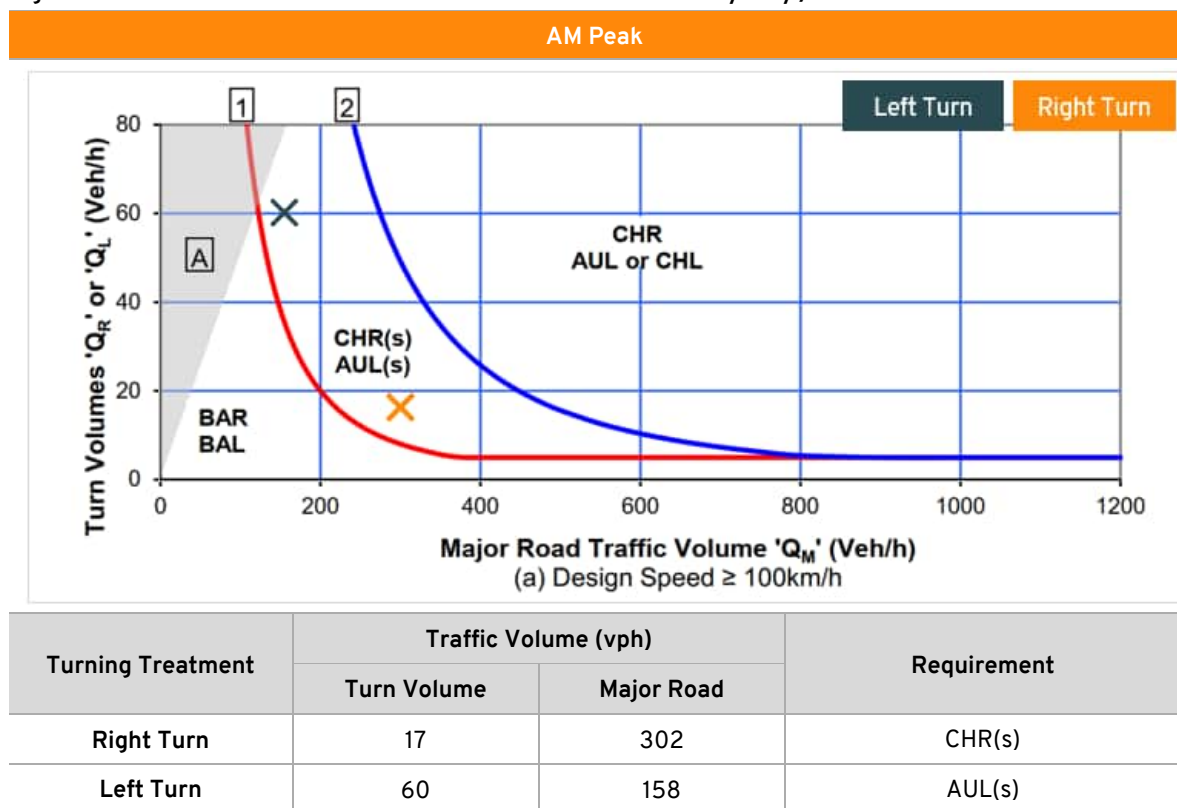


Figure 27: Austroads Turn Treatment Assessment – Loddon Valley Hwy / Macorna Rd



4.1.4.5 Loddon Valley Highway / Old Echuca Road

The traffic volumes used for the assessment are provided in Figure 28 and have been plotted against the Austroads turn treatment warrants in Figure 29.

Figure 28: Total Peak Hour Volumes in Peak Construction – Loddon Valley Hwy / Old Echuca Rd

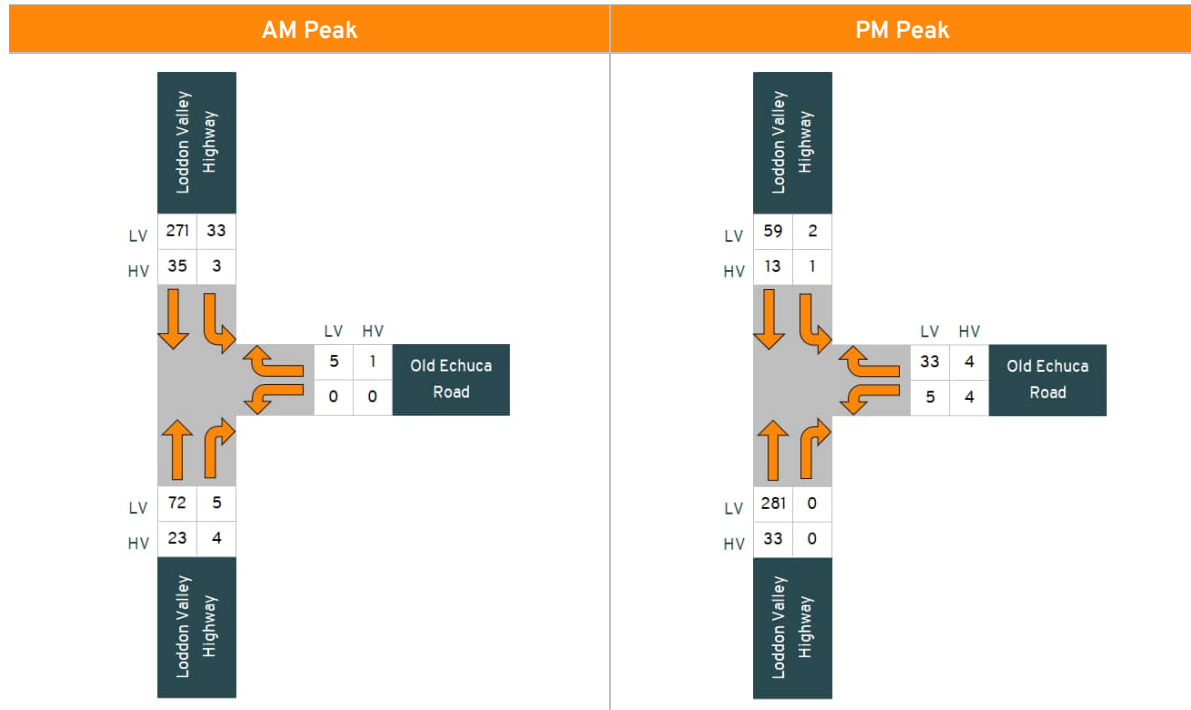
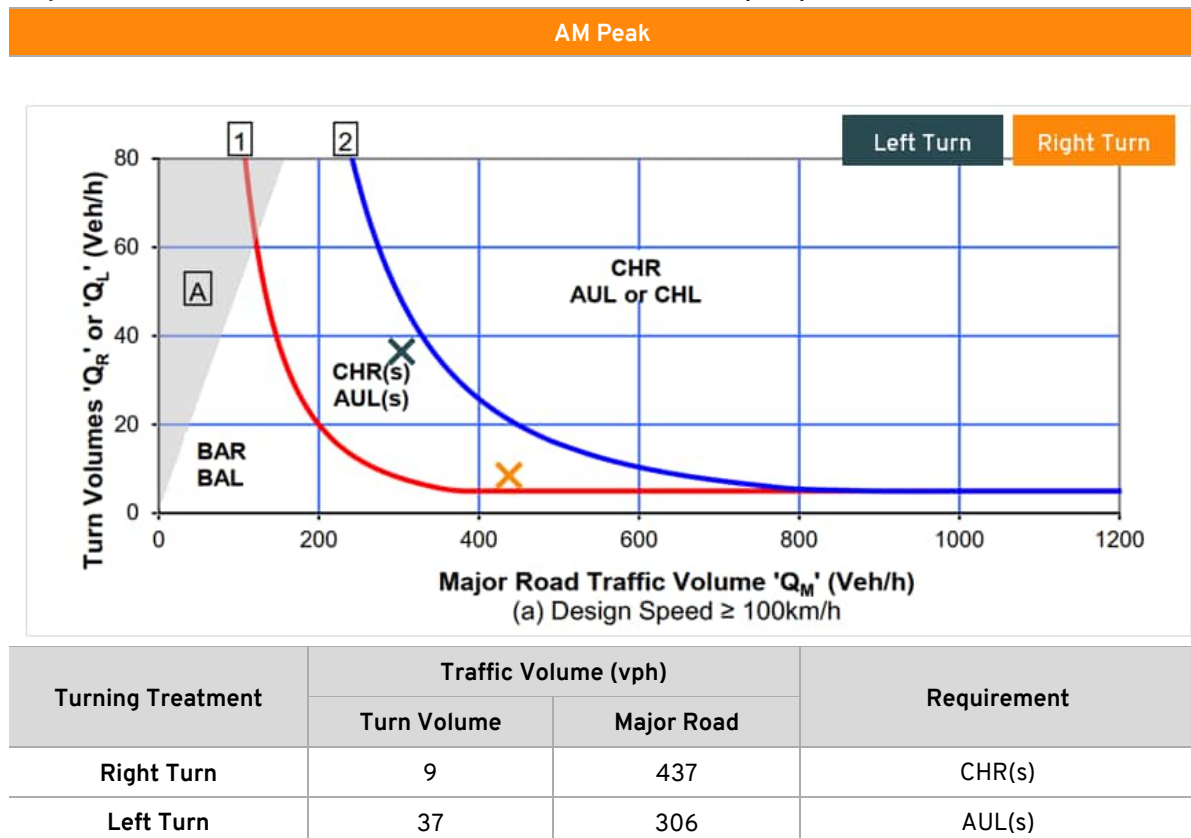


Figure 29: Austroads Turn Treatment Assessment – Loddon Valley Hwy / Old Echuca Rd



4.1.4.1 Summary

Based on the above assessment, it is proposed to provide BAL and BAR treatments at the Mincha-Canary Island Road, Mitiamo-Kerang Road and Campbells Road intersections with Loddon Valley Highway. It is proposed to provide higher level treatments of AUL(s) and CHR(s) at the primary site access intersections with Macorna Road and Old Echuca Road. The proposed layout for each of these intersections is provided in Appendix C.

The intersections have been designed in accordance with the requirements of the Austroads Guide including swept path assessment for a B-double design vehicle using the Autodesk Vehicle Tracking software. The assessment demonstrates that the vehicle is able to suitably manoeuvre at the intersection with the inclusion of the proposed turn treatments. A swept path assessment has also been provided for the largest size OSOM vehicle expected to access the site.

Accordingly, it is concluded that the site access intersections on Loddon Valley Highway have been suitably designed to accommodate the vehicles expected to access the site.

4.1.5 Road Capacity Assessment

4.1.5.1 Intersection Assessment

In order to determine the ability of the road network to accommodate the traffic expected to be generated during the peak construction period, an analysis was carried out using SIDRA intersection modelling software of the operation of the following intersections:

- Loddon Valley Highway / Mincha-Canary Island Road
- Loddon Valley Highway / Mitiamo-Kerang Road
- Loddon Valley Highway / Campbells Road
- Loddon Valley Highway / Macorna Road
- Loddon Valley Highway / Old Echuca Road

Level of Service (LOS) is the qualitative measure used to describe the operating conditions of a section of road or an intersection. Levels of Service are designated from A to F from best (free flow conditions) to worst (forced flow with stop start operation, long queues and delays) and represent the perception of the road conditions by motorists including speed and travel time, freedom to manoeuvre, traffic interruptions, comfort and convenience, and safety. The assessment of LOS for sign-controlled intersections is based on the average delay (seconds/vehicle) of the critical movement.

The traffic modelling exercise has been undertaken based on the traffic volumes outlined in Section 4.1.4 for the morning and evening peak hours during the peak construction period. The intersection layout has been modelled with the proposed turn treatments.

The results of the SIDRA analysis are provided within Appendix D and summarised in Table 10.

Table 10: SIDRA Analysis Results Summary – Peak Construction Traffic

Approach / Movement		Morning Peak Hour				Evening Peak Hour			
		Degree of Saturation	Average Delay (sec)	95% Queue (m)	Level of Service	Degree of Saturation	Average Delay (sec)	95% Queue (m)	Level of Service
Loddon Valley Highway / Mincha-Canary Island Road									
Loddon Valley Highway (South)	Through	0.071	0.1	0.8	A	0.049	0	0.1	A
	Right	0.071	8.6	0.8	A	0.049	7.6	0.1	A
Mincha-Canary Island Road (East)	Left	0.002	8.2	0.1	A	0.033	8.9	0.9	A
	Right	0.002	9.4	0.1	A	0.033	9.6	0.9	A
Loddon Valley Highway (North)	Left	0.009	7.8	0	A	0.001	7.8	0	A
	Through	0.062	0	0	A	0.074	0	0	A
Loddon Valley Highway / Mitiamo-Kerang Road									
Loddon Valley Highway (South)	Through	0.071	0.1	1	A	0.054	0	0.1	A
	Right	0.071	8.6	1	A	0.054	7.5	0.1	A
Mitiamo-Kerang Road (East)	Left	0.002	8.3	0.1	A	0.041	8.8	1.2	A
	Right	0.002	9.5	0.1	A	0.041	9.8	1.2	A
Loddon Valley Highway (North)	Left	0.013	8.1	0	A	0.001	7.8	0	A
	Through	0.069	0	0	A	0.067	0	0	A



Approach / Movement		Morning Peak Hour				Evening Peak Hour			
		Degree of Saturation	Average Delay (sec)	95% Queue (m)	Level of Service	Degree of Saturation	Average Delay (sec)	95% Queue (m)	Level of Service
Loddon Valley Highway / Campbells Road									
Loddon Valley Highway (South)	Through	0.065	0.1	0.8	A	0.063	0	0.1	A
	Right	0.065	10	0.8	A	0.063	7.5	0.1	A
Campbell Road (East)	Left	0.002	8.4	0.1	A	0.042	9.6	1.2	A
	Right	0.002	9.6	0.1	A	0.042	9.9	1.2	A
Loddon Valley Highway (North)	Left	0.015	8.1	0	A	0.001	7.8	0	A
	Through	0.08	0	0	A	0.063	0	0	A
Loddon Valley Highway / Macorna Road									
Loddon Valley Highway (South)	Through	0.053	0	0	A	0.094	0	0	A
	Right	0.02	10	0.7	A	0.001	7.8	0	A
Macorna Road (East)	Left	0.002	8.5	0.1	A	0.104	9.7	3.3	A
	Right	0.002	10.1	0.1	A	0.104	10.6	3.3	A
Loddon Valley Highway (North)	Left	0.036	8.1	0	A	0.001	7.8	0	A
	Through	0.092	0	0	A	0.05	0	0	A



Approach / Movement		Morning Peak Hour				Evening Peak Hour			
		Degree of Saturation	Average Delay (sec)	95% Queue (m)	Level of Service	Degree of Saturation	Average Delay (sec)	95% Queue (m)	Level of Service
Loddon Valley Highway / Old Echuca Road									
Loddon Valley Highway (South)	Through	0.059	0	0	A	0.179	0	0	A
	Right	0.013	11.3	0.5	A	0.001	7.7	0	A
Old Echuca Road (East)	Left	0.014	9.2	0.4	A	0.08	9.5	2.4	A
	Right	0.014	13.3	0.4	A	0.08	12.5	2.4	A
Loddon Valley Highway (North)	Left	0.021	8.1	0	A	0.002	8.7	0	A
	Through	0.176	0	0	A	0.043	0	0	A



The SIDRA analysis indicates the following:

- Each intersection is expected to operate with minimal queue lengths on all legs.
- The overall average delay at each intersection is below 14 seconds during the peak hours which is considered to be minor; and
- Each intersection is expected to continue to operate with good level of service (LOS A).

4.1.5.2 Midblock Assessment

A summary of the existing and proposed peak hour mid-block traffic volumes on each of the key roads within the Project area is provided in Table 11.

Table 11: Midblock Traffic

Vehicle	Existing Peak Hour Traffic (vph)	Estimated Peak Hour Project Traffic (vph)	Expected Peak Hour Traffic (vph)
Loddon Valley Highway	197	116	313
Leitchville-Kerang Road	51	74	125
Kerang-Macorna Road	19	74	93
Mincha-Canary Island Road	5	27	32
Macorna Road	5	74	79

Based on the above, all roads are expected to continue to operate with a Level of Service A with no impacts to vehicle movement. Based on this, there is expected to be sufficient capacity in the road network to accommodate the Project traffic.

4.1.5.3 Summary

The above assessment indicates the intersections surrounding the project are expected to continue to operate with a good level of service, low queuing and minimal delays during the peak construction period. From Loddon Valley Highway, vehicles would be distributed across the broader road network which would have a minimal impact on the surrounding road environment.

Outside of the peak hours (i.e. throughout the middle of the day) the project traffic volumes are expected to be predominantly associated with heavy vehicles with an average of approximately 15 vehicle trips per hour (two-way total) during the peak construction period. However, for the purposes of the assessment, it is conservatively assumed that a maximum of up to 30 heavy vehicle trips would occur per hour to allow for fluctuations across the day. This increase in traffic (equivalent to an average of approximately one vehicle per minute) can be readily accommodated on the road network given the existing low traffic volumes and the fact that the road network would operate with a lower level of traffic compared to the peak hours.

4.1.6 Sensitivity Assessment

The above traffic modelling has been undertaken using conservative assumptions to address uncertainties associated with construction staging, workforce arrangements, and peak traffic

generation. While construction traffic volumes have been evenly distributed across the available access point, it is acknowledged that traffic movements will likely fluctuate over the life of the project.

The following conservative consumptions have been made:

- The peak hour construction traffic has been modelled operating concurrently with the road network peak hour, representing a worst-case operating scenario. Typically, the construction peak hour would occur between 6:00am – 7:00am when there is less traffic on the road.
- It has been assumed that all staff will be accommodated off-site and will travel to the site in light vehicles. There may be an opportunity to provide an on-site staff accommodation facility and/or to provide a shuttle bus service from the neighbouring towns. This would significantly reduce the peak hour traffic movements to the site.

The modelling results indicate that all assessed intersections operate at Level of Service A under the assessed scenarios, demonstrating substantial spare capacity within the surrounding road network in the event there is higher demand at certain intersections which is expected through the life of the project.

Based on the above, the proposed turn treatments at the intersection with Loddon Valley Highway are considered to be suitable, even with some fluctuations in the traffic volumes and distribution at each access point. It is further noted that the construction period is temporary and that the traffic volumes during the operational period are minor.

4.2 Operational Phase

During operation, the Project is expected to generate a low level of traffic associated with maintenance and operational functions. The wind farm is expected to be operated by up to 18 workers resulting in typical traffic generation of up to 36 light vehicle trips per day, along with occasional heavy vehicles delivering parts to the site where required to support maintenance activities. This level of traffic would have a negligible impact on the road environment and can be readily accommodated on the road network.

4.3 Decommissioning Phase

At the end of the operational life of the Project all above ground infrastructure will be dismantled and removed from the Project area. Internal roads, if not required for ongoing farming purposes or fire access, would be removed and the Project area reinstated as close as possible to its original state.

Traffic generation during decommissioning would be less than the construction period. A comprehensive Traffic Management Plan will be prepared prior to the decommissioning phase in conjunction with the relevant road authorities to ensure adequate road safety and road network operations are maintained.

4.4 Summary

The Project is expected to generate the highest level of traffic during the peak construction period. The assessment presented above indicates that the road network is able to accommodate the Project traffic based on intersection modelling undertaken at the key access intersections with the Loddon Valley Highway, including the proposed turn treatments.

During construction, the traffic volumes throughout the middle of the day are expected to be predominantly associated with heavy vehicles with approximately 30 vph as outlined in Section 4.1.5.3. This increase in traffic can be readily accommodated on the road network given the existing low traffic volumes and the fact that the road network would operate with less vehicles than during the peak hours.

The midblock assessment outlined above demonstrates that the surrounding road network, including both arterial and local roads, has sufficient capacity to accommodate Project-related traffic.

‘Superload’ movements associated with the Project would include the transport of wind turbine components and the main transformers. These vehicle combinations would be subject to a Transport Management Plan and are expected to travel outside of the peak hours under pilot and/or police escort. The vehicles would be unloaded and kept to their smallest practicable dimensions when departing the site to avoid OSOM classification where possible. It is considered that ‘Superload’ OSOM vehicles would be able to be accommodated on the road network subject to the road upgrades and mitigation measures outlined within Section 7, which would be confirmed as part of the future Transport Management Plan and specific permits that would be obtained prior to transport.

During the operational phase, the periodic increase in traffic of up to 40 vehicle trips per day associated with the maintenance and operational functions would result in a negligible impact on the road environment.

Accordingly, the road network is able to accommodate the traffic generated by the Project during the construction, operational, and decommissioning phases, subject to the road upgrades and mitigation measures outlined herein.

5. Heavy Vehicle Route Assessment

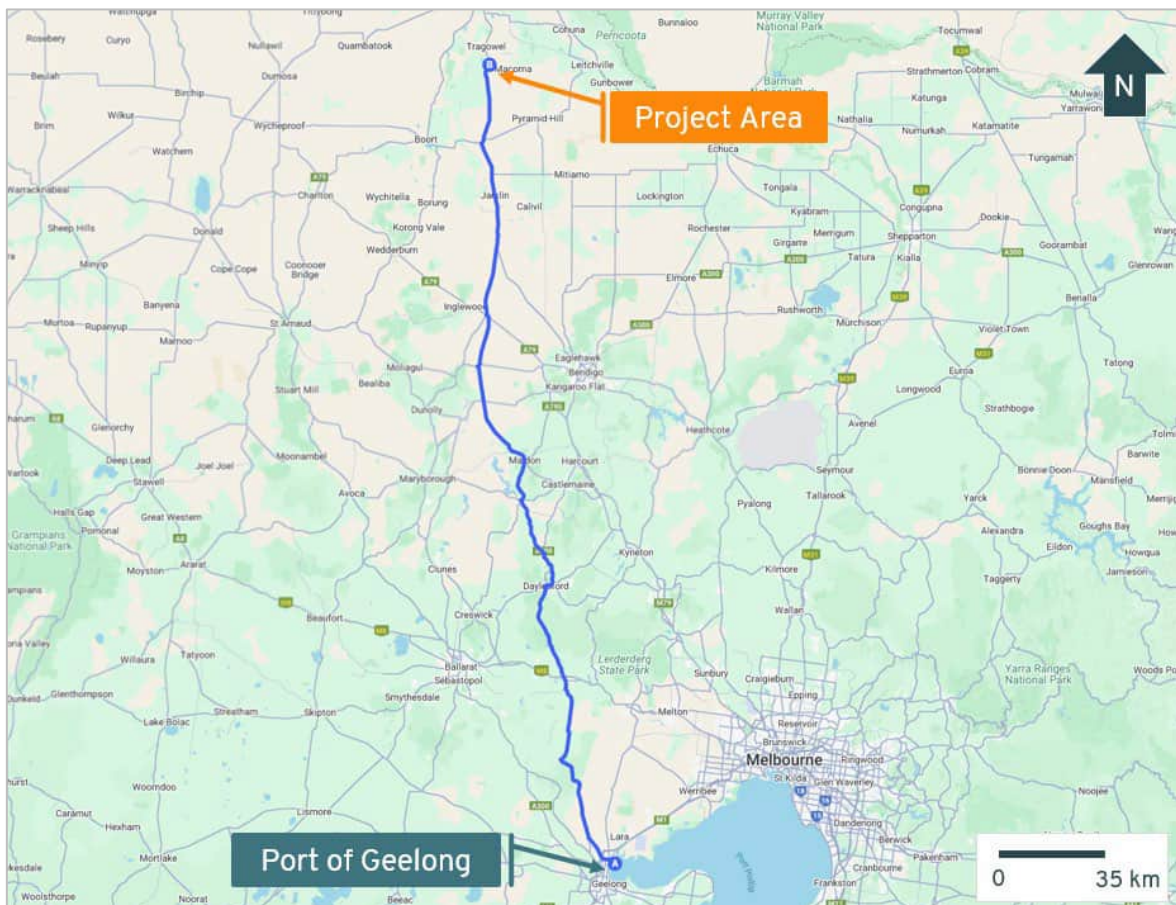
The following provides a review of the proposed haulage routes associated with the delivery of materials and equipment using vehicles up to 26m long B-doubles. It is noted that OSOM vehicles are considered separately in Section 7.

Construction materials and equipment will generally be sourced from the surrounding area where practicable. While the precise suppliers are not yet known and would be determined prior to construction, it is anticipated that all heavy vehicles travelling from the surrounding areas would utilise the declared road network to access the site including Loddon Valley Highway.

Heavy vehicles may also be utilised for deliveries of ancillary parts/supplies and other large materials (e.g. steel reinforcement) from the Port of Geelong or the Melbourne metropolitan area.

The proposed heavy vehicle route from Port of Geelong is outlined in Figure 30 with a summary of the relevant roads provided in Table 12. Any heavy vehicles travelling from Melbourne would also utilise this route between the Metropolitan Ring Road (M80) and the Project area.

Figure 30: Heavy Vehicle Haulage Route from Port of Geelong



Source: Google Maps – [Link](#)

Table 12: Heavy Vehicle Haulage Route Overview

Road	Jurisdiction	B-double Approval
The Esplanade	City of Greater Geelong	Approved
Madden Avenue		
Seabeach Parade	Department of Transport and Planning (DTP)	
St Georges Road		
Cox Road		
Anakie Road	City of Greater Geelong	
C141 – Ballan Road, Geelong-Ballan Road, Ballan-Daylesford Road	Department of Transport and Planning (DTP)	
Central Springs Road		
Bridport Street		
A300 – Albert Street, Howe Street, Raglan Street, Midland Highway		
C285 – Powell Connection Road, Hepburn-Newstead Road, Newstead-Daylesford Road		
C283 – Pyrenees Highway, Maldon-Newstead Road, Newstead Road, Lyons Street		
C282 – High Street, Bridgwater-Maldon Road		
A79 – Calder Highway		
C274 – Bridgewater-Serpentine Road		
B260 – Loddon Valley Highway		

The access route utilises roads that are designated for 25/26m B-doubles within the NHVR National Network Map which includes the relevant state-based heavy vehicle networks. Accordingly, the proposed access routes from Port of Geelong or the Melbourne metropolitan area are able to accommodate the loads and types of vehicle traffic to be generated during construction of the wind farm.

Heavy vehicles should avoid travel along Loddon Highway during school bus operating times to limit the potential interaction of larger vehicles and vulnerable road users.

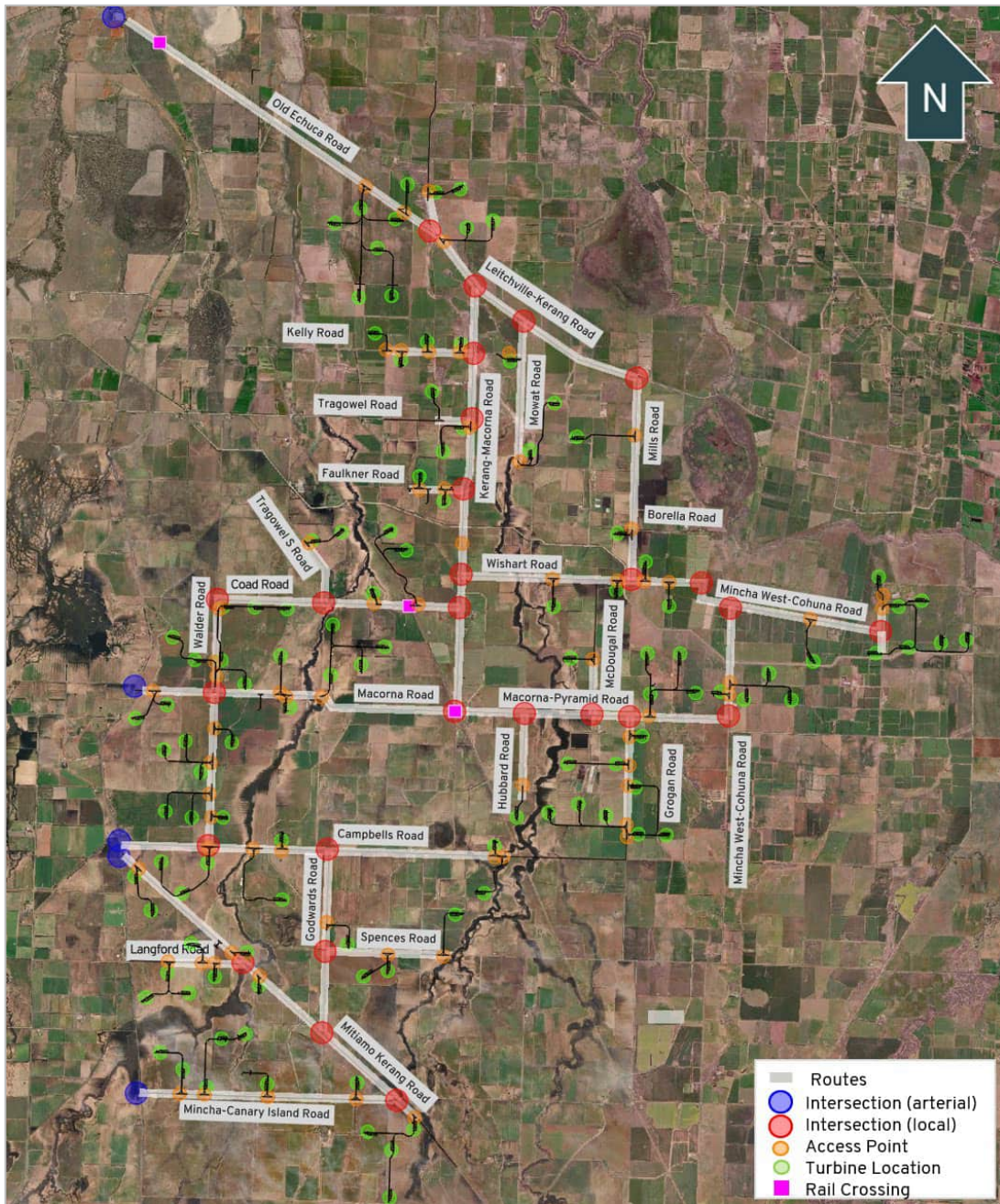
6. Local Road Network

6.1 Local Roads

6.1.1 Proposed Access Routes

A summary of the proposed access routes to travel to each of the site access locations is provided in Figure 31. Also shown are the arterial road intersections, local road intersections, turbine access locations and railway crossings.

Figure 31: Proposed Access Routes



The local roads of Leitchville-Kerang Road and Kerang-Macorna Road are sealed with the remaining local road network being unsealed and having a range of carriageway widths and quality of road surface. The following provides a review of the suitability of the road surface as well as the carriageway widths and provides recommendations for potential future road upgrades in order to be able to accommodate traffic generated by the project.

6.1.2 Unsealed Roads

The *Australian Road Research Board Best Practice Guide for Unsealed Roads 2* (ARRB Guide), dated October 2020, provides a breakdown of the unsealed road classifications based on a functional classification system which is reflective of the approach taken within the Austroads Guidelines. It is noted that the traffic volumes refer to Average Daily Traffic (two-way). A summary of the classifications outlined within Table 3.9 of the ARRB Guide is provided below.

Table 13: Unsealed Roads Classification System (ARRB Guide)

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

Unsealed roads would typically be considered for sealing when they accommodate between 200 and 500 vehicles per day. The ARRB Guide notes that roads may warrant paving when maintenance costs increase to unacceptable levels, in wet climates, or when economic or social benefits are evident.

The Project is expected to generate in the order of 643 vpd as outlined in Section 4.1.1. The traffic distribution assessment indicates Macorna Road would accommodate the highest level of Project traffic with approximately 26% of all movements or 167 vpd Macorna Road. Macorna Road also recorded the highest traffic volumes of all unsealed roads surveyed which was 47 vpd. Therefore, the unsealed local road network is expected to accommodate up to 214 vpd.

Accordingly, it is considered appropriate for the local road network to remain unsealed given the temporary nature of the construction period, large proportion of light vehicle traffic, and all other local roads are expected to carry significantly less traffic.

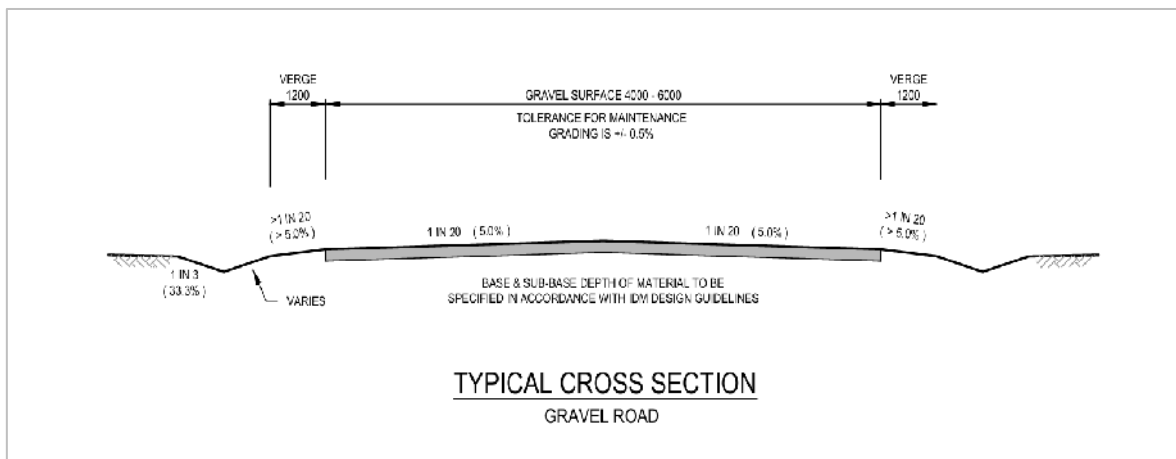
It is recommended that all roads used by the Project be upgraded (if not already) to an all-weather surface to prevent disruptions during wet weather periods.

Regular road dilapidation surveys should be undertaken along the local road network utilised by the Project to ensure each road is suitably maintained in a safe condition.

6.1.3 Road Width

The *Infrastructure Design Manual* provides typical cross sections for unsealed rural roads, as shown below in Figure 32. This indicates that unsealed roads should be provided with a width of 4-6m, with a 1.2m verge on both sides of the road.

Figure 32: Typical Road Cross Section



Source: *Infrastructure Design Manual – SD 600 ‘Typical Road Profiles Rural’*

Each local road within the Project area is proposed to be upgraded to a typical width of 6.0-7.0m which allows for two-way simultaneous movement for heavy vehicle and meets the requirements of the *Infrastructure Design Manual* and *ARRB Guide*. The road width would be determined prior to construction and would reflect the level and type of traffic expected to be utilising the road.

Preliminary consultation with Loddon Shire Council and Gannawarra Shire Council (refer Table 1) indicates that both Councils are generally supportive of the proposed road upgrades outlined above.

6.1.4 Local Road Summary

An example of the three typical road surfaces including dry weather (dirt), all weather (gravel) and sealed are provided in Figure 33 to Figure 35, respectively.

Figure 33: Typical Dry Weather (Dirt) Road – Grogan Road



Figure 34: Typical All Weather (Gravel) Road – Mills Road



Figure 35: Typical Sealed Road – Kerang-Macorna Road



A summary of the existing conditions of the local road network proposed to be used for the Project is provided in Table 14 as well as the recommended upgrades based on the requirements of the Austroads Guide, Infrastructure Design Manual, and ARRB Guide.

Table 14: Local Road Network

Road Name	Approximate Road Width (m)	Features	NHVR B-double Network	Recommended Upgrades
Old Echuca Road	7.0	Rail crossing (boom gate) All weather surface	Approved – west of Nixon Road	No upgrades
	7.0	Dry weather only	Unrated – east of Nixon Road	Upgrade to all weather surface
Leitchville-Kerang Road	6.5	Sealed pavement	Approved	No upgrades
Kerang-Macorna Road	6.0	Sealed pavement	Approved	No upgrades
Mowat Road	5.0 - 6.0	Dry weather only	Unrated	Upgrade to all weather surface and widen
Mills Road	7.0	All weather	Approved – north of Borella Road	No upgrades
		Dry weather only	Dry weather only – south of Borella Road	Upgrade to all weather surface
Kelly Road	6.0 - 7.0	All weather	Approved	No upgrades
Tragowel Road	7.0	All weather	Approved	No upgrades

Road Name	Approximate Road Width (m)	Features	NHVR B-double Network	Recommended Upgrades
Faulkner Road	5.5-6.5	Dry weather only	Unrated	Upgrade to all weather surface and widen road
Walder Road	4.0 – 6.0	Dry weather only	Unrated	Upgrade to all weather surface and widen road
Mincha West-Cohuna Road	6.0 – 7.0	All weather	Approved – <i>Expect per below</i>	No upgrades
		Dry weather only	Dry weather only – section adjacent Ladson Road	Upgrade to all weather surface
Wishart Road	3.0 – 7.0	Dry weather only Narrow road east of Mills Road	Unrated	Upgrade to all weather surface and significantly widen road (between Mills Road and Borella Road) <i>*Alternatively provide access to turbines via Borella Road</i>
Coad Road	3.5 - 4.5	Dry weather only Rail crossing (give way)	Unrated	Upgrade to all weather surface and significantly widen road
Tragowel S Road	3.5-5.0	Dry weather only section at Coad Road approach	Unrated	Upgrade a section to all weather surface and widen road
Macorna Road	7.0	All weather surface Rail crossing (boom gate)	Approved	No upgrades
Macorna-Pyramid Road	6.0	Sealed pavement	Approved	No upgrades
McDougal Road	6.0 – 7.0	Dry weather only	Dry weather only	Upgrade to all weather surface
Grogan Road	4.0	Dry weather only	Unrated	Upgrade to all weather surface and significantly widen road
Hubbard Road	4.5-5.5	All weather surface	Unrated	Widen road
Campbells Road	3.5 - 6.5	Dry weather only Rail crossing (give way) Road in poor condition east of Macorna South Road (usage minimised)	Unrated	Upgrade to all weather surface and widen narrow sections of the road

Road Name	Approximate Road Width (m)	Features	NHVR B-double Network	Recommended Upgrades
Godwards Road	4.0 – 7.0	Dry weather	Unrated	Upgrade to all weather surface and widen narrow sections of the road
Mitiamo-Kerang Road	5.0 – 7.0	Dry weather	Unrated	Upgrade to all weather surface and widen narrow sections of the road
Spences Road	4.5 – 6.0	Dry weather Some sections of road in poor condition	Unrated <i>Restricted west of Godwards Road</i>	Upgrade to all weather surface and widen road
Langford Road	3.5 – 4.0	Dry weather	Unrated	Upgrade to all weather surface and significantly widen road
Mincha-Canary Island Road	6.0	All weather surface	Unrated	No upgrades

A structural assessment will be required along any of the culverts/bridges within the road network to ensure that they are suitable for heavy vehicles access including the OSOM vehicles.

6.2 Local Road Intersections

Based on the proposed access routes outlined above, a number of intersections have been identified as locations where project traffic will be required to undertake turning movements. In order to confirm each of the intersections are able to suitably accommodate project traffic an assessment has been undertaken to ensure suitable sight distance is provided and a swept path assessment has been undertaken to confirm whether any road upgrades are needed.

6.2.1 Sight Distance Assessment

An assessment of the Safe Intersection Sight Distance (SISD) has been carried out at the local road intersections to ensure vehicles are able to safely manoeuvre at the intersections.

Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections specifies the SISD as the minimum sight distance which should be provided along the major road at any intersection, with Table 3.1 of the guide specifying the SISD required for various design speeds. The required SISD along the through roads is 248m assuming a conservative design speed of 100km/h (based on the 85th percentile speeds in Section 2.3.2) and a reaction time of 2.0 seconds.

The available sight distance typically exceeds the requirements of the Austroads Guide given the relatively flat and straight alignment of the road network with vegetation typically limited to low-level ground cover. The sight distance available at each intersection is summarised in Table 15.

6.2.2 Swept Path Assessment

A swept path assessment has been undertaken for each of the local road intersections using a 26.0m B-double design vehicle as well as the proposed OSOM vehicle. The assessment has been undertaken for one B-double to be turning at any given time, with the OSOM vehicle able to utilise the full road width given the vehicle would be supported by a spotter vehicle and police escort if required. The swept path assessment is provided in Appendix E, with a summary of the upgrade requirements provided in Table 15.

The assessment indicates that there is likely to be some impact to adjacent property owners at intersections with either the OSOM vehicle required to traverse into the property or the blade is required to overhang the property boundary. Approval will be sought from all relevant property owners noting that where hardstand is required to be constructed in private land the owner is involved with the project.

6.2.3 Summary

A summary of the assessment of the local road intersections, including the available sight distance and road upgrades, is provided in Table 15 on the following page.

Images of key locations where the sight distance is less than 300m is provided within Figure 36 to Figure 39.

Table 15: Proposed Local Intersection Network

Through Road	Intersecting Road	Available Sight Distance	Swept Path Ref.	OSOM Route	Required Upgrades
Leitchville-Kerang Road	Old Echuca Road	>300m (both directions)	S02: 69-72	Yes	- Widen the northbound connector road - No upgrades required to the main intersection
	Kerang-Macorna Road	>300m (both directions)	S02: 73-76	Yes	No upgrades required
	Mowat Road	>300m (both directions)	S02: 77-80	Yes	Widen the intersection / provide hardstands for OSOM vehicles
	Mills Road	>300m (both directions)	S02: 81-83	Yes	- Provide significant hardstands for OSOM movements to avoid power pole and trees - OSOM vehicle required to travel across private land and has blade overhang
Kerang-Macorna Road	Kelly Road	>300m (both directions)	S02: 84-91	Yes	- Widen the intersection / provide hardstands for OSOM vehicles - OSOM vehicle required to travel across private land and has blade overhang
	Tragowel Road	>300m (both directions)	S02: 92-95	Yes	- Widen the intersection / provide hardstands for OSOM vehicles - Blade overhangs private land
	Faulkner Road	>300m (both directions)	S02: 96-99	Yes	- Widen the intersection / provide hardstands for OSOM vehicles - Blade overhangs private land
	Wishart Road	>300m (both directions)	S02: 36-39	Yes	- Widen the intersection / provide hardstands for OSOM vehicles - OSOM vehicle required to travel across private land and has blade overhang



Through Road	Intersecting Road	Available Sight Distance	Swept Path Ref.	OSOM Route	Required Upgrades
	Coad Road	>300m (both directions)	S02: 40-43	Yes	- Widen the intersection / provide hardstands for OSOM vehicles - OSOM vehicle required to travel across private land and has significant blade overhang - One tree to be removed - OSOM access from the north to reduce number of trees to be removed
Wishart Road	Mills Road	>300m (east) ~170m (west) due to the raised bridge (refer Figure 36). The 85 th percentile speeds collected along the unsealed roads indicate that vehicles typically travel slower than 80 km/hr which would be an acceptable speed for the available sight distance	S02: 34-35	No	Widen the intersection
	Mincha West Cohuna Road	>300m (both directions)	S02: 26-28	Yes	Widen the intersection / provide hardstands for OSOM vehicles
Borella Road	Wishart Road	>300m (both directions)	S02: 33	No	Widen the intersection
Mincha West-Cohuna Road	Ladson Road	>300m (both directions) <i>*vegetation trimming may be required to the south (refer Figure 37)</i>	S02: 29-32	Yes	- Widen the intersection / provide hardstands for OSOM vehicles - OSOM vehicle required to travel significantly across private land to avoid tree removal
	Macorna-Pyramid Road	>300m (both directions)	S02: 23-25	Yes	Widen the intersection / provide hardstands for OSOM vehicles



Through Road	Intersecting Road	Available Sight Distance	Swept Path Ref.	OSOM Route	Required Upgrades
Coad Road	Walder Road	>300m (both directions)	S02: 48	No	Widen the intersection
	Tragowal S Road	>300m (both directions)	S02: 44-47	Yes	- Widen the intersection / provide hardstands for OSOM vehicles - OSOM vehicle required to travel across private land and has blade overhang - Potential impacts to irrigation channel
Macorna Road	Walder Road	>300m (both directions)	S02: 01-08	Yes	- Widen the intersection / provide hardstands for OSOM vehicles - OSOM vehicle required to travel across private land and has significant blade overhang - Potential impact to water channel
Macorna-Pyramid Road	Kerang-Macorna Road	>300m (east)	S02: 09-10	No	Widen the intersection while avoiding railway infrastructure and power pole
		The railway crossing to the west restricts sight distance for a short length. Approaching cars can be seen before they reach the railway crossing (refer Figure 38)			
	Hubbard Road	>300m (both directions)	S02: 11-14	Yes	- Widen the intersection / provide hardstands for OSOM vehicles - OSOM vehicle required to travel across private land and has blade overhang



Through Road	Intersecting Road	Available Sight Distance	Swept Path Ref.	OSOM Route	Required Upgrades
	McDougal Road	>300m (both directions)	S02: 15-18	Yes	- Widen the intersection / provide hardstands for OSOM vehicles - OSOM vehicle required to travel across private land and has significant blade overhang to avoid a power pole - Potential impact to irrigation channel
	Grogan Road	>300m (both directions)	S02: 19-22	Yes	- Widen the intersection / provide hardstands for OSOM vehicles - OSOM vehicle required to travel across private land and has blade overhang
Godwards Road	Spences Road	~30m (north) due to the raised bridge, fencing and vegetation (refer Figure 39). Sight distance could be improved if vegetation was kept low, with sight distance able to be achieved through the wire fence.	S02: 53-56	Yes	- Widen the intersection / provide hardstands for OSOM vehicles - OSOM vehicle required to travel across private land and has blade overhang
		>300m (south)			
Campbells Road	Walder Road	>300m (both directions)	S02: 49-50	No	- Widen the intersection and channel crossing. Potential to use an alternative route for heavy vehicles if this is major works. - Minor encroachment of road into private properties
	Godwards Road	>300m (both directions)	S02: 51-52	No	Widen the intersection



Through Road	Intersecting Road	Available Sight Distance	Swept Path Ref.	OSOM Route	Required Upgrades
Mitiamo-Kerang Road	Langford Road	>300m (both directions)	S02: 57-60	Yes	- Widen the intersection / provide hardstands for OSOM vehicles - Some trees may need to be removed - Blade overhangs private land
	Godwards Road	>300m (both directions)	S02: 61-64	Yes	- Widen the intersection / provide hardstands for OSOM vehicles - OSOM vehicle required to travel across private land
	Mincha-Canary Island Road	>300m (both directions)	S02: 65-68	Yes	Widen the intersection / provide hardstands for OSOM vehicles
Loddon Valley Highway	Mincha-Canary Island Road	>300m (both directions)	S03: 01-04	Yes	- Turn treatment upgrade - Blade overhangs private land - Provide hardstands for OSOM movements
	Mitiamo-Kerang Road	>300m (both directions)	S03: 05-08	Yes	- Turn treatment upgrade - Realign approach angle - Provide hardstands for OSOM movements
	Campbells Road	>300m (both directions)	S03: 05, 09-11	Yes	- Turn treatment upgrade - Blade overhangs private land - Provide hardstands for OSOM movements
	Macorna Road	>300m (both directions)	S03: 12-15	Yes	- Turn treatment upgrade - Blade overhangs private land - Provide hardstands for OSOM movements
	Old Echuca Road	>300m (both directions)	S03: 16-19	Yes	- Turn treatment upgrade - Provide hardstands for OSOM movements



Figure 36: Restricted Sight Distance on Wishart Road



Figure 37: Restricted Sight Distance on Mincha West Cohuna Road



Figure 38: Restricted Sight Distance on Macorna Road



Figure 39: Restricted Sight Distance on Godwards Road



Based on the above assessment, there is sufficient sight distance available along the local and arterial road network for vehicles to safely manoeuvre to/from the Project accesses, with the maintenance of vegetation to low levels.

Road works are required to widen and upgrade road surfaces so that they are suitable for two-way heavy vehicle movements year-round. OSOM vehicle movements will also require the provision of hardstand areas to enable turning movements at intersections. At some locations, this may necessitate the use of private land to accommodate either vehicle tracking or blade overhang. Where this occurs, appropriate landowner permissions will be required prior to construction.

6.3 Site Accesses

It is proposed for each of the site access locations shown in Figure 31 to be constructed in accordance with the Infrastructure Design Manual for Rural Vehicle Crossings. A typical vehicle crossing design is provided in Appendix F which is based on the IDM Standard Drawing *SD265 – Typical Semi or B-double Vehicle Crossing (Rural Entrance)* and revised as required to ensure access is provided for B-doubles and OSOM vehicles. The design has been undertaken for a typical 90-degree access and a typical 130-degree access, which is expected to be suitable to adopt for all the access points.

It is proposed for the accesses to be constructed in an unsealed all-weather surface to the satisfaction of Council. Road widening has been shown opposite the access in accordance with the IDM Standard Drawing, however, the provision of the widening is at the discretion of the Council. Due to the very low existing traffic volumes associated with non-Project traffic, the widening to facilitate a passing manoeuvre is not considered necessary.

As detailed in Section 6.2.1, the road network is relatively flat and has a straight alignment with vegetation typically limited to low-level ground cover. A desktop assessment has been undertaken of each of the site access points to determine any key constraints that may impeded sight access, which typically consists of trees in the verge or a vertical deflection in the road at bridges. The assessment indicates that all of the access points are provided with greater than 300m of sight distance with the exception of one access point located adjacent to the bridge on Wishart Road, where approximately 170m of sight distance is provided. The 85th percentile speeds collected along the unsealed roads (Section 2.3.2) indicate that vehicles typically travel slower than 80 km/hr which would be an acceptable speed for the available sight distance.

Based on the above, the location and design of the Project access points is considered to be suitable to allow for safe and efficient movement of vehicles to/from the road network.

7. OSOM Vehicle Route Assessment

Deliveries of wind farm components are proposed to originate from the Port of Geelong utilising OSOM vehicle combinations to transport the large, indivisible loads, likely to be classified as 'Superloads'. Whilst these vehicles will contribute a small proportion of the overall traffic accessing the Project area during the construction period, they present challenges due to their overall size and mass, and typically require road upgrades to the existing network.

Rex J Andrews Pty Ltd (RJA) have prepared a route assessment which is provided in Appendix G. RJA are a transport company experienced in the transportation of wind farm components and other OSOM transport. It is noted that this assessment has been undertaken from the Port of Geelong to the Loddon Valley Highway. An assessment between Loddon Valley Highway and the Project access points has been provided in Section 6.2.2 and Appendix E.

A summary of the key outcomes of the RJA report are provided in the following sections.

7.1 Vehicle Specifications

Indicative vehicle specification drawings available at the time of assessment for the transport combinations have been provided by RJA as attached in Appendix G.

This assessment focuses on the largest and heaviest components to be transported to the site (i.e. the design vehicles) which are the turbine blades, tower sections and the main transformers. These vehicle combinations would be classified as 'Superloads' due to their overall size and/or mass.

The blades would be transported in a single piece and form the longest load lengths. The turbine blade considered within this assessment is a Vestas V172 blade with a length of 85m. The blades would be transported on specially designed blade trailers with removable extension beams which will significantly reduce the vehicle turning envelopes on the return journey to the port.

The tower sections form cylindrical load shapes with varying dimensions. The tower sections specified for this project are based on the Vestas V172 tower which is suitable for a hub height of 166m. Smaller sections would be transported using platform trailers, while bookend trailers would be used for larger sections with a diameter of around 6.0m or greater.

All other components are expected to be within the vertical and horizontal design envelopes of the blades and/or tower sections. The structural constraints would be dictated by the main transformer transport vehicle as the combination with the highest axle loads.

The final selection of transport vehicles to be utilised by the Project would be considered in consultation with authorities and the appointed transport company as part of the development of the Transport Management Plan and route approvals.

7.2 Transport Volumes

A breakdown of the anticipated traffic volumes associated with the major wind farm components is provided in Table 16.

Table 16: OSOM Traffic Volumes and Indicative Weekly Delivery Schedule

Component	No. per Turbine	No. of Turbines	Total Inbound OSOM Trips
Blades	3	114	345
Hub	1		114
Nacelle	1		114
Drivetrain	1		114
T7 Tower (Top)	1		114
T6 Tower	1		114
T5 Tower	1		114
T4 Tower	1		114
T3 Tower	1		114
T2 Tower	1		114
T1 Tower (Base)	1		114
Turbine Total	13	-	1,495
Main Transformers	2		2
Totals			1,497

The schedule indicates that there would be in the order of 1,497 OSOM deliveries over the construction period of the project. Based on an expected project timeframe of 3.5 years, this equates to approximately 12 OSOM deliveries per week over the course of the project.

It is noted that there may also be a number of smaller OSOM vehicles accessing the site including erection cranes and a switch room. A separate container with ancillary parts and supplies will also be transported from the port for each component, however this is expected to utilise semi-trailers and would not be classified as an OSOM load. All vehicles have been included within the broader project traffic volumes outlined in Section 4.1.1.

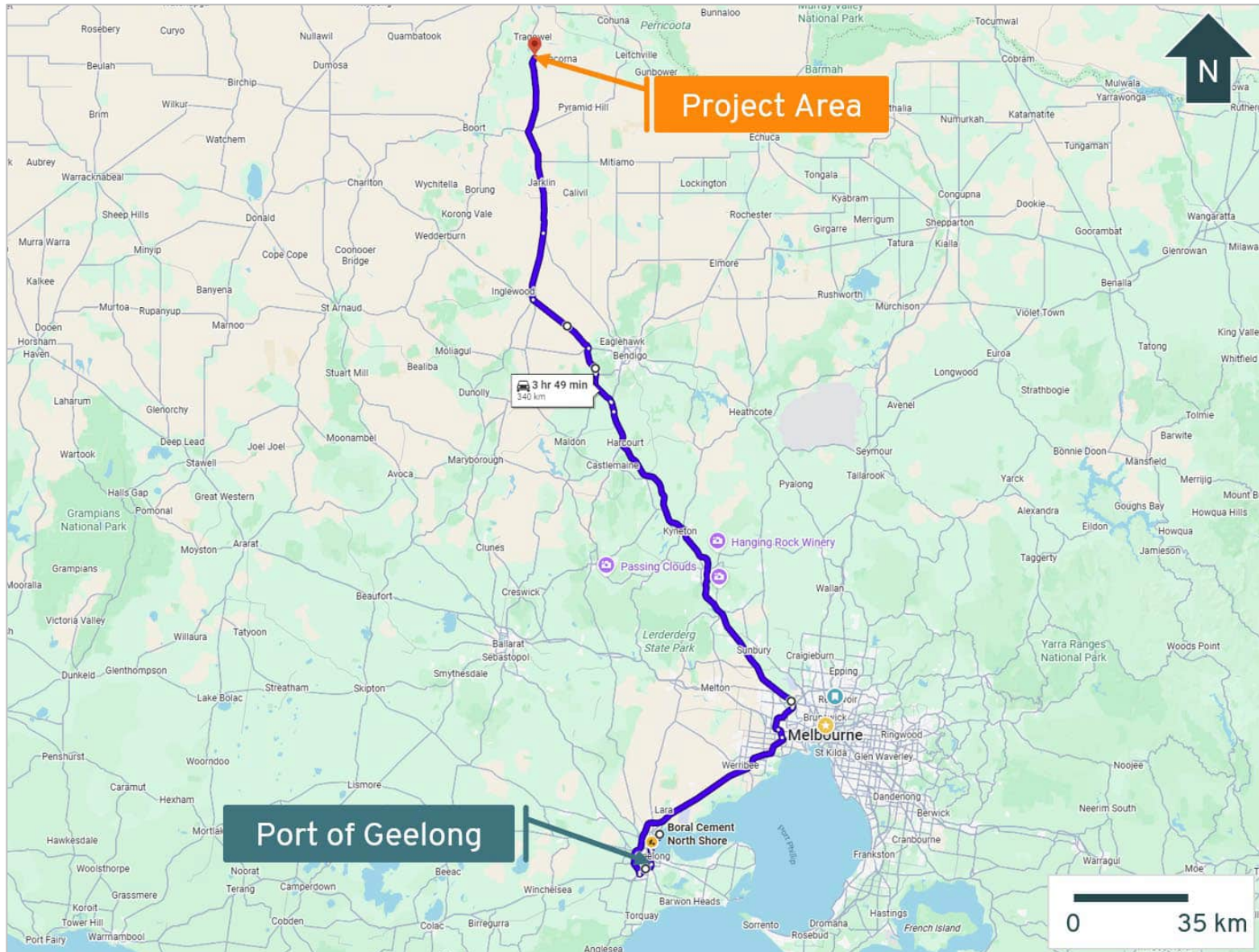
7.3 Route 1 – Blades

7.3.1 Route Overview

Given the dimensions of the blade transport combination, the most appropriate transport route maximises use of the National Land Transport Network (Road) between the port of entry and the Project area. These types of roads consist of major highways/freeways which are generally constructed to a high standard to accommodate freight movements and provide uninterrupted routes which minimise turning manoeuvres and travel through built-up areas.

The proposed route option prepared by RJA is outlined in Figure 40 and Table 17 below. The return journey to the Port of Geelong is expected to utilise a similar route.

Figure 40: Route 1 Map



Source: Google Maps - [Link](#)



Table 17: Route 1 Overview

Route	Description	Distance (km)	Route Overview	
			Roads	Authority
1	Geelong to Macorna WF <i>Blades and other components with 5.3m max. load height</i>	340	1. The Esplanade 2. Sea Breeze Parade	City of Greater Geelong
			3. Aberly Road 4. Corio Quay Road 5. Princes Highway (A10) 6. Geelong Ring Road/Princes Freeway (M1) 7. Western Ring Road (M80) 8. Keilor Park Drive 9. Calder Freeway (M79) 10. Calder Alternative Highway (A790) 11. Calder Highway (A79) 12. Bridgewater-Serpentine Road (C274) 13. Loddon Valley Highway (B260)	DTP
			14. Macorna Road / Old Echuca Road / Murray Valley Highway	Gannawarra Shire Council

7.3.2 Height Clearances

RJA has determined that the proposed route has a minimum overhead clearance of 5.3m. This will need to be confirmed prior to travel in the case where new traffic signals or gantry signs have been installed.

It is noted that a powerline survey would be undertaken prior to construction to confirm any overhead electrical assets along the route which may need to be lifted. Detailed on-site assessment of any overhanging vegetation (e.g. tree branches) would also be undertaken prior to construction with trimming to be carried out where required.

7.3.3 Railway Level Crossings

A total of four railway level crossings have been identified along the proposed transport route as outlined in Table 18. Further to these, there may be additional railway level crossings within the local road network to access each turbine site (refer Section 6.1.3).

Table 18: Railway Level Crossings – Route 1

Route	Ref	Level Crossing Location
1	1	Aberly Road, North Shore VIC Map Link
	2	Calder Alternative Highway, Marong VIC Map Link
	3	Calder Highway, Derby VIC Map Link

Route	Ref	Level Crossing Location
	4	Bridgewater-Serpentine Road, Bridgewater VIC Map Link

The OSOM vehicles are expected to be able to cross the rail tracks at each location with no road upgrade works identified. Written approval will be sought from the relevant rail authorities for all level crossings as part of the Transport Management Plan. This would include any specific conditions or traffic management measures to be adopted during railway crossing manoeuvres. Typically, a Rail Protection Officer would be required to supervise each crossing given the length of the OSOM vehicle combination. Spotters would also be utilised to guide the vehicle across each rail crossing where required.

Accordingly, the potential impacts of OSOM traffic on the level crossings are expected to be suitably managed through specific conditions and mitigation measures to be determined with the rail authorities through the permit process.

7.3.4 Bridges and Culverts

A detailed review of the load limits on all bridges and structures along the route will be undertaken as part of the permit process for the OSOM vehicles.

7.3.5 Route Summary

The RJA assessment has identified a number of 'pinch points' where road upgrades are required in order to allow the blade transport vehicles to successfully access the site from Port of Geelong. A summary from the RJA report of locations where road upgrades are required is provided in Table 19, with further details including a swept path assessment provided in Appendix G.

Table 19: Proposed Road Upgrades – Route 1

KM index	Location	Required Road Upgrades
Geelong Metropolitan Area		
0.0	Lascelles berth 3 onto The Esplanade (North Shore, VIC)	- Hardstand to be installed on inside and outside of corner
1.2	The Esplanade onto Sea Breeze Parade (North Shore, VIC)	- Kerbs and barriers on entry to be removed and road made trafficable on entry - Signs to be removed
1.9	Sea Breeze Parade onto Aberly Road (North Shore, VIC)	- Islands to be made trafficable/replaced with painted lines - Signs to be relocated or made removable with flush bases
2.4	Aberly Road onto Corio Quay Road (North Shore, VIC)	- Several signs to be relocated or made removable
2.8	Curve on Corio Quay Road (North Shore, VIC)	- Island to be made trafficable and signs relocated

KM index	Location	Required Road Upgrades
17.0	Princes Highway onto Geelong Ring Road (Highton, VIC)	- Hardstand to be installed - Islands made trafficable - Signs relocated or made removable
Regional Victoria		
101.4	Western Ring Road Off Ramp onto Keilor Park Drive (Keilor East, VIC)	- Suitable bypass road to be constructed
102.3	Keilor Park Drive onto Calder Freeway (Keilor East, VIC)	Option 1: - Kerb and island to be made trafficable - Signs to be made removeable or relocated - Guardrail and light pole to be relocated - Hardstand to be installed on outside of corner Option 2: - Kerb and island to be made trafficable - Signs to be made removeable or relocated - Guardrail to be relocated - Hardstand to be installed through corner and vegetation removed
221.2	Calder Freeway Off Ramp onto Calder Alternative Highway (Ravenswood, VIC)	- Light poles and signs to be either removed or relocated out of swept path
231.0	Roundabout on Calder Alternative Highway (Lockwood, VIC)	- Hardstand to be installed on inside and outside of roundabout - Signs to be made removable or relocated
241.3	Calder Alternative Highway onto Calder Highway (Marong, VIC)	- Power pole to be relocated out of swept path. - Signs to be made removable or relocated
285.0	Bridgewater-Serpentine Road onto Loddon Valley Highway (Serpentine, VIC)	- Island to be made trafficable - Signs to be made removable or relocated
341.0	Loddon Valley Highway onto Macorna Road (Site Access A) (Macorna, VIC)	- Hardstand to be placed on inside and outside of corner (landowner permission required)
357.0	Loddon Valley Highway onto Old Echuca Road (Site Access B) (Macorna, VIC)	- Hardstand is required on the outside of the corner
358.0	Loddon Valley Highway onto Murray Valley Highway (Site Access C) (Macorna, VIC)	- The centre island will need to be made trafficable and replaced with painted lines. Several signs will need to be relocated or be made removable. - Hardstand on the outside of the corner is required

It is noted that traffic management measures including the use of escort vehicles and spotters will also be required along the route to control traffic and ensure the vehicle and load are clear of infrastructure. Recommended driver protocols for OSOM transport are outlined within Section 8.6.

Accordingly, it is concluded that the proposed route is suitable for use by vehicles with a maximum loaded height of 5.3m subject to the identified road upgrades and traffic management measures.

7.4 Route 2 – Towers

7.4.1 Route Overview

Given the overall height of the base tower transport combination, the most appropriate transport route is dictated by the need to avoid fixed overhead obstructions which provide insufficient height clearances.

The proposed route option prepared by RJA is outlined in Figure 41 and Table 20 below. The return journey to the Port of Geelong is expected to utilise a more direct route (similar to the blade route) as the vehicles would be unloaded and kept to their smallest practicable dimensions to avoid OSOM classification where possible.

Figure 41: Route 2 Map



Source: Google Maps - [Link](#)

Table 20: Route 2 Overview

Route	Description	Distance (km)	Route Overview	
			Roads	Authority
2	Geelong to Macorna WF via St Arnaud <i>Towers and other components 6.5m max. load height</i>	441	1. The Esplanade 2. Madden Avenue	City of Greater Geelong
			3. Seabeach Parade (C115) 4. St Georges Road 5. Cox Road (C136/C118) 6. Anakie Road (C118) 7. Midland Highway (A300) 8. Princes Freeway (M1) 9. Hamilton Highway (B140) 10. Colac-Ballarat Road (C146)	DTP
			11. Pitfield-Cressy Road	Golden Plains Shire Council
			12. Rokewood-Skipton Road (C143) 13. Glenelg Highway (B160) 14. Beaufort Road (C172) 15. Skipton Road (C172) 16. Lawrence Street (C172) 17. Albert Street (C172) 18. Lexton Road (C172) 19. Beaufort-Lexton Road (C172) 20. Williamson Road (C172) 21. Sunraysia Highway (B220) 22. Wimmera Highway (B240) 23. Bridgewater-Dunolly Road (C274) 24. Arnold Road (C274) 25. Bridgewater-Serpentine Road (River Street) (C274) 26. Loddon Valley Highway (B260)	DTP
			27. Macorna Road / Old Echuca Road / Murray Valley Highway	Gannawarra Shire Council

7.4.2 Height Clearances

RJA has determined that the proposed route has a minimum overhead clearance of 6.5m. This will need to be confirmed prior to travel in the case where new traffic signals or gantry signs have been installed.

The critical height clearance along the route was identified along Hamilton Highway under the Princess Freeway bridge in Fyansford which has a 6.1m clearance. It is understood that a bypass has been constructed for a previous project to achieve a minimum clearance of 6.5m. Accordingly, the height clearances along this route are considered suitable to accommodate the transport of tower sections and any other loads with a maximum load height of up to 6.5m subject to the use of the Princes Freeway bridge bypass.

It is noted that a powerline survey would be undertaken prior to construction to confirm any overhead electrical assets along the route which may need to be lifted. Detailed on-site assessment of any overhanging vegetation (e.g. tree branches) would also be undertaken prior to construction with trimming to be carried out where required.

7.4.3 Railway Level Crossings

A total of ten railway level crossings have been identified along the proposed transport route as outlined in Table 21. Further to these, there may be additional railway level crossings within the local road network to access each turbine site (refer Section 6.1.3).

Table 21: Railway Level Crossings – Route 2

Route	Ref	Level Crossing Location
2	1	St Georges Road, Norlane VIC Map Link
	2	Anakie Road, Bell Post Hill VIC Map Link
	3	Hamilton Highway, Inverleigh VIC Map Link
	4	Lawrence Street, Beaufort VIC Map Link
	5	Sunraysia Highway, Avoca VIC Map Link
	6	Sunraysia Highway, St Arnaud VIC Map Link
	7	Wimmera Highway, Tarnagulla VIC Map Link
	8	Bridgewater-Dunolly Road, Llanelly VIC Map Link
	9	Bridgewater-Dunolly Road, Arnold VIC Map Link
	10	Bridgewater-Serpentine Road, Bridgewater on Loddon VIC Map Link

The OSOM vehicles are expected to be able to cross the rail tracks at each location with no road upgrade works identified. Written approval will be sought from the relevant rail authorities for all level crossings as part of the Transport Management Plan. This would include any specific conditions or traffic management measures to be adopted during railway crossing manoeuvres. A Rail Protection Officer may be required to supervise each crossing given the length of the OSOM vehicle combinations. Spotters would also be utilised to guide the vehicle across each rail crossing where required.

Accordingly, the potential impacts of OSOM traffic on the level crossings are expected to be suitably managed through specific conditions and mitigation measures to be determined with each of the rail authorities through the permit process.

7.4.4 Bridges and Culverts

A detailed review of the load limits on all bridges and structures along the route will be undertaken as part of the permit process for the OSOM vehicles.

7.4.5 Route Summary

The RJA assessment has identified a number of ‘pinch points’ where road upgrades are required in order to allow the tower transport vehicles to successfully access the site from Port of Geelong. A summary from the RJA report of locations where road upgrades are provided is provided in Table 22, with further details including a swept path assessment provided in Appendix G.

Table 22: Proposed Road Upgrades – Route 2

KM index	Location	Required Road Upgrades
City of Greater Geelong		
0.65	Madden Avenue onto Seabeach Parade (North Shore, VIC)	- Power pole and signs to be relocated out of swept path. - Hardstand to be installed and kerbs made trafficable.
1.1	Seabeach Parade onto St Georges Road (North Shore, VIC)	- Hardstand to be installed on outside of corner and kerbs made trafficable
1.5	Roundabout on St Georges Road at Station Street (Corio, VIC)	- Island on entry to be made trafficable/replaced with painted lines - Note: Existing roundabout made trafficable for previous project
4.4	Cox Road onto Anakie Road (Norlane, VIC)	- Hardstand to be installed on island and roundabout and kerbs made trafficable
6.3	Roundabout on Anakie Road at Furner Avenue (Bell Park, VIC)	- Roundabout to be made trafficable / concreted - Islands to be made trafficable / replaced with painted lines
8.4	Anakie Road onto Ballarat Road (Bell Park, VIC)	- Traffic islands to be made trafficable / replaced with painted lines - Vegetation to be trimmed for clearance
9.7	Ballarat Road onto Geelong Ring Road (Hamlyn Heights, VIC)	- Hardstand to be installed on outside of corner
14.7	Geelong Ring Road onto Hamilton Highway (Fyansford, VIC)	- Hardstand to be installed on outside of corner on entry - Note: Loads to use bypass installed for previous project
14.8	Hamilton Highway Under Princes Highway x2	- Discussions with asset owners / regulators required to secure use of bypass installed for current project

KM index	Location	Required Road Upgrades
Regional Victoria		
75.1	Hamilton Highway onto Colac-Ballarat Road (Cressy, VIC)	- Hardstand to be installed on inside and outside of corner - Island to be made trafficable / replaced with painted lines
79.6	Colac-Ballarat Road onto Pitfield-Cressy Road (Werneth, VIC)	- Hardstand to be installed on inside and outside of corner.
127	Rokewood-Skipton Road onto Glenelg Highway (Skipton, VIC)	- Hardstand to be installed on outside of corner - Island to be made trafficable / replaced with painted lines
128	Glenelg Highway onto Beaufort Road (Skipton, VIC)	- Hardstand to be installed on outside of corner
183	Williamson Street onto Sunraysia Highway (Lexton, VIC)	- Traffic islands to be made trafficable / replaced with painted lines
267	Sunraysia Highway onto Wimmera Highway (St Arnaud, VIC)	- Islands to be made trafficable / replaced with painted lines - Signs relocated out of swept path
327	Turn on Wimmera Highway at Tarnagulla (Tarnagulla, VIC)	- Island to be made trafficable / replaced with painted lines - Hardstand to be installed on outside of corner
331	Wimmera Highway onto Bridgewater-Dunolly Road (Llanelly, VIC)	- Signs to be relocated or made removable
370	River Road onto Loddon Valley Highway (Serpentine, VIC)	- Island to be made trafficable / replaced with painted lines
423	Loddon Valley Highway onto Macorna Road (Site Access A) (Macorna, VIC)	- Hardstand to be placed on inside and outside of corner (landowner permission required)
423	Loddon Valley Highway onto Old Echuca Road (Site Access B) (Macorna, VIC)	- Hardstand is required on the outside of the corner
423	Loddon Valley Highway onto Murray Valley Highway (Site Access C) (Macorna, VIC)	- The centre island will need to be made trafficable and replaced with painted lines. Several signs will need to be relocated or be made removable. - Hardstand on the outside of the corner is required

It is noted that traffic management measures including the use of escort vehicles and spotters will also be required along the route to control traffic and ensure the vehicle and load are clear of infrastructure. Recommended driver protocols for OSOM transport are outlined within Section 8.6.

Accordingly, it is concluded that the proposed route between the Port of Geelong and Loddon Valley Highway is suitable for use by OSOM vehicles with a maximum loaded height of 6.5m subject to the identified road upgrades and traffic management measures.

7.5 Local Road Assessment

A swept path assessment has been undertaken of the proposed OSOM vehicle between Loddon Valley Highway and each local road intersection to understand the road network upgrades that will be required to provide access to each turbine site. This assessment is detailed in 6.2.2, with the swept path assessment provided in Appendix E.

7.6 Summary

Deliveries of wind farm components will originate from the Port of Geelong utilising oversize or overmass vehicle combinations. Rex J Andrews has undertaken an assessment of the access routes which identified a number of road upgrades and mitigation measures required in order to allow the transport vehicles to successfully access the site.

Pilot and/or police escort vehicles will accompany each OSOM combination to provide advance warning for other road users and manage traffic at 'pinch points' where required as identified in Sections 7.3.5 and 7.4.5. The OSOM vehicles will depart at specific intervals and regroup at pinch points to allow for implementation of the required traffic management measures such as temporary road closures. This will be detailed in the Transport Management Plan to be prepared prior to the OSOM transport in consultation with DTP and relevant stakeholders.

Prior to OSOM transport, a review of the access routes would be undertaken to identify locations where vulnerable road users may be present on the road network such as schools, childcare centres, hospitals and public transport routes (including school buses). The peak operating times at these locations should be identified and, where possible, OSOM transport avoided near these facilities during peak times which would be included as part of the Transport Management Plan.

Neighbours of the Project should be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.

Accordingly, based on the assessment above, it is concluded that the road network is able to accommodate the expected OSOM vehicle transport subject to the identified road upgrades and traffic management measures.

8. Traffic Management Plan

It is recommended that a Traffic Management Plan (TMP) be prepared prior to commencement of construction of the Project. The TMP should be prepared and implemented in accordance with Australian Standard 1742.3 and the Work Health and Safety Regulation 2017. The TMP will provide additional information regarding the traffic volumes and distribution of construction vehicles that is not available at this time including:

- Road transport volumes, distribution and vehicle types broken down into:
 - Hours and days of construction.
 - Schedule for phasing/staging of the Project.
- The origin, destination and routes for:
 - Employee and contractor light vehicles.
 - Heavy vehicles.
 - OSOM vehicles.
- A map of the primary haulage routes highlighting critical locations.
- An induction process for vehicle operators and regular toolbox meetings.
- A complaint resolution and disciplinary procedure.
- Local climatic conditions that may impact road safety of employees throughout all Project phases (e.g. fog, wet and significant dry, dusty weather).

The following provides recommended measures that should be adopted within the TMP to minimise the potential impact of construction traffic along the road network.

8.1 Information and Communication

The implementation of a community information and awareness program would assist in managing the potential traffic impacts. Prior to the commencement of construction and throughout the construction period, a program of consultation should be initiated to ensure local residents are aware of construction traffic accessing the Project area. This program may include elements of the following as appropriate to the phase of works:

- Press releases in local newspapers.
- Specific emails, newsletters and individual letter drops to neighbouring residents along the access route to the Project area.
- A website providing details of the status of works and contact details for complaints or enquiries.
- Key contact personnel and contact details, including out of hours contact information to residents, schools, public activities and business operating alongside the local route.
- Neighbours of the Project should be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.

8.2 Signage

If deemed necessary, specific warning signs advising of the changed traffic operations and presence of heavy vehicles are to be appropriately located on approaches to and from the transport routes. These should warn existing road users of changed traffic conditions. Signs may be installed or activated on specific days to warn local road users of construction activities.

8.3 On-Site Mitigation Measures

On-site mitigation measures targeted at safety and reducing the potential impact of on-site transport may include:

- On-site speed restrictions.
- Appropriate dust suppression measures.
- Maintenance program for internal access tracks to ensure safe access.
- Loading and unloading is to occur within the Project area only. No public streets or roads would be used for material storage at any time.
- Sufficient car parking is to be provided within the Project area to ensure vehicles do not park on the surrounding public road network.
- All car parking and loading areas are to be designed in accordance with the relevant Australian Standard (2890 series) and Council requirements.

8.4 Shuttle Buses

Shuttle buses could be used to transport the workforce between the Project Area and the nearby towns of Kerang, Echuca and Koondrook/Barham to reduce the peak hour traffic volumes. Shuttle buses would typically transport an average of 20 personnel.

The shuttle buses would pick up and drop off workers from on-site car parking areas which would provide sufficient manoeuvring space for buses. Minor temporary parking control measures may be implemented if required to ensure buses are able to suitably access the parking area and turn around on site. All buses would travel to the Project Area via Loddon Valley Highway or Leitchville-Kerang Road.

Measures to ensure a shuttle bus program can be practically achieved and monitored will be included within the Construction Environmental Management Plan and/or TMP. Recommended measures include:

- Limiting car parking for light vehicles on site.
- Regular toolbox meeting sessions identifying method of travel to work and strongly encouraging use of the shuttle buses.
- Identifying the bus drop off/pick up locations and clearly communicating these locations with the workforce.
- Allocating a team member to be responsible for enforcement and management of the shuttle buses.
- Identifying mechanisms to be put in place if shuttle bus passenger numbers are not achieved.

8.5 Driver Protocols

Management of vehicular access to and from the site is essential in order to maintain the safety of the general public as well as the workforce. A Driver Code of Conduct is to be implemented as a measure to maintain safety within and around the site, which may include the following measures:

- All vehicles will enter and exit the site in a forward direction via the designated site access location as shown in Figure 1.
- Heavy vehicles should avoid travel along Loddon Valley Highway during school bus operating times to limit the potential interaction of larger vehicles and vulnerable road users.
- Safety initiatives should be considered to manage potential impacts to residential areas and/or school bus zones.
- Utilisation of only the designated transport routes.
- Construction vehicle movements are to abide by finalised schedules as agreed by the relevant authorities.
- All permits for working within the road reserve must be received from the relevant authority prior to works commencing.
- Measures to provide awareness of the prevalence of wild animals on the road, particularly at dawn and dusk, and for staff to drive in an appropriate manner to prevent 'struck animal' type crashes.

8.6 OSOM Vehicle Protocols

Driver protocols for OSOM transport should include the following:

- The schedule for the delivery of OSOM loads to the Project area should avoid peak periods of traffic on the road network as far as practicable and minimise disruption to residents.
- OSOM load permits for turbine components should be appended to the TMP.
- Pilots should be in radio contact with other trucks to ensure passing occurs at safe and convenient locations.
- In the event of a breakdown, crash or road failure, the transport crew should:
 - Park the pilot vehicles in locations where they maximise safety, considering overhanging components and sight distance on approaches.
 - Contact the project manager.
 - Contact emergency services (including police) where required.
 - Contact the road controlling authority where required.
 - Contact the site manager to notify all other project traffic and local traffic via CB radio.
 - Follow all instructions from police and the road controlling authority.
- In the event of a crash, the vehicles involved should not be moved until instructed by police.
- Utilisation of only the designated transport routes.
- Construction vehicle movements are to abide by finalised schedules as agreed by the relevant authorities.

8.7 Road Upgrades

In addition to the traffic management measures specified above, it is proposed to provide road upgrades to accommodate general construction traffic and OSOM transport vehicles. The road upgrades required for suitable access to the Project to be achieved is inclusive of the following:

- The intersections with the arterial road network (Loddon Valley Highway) are proposed to be provided with turn treatments based on the Austroads Guide requirements (refer Section 4.1.4) and concept plans have been prepared for the intersections (refer Appendix C).
- Road widening and upgrades to the surface of the local road network within the Project Area which have been summarised in Section 6.1.3 and general include widening all roads to have a carriageway width of 6.0-7.0m and an all weather surface.
- Upgrades to the local road intersections within the Project Area which are summarised within Section 6, and shown within Appendix E, in order to allow heavy vehicles to suitably turn.
- Upgrades along the OSOM transport routes from Port of Geelong to Loddon Valley Highway as identified within the Route Assessment prepared by Rex J Andrews (Section 7 and Appendix G).

8.8 Summary

The recommendations outlined above will ensure the construction traffic will have a minimal impact to the capacity and safety of the surrounding road network. The TMP will be prepared in consultation with DTP and the relevant Councils.

9. Conclusion

Amber Organisation has assessed the potential traffic impacts of the proposed Macorna Wind Farm project for Atmos Renewables Pty Ltd.

The Project includes the construction, operation and decommissioning of a wind farm and ancillary infrastructure with up to 114 wind turbine generators and a maximum installed capacity of approximately 820.8 megawatts.

The Project is situated within the draft North West Renewable Energy Zone and occupies land around the Macorna township. It has an area of approximately 23,000 hectares which includes land within the Gannawarra Shire Council and Loddon Shire Council Local Government Areas.

Vehicular access from the arterial network is primarily proposed from Loddon Valley Highway onto Mincha-Canary Island Road, Mitiamo-Kerang Road, Campbells Road, Macorna Road or Old Echuca Road. Light vehicles travelling from the east are expected to access the Project area via Leitchville-Kerang Road. Vehicles will then utilise the local road network within the Project area to travel throughout the site to each turbine access.

The construction period is expected to commence in 2029 and would take approximately 3.5 years. A construction workforce of up to 375 personnel would be on-site during the peak construction phase and would predominantly reside in Kerang, Echuca and Koondrook/Barham with a small proportion of personnel based in Cohuna and Bendigo.

Deliveries of wind farm components will originate from the Port of Geelong while construction materials and equipment will generally be sourced from the surrounding area where practicable. Heavy vehicles may also be utilised for deliveries of ancillary parts/supplies and other large materials (e.g. steel reinforcement) from the Port of Geelong or the Melbourne metropolitan area.

The above assessment determined the following:

- The Project is expected to generate up to 650 vehicle trips per day during the peak construction period, including 150 heavy vehicle trips.
- It is proposed to provide BAR and BAL turn treatments at the Loddon Valley Highway intersections with Mincha-Canary Island Road, Mitiamo-Kerang Road and Campbells Road, with CHR(s) and AUL(s) turn treatments proposed at the intersections with Macorna Road and Old Echuca Road. Concept plans have been prepared for the proposed upgrades which has been designed for simultaneous B-double movements and the largest oversize vehicle expected to access the site.
- The road network is able to accommodate the traffic generated by the Project during the construction, operation and decommissioning phases based on the SIDRA analysis undertaken for the intersections with Loddon Valley Highway expected to be utilised by the Project.
- The proposed heavy vehicle access routes from Port of Geelong or the Melbourne metropolitan area utilise roads that are designated for 25/26m B-doubles within the NHVR National Network Map which includes the relevant state-based heavy vehicle networks. Accordingly, the proposed access routes are able to accommodate the loads and types of vehicle traffic to be generated during construction of the wind farm.
- Many of the local roads within the Project Area currently provide road widths of less than 6.0m and are constructed with a dirt surface which restricts use to dry weather only. The road network within the Project area is proposed to be upgraded or constructed to a typical width of 6.0-7.0m to allow for two heavy vehicles to pass, with widening at local road intersections

to facilitate movements. It is also proposed to upgrade the 'dry weather only' roads to an all-weather surface to ensure access is available year-round.

- Each local road intersection has adequate sight distance to allow vehicles to safely manoeuvre through the road network, with some vegetation trimming and maintenance. All vegetation should be kept low to ensure that sight distance is maintained.
- Rex J Andrews has prepared an OSOM route assessment from the Port of Geelong to Loddon Valley Highway which identified a number of road upgrades and traffic management measures required in order to allow the transport vehicles to successfully access the site.
- An assessment of the local road network between Loddon Valley Highway and each site access point has been undertaken for the largest sized OSOM vehicle. This assessment identified a number of road upgrades including hardstand areas around intersections and impacts to adjacent properties. Approval will be sought from each impacted landowner in order to temporarily utilise their land for OSOM vehicle movements.
- The proposed access locations are provided with adequate sight distance to allow vehicles to safely enter the road network. Two typical designs have been provided for the accesses which can be adopted in a standard configuration to allow general construction traffic as well as the largest OSOM vehicle. The traffic generated by the construction, operation and decommissioning of the Project can be accommodated on the road network in a safe manner.
- In order to mitigate the potential impacts of the Project during construction, a TMP will be prepared which should include the recommendations provided within this document.

Accordingly, based on the assessment above, it is concluded that the road network is able to accommodate the expected vehicle types and traffic volumes during the construction, operation, and decommissioning phases of the Project subject to the proposed road upgrades and traffic management measures. Further, the proposed access locations have been suitably designed to allow vehicles to safely enter and exit the site.

Appendix A

Intersection Count Survey Data



TRANS TRAFFIC SURVEY
TURNING MOVEMENT SURVEY

trafficsurvey.com.au



Intersection of Mincha-Canary Island Rd and Loddon Valley

GPS: -36.00265, 143.94782

Date: Tue 09/12/25

Weather: Overcast

Suburban: Macoma

Customer: Amber

North: Loddon Valley Hwy

East: Mincha-Canary Island Rd

South: Loddon Valley Hwy

West: N/A

Survey AM: 7:00 AM-10:00 AM

Period PM: 3:00 PM-4:00 PM

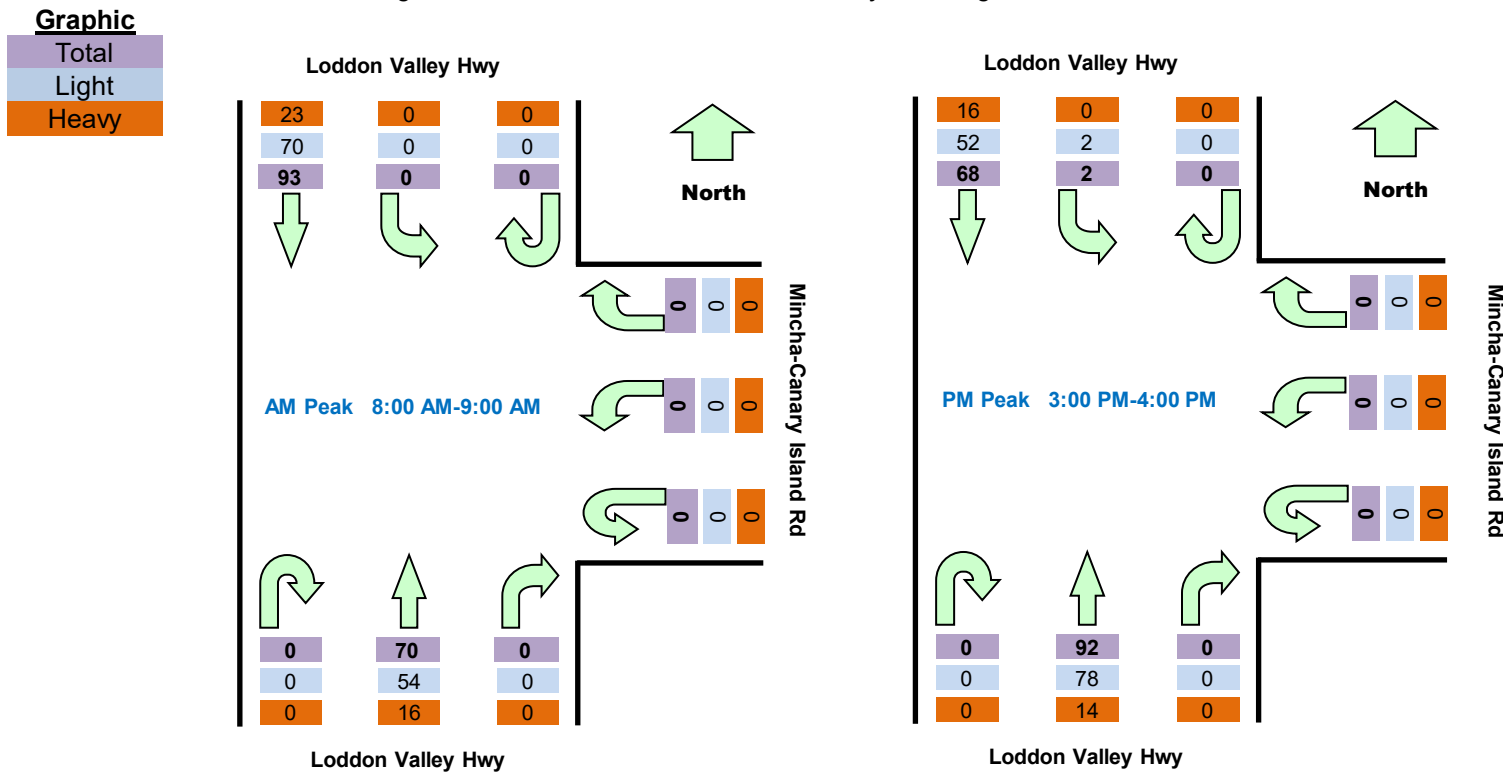
Traffic AM: 8:00 AM-9:00 AM

Peak PM: 3:00 PM-4:00 PM

Time		th Approach Loddon Valley			Approach Mincha-Canary Islath			Approach Loddon Valley			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
7:00	7:15	0	7	0	0	0	0	0	0	15	113	
7:15	7:30	0	10	0	0	0	0	0	0	9	129	
7:30	7:45	0	19	0	0	1	0	0	0	19	155	
7:45	8:00	0	16	0	0	0	0	0	0	17	152	
8:00	8:15	0	23	0	0	0	0	0	0	15	163	Peak
8:15	8:30	0	29	0	0	0	0	0	0	16	152	
8:30	8:45	0	14	0	0	0	0	0	0	22	160	
8:45	9:00	0	27	0	0	0	0	0	0	17	157	
9:00	9:15	0	10	0	0	0	0	0	0	17	152	
9:15	9:30	0	32	0	0	0	1	0	0	20		
9:30	9:45	0	20	0	0	0	0	0	0	13		
9:45	10:00	0	21	0	0	1	0	0	0	17		
15:00	15:15	0	22	0	0	0	0	0	0	20	162	Peak
15:15	15:30	0	14	0	0	0	0	0	0	20	154	
15:30	15:45	0	13	1	0	0	0	0	0	26	153	
15:45	16:00	0	19	1	0	0	0	0	0	26	153	
16:00	16:15	0	15	0	0	0	0	0	0	19	150	
16:15	16:30	0	13	0	0	0	1	0	0	19	145	
16:30	16:45	0	14	0	0	0	0	0	0	26	134	
16:45	17:00	0	21	0	0	0	0	0	1	21	140	
17:00	17:15	0	10	0	0	1	0	0	0	18	125	
17:15	17:30	0	11	1	0	0	0	0	0	10		
17:30	17:45	0	20	0	0	0	0	0	1	25		
17:45	18:00	0	9	0	0	0	0	0	0	19		

Peak Time		th Approach Loddon Valley			Approach Mincha-Canary Islath			Approach Loddon Valley			Peak total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
8:00	9:00	0	93	0	0	0	0	0	0	70	163
15:00	16:00	0	68	2	0	0	0	0	0	92	162

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Time		th Approach Loddon Valley			Approach Mincha-Canary Islath			Approach Loddon Valley			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
7:00	7:15	0	5	0	0	0	0	0	0	7		
7:15	7:30	0	7	0	0	0	0	0	0	5		
7:30	7:45	0	17	0	0	1	0	0	0	12		
7:45	8:00	0	12	0	0	0	0	0	0	9		
8:00	8:15	0	18	0	0	0	0	0	0	11		
8:15	8:30	0	24	0	0	0	0	0	0	15		
8:30	8:45	0	9	0	0	0	0	0	0	14		
8:45	9:00	0	19	0	0	0	0	0	0	14		
9:00	9:15	0	8	0	0	0	0	0	0	11		
9:15	9:30	0	29	0	0	0	0	0	0	17		
9:30	9:45	0	16	0	0	0	0	0	0	9		
9:45	10:00	0	15	0	0	1	0	0	0	12		
15:00	15:15	0	15	0	0	0	0	0	0	17		
15:15	15:30	0	13	0	0	0	0	0	0	17		
15:30	15:45	0	11	1	0	0	0	0	0	21		
15:45	16:00	0	13	1	0	0	0	0	0	23		
16:00	16:15	0	10	0	0	0	0	0	0	11		
16:15	16:30	0	10	0	0	0	0	0	0	18		
16:30	16:45	0	11	0	0	0	0	0	0	25		
16:45	17:00	0	16	0	0	0	0	0	1	18		
17:00	17:15	0	6	0	0	1	0	0	0	13		
17:15	17:30	0	10	1	0	0	0	0	0	10		
17:30	17:45	0	17	0	0	0	0	0	0	24		
17:45	18:00	0	6	0	0	0	0	0	0	12		

Peak Time		th Approach Loddon Valley			Approach Mincha-Canary Islath			Approach Loddon Valley			Peak total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
8:00	9:00	0	70	0	0	0	0	0	0	54	124
15:00	16:00	0	52	2	0	0	0	0	0	78	132

Time		th Approach Loddon Valley			Approach Mincha-Canary Islath			Approach Loddon Valley			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
7:00	7:15	0	2	0	0	0	0	0	0	8		
7:15	7:30	0	3	0	0	0	0	0	0	4		
7:30	7:45	0	2	0	0	0	0	0	0	7		
7:45	8:00	0	4	0	0	0	0	0	0	8		
8:00	8:15	0	5	0	0	0	0	0	0	4		
8:15	8:30	0	5	0	0	0	0	0	0	1		
8:30	8:45	0	5	0	0	0	0	0	0	8		
8:45	9:00	0	8	0	0	0	0	0	0	3		
9:00	9:15	0	2	0	0	0	0	0	0	6		
9:15	9:30	0	3	0	0	0	1	0	0	3		
9:30	9:45	0	4	0	0	0	0	0	0	4		
9:45	10:00	0	6	0	0	0	0	0	0	5		
15:00	15:15	0	7	0	0	0	0	0	0	3		
15:15	15:30	0	1	0	0	0	0	0	0	3		
15:30	15:45	0	2	0	0	0	0	0	0	5		
15:45	16:00	0	6	0	0	0	0	0	0	3		
16:00	16:15	0	5	0	0	0	0	0	0	8		
16:15	16:30	0	3	0	0	0	1	0	0	1		
16:30	16:45	0	3	0	0	0	0	0	0	1		
16:45	17:00	0	5	0	0	0	0	0	0	3		
17:00	17:15	0	4	0	0	0	0	0	0	5		
17:15	17:30	0	1	0	0	0	0	0	0	0		
17:30	17:45	0	3	0	0	0	0	0	1	1		
17:45	18:00	0	3	0	0	0	0	0	0	7		

Peak Time		th Approach Loddon Valley			Approach Mincha-Canary Islath			Approach Loddon Valley			Peak total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
8:00	9:00	0	23	0	0	0	0	0	0	16	39
15:00	16:00	0	16	0	0	0	0	0	0	14	30

TRANS TRAFFIC SURVEY
TURNING MOVEMENT SURVEY

Intersection of Mitiamo-Kerang Rd and Loddon Valley Hwy

GPS -35.95131, 143.9412

Date: Tue 09/12/25
Weather: Overcast
Suburban: Macoma
Customer: Amber

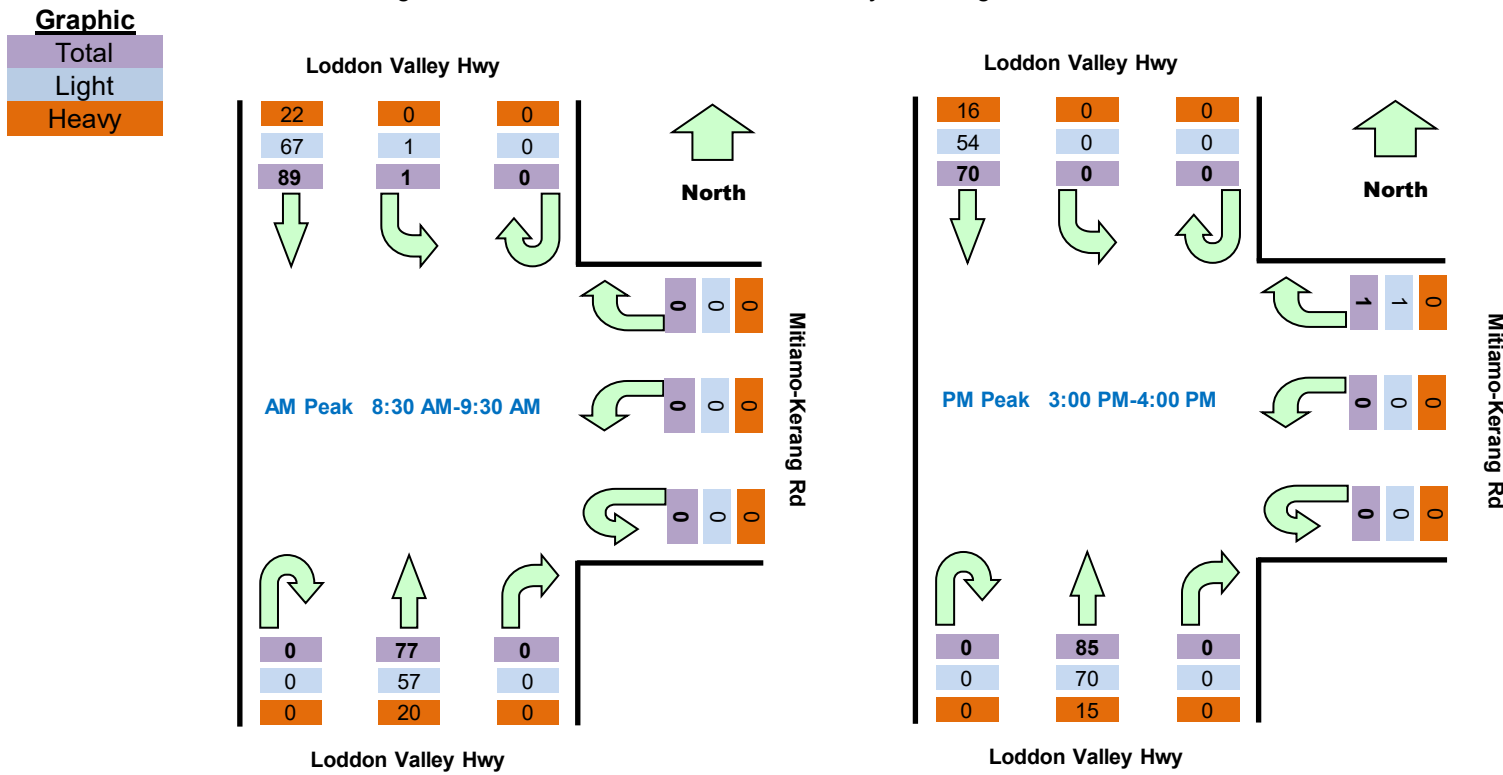
North: Loddon Valley Hwy
East: Mitiamo-Kerang Rd
South: Loddon Valley Hwy
West: N/A

Survey AM: 7:00 AM-10:00 AM
Period PM: 3:00 PM-4:00 PM
Traffic AM: 8:30 AM-9:30 AM
Peak PM: 3:00 PM-4:00 PM

All Vehicles		th Approach Loddon Valley									th Approach Mitiamo-Kerang			th Approach Loddon Valley			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak						
7:00	7:15	0	9	0	0	0	0	0	1	19	120							
7:15	7:30	0	13	0	0	0	0	0	0	7	124							
7:30	7:45	0	17	0	0	0	0	0	0	20	152							
7:45	8:00	0	19	0	0	1	0	0	0	14	152							
8:00	8:15	0	18	0	0	0	0	0	0	15	163							
8:15	8:30	0	27	0	0	2	0	0	0	19	163							
8:30	8:45	0	18	0	0	0	0	0	0	19	167	Peak						
8:45	9:00	0	24	1	0	0	0	0	0	20	158							
9:00	9:15	0	15	0	0	0	0	0	0	18	158							
9:15	9:30	0	32	0	0	0	0	0	0	20								
9:30	9:45	0	16	1	0	0	0	0	0	11								
9:45	10:00	0	23	0	0	0	0	0	0	22								
15:00	15:15	0	26	0	0	0	0	0	0	15	156	Peak						
15:15	15:30	0	10	0	0	0	0	0	0	22	152							
15:30	15:45	0	16	0	0	1	0	0	0	24	153							
15:45	16:00	0	18	0	0	0	0	0	0	24	148							
16:00	16:15	0	15	0	0	0	0	0	0	22	154							
16:15	16:30	0	13	0	0	0	0	0	0	20	144							
16:30	16:45	0	18	0	0	0	0	0	0	18	139							
16:45	17:00	0	18	0	0	1	0	0	0	29	143							
17:00	17:15	0	8	0	0	1	0	0	0	18	123							
17:15	17:30	0	16	1	0	0	0	0	0	11								
17:30	17:45	0	18	0	0	0	0	0	0	22								
17:45	18:00	0	11	0	0	0	0	0	0	17								

Peak Time		th Approach Loddon Valley			st Approach Mitiamo-Kerang			th Approach Loddon Valley			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
8:30	9:30	0	89	1	0	0	0	0	0	77	167
15:00	16:00	0	70	0	0	1	0	0	0	85	156

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Light Vehicles		Time									
		th Approach Loddon Valley			st Approach Mitlamo-Kerang			th Approach Loddon Valley			
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
7:00	7:15	0	4	0	0	0	0	0	1	8	
7:15	7:30	0	11	0	0	0	0	0	0	4	
7:30	7:45	0	15	0	0	0	0	0	0	11	
7:45	8:00	0	13	0	0	1	0	0	0	8	
8:00	8:15	0	15	0	0	0	0	0	0	11	
8:15	8:30	0	22	0	0	2	0	0	0	16	
8:30	8:45	0	12	0	0	0	0	0	0	12	
8:45	9:00	0	17	1	0	0	0	0	0	16	
9:00	9:15	0	12	0	0	0	0	0	0	13	
9:15	9:30	0	26	0	0	0	0	0	0	16	
9:30	9:45	0	13	1	0	0	0	0	0	9	
9:45	10:00	0	19	0	0	0	0	0	0	16	
15:00	15:15	0	18	0	0	0	0	0	0	12	
15:15	15:30	0	9	0	0	0	0	0	0	18	
15:30	15:45	0	13	0	0	1	0	0	0	20	
15:45	16:00	0	14	0	0	0	0	0	0	20	
16:00	16:15	0	9	0	0	0	0	0	0	15	
16:15	16:30	0	11	0	0	0	0	0	0	18	
16:30	16:45	0	13	0	0	0	0	0	0	18	
16:45	17:00	0	14	0	0	1	0	0	0	25	
17:00	17:15	0	5	0	0	1	0	0	0	13	
17:15	17:30	0	14	1	0	0	0	0	0	11	
17:30	17:45	0	14	0	0	0	0	0	0	21	
17:45	18:00	0	10	0	0	0	0	0	0	16	

Peak Time		th Approach Loddon Valley			st Approach Mitiamo-Kerang			th Approach Loddon Valley			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
8:30	9:30	0	67	1	0	0	0	0	0	57	125
15:00	16:00	0	54	0	0	1	0	0	0	70	125

Heavy Vehicles		Time										Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak	
7:00	7:15	0	5	0	0	0	0	0	0	11			
7:15	7:30	0	2	0	0	0	0	0	0	3			
7:30	7:45	0	2	0	0	0	0	0	0	9			
7:45	8:00	0	6	0	0	0	0	0	0	6			
8:00	8:15	0	3	0	0	0	0	0	0	4			
8:15	8:30	0	5	0	0	0	0	0	0	3			
8:30	8:45	0	6	0	0	0	0	0	0	7			
8:45	9:00	0	7	0	0	0	0	0	0	4			
9:00	9:15	0	3	0	0	0	0	0	0	5			
9:15	9:30	0	6	0	0	0	0	0	0	4			
9:30	9:45	0	3	0	0	0	0	0	0	2			
9:45	10:00	0	4	0	0	0	0	0	0	6			
15:00	15:15	0	8	0	0	0	0	0	0	3			
15:15	15:30	0	1	0	0	0	0	0	0	4			
15:30	15:45	0	3	0	0	0	0	0	0	4			
15:45	16:00	0	4	0	0	0	0	0	0	4			
16:00	16:15	0	6	0	0	0	0	0	0	7			
16:15	16:30	0	2	0	0	0	0	0	0	2			
16:30	16:45	0	5	0	0	0	0	0	0	0			
16:45	17:00	0	4	0	0	0	0	0	0	4			
17:00	17:15	0	3	0	0	0	0	0	0	5			
17:15	17:30	0	2	0	0	0	0	0	0	0			
17:30	17:45	0	4	0	0	0	0	0	0	1			
17:45	18:00	0	1	0	0	0	0	0	0	1			

Peak Time		th Approach Loddon Valley			st Approach Mitiamo-Kerang			th Approach Loddon Valley			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
8:30	9:30	0	22	0	0	0	0	0	0	20	42
15:00	16:00	0	16	0	0	0	0	0	0	15	31

TRANS TRAFFIC SURVEY
TURNING MOVEMENT SURVEY

Intersection of Campbells Rd and Loddon Valley Hwy, Mac

GPS: -35.94932, 143.94092
Date: Tue 09/12/25
Weather: Overcast
Suburban: Macoma
Customer: Amber

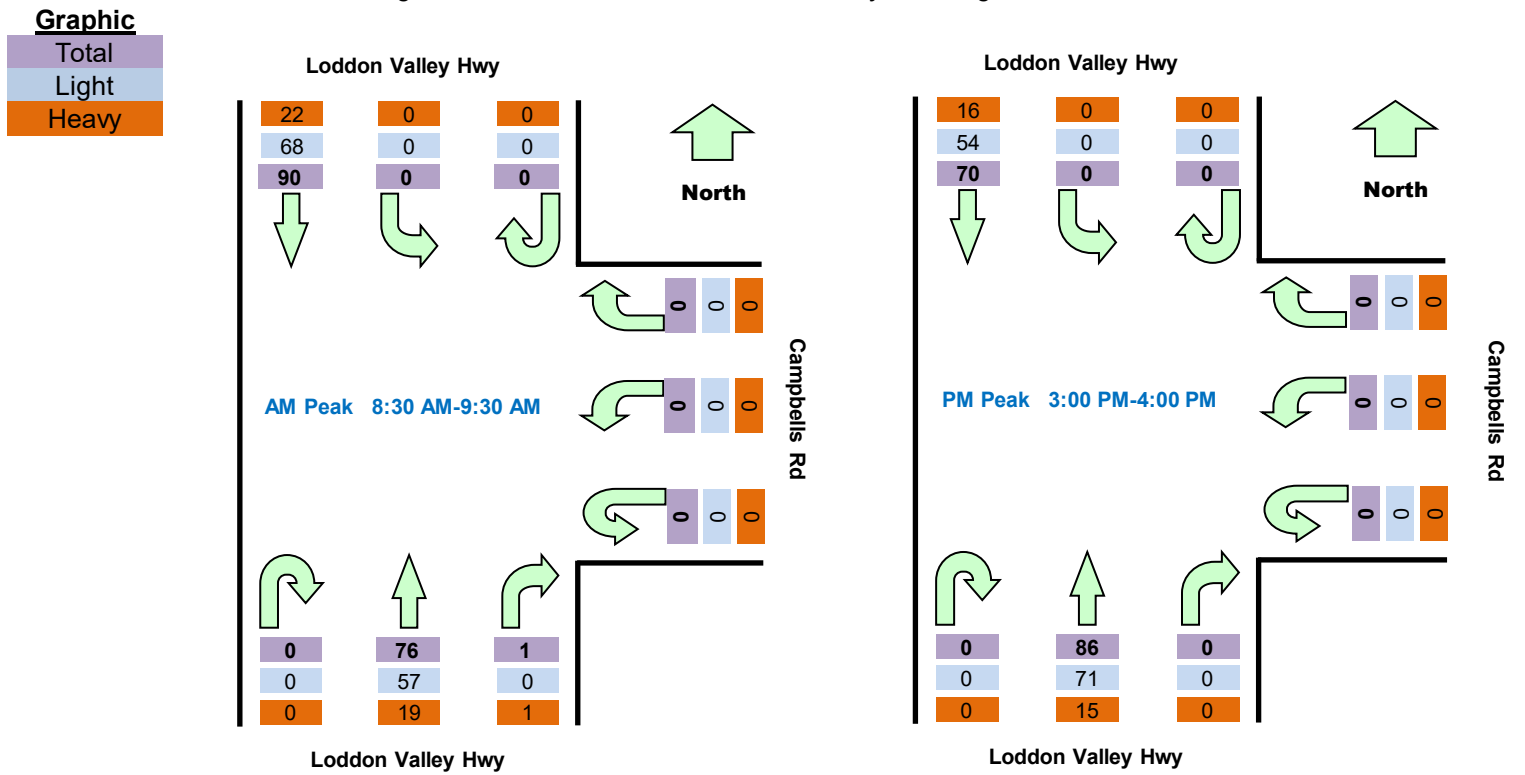
North: Loddon Valley Hwy
East: Campbells Rd
South: Loddon Valley Hwy
West: N/A

Survey Period: AM: 7:00 AM-10:00 AM
PM: 3:00 PM-4:00 PM
Traffic Peak: AM: 8:30 AM-9:30 AM
PM: 3:00 PM-4:00 PM

All Vehicles		th Approach Loddon Valley East Approach Campbells Rth Approach Loddon Valley									Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
7:00	7:15	0	9	0	0	0	0	0	0	19	119	
7:15	7:30	0	13	0	0	0	0	0	0	7	124	
7:30	7:45	0	17	0	0	0	0	0	0	20	152	
7:45	8:00	0	19	0	0	0	0	0	0	15	152	
8:00	8:15	0	18	0	0	0	0	0	0	15	163	
8:15	8:30	0	27	0	0	0	0	0	0	21	163	
8:30	8:45	0	18	0	0	0	0	0	0	19	167	Peak
8:45	9:00	0	25	0	0	0	0	0	1	19	158	
9:00	9:15	0	15	0	0	0	0	0	0	18	159	
9:15	9:30	0	32	0	0	0	0	0	0	20		
9:30	9:45	0	17	0	0	0	0	0	0	11		
9:45	10:00	0	22	1	0	0	1	0	0	22		
15:00	15:15	0	26	0	0	0	0	0	0	15	156	Peak
15:15	15:30	0	10	0	0	0	0	0	0	22	153	
15:30	15:45	0	16	0	0	0	0	0	0	25	154	
15:45	16:00	0	18	0	0	0	0	0	0	24	149	
16:00	16:15	0	14	1	0	0	1	0	0	22	155	
16:15	16:30	0	13	0	0	0	0	0	0	20	144	
16:30	16:45	0	18	0	0	0	0	0	0	18	139	
16:45	17:00	0	18	0	0	0	0	0	0	30	143	
17:00	17:15	0	8	0	0	0	0	0	0	19	125	
17:15	17:30	0	17	0	0	0	0	0	0	11		
17:30	17:45	0	18	0	0	0	0	0	0	22		
17:45	18:00	0	11	0	0	2	0	0	0	17		

Peak Time		th Approach Loddon Valley			East Approach Campbells Rd			th Approach Loddon Valley			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
8:30	9:30	0	90	0	0	0	0	0	1	76	167
15:00	16:00	0	70	0	0	0	0	0	0	86	156

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Light Vehicles		Time									
		th Approach Loddon Valley			East Approach Campbells			Rth Approach Loddon Valley			
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
7:00	7:15	0	4	0	0	0	0	0	0	0	8
7:15	7:30	0	11	0	0	0	0	0	0	0	4
7:30	7:45	0	15	0	0	0	0	0	0	0	11
7:45	8:00	0	13	0	0	0	0	0	0	0	9
8:00	8:15	0	15	0	0	0	0	0	0	0	11
8:15	8:30	0	22	0	0	0	0	0	0	0	18
8:30	8:45	0	12	0	0	0	0	0	0	0	12
8:45	9:00	0	18	0	0	0	0	0	0	0	16
9:00	9:15	0	12	0	0	0	0	0	0	0	13
9:15	9:30	0	26	0	0	0	0	0	0	0	16
9:30	9:45	0	14	0	0	0	0	0	0	0	9
9:45	10:00	0	19	1	0	0	0	0	0	0	16
15:00	15:15	0	18	0	0	0	0	0	0	0	12
15:15	15:30	0	9	0	0	0	0	0	0	0	18
15:30	15:45	0	13	0	0	0	0	0	0	0	21
15:45	16:00	0	14	0	0	0	0	0	0	0	20
16:00	16:15	0	9	1	0	0	0	0	0	0	15
16:15	16:30	0	11	0	0	0	0	0	0	0	18
16:30	16:45	0	13	0	0	0	0	0	0	0	18
16:45	17:00	0	14	0	0	0	0	0	0	0	26
17:00	17:15	0	5	0	0	0	0	0	0	0	14
17:15	17:30	0	15	0	0	0	0	0	0	0	11
17:30	17:45	0	14	0	0	0	0	0	0	0	21
17:45	18:00	0	10	0	0	2	0	0	0	0	16

Peak Time		th Approach Loddon Valley			East Approach Campbells			Roth Approach Loddon Valley			Peak total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
8:30	9:30	0	68	0	0	0	0	0	0	57	125
15:00	16:00	0	54	0	0	0	0	0	0	71	125

Heavy Vehicles		Time									
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
7:00	7:15	0	5	0	0	0	0	0	0	11	
7:15	7:30	0	2	0	0	0	0	0	0	3	
7:30	7:45	0	2	0	0	0	0	0	0	9	
7:45	8:00	0	6	0	0	0	0	0	0	6	
8:00	8:15	0	3	0	0	0	0	0	0	4	
8:15	8:30	0	5	0	0	0	0	0	0	3	
8:30	8:45	0	6	0	0	0	0	0	0	7	
8:45	9:00	0	7	0	0	0	0	0	1	3	
9:00	9:15	0	3	0	0	0	0	0	0	5	
9:15	9:30	0	6	0	0	0	0	0	0	4	
9:30	9:45	0	3	0	0	0	0	0	0	2	
9:45	10:00	0	3	0	0	0	1	0	0	6	
15:00	15:15	0	8	0	0	0	0	0	0	3	
15:15	15:30	0	1	0	0	0	0	0	0	4	
15:30	15:45	0	3	0	0	0	0	0	0	4	
15:45	16:00	0	4	0	0	0	0	0	0	4	
16:00	16:15	0	5	0	0	0	1	0	0	7	
16:15	16:30	0	2	0	0	0	0	0	0	2	
16:30	16:45	0	5	0	0	0	0	0	0	0	
16:45	17:00	0	4	0	0	0	0	0	0	4	
17:00	17:15	0	3	0	0	0	0	0	0	5	
17:15	17:30	0	2	0	0	0	0	0	0	0	
17:30	17:45	0	4	0	0	0	0	0	0	1	
17:45	18:00	0	1	0	0	0	0	0	0	1	

Peak Time		th Approach Loddon Valley			East Approach Campbells Rd			th Approach Loddon Valley			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
8:30	9:30	0	22	0	0	0	0	0	1	19	42
15:00	16:00	0	16	0	0	0	0	0	0	15	31

TRANS TRAFFIC SURVEY
TURNING MOVEMENT SURVEY

Intersection of Macorna Rd and Loddon Valley Hwy, Macoi

GPS -35.91616, 143.94341

Date: Tue 09/12/25
Weather: Overcast
Suburban: Macorna
Customer: Amber

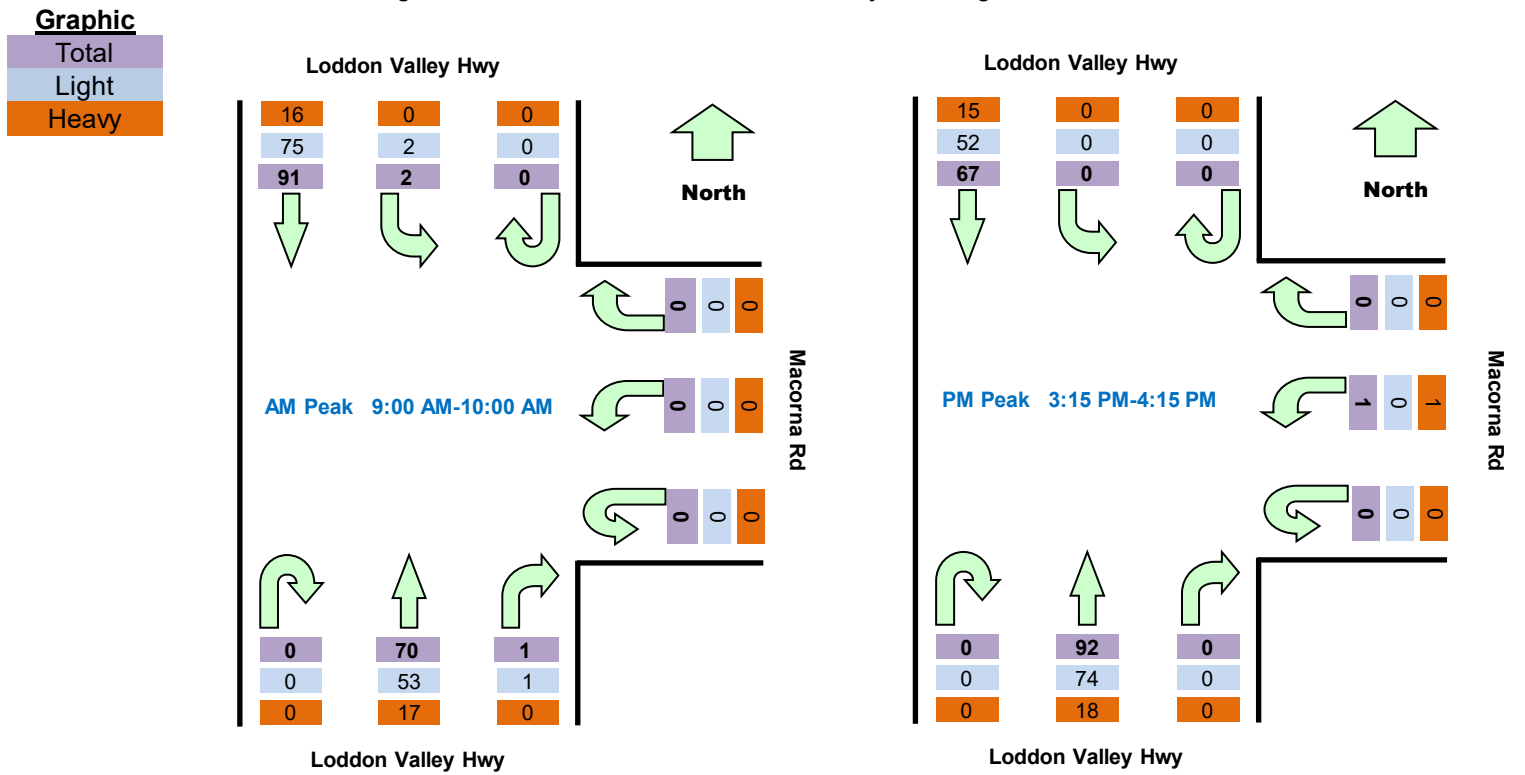
North: Loddon Valley Hwy
East: Macorna Rd
South: Loddon Valley Hwy
West: N/A

Survey AM: 7:00 AM-10:00 AM
Period PM: 3:00 PM-4:00 PM
Traffic AM: 9:00 AM-10:00 AM
Peak PM: 3:15 PM-4:15 PM

Time		th Approach Loddon Valley			East Approach Macorna Rd			th Approach Loddon Valley			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
7:00	7:15	0	8	0	0	0	0	0	0	0	16	124
7:15	7:30	0	15	0	0	1	0	0	0	8	139	
7:30	7:45	0	19	1	0	0	1	0	0	17	158	
7:45	8:00	0	21	2	0	0	0	0	1	14	157	
8:00	8:15	0	23	0	0	0	0	0	0	16	159	
8:15	8:30	0	20	0	0	1	0	0	0	22	159	
8:30	8:45	0	19	0	0	0	0	0	0	18	163	
8:45	9:00	0	24	0	0	0	0	0	0	16	158	
9:00	9:15	0	17	2	0	0	0	0	0	20	164	Peak
9:15	9:30	0	28	0	0	0	0	0	0	19		
9:30	9:45	0	21	0	0	0	0	0	0	11		
9:45	10:00	0	25	0	0	0	0	0	1	20		
15:00	15:15	0	24	0	0	1	0	0	0	12	155	
15:15	15:30	0	17	0	0	0	0	0	0	22	160	Peak
15:30	15:45	0	14	0	0	0	1	0	0	23	157	
15:45	16:00	0	17	0	0	0	0	0	0	24	152	
16:00	16:15	0	19	0	0	0	0	0	0	23	153	
16:15	16:30	0	13	0	0	1	0	0	1	21	140	
16:30	16:45	0	15	0	0	0	0	0	0	18	133	
16:45	17:00	0	14	0	0	0	0	0	0	28	132	
17:00	17:15	0	9	0	0	0	0	0	0	20	122	
17:15	17:30	0	18	0	0	0	0	0	0	11		
17:30	17:45	0	16	0	0	0	0	0	0	16		
17:45	18:00	0	10	0	0	0	1	0	0	21		

Peak Time		th Approach Loddon Valley			East Approach Macorna Rd			th Approach Loddon Valley			Peak total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
9:00	10:00	0	91	2	0	0	0	0	1	70	164
15:15	16:15	0	67	0	0	0	1	0	0	92	160

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Time		th Approach Loddon Valley			East Approach Macorna Rd			th Approach Loddon Valley		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
7:00	7:15	0	7	0	0	0	0	0	0	7
7:15	7:30	0	12	0	0	1	0	0	0	4
7:30	7:45	0	16	0	0	0	1	0	0	12
7:45	8:00	0	16	1	0	0	0	0	1	7
8:00	8:15	0	18	0	0	0	0	0	0	10
8:15	8:30	0	17	0	0	1	0	0	0	18
8:30	8:45	0	11	0	0	0	0	0	0	12
8:45	9:00	0	17	0	0	0	0	0	0	12
9:00	9:15	0	14	2	0	0	0	0	0	15
9:15	9:30	0	22	0	0	0	0	0	0	14
9:30	9:45	0	18	0	0	0	0	0	0	9
9:45	10:00	0	21	0	0	0	0	0	1	15
15:00	15:15	0	17	0	0	0	1	0	0	10
15:15	15:30	0	14	0	0	0	0	0	0	19
15:30	15:45	0	12	0	0	0	0	0	0	19
15:45	16:00	0	15	0	0	0	0	0	0	20
16:00	16:15	0	11	0	0	0	0	0	0	16
16:15	16:30	0	13	0	0	0	0	0	1	17
16:30	16:45	0	10	0	0	0	0	0	0	18
16:45	17:00	0	10	0	0	0	0	0	0	24
17:00	17:15	0	6	0	0	0	0	0	0	14
17:15	17:30	0	15	0	0	0	0	0	0	10
17:30	17:45	0	12	0	0	0	0	0	0	15
17:45	18:00	0	10	0	0	0	1	0	0	20

Peak Time		th Approach Loddon Valley			East Approach Macorna Rd			th Approach Loddon Valley			Peak total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
9:00	10:00	0	75	2	0	0	0	0	1	53	131
15:15	16:15	0	52	0	0	0	0	0	0	74	126

Time		th Approach Loddon Valley			East Approach Macorna Rd			th Approach Loddon Valley		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
7:00	7:15	0	1	0	0	0	0	0	0	9
7:15	7:30	0	3	0	0	0	0	0	0	4
7:30	7:45	0	3	1	0	0	0	0	0	5
7:45	8:00	0	5	1	0	0	0	0	0	7
8:00	8:15	0	5	0	0	0	0	0	0	6
8:15	8:30	0	3	0	0	0	0	0	0	4
8:30	8:45	0	8	0	0	0	0	0	0	6
8:45	9:00	0	7	0	0	0	0	0	0	4
9:00	9:15	0	3	0	0	0	0	0	0	5
9:15	9:30	0	6	0	0	0	0	0	0	5
9:30	9:45	0	3	0	0	0	0	0	0	2
9:45	10:00	0	4	0	0	0	0	0	0	5
15:00	15:15	0	7	0	0	0	0	0	0	2
15:15	15:30	0	3	0	0	0	0	0	0	3
15:30	15:45	0	2	0	0	0	1	0	0	4
15:45	16:00	0	2	0	0	0	0	0	0	4
16:00	16:15	0	8	0	0	0	0	0	0	7
16:15	16:30	0	0	0	0	1	0	0	0	4
16:30	16:45	0	5	0	0	0	0	0	0	0
16:45	17:00	0	4	0	0	0	0	0	0	4
17:00	17:15	0	3	0	0	0	0	0	0	6
17:15	17:30	0	3	0	0	0	0	0	0	1
17:30	17:45	0	4	0	0	0	0	0	0	1
17:45	18:00	0	0	0	0	0	0	0	0	1

Peak Time		th Approach Loddon Valley			East Approach Macorna Rd			th Approach Loddon Valley			Peak total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
9:00	10:00	0	16	0	0	0	0	0	0	17	33
15:15	16:15	0	15	0	0	0	1	0	0	18	34

TRANS TRAFFIC SURVEY
TURNING MOVEMENT SURVEY

Intersection of Old Echuca Rd and Loddon Valley Hwy, Ma

GPS -35.77253, 143.93559
Date: Tue 09/12/25
Weather: Overcast
Suburban: Macoma
Customer: Amber

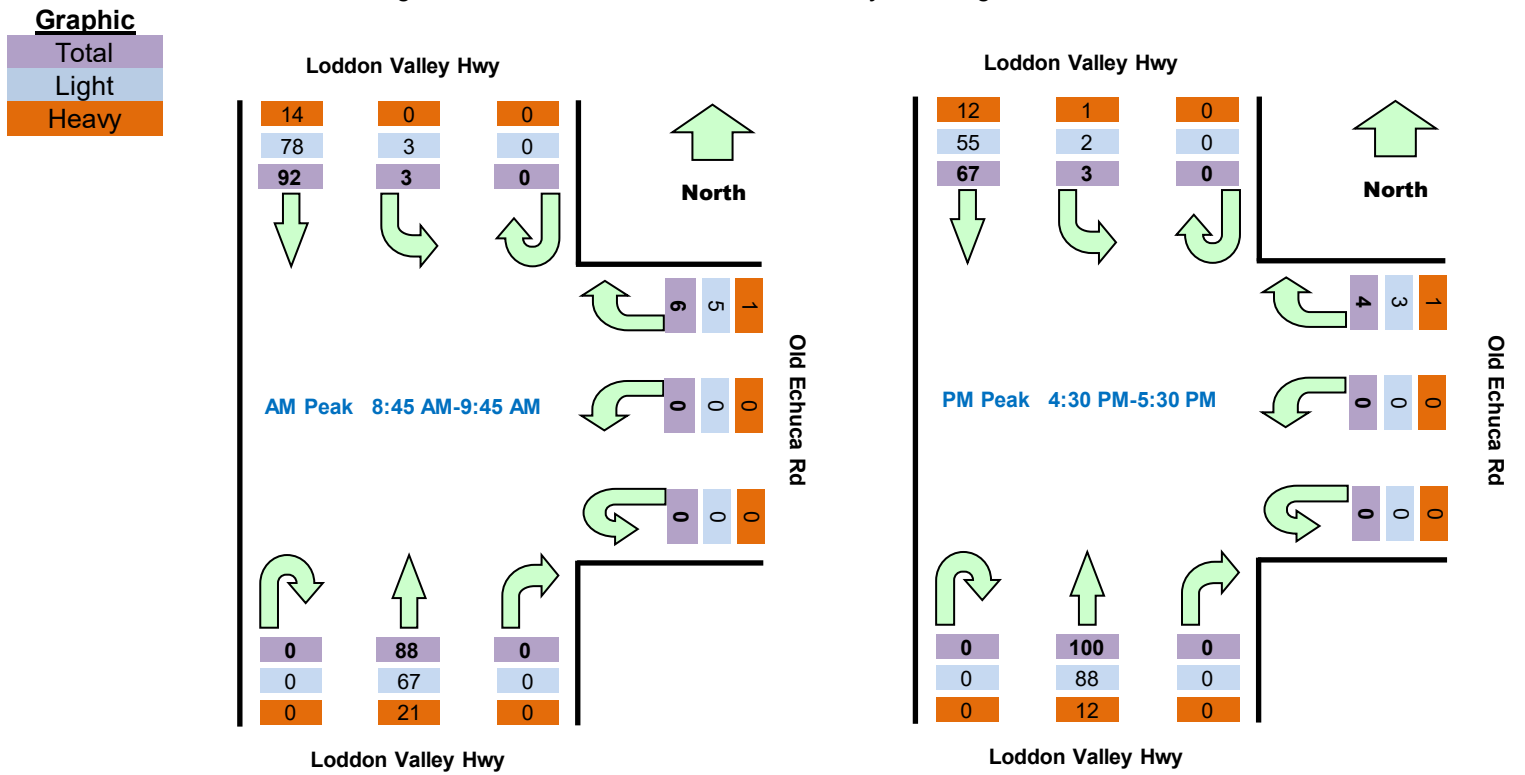
North: Loddon Valley Hwy
East: Old Echuca Rd
South: Loddon Valley Hwy
West: N/A

Survey AM: 7:00 AM-10:00 AM
Period PM: 3:30 PM-5:30 PM
Traffic AM: 8:45 AM-9:45 AM
Peak PM: 4:30 PM-5:30 PM

Time		th Approach Loddon Valley			East Approach Old Echuca Rd			th Approach Loddon Valley			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
7:00	7:15	0	14	0	0	1	0	0	0	12	150	
7:15	7:30	0	20	0	0	0	0	0	0	18	173	
7:30	7:45	0	26	2	0	1	0	0	0	10	175	
7:45	8:00	0	20	1	0	4	0	0	0	21	179	
8:00	8:15	0	31	0	0	1	0	0	0	18	179	
8:15	8:30	0	19	1	0	1	0	0	0	19	182	
8:30	8:45	0	26	1	0	0	0	0	0	16	180	
8:45	9:00	0	17	1	0	2	0	0	0	26	189	Peak
9:00	9:15	0	30	1	0	2	0	0	0	20	177	
9:15	9:30	0	21	0	0	0	0	0	0	17		
9:30	9:45	0	24	1	0	2	0	0	0	25		
9:45	10:00	1	22	1	0	1	0	0	0	9		
15:00	15:15	1	13	0	0	0	0	0	0	12	154	
15:15	15:30	0	14	0	0	0	0	0	0	20	165	
15:30	15:45	0	22	0	0	0	0	0	0	24	169	
15:45	16:00	0	19	1	0	0	0	0	0	28	167	
16:00	16:15	0	13	0	0	0	0	0	0	24	156	
16:15	16:30	0	15	0	0	0	0	0	0	23	170	
16:30	16:45	0	21	0	0	1	0	0	0	22	174	Peak
16:45	17:00	0	10	1	0	2	0	0	0	24	154	
17:00	17:15	0	18	2	0	0	0	0	0	31	154	
17:15	17:30	0	18	0	0	1	0	0	0	23		
17:30	17:45	0	11	0	0	0	0	0	0	13		
17:45	18:00	0	10	2	0	0	0	0	0	25		

Peak Time		th Approach Loddon Valley			East Approach Old Echuca Rd			th Approach Loddon Valley			Peak total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
8:45	9:45	0	92	3	0	6	0	0	0	88	189
16:30	17:30	0	67	3	0	4	0	0	0	100	174

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Time		th Approach Loddon Valley			East Approach Old Echuca Rd			th Approach Loddon Valley		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
7:00	7:15	0	12	0	0	1	0	0	0	4
7:15	7:30	0	17	0	0	0	0	0	0	7
7:30	7:45	0	18	2	0	1	0	0	0	8
7:45	8:00	0	15	0	0	3	0	0	0	12
8:00	8:15	0	26	0	0	1	0	0	0	12
8:15	8:30	0	13	1	0	1	0	0	0	13
8:30	8:45	0	19	1	0	0	0	0	0	14
8:45	9:00	0	15	1	0	1	0	0	0	18
9:00	9:15	0	26	1	0	2	0	0	0	17
9:15	9:30	0	17	0	0	0	0	0	0	12
9:30	9:45	0	20	1	0	2	0	0	0	20
9:45	10:00	1	18	1	0	1	0	0	0	8
15:00	15:15	1	11	0	0	0	0	0	0	10
15:15	15:30	0	12	0	0	0	0	0	0	16
15:30	15:45	0	16	0	0	0	0	0	0	19
15:45	16:00	0	15	1	0	0	0	0	0	24
16:00	16:15	0	10	0	0	0	0	0	0	20
16:15	16:30	0	11	0	0	0	0	0	0	15
16:30	16:45	0	17	0	0	1	0	0	0	19
16:45	17:00	0	6	0	0	1	0	0	0	23
17:00	17:15	0	17	2	0	0	0	0	0	28
17:15	17:30	0	15	0	0	1	0	0	0	18
17:30	17:45	0	8	0	0	0	0	0	0	13
17:45	18:00	0	10	2	0	0	0	0	0	24

Peak Time		th Approach Loddon Valley			East Approach Old Echuca Rd			th Approach Loddon Valley			Peak total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
8:45	9:45	0	78	3	0	5	0	0	0	67	153
16:30	17:30	0	55	2	0	3	0	0	0	88	148

Time		th Approach Loddon Valley			East Approach Old Echuca Rd			th Approach Loddon Valley		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
7:00	7:15	0	2	0	0	0	0	0	0	8
7:15	7:30	0	3	0	0	0	0	0	0	11
7:30	7:45	0	8	0	0	0	0	0	0	2
7:45	8:00	0	5	1	0	1	0	0	0	9
8:00	8:15	0	5	0	0	0	0	0	0	6
8:15	8:30	0	6	0	0	0	0	0	0	6
8:30	8:45	0	7	0	0	0	0	0	0	2
8:45	9:00	0	2	0	0	1	0	0	0	8
9:00	9:15	0	4	0	0	0	0	0	0	3
9:15	9:30	0	4	0	0	0	0	0	0	5
9:30	9:45	0	4	0	0	0	0	0	0	5
9:45	10:00	0	4	0	0	0	0	0	0	1
15:00	15:15	0	2	0	0	0	0	0	0	2
15:15	15:30	0	2	0	0	0	0	0	0	4
15:30	15:45	0	6	0	0	0	0	0	0	5
15:45	16:00	0	4	0	0	0	0	0	0	4
16:00	16:15	0	3	0	0	0	0	0	0	4
16:15	16:30	0	4	0	0	0	0	0	0	8
16:30	16:45	0	4	0	0	0	0	0	0	3
16:45	17:00	0	4	1	0	1	0	0	0	1
17:00	17:15	0	1	0	0	0	0	0	0	3
17:15	17:30	0	3	0	0	0	0	0	0	5
17:30	17:45	0	3	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0	0	1

Peak Time		th Approach Loddon Valley			East Approach Old Echuca Rd			th Approach Loddon Valley			Peak total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
8:45	9:45	0	14	0	0	1	0	0	0	21	36
16:30	17:30	0	12	1	0	1	0	0	0	12	26

Appendix B

Tube Count Survey Data



TRANS TRAFFIC SURVEY

trafficsurvey.com.au

T. 1300 82 88 82 - F. 1300 83 88 83 - E. traffic@trafficsurvey.com.au - W. www.trafficsurvey.com.au

AUTOMATIC COUNT SUMMARY

Street Name :	Mincha-Canary Island Rd	Location :	East of Loddon Vale Hwy
Suburb :	Loddon Vale	Start Date :	00:00 Mon 08/December/2025
Machine ID:	JE59AS8S	Finish Date :	00:00 Mon 15/December/2025
Site ID:	25588	Speed Zone :	100 km/h
Prepared By :	Vo Son Binh	Email:	binh@trafficsurvey.com.au

GPS information		Direction of Travel		
		Both directions	Westbound	Eastbound
Lat 36° 0' 9.23 South				
Long 143° 57' 0.64 East				
Traffic Volume : (Vehicles/Day)	Weekdays Average	25	13	12
	7 Day Average	18	7	11
Weekday AM	10:00	3	2	1
Peak hour start PM	13:00	4	2	2
Speeds : (Km/Hr)	85th Percentile	49.4	53.9	45.4
	Average	47.5	52.3	43.1
Classification % :	Light Vehicles up to 5.5m	76.7%	78.6%	80.0%

Location

GPS Information [Load Google Map \(internet required\)](#)

(Latitude, Longitude) -36.002565, 143.950178



[Speed Data](#)

[Speed Graph](#)

[Speed Bin](#)

[Volume Data](#)

[Volume Graph](#)

[Classification](#)



QUALITY ASSURED COMPANY BY ISO 9001:2015

OH&S SYSTEM CERTIFIED TO ISO 4801:2001

ENVIRONMENT MANAGEMENT SYSTEM CERTIFIED TO ISO14001:2015

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

Site Mincha-Canary Island Rd

Direction Both directions ▼

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	8/12/2025	9/12/2025	10/12/2025	11/12/2025	12/12/2025	13/12/2025	14/12/2025	Total	Average	Total	Average	Total	Average
AM Peak	08:00	10:00	09:00	07:00	10:00	09:00	10:00	N/A	10:00	N/A	10:00	N/A	10:00
PM Peak	13:00	14:00	14:00	13:00	13:00	15:00	14:00	N/A	14:00	N/A	13:00	N/A	14:00
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	2	0	0	2	0	2	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	1	0	0	1	0	1	0	0	0
06:00	1	2	1	0	0	0	2	6	1	4	1	2	1
07:00	1	1	4	1	2	1	1	11	2	9	2	2	1
08:00	2	0	1	1	2	0	1	7	1	6	1	1	1
09:00	0	2	6	1	0	2	0	11	2	9	2	2	1
10:00	2	6	5	1	3	1	3	21	3	17	3	4	2
11:00	2	2	2	1	0	1	2	10	1	7	1	3	2
12:00	9	5	1	0	0	0	2	17	2	15	3	2	1
13:00	12	3	3	3	2	1	1	25	4	23	5	2	1
14:00	8	9	5	1	1	2	4	30	4	24	5	6	3
15:00	1	2	2	2	0	4	2	13	2	7	1	6	3
16:00	0	2	3	2	2	0	2	11	2	9	2	2	1
17:00	1	3	2	3	2	3	1	15	2	11	2	4	2
18:00	2	1	0	2	0	0	1	6	1	5	1	1	1
19:00	7	2	1	0	0	0	0	10	1	10	2	0	0
20:00	3	1	0	0	1	0	0	5	1	5	1	0	0
21:00	2	2	0	1	1	0	0	6	1	6	1	0	0
22:00	0	0	0	2	1	0	0	3	0	3	1	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	53	43	36	21	20	15	22	210	30	173	35	37	19
% Heavy	11.32%	32.56%	33.33%	19.05%	25.00%	6.67%	27.27%	22.86%		23.70%		18.92%	

TRANS TRAFFIC SURVEY

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Site Mincha-Canary Island Rd

Direction

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	8/12/2025	9/12/2025	10/12/2025	11/12/2025	12/12/2025	13/12/2025	14/12/2025	Total	Average	Total	Average	Total	Average
AM Peak	06:00	10:00	09:00	08:00	01:00	09:00	06:00	N/A	06:00	N/A	06:00	N/A	06:00
PM Peak	13:00	14:00	14:00	13:00	16:00	17:00	14:00	N/A	14:00	N/A	13:00	N/A	17:00
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	1	0	0	1	0	1	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	1	0	0	1	0	1	0	0	0
06:00	1	2	1	0	0	0	2	6	1	4	1	2	1
07:00	1	0	1	0	0	0	0	2	0	2	0	0	0
08:00	0	0	0	1	1	0	1	3	0	2	0	1	1
09:00	0	0	2	0	0	1	0	3	0	2	0	1	1
10:00	1	4	2	1	1	1	0	10	1	9	2	1	1
11:00	1	1	0	0	0	0	0	2	0	2	0	0	0
12:00	4	3	0	0	0	0	2	9	1	7	1	2	1
13:00	6	2	2	2	0	0	0	12	2	12	2	0	0
14:00	4	5	3	0	1	1	3	17	2	13	3	4	2
15:00	1	2	1	2	0	2	1	9	1	6	1	3	2
16:00	0	1	1	2	2	0	0	6	1	6	1	0	0
17:00	1	2	2	1	1	3	1	11	2	7	1	4	2
18:00	2	0	0	2	0	0	1	5	1	4	1	1	1
19:00	4	2	1	0	0	0	0	7	1	7	1	0	0
20:00	1	1	0	0	0	0	0	2	0	2	0	0	0
21:00	0	1	0	0	1	0	0	2	0	2	0	0	0
22:00	0	0	0	0	1	0	0	1	0	1	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	27	26	16	11	10	8	11	109	16	90	18	19	10
% Heavy	11.11%	42.31%	37.50%	18.18%	10.00%	0.00%	18.18%	22.94%		25.56%		10.53%	

TRANS TRAFFIC SURVEY

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Site Mincha-Canary Island Rd

Direction ▼

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	8/12/2025	9/12/2025	10/12/2025	11/12/2025	12/12/2025	13/12/2025	14/12/2025	Total	Average	Total	Average	Total	Average
AM Peak	08:00	09:00	09:00	07:00	07:00	07:00	10:00	N/A	07:00	N/A	10:00	N/A	11:00
PM Peak	13:00	14:00	14:00	17:00	13:00	15:00	16:00	N/A	12:00	N/A	13:00	N/A	13:00
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	1	0	0	1	0	1	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	1	3	1	2	1	1	9	1	7	1	2	1
08:00	2	0	1	0	1	0	0	4	1	4	1	0	0
09:00	0	2	4	1	0	1	0	8	1	7	1	1	1
10:00	1	2	3	0	2	0	3	11	2	8	2	3	2
11:00	1	1	2	1	0	1	2	8	1	5	1	3	2
12:00	5	2	1	0	0	0	0	8	1	8	2	0	0
13:00	6	1	1	1	2	1	1	13	2	11	2	2	1
14:00	4	4	2	1	0	1	1	13	2	11	2	2	1
15:00	0	0	1	0	0	2	1	4	1	1	0	3	2
16:00	0	1	2	0	0	0	2	5	1	3	1	2	1
17:00	0	1	0	2	1	0	0	4	1	4	1	0	0
18:00	0	1	0	0	0	0	0	1	0	1	0	0	0
19:00	3	0	0	0	0	0	0	3	0	3	1	0	0
20:00	2	0	0	0	1	0	0	3	0	3	1	0	0
21:00	2	1	0	1	0	0	0	4	1	4	1	0	0
22:00	0	0	0	2	0	0	0	2	0	2	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	26	17	20	10	10	7	11	101	14	83	17	18	9
% Heavy	11.54%	17.65%	30.00%	20.00%	40.00%	14.29%	36.36%	22.77%		21.69%		27.78%	

TRANS TRAFFIC SURVEY

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AUTOMATIC COUNT SUMMARY

Street Name :	Macorna Rd	Location :	East of Loddon Vale Hwy
Suburb :	Macorna	Start Date :	00:00 Mon 08/December/2025
Machine ID:	MD629P9C	Finish Date :	00:00 Mon 15/December/2025
Site ID:	25589	Speed Zone :	100 km/h
Prepared By :	Vo Son Binh	Email:	binh@trafficsurvey.com.au

GPS information		Direction of Travel		
		Both directions	Westbound	Eastbound
Lat 35° 54' 58.11 South				
Long 143° 56' 44.69 East				
Traffic Volume : (Vehicles/Day)	Weekdays Average	35	15	20
	7 Day Average	35	16	19
Weekday AM	09:00	4	2	2
Peak hour start PM	12:00	4	1	3
Speeds : (Km/Hr)	85th Percentile	63.2	67.9	59.4
	Average	59.8	64.3	55.7
Classification % :	Light Vehicles up to 5.5m	64.6%	65.2%	66.7%

Location

GPS Information [Load Google Map \(internet required\)](#)
(Latitude, Longitude) -35.916142, 143.945748



[Speed Data](#) [Speed Graph](#) [Speed Bin](#)
[Volume Data](#) [Volume Graph](#) [Classification](#)



QUALITY ASSURED COMPANY BY ISO 9001:2015
OH&S SYSTEM CERTIFIED TO ISO 4801:2001
ENVIRONMENT MANAGEMENT SYSTEM CERTIFIED TO ISO14001:2015

TRANS TRAFFIC SURVEY

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Site Macorna Rd

Direction ▼

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Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	8/12/2025	9/12/2025	10/12/2025	11/12/2025	12/12/2025	13/12/2025	14/12/2025	Total	Average	Total	Average	Total	Average
AM Peak	09:00	07:00	08:00	09:00	09:00	11:00	10:00	N/A	07:00	N/A	09:00	N/A	11:00
PM Peak	15:00	12:00	12:00	18:00	16:00	12:00	13:00	N/A	12:00	N/A	12:00	N/A	13:00
00:00	0	0	0	0	0	1	0	1	0	0	0	1	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	2	2	0	0	0	2	1
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	1	0	1	0	0	0	1	1
05:00	1	2	1	0	1	0	0	5	1	5	1	0	0
06:00	1	2	2	4	1	0	0	10	1	10	2	0	0
07:00	3	6	3	4	3	3	1	23	3	19	4	4	2
08:00	3	1	6	2	2	5	0	19	3	14	3	5	3
09:00	5	3	3	5	4	5	2	27	4	20	4	7	4
10:00	4	4	1	1	3	2	6	21	3	13	3	8	4
11:00	5	3	1	1	4	10	2	26	4	14	3	12	6
12:00	3	6	8	4	4	6	4	35	5	25	5	10	5
13:00	2	5	1	4	3	2	9	26	4	15	3	11	6
14:00	3	2	3	4	2	4	1	19	3	14	3	5	3
15:00	5	2	3	3	5	3	0	21	3	18	4	3	2
16:00	4	2	3	3	6	3	2	23	3	18	4	5	3
17:00	4	1	3	4	4	2	5	23	3	16	3	7	4
18:00	1	3	3	5	1	2	5	20	3	13	3	7	4
19:00	4	2	1	1	1	3	2	14	2	9	2	5	3
20:00	0	1	0	0	2	3	2	8	1	3	1	5	3
21:00	1	1	2	2	1	3	3	13	2	7	1	6	3
22:00	1	0	0	1	1	0	2	5	1	3	1	2	1
23:00	0	0	1	0	0	1	0	2	0	1	0	1	1
Total	50	46	45	48	48	59	48	344	49	237	47	107	54
% Heavy	32.00%	41.30%	37.78%	50.00%	47.92%	23.73%	18.75%	35.47%		41.77%		21.50%	

TRANS TRAFFIC SURVEY

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Site Macorna Rd

Direction Westbound ▼

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Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	8/12/2025	9/12/2025	10/12/2025	11/12/2025	12/12/2025	13/12/2025	14/12/2025	Total	Average	Total	Average	Total	Average
AM Peak	11:00	07:00	08:00	06:00	08:00	11:00	10:00	N/A	08:00	N/A	08:00	N/A	11:00
PM Peak	15:00	13:00	12:00	13:00	15:00	12:00	17:00	N/A	12:00	N/A	12:00	N/A	12:00
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	1	1	0	0	0	1	1
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	1	1	1	0	1	0	0	4	1	4	1	0	0
06:00	0	1	1	2	0	0	0	4	1	4	1	0	0
07:00	1	2	2	2	1	1	0	9	1	8	2	1	1
08:00	2	1	4	1	2	2	0	12	2	10	2	2	1
09:00	3	0	1	2	2	5	1	14	2	8	2	6	3
10:00	1	2	1	0	2	1	2	9	1	6	1	3	2
11:00	4	2	0	1	2	7	2	18	3	9	2	9	5
12:00	1	2	3	1	1	4	2	14	2	8	2	6	3
13:00	2	3	0	3	1	0	2	11	2	9	2	2	1
14:00	1	1	1	3	1	2	0	9	1	7	1	2	1
15:00	3	2	1	1	3	2	0	12	2	10	2	2	1
16:00	2	1	2	1	3	3	0	12	2	9	2	3	2
17:00	2	1	1	2	1	0	4	11	2	7	1	4	2
18:00	0	2	2	3	0	1	3	11	2	7	1	4	2
19:00	3	0	1	0	1	1	1	7	1	5	1	2	1
20:00	0	1	0	0	1	1	1	4	1	2	0	2	1
21:00	1	0	0	1	0	1	1	4	1	2	0	2	1
22:00	0	0	0	1	1	0	0	2	0	2	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	27	22	21	24	23	31	20	168	24	117	23	51	26
% Heavy	37.04%	45.45%	38.10%	37.50%	52.17%	22.58%	20.00%	35.71%		41.88%		21.57%	

TRANS TRAFFIC SURVEY

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Site Macorna Rd

Direction ▼

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Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	8/12/2025	9/12/2025	10/12/2025	11/12/2025	12/12/2025	13/12/2025	14/12/2025	Total	Average	Total	Average	Total	Average
AM Peak	10:00	07:00	08:00	09:00	07:00	08:00	10:00	N/A	07:00	N/A	07:00	N/A	10:00
PM Peak	12:00	12:00	12:00	12:00	12:00	12:00	13:00	N/A	12:00	N/A	12:00	N/A	13:00
00:00	0	0	0	0	0	1	0	1	0	0	0	1	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	1	1	0	0	0	1	1
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	1	0	1	0	0	0	1	1
05:00	0	1	0	0	0	0	0	1	0	1	0	0	0
06:00	1	1	1	2	1	0	0	6	1	6	1	0	0
07:00	2	4	1	2	2	2	1	14	2	11	2	3	2
08:00	1	0	2	1	0	3	0	7	1	4	1	3	2
09:00	2	3	2	3	2	0	1	13	2	12	2	1	1
10:00	3	2	0	1	1	1	4	12	2	7	1	5	3
11:00	1	1	1	0	2	3	0	8	1	5	1	3	2
12:00	2	4	5	3	3	2	2	21	3	17	3	4	2
13:00	0	2	1	1	2	2	7	15	2	6	1	9	5
14:00	2	1	2	1	1	2	1	10	1	7	1	3	2
15:00	2	0	2	2	2	1	0	9	1	8	2	1	1
16:00	2	1	1	2	3	0	2	11	2	9	2	2	1
17:00	2	0	2	2	3	2	1	12	2	9	2	3	2
18:00	1	1	1	2	1	1	2	9	1	6	1	3	2
19:00	1	2	0	1	0	2	1	7	1	4	1	3	2
20:00	0	0	0	0	1	2	1	4	1	1	0	3	2
21:00	0	1	2	1	1	2	2	9	1	5	1	4	2
22:00	1	0	0	0	0	0	2	3	0	1	0	2	1
23:00	0	0	1	0	0	1	0	2	0	1	0	1	1
Total	23	24	24	24	25	28	28	176	25	120	24	56	28
% Heavy	26.09%	37.50%	37.50%	62.50%	44.00%	25.00%	17.86%	35.23%		41.67%		21.43%	

TRANS TRAFFIC SURVEY

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AUTOMATIC COUNT SUMMARY

Street Name :	Leitchville-Kerang Rd	Location :	South of Old Echuca Rd
Suburb :	Tragowel	Start Date :	00:00 Mon 08/December/2025
Machine ID:	M658NCK3	Finish Date :	00:00 Mon 15/December/2025
Site ID:	25586	Speed Zone :	100 km/h
Prepared By :	Vo Son Binh	Email:	binh@trafficsurvey.com.au

GPS information Lat 35° 49' 5.03 South		Direction of Travel		
		Both directions	Northbound	Southbound
Long 144° 1' 15.60 East				
Traffic Volume : (Vehicles/Day)	Weekdays Average	526	279	247
	7 Day Average	476	249	227
Weekday AM	09:00	44	23	21
Peak hour starts PM	16:00	50	27	23
Speeds : (Km/Hr)	85th Percentile	93.4	94.3	92.0
	Average	82.7	83.3	81.2
Classification % :	Light Vehicles up to 5.5m	77.2%	77.7%	76.8%

Location

GPS Information [Load Google Map \(internet required\)](#)
(Latitude, Longitude) -35.818063, 144.020999



[Speed Data](#) [Speed Graph](#) [Speed Bin](#)
[Volume Data](#) [Volume Graph](#) [Classification](#)



QUALITY ASSURED COMPANY BY ISO 9001:2015
OH&S SYSTEM CERTIFIED TO ISO 4801:2001
ENVIRONMENT MANAGEMENT SYSTEM CERTIFIED TO ISO14001:2015

TRANS TRAFFIC SURVEY

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Site Leitchville-Kerang Rd

Direction ▼

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Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	8/12/2025	9/12/2025	10/12/2025	11/12/2025	12/12/2025	13/12/2025	14/12/2025	Total	Average	Total	Average	Total	Average
AM Peak	11:00	08:00	09:00	10:00	10:00	11:00	10:00	N/A	10:00	N/A	09:00	N/A	10:00
PM Peak	16:00	16:00	16:00	16:00	17:00	14:00	12:00	N/A	16:00	N/A	16:00	N/A	12:00
00:00	0	1	1	1	1	0	2	6	1	4	1	2	1
01:00	0	0	0	0	1	0	1	2	0	1	0	1	1
02:00	0	0	0	1	2	2	1	6	1	3	1	3	2
03:00	2	1	2	2	1	1	1	10	1	8	2	2	1
04:00	4	4	5	4	4	3	1	25	4	21	4	4	2
05:00	10	16	20	14	7	6	1	74	11	67	13	7	4
06:00	27	19	26	28	23	23	9	155	22	123	25	32	16
07:00	31	39	28	36	20	20	12	186	27	154	31	32	16
08:00	35	57	44	30	35	19	20	240	34	201	40	39	20
09:00	33	51	53	40	40	28	18	263	38	217	43	46	23
10:00	44	40	32	41	45	36	45	283	40	202	40	81	41
11:00	46	38	19	32	32	50	33	250	36	167	33	83	42
12:00	39	30	27	30	36	34	38	234	33	162	32	72	36
13:00	47	31	28	34	35	26	27	228	33	175	35	53	27
14:00	53	35	26	33	39	36	25	247	35	186	37	61	31
15:00	29	48	31	35	53	20	33	249	36	196	39	53	27
16:00	55	54	41	48	56	31	25	310	44	254	51	56	28
17:00	42	44	40	41	59	17	27	270	39	226	45	44	22
18:00	29	20	30	28	45	17	25	194	28	152	30	42	21
19:00	21	20	14	5	15	10	13	98	14	75	15	23	12
20:00	17	15	30	14	9	6	15	106	15	85	17	21	11
21:00	11	13	9	19	5	10	9	76	11	57	11	19	10
22:00	3	1	7	1	3	6	3	24	3	15	3	9	5
23:00	0	1	0	4	9	3	4	21	3	14	3	7	4
Total	578	578	513	521	575	404	388	3557	508	2765	553	792	396
% Heavy	22.49%	24.05%	23.20%	23.99%	29.22%	25.25%	11.60%	23.28%		24.63%		18.56%	

TRANS TRAFFIC SURVEY

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Site Leitchville-Kerang Rd

Direction ▼

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Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	8/12/2025	9/12/2025	10/12/2025	11/12/2025	12/12/2025	13/12/2025	14/12/2025	Total	Average	Total	Average	Total	Average
AM Peak	11:00	08:00	09:00	09:00	10:00	11:00	10:00	N/A	10:00	N/A	09:00	N/A	10:00
PM Peak	13:00	15:00	16:00	16:00	17:00	14:00	15:00	N/A	16:00	N/A	16:00	N/A	14:00
00:00	0	1	1	0	0	0	0	2	0	2	0	0	0
01:00	0	0	0	0	0	0	1	1	0	0	0	1	1
02:00	0	0	0	1	0	1	1	3	0	1	0	2	1
03:00	1	0	0	0	0	1	0	2	0	1	0	1	1
04:00	0	1	2	3	4	2	1	13	2	10	2	3	2
05:00	6	6	11	6	4	2	0	35	5	33	7	2	1
06:00	18	13	14	17	8	2	6	78	11	70	14	8	4
07:00	17	27	19	18	14	5	6	106	15	95	19	11	6
08:00	25	31	20	19	19	9	12	135	19	114	23	21	11
09:00	15	31	31	21	16	14	8	136	19	114	23	22	11
10:00	21	16	18	21	29	24	23	152	22	105	21	47	24
11:00	27	22	11	20	18	25	15	138	20	98	20	40	20
12:00	21	15	15	14	20	14	16	115	16	85	17	30	15
13:00	33	20	18	16	18	17	13	135	19	105	21	30	15
14:00	29	15	13	14	23	25	17	136	19	94	19	42	21
15:00	10	27	14	19	27	8	20	125	18	97	19	28	14
16:00	26	24	26	26	34	21	18	175	25	136	27	39	20
17:00	17	13	12	18	36	11	16	123	18	96	19	27	14
18:00	14	11	8	16	25	12	14	100	14	74	15	26	13
19:00	15	7	8	1	5	5	7	48	7	36	7	12	6
20:00	7	7	17	10	4	2	8	55	8	45	9	10	5
21:00	5	7	4	9	1	4	3	33	5	26	5	7	4
22:00	1	1	3	0	1	2	0	8	1	6	1	2	1
23:00	0	1	0	2	3	1	1	8	1	6	1	2	1
Total	308	296	265	271	309	207	206	1862	266	1449	290	413	207
% Heavy	22.73%	25.34%	26.79%	21.77%	29.13%	21.74%	9.71%	23.09%		25.19%		15.74%	

TRANS TRAFFIC SURVEY

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Site Leitchville-Kerang Rd

Direction ▼

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	8/12/2025	9/12/2025	10/12/2025	11/12/2025	12/12/2025	13/12/2025	14/12/2025	Total	Average	Total	Average	Total	Average
AM Peak	10:00	08:00	08:00	10:00	09:00	11:00	10:00	N/A	10:00	N/A	09:00	N/A	11:00
PM Peak	16:00	17:00	17:00	17:00	15:00	12:00	12:00	N/A	17:00	N/A	17:00	N/A	12:00
00:00	0	0	0	1	1	0	2	4	1	2	0	2	1
01:00	0	0	0	0	1	0	0	1	0	1	0	0	0
02:00	0	0	0	0	2	1	0	3	0	2	0	1	1
03:00	1	1	2	2	1	0	1	8	1	7	1	1	1
04:00	4	3	3	1	0	1	0	12	2	11	2	1	1
05:00	4	10	9	8	3	4	1	39	6	34	7	5	3
06:00	9	6	12	11	15	21	3	77	11	53	11	24	12
07:00	14	12	9	18	6	15	6	80	11	59	12	21	11
08:00	10	26	24	11	16	10	8	105	15	87	17	18	9
09:00	18	20	22	19	24	14	10	127	18	103	21	24	12
10:00	23	24	14	20	16	12	22	131	19	97	19	34	17
11:00	19	16	8	12	14	25	18	112	16	69	14	43	22
12:00	18	15	12	16	16	20	22	119	17	77	15	42	21
13:00	14	11	10	18	17	9	14	93	13	70	14	23	12
14:00	24	20	13	19	16	11	8	111	16	92	18	19	10
15:00	19	21	17	16	26	12	13	124	18	99	20	25	13
16:00	29	30	15	22	22	10	7	135	19	118	24	17	9
17:00	25	31	28	23	23	6	11	147	21	130	26	17	9
18:00	15	9	22	12	20	5	11	94	13	78	16	16	8
19:00	6	13	6	4	10	5	6	50	7	39	8	11	6
20:00	10	8	13	4	5	4	7	51	7	40	8	11	6
21:00	6	6	5	10	4	6	6	43	6	31	6	12	6
22:00	2	0	4	1	2	4	3	16	2	9	2	7	4
23:00	0	0	0	2	6	2	3	13	2	8	2	5	3
Total	270	282	248	250	266	197	182	1695	242	1316	263	379	190
% Heavy	22.22%	22.70%	19.35%	26.40%	29.32%	28.93%	13.74%	23.48%		24.01%		21.64%	

TRANS TRAFFIC SURVEY

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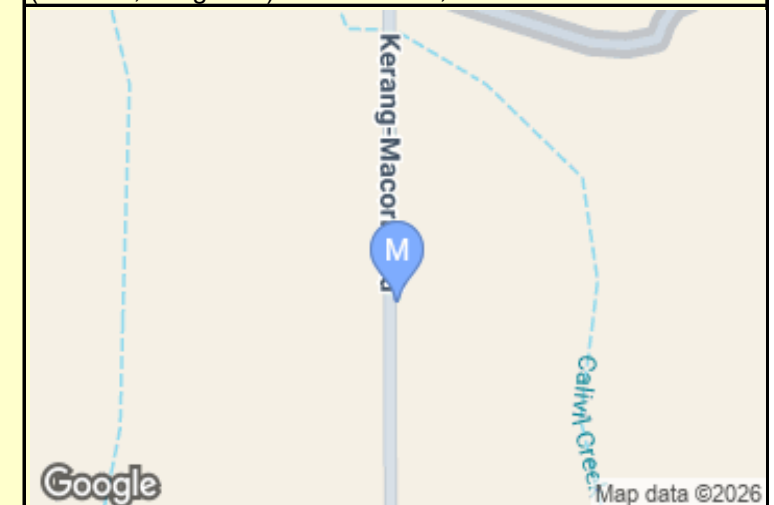
AUTOMATIC COUNT SUMMARY

Street Name :	Kerang-Macorna Rd	Location :	North of Kelly Rd
Suburb :	Tragowel	Start Date :	00:00 Mon 08/December/2025
Machine ID:	MD12RWSA	Finish Date :	00:00 Mon 15/December/2025
Site ID:	25587	Speed Zone :	100 km/h
Prepared By :	Vo Son Binh	Email:	binh@trafficsurvey.com.au

GPS information Lat 35° 50' 23.78 South		Direction of Travel			
		Both directions	Northbound	Southbound	
Long 144° 1' 47.94 East					
Traffic Volume : (Vehicles/Day)	Weekdays Average		187	98	89
	7 Day Average		162	81	81
Weekday	AM	10:00	15	8	7
Peak hour starts	PM	16:00	17	8	9
Speeds : (Km/Hr)	85th Percentile		101.5	102.8	100.8
	Average		94.5	94.4	94.5
Classification % :	Light Vehicles up to 5.5m		68.6%	68.8%	68.5%

Location

GPS Information [Load Google Map \(internet required\)](#)
(Latitude, Longitude) -35.839940, 144.029984



[Speed Data](#) [Speed Graph](#) [Speed Bin](#)
[Volume Data](#) [Volume Graph](#) [Classification](#)



QUALITY ASSURED COMPANY BY ISO 9001:2015
OH&S SYSTEM CERTIFIED TO ISO 4801:2001
ENVIRONMENT MANAGEMENT SYSTEM CERTIFIED TO ISO14001:2015

TRANS TRAFFIC SURVEY

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Site Kerang-Macorna Rd

Direction Both directions ▼

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	8/12/2025	9/12/2025	10/12/2025	11/12/2025	12/12/2025	13/12/2025	14/12/2025	Total	Average	Total	Average	Total	Average
AM Peak	10:00	09:00	10:00	10:00	11:00	11:00	10:00	N/A	10:00	N/A	10:00	N/A	10:00
PM Peak	16:00	16:00	18:00	14:00	15:00	14:00	12:00	N/A	16:00	N/A	16:00	N/A	12:00
00:00	0	1	0	0	0	0	0	1	0	1	0	0	0
01:00	0	0	0	0	0	1	1	2	0	0	0	2	1
02:00	1	1	2	2	2	1	1	10	1	8	2	2	1
03:00	0	0	0	0	0	1	1	2	0	0	0	2	1
04:00	1	2	0	1	2	0	1	7	1	6	1	1	1
05:00	3	3	4	2	2	3	0	17	2	14	3	3	2
06:00	6	4	11	8	6	3	4	42	6	35	7	7	4
07:00	8	18	13	12	9	4	4	68	10	60	12	8	4
08:00	13	18	12	9	11	8	5	76	11	63	13	13	7
09:00	10	19	18	15	9	13	3	87	12	71	14	16	8
10:00	17	18	20	16	14	11	23	119	17	85	17	34	17
11:00	10	18	10	13	16	15	7	89	13	67	13	22	11
12:00	12	15	10	11	10	6	23	87	12	58	12	29	15
13:00	11	8	13	14	10	5	10	71	10	56	11	15	8
14:00	26	8	16	22	16	13	3	104	15	88	18	16	8
15:00	12	8	22	15	17	4	4	82	12	74	15	8	4
16:00	28	20	20	14	11	9	7	109	16	93	19	16	8
17:00	24	14	26	13	10	5	10	102	15	87	17	15	8
18:00	9	8	29	8	7	9	1	71	10	61	12	10	5
19:00	7	5	11	2	2	4	4	35	5	27	5	8	4
20:00	9	6	25	9	10	2	6	67	10	59	12	8	4
21:00	4	3	7	11	5	4	4	38	5	30	6	8	4
22:00	2	0	3	2	1	2	3	13	2	8	2	5	3
23:00	0	1	1	0	3	3	0	8	1	5	1	3	2
Total	213	198	273	199	173	126	125	1307	187	1056	211	251	126
% Heavy	28.17%	41.92%	28.94%	31.16%	29.48%	34.92%	17.60%	30.68%		31.72%		26.29%	

TRANS TRAFFIC SURVEY

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Site Kerang-Macorna Rd

Direction Northbound ▼

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	8/12/2025	9/12/2025	10/12/2025	11/12/2025	12/12/2025	13/12/2025	14/12/2025	Total	Average	Total	Average	Total	Average
AM Peak	10:00	09:00	09:00	10:00	11:00	10:00	10:00	N/A	09:00	N/A	09:00	N/A	10:00
PM Peak	14:00	16:00	20:00	14:00	15:00	14:00	12:00	N/A	14:00	N/A	14:00	N/A	12:00
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	1	1	2	2	1	1	0	8	1	7	1	1	1
03:00	0	0	0	0	0	1	0	1	0	0	0	1	1
04:00	0	0	0	0	1	0	0	1	0	1	0	0	0
05:00	2	0	3	2	1	2	0	10	1	8	2	2	1
06:00	3	3	3	4	4	1	3	21	3	17	3	4	2
07:00	7	12	8	6	5	2	2	42	6	38	8	4	2
08:00	7	12	9	5	8	3	3	47	7	41	8	6	3
09:00	5	13	12	8	4	6	2	50	7	42	8	8	4
10:00	11	8	9	10	7	7	5	57	8	45	9	12	6
11:00	7	9	5	9	10	6	5	51	7	40	8	11	6
12:00	4	7	3	3	5	2	15	39	6	22	4	17	9
13:00	9	2	9	8	6	2	5	41	6	34	7	7	4
14:00	12	4	9	13	8	8	2	56	8	46	9	10	5
15:00	4	5	9	8	10	1	3	40	6	36	7	4	2
16:00	6	8	10	8	8	3	5	48	7	40	8	8	4
17:00	3	8	3	3	6	2	5	30	4	23	5	7	4
18:00	3	5	7	7	3	7	0	32	5	25	5	7	4
19:00	5	3	10	1	0	1	1	21	3	19	4	2	1
20:00	5	2	21	5	4	1	3	41	6	37	7	4	2
21:00	3	1	4	3	2	3	0	16	2	13	3	3	2
22:00	2	0	1	1	0	0	1	5	1	4	1	1	1
23:00	0	1	1	0	1	2	0	5	1	3	1	2	1
Total	99	104	138	106	94	61	60	662	95	541	108	121	61
% Heavy	27.27%	42.31%	28.26%	30.19%	28.72%	29.51%	20.00%	30.06%		31.24%		24.79%	

TRANS TRAFFIC SURVEY

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Site Kerang-Macorna Rd

Direction Southbound

[Back to Site Summary Page](#)

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	8/12/2025	9/12/2025	10/12/2025	11/12/2025	12/12/2025	13/12/2025	14/12/2025	Total	Average	Total	Average	Total	Average
AM Peak	08:00	10:00	10:00	09:00	10:00	11:00	10:00	N/A	10:00	N/A	10:00	N/A	10:00
PM Peak	16:00	16:00	17:00	17:00	14:00	16:00	12:00	N/A	17:00	N/A	17:00	N/A	12:00
00:00	0	1	0	0	0	0	0	1	0	1	0	0	0
01:00	0	0	0	0	0	1	1	2	0	0	0	2	1
02:00	0	0	0	0	1	0	1	2	0	1	0	1	1
03:00	0	0	0	0	0	0	1	1	0	0	0	1	1
04:00	1	2	0	1	1	0	1	6	1	5	1	1	1
05:00	1	3	1	0	1	1	0	7	1	6	1	1	1
06:00	3	1	8	4	2	2	1	21	3	18	4	3	2
07:00	1	6	5	6	4	2	2	26	4	22	4	4	2
08:00	6	6	3	4	3	5	2	29	4	22	4	7	4
09:00	5	6	6	7	5	7	1	37	5	29	6	8	4
10:00	6	10	11	6	7	4	18	62	9	40	8	22	11
11:00	3	9	5	4	6	9	2	38	5	27	5	11	6
12:00	8	8	7	8	5	4	8	48	7	36	7	12	6
13:00	2	6	4	6	4	3	5	30	4	22	4	8	4
14:00	14	4	7	9	8	5	1	48	7	42	8	6	3
15:00	8	3	13	7	7	3	1	42	6	38	8	4	2
16:00	22	12	10	6	3	6	2	61	9	53	11	8	4
17:00	21	6	23	10	4	3	5	72	10	64	13	8	4
18:00	6	3	22	1	4	2	1	39	6	36	7	3	2
19:00	2	2	1	1	2	3	3	14	2	8	2	6	3
20:00	4	4	4	4	6	1	3	26	4	22	4	4	2
21:00	1	2	3	8	3	1	4	22	3	17	3	5	3
22:00	0	0	2	1	1	2	2	8	1	4	1	4	2
23:00	0	0	0	0	2	1	0	3	0	2	0	1	1
Total	114	94	135	93	79	65	65	645	92	515	103	130	65
% Heavy	28.95%	41.49%	29.63%	32.26%	30.38%	40.00%	15.38%	31.32%		32.23%		27.69%	