Technical Report – Traffic and Transport

Virya Energy

Yanco Delta Wind Farm
26 September 2022

Executive Summary

Virya Energy is proposing to construct, operate and maintain the Yanco Delta Wind Farm (the Project). Approval is sought under Division 4.7 of Part 4 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act) and Part 9, Division 1 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Project would involve the construction, operation and maintenance of a wind farm with up to 208 wind turbine generators (WTGs), a battery energy storage system (BESS) and associated electrical infrastructure. The generating capacity of the wind farm is approximately 1,500 megawatts (MW).

This traffic and transport assessment has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) relating to traffic and transport impacts and will assist the Minister for Planning to make a determination on whether or not to approve the Project. This assessment provides an assessment of potential impacts of the Project on traffic and transport and outlines proposed management measures.

Existing environment

The existing road network near the Project consists of local and State roads. Local roads are managed by the Murrumbidgee and Edward River Councils and include Liddles Lane, Jerrys Lane, Wilson Road and Moonbria Road. Traffic volumes on these roads are low due to the remoteness of the area. State roads are managed by Transport for New South Wales and include Kidman Way (B87), Newell Highway (A39) and Sturt Highway (A20). Traffic volumes on these roads typically range up to 80 vehicle per hour on Kidman Way (B87), 135 vehicles per hour on Newell Highway (A39) and 105 vehicle per hour on Sturt Highway (A20).

Crash rates are low on roads forming part of the proposed access routes. In the five-year period from 2016 to 2020, a total of 39 crashes were reported on key roads near the Project. The majority of these crashes (54 per cent) occurred at dawn, dusk or in darkness. Approximately 28 per cent of crashes involved speeding and 23 per cent involved fatigue as a contributing factor.

The public transport network near the Project is limited to infrequent coach services and school bus services. No formal pedestrian or cycling facilities are located near the Project.

Overview of traffic and transport impacts

Construction

The potential traffic and transport impacts of the Project during construction include:

- Minor potential impact on the performance of one section of Liddles Lane (west of Jerrys Lane) and one section of the Newell Highway (A39) located within the township of Jerilderie (Jerilderie Street) – These sections of road would experience a decrease in Level of Service (LoS) from A to B during the morning and evening peak hours, however the flow of traffic would remain within the zone of stable flow
- Negligible potential impact to road performance of Jerrys Lane, Kidman Way (B87), Sturt Highway (A20) and other sections of Liddles Lane and the Newell Highway (A39) – These roads are expected to have sufficient capacity to accommodate the construction traffic generated by the Project
- Negligible potential impacts to regional coach or local school bus services – Due to the available spare capacity of the road network and the occurrence of peak construction traffic movements outside of typical school travel periods and the timetabled coach services
- Negligible potential impacts to passenger or freight rail services
- Minor potential amenity impacts to active transport at town centres – Due to the addition of construction vehicles on the road network temporarily
- Negligible potential impacts to parking – Parking for construction vehicles would be provided within or next to the construction compound and laydown areas within the Project, away from public roads
- Negligible overall potential impacts to other Crown road users – Crown roads would be used for vehicular access to permanent ancillary infrastructure and temporary facilities during the construction of the Project. However, Crown roads would not be relied upon for access to the Project and have zero or very low traffic volumes using the roads, as primary access to the Project would be via a designated and upgraded access track from Liddles Lane

- Negligible potential impact on road safety – Given the relatively low historic rate of crashes in the area, the majority of traffic movements occurring outside of dark lighting conditions and the opportunity to manage contributing factors such as fatigue and speeding.

Operation

Potential impacts of the Project during operation have been identified as follows:

- Negligible potential impact on the performance of the surrounding road network – As roads currently carry low traffic volumes and have spare capacity to accommodate the relatively low increase in operational traffic
- Minor potential impacts on public transport, safety, pedestrians and cyclists – Due to the relatively low operational traffic volumes.

Decommissioning

Potential impacts of the Project during decommissioning have been identified as follows:

- Minor potential impact on the performance of one section of the Newell Highway (A339) located within the township of Jerilderie (Jerilderie Street) – This section of road would experience a decrease in Level of Service from A to B during the morning and evening peak hours, however the flow of traffic would remain within the zone of stable flow
- Negligible potential impact to road performance of Jerrys Lane, Kidman Way (B87), Sturt Highway (A20) and other sections of Liddles Lane and the Newell Highway (A39) – These roads are expected to have sufficient capacity to accommodate traffic generated by the decommissioning of the Project
- Negligible potential impacts on public transport, pedestrians and cyclists, and road safety consistent with the impacts identified for the construction phase of the Project.

Cumulative

Potential cumulative impacts of the Project have been identified as follows:

- Minor potential cumulative impact on the performance of one section of Liddles Lane (west of Jerrys Lane) and one section of the Newell Highway (A39) located within the township of Jerilderie (Jerilderie Street) – Liddles Lane would experience a decrease in LoS from A to B during the morning and evening peak hours and Jerilderie Street (A39) would experience a decrease in LoS from A to C during the morning and evening peak hours. In rural areas, LoS C can be considered a minimum desirable standard. Jerrys Lane, Kidman Way (B87), Sturt Highway (A20) and other sections of Liddles Lane and the Newell Highway (A39) are expected to have sufficient capacity to accommodate cumulative traffic volumes without a perceptible impact to road performance.

Management measures

Management measures implemented during construction, operation and decommissioning of the Project would avoid, mitigate or manage identified potential traffic and transport impacts. A Construction Traffic Management Plan (CTMP) would be implemented by the construction contractor and would minimise potential impacts of the Project during construction. Relevant traffic safety measures included in the CTMP will include traffic control and signage, driver conduct, safety protocols and management of oversized overmass (OSOM) vehicles. Furthermore, a separate OSOM transport management plan would be prepared and would include a detailed overview of management measures for the OSOM movements, including identification of route, escort measures, time of transporting and a communications strategy.

Conclusion

With the implementation of environmental management measures, the potential impacts on road network performance, parking, access, public transport, pedestrians and cyclists, safety and maritime activities during construction, operation and decommissioning of the Project are expected to be minimal.

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Glossary and terms

Term	Definition
ABS	Australian Bureau of Statistics
BESS	Battery Energy Storage System
Capacity	The nominal maximum number of vehicles which has a reasonable expectation of passing over a given section of a lane or roadway in one direction during a given time period under prevailing roadway conditions
Construction access tracks	Vehicle access tracks for construction and delivery of plant and equipment on private property.
Cumulative impacts	Impacts that, when considered together, have different and/or more substantial impacts than a single impact assessment on its own
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
Heavy vehicles	A heavy vehicle is classified as a Class 3 vehicle (a two-axle truck) or larger, in accordance with the Austroads Vehicle Classification System
HPVs	Higher Productivity Vehicles
Impact	Influence or effect exerted by a project or other activity on the natural, built and community environment
kV	kilovolts
LGA	Local government area
Local road	A road or street used primarily for access to abutting properties
MW	megawatts
MWh	megawatt hours
NHVR	National Heavy Vehicle Regulator
NSW	New South Wales
OSOM	Oversized and / or overmass vehicle
PCU	Passenger car units
PBS	Performance Based Standards
Renewable Energy Zone	Renewable Energy Zone
RUM	Road user movement
SEARs	Secretary's Environmental Assessment Requirements
SSD	State Significant Development
State road	A road that forms part of the principal network for the movement of people and goods
The Project	Yanco Delta Wind Farm
The Proponent	Virya Energy Pty Ltd

Term	Definition
TIA	Traffic Impact Assessment
TfNSW	Transport for New South Wales
Transport routes	Public roads that are to be used for delivery of plant and equipment
WTGs	Wind turbine generators

1. Introduction

1.1 Background

Virya Energy is proposing to construct, operate and maintain the Yanco Delta Wind Farm (the Project). Approval is sought under Division 4.7 of Part 4 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act) and Part 9, Division 1 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Project would involve the construction, operation and maintenance of a wind farm with up to 208 wind turbine generators (WTGs), a battery energy storage system (BESS) and associated electrical infrastructure. The generating capacity of the wind farm is approximately 1,500 megawatts (MW). The Project would be located within the South-West Renewable Energy Zone (REZ), 10 kilometres north-west of the town of Jerilderie, within the Murrumbidgee Council and Edward River Council Local Government Areas (LGAs) (refer to **Figure 1-1**).

The Project area is defined as the property boundaries of Project landowners (i.e. landowners that have entered into agreements with Virya Energy to have WTGs or associated infrastructure on their properties).

1.2 Project description

The Project would include the following key features:

- Up to 208 WTGs to a maximum tip height of 270 metres
- Generating capacity of approximately 1500 MW
- BESS, approximately 800 MW/800 megawatt hours (MWh) (type yet to be determined)
- Permanent ancillary infrastructure, including operation and maintenance facility, internal roads, hardstands, underground and overhead cabling, wind monitoring masts, central primary substation and up to eight collector substations
- Temporary facilities, including site compounds, laydown areas, stockpiles, gravel borrow pit(s) and concrete batch plants.

An indicative Project layout is provided in **Figure 1-2**.

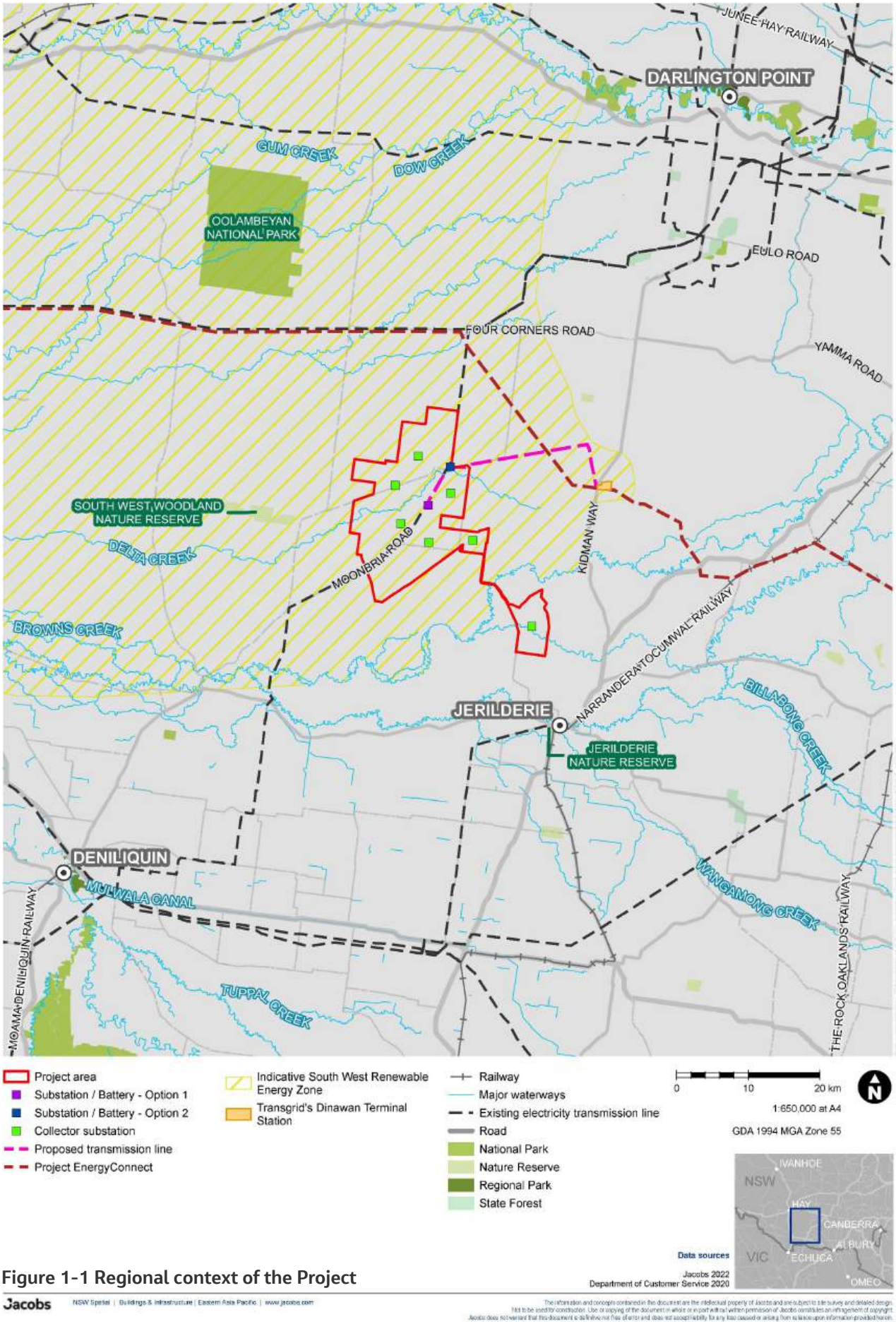

Figure 1-1 Regional context of the Project

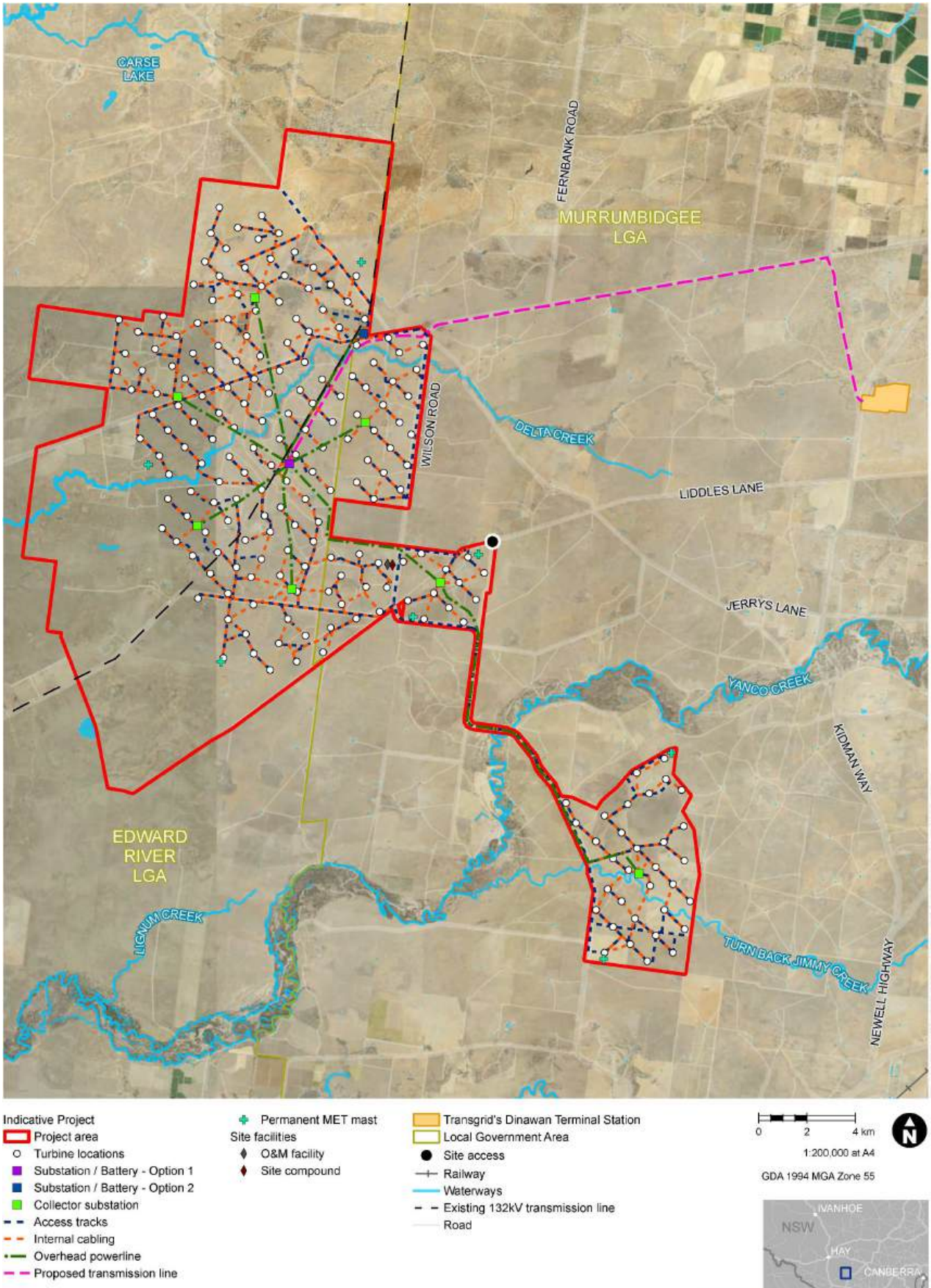

Figure 1-2 Indicative Project layout

1.3 Secretary's Environmental Assessment Requirements

This assessment forms part of the environmental impact statement (EIS) for the Project. The EIS has been prepared under Division 4.7 of the EP&A Act. This assessment has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) (SSD-41743746) relating to traffic and transport and will assist the Minister for Planning to make a determination on whether or not to approve the Project.

Table 1-1 outlines the SEARs relevant to this assessment along with a reference to where these are addressed.

Table 1-1 SEARs relevant to traffic and transport

Secretary's requirement	Where addressed in this report
Transport – including:	
▪ An assessment of the construction, operational and decommissioning traffic impacts of the development on the local and State road network.	Construction traffic impacts are discussed in **Chapter 5** Operational traffic impacts are discussed in **Chapter 6** Decommissioning traffic impacts are discussed in **Chapter 7**
▪ Provide details of the peak and average traffic volumes (including light, heavy and over-mass / over-dimensional vehicles) and transport and haulage routes during construction, operation and decommissioning, including traffic associated with sourcing raw materials (water, sand and gravel).	Haulage routes during construction, operation and decommissioning is discussed in **Section 5.4**, **Section 6.1** and **Section 7.1** respectively Details of the peak and average traffic volumes during construction, operation and decommissioning is discussed in **Section 5.4**, **Section 6.1** and **Section 7.1** respectively
▪ An assessment of the potential traffic impacts of the Project on road network function, including intersection performance, site access arrangements, site access and haulage routes, and road safety, including school bus routes and school zones.	Construction traffic impacts are discussed in **Chapter 5** Operational traffic impacts are discussed in **Chapter 6** Decommissioning traffic impacts are discussed in **Chapter 7**
▪ An assessment of the capacity of the existing road network to accommodate the type and volume of traffic generated by the Project (including over-mass / over-dimensional traffic haulage routes from port) during construction, operation and decommissioning.	Network capacity during construction is discussed in **Section 5.5** Network capacity during operation is discussed in **Section 6.2** Network capacity during decommissioning is discussed in **Section 7.2**
▪ An assessment of the likely transport impacts to the site access and haulage routes, site access point, any rail safety issues, any Crown Land (including any existing Travelling Stock Route network) particularly in relation to the capacity and conditions of the roads and use of rail level crossings (and rail safety assessment if required), and impacts to rail underbridges and overbridges.	Traffic impacts to Crown Land is discussed in **Section 6.7** and **Section 6.7**6.7 Traffic impacts to rail facilities are discussed in **Section 5.8.2**, **Section 5.12.3** and **Section 6.4.2**
▪ A cumulative impact assessment of traffic from nearby developments.	Cumulative impacts are discussed in **Chapter 8**

Secretary's requirement	Where addressed in this report
▪ Provide details of measures to mitigate and / or manage potential impacts including a schedule of all required road upgrades (including resulting from over mass / over dimensional traffic haulage routes), road maintenance contributions, and any other traffic control measures, developed in consultation with the relevant road and / or rail authority.	A list of management measures is provided in **Chapter 9** A schedule of all require road upgrades is provided in **Section 9.1**

1.4 Structure of this report

The structure and content of this report are outlined in **Table 1-2**.

Table 1-2 Structure and content

Chapter	Description
Chapter 1 Introduction	Outlines key elements of the Project, SEARs and the structure of this report (this Chapter)
Chapter 2 Legislative and policy context	Provides an outline of the statutory context, including applicable legislation and planning policies
Chapter 3 Assessment methodology	Provides a description of the assessment methodology for this assessment
Chapter 4 Existing road and transport environment	Provides a description of the existing traffic and transport environment, including the key roads, traffic volumes and patterns, road safety, the public and active transport networks and Crown land
Chapter 5 Potential construction impacts	Presents the outcomes of the construction impact assessment, including impacts on road capacity and performance, road safety, public transport, active transport, parking and Crown Land
Chapter 6 Potential operational impacts	Presents the outcomes of the operational impact assessment, including impacts on road capacity and performance, road safety, public transport, active transport, parking and Crown Land
Chapter 7 Potential decommissioning impacts	Presents the outcomes of the decommissioning impact assessment, including impacts on road capacity and performance, road safety, public transport, active transport, parking and Crown Land
Chapter 8 Potential cumulative impacts	Presents the qualitative assessment of potential cumulative construction and operational traffic and transport impacts with other projects near the Project
Chapter 9 Environmental management measures	Presents the traffic and transport management measures applicable for the Project
Chapter 10 Conclusion	Summarises the findings of this report
References	Provides details of external resources used

Chapter	Description
Appendix A Construction traffic generation calculations	Provides the underlying assumptions used to calculate the anticipated traffic movements on the local and State road network
Appendix B Example Driver Code of Conduct	Provides an example Driver Code of Conduct to ensure that light and heavy drivers adhere to safe driving practices
Appendix C Overmass oversize swept path assessment	Presents the results of the overmass oversize swept path assessment

2. Legislative and policy context

2.1 State legislation

2.1.1 Environmental Planning and Assessment Act 1979

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

Part 4 of the EP&A Act establishes the framework for assessing development that is permissible with consent. The Project is State Significant Development (SSD) under Section 2.6(1) in conjunction with Section 20 of Schedule 1 of the State Environmental Planning Policy (Planning Systems) 2021.

The Project is defined as electricity generating work and has a capital investment value (CIV) estimated to exceed one billion Australian dollars. Therefore, the Project is proceeding with an application for planning approval as an SSD. Under Section 4.12(8) of the EP&A Act, the application is to be accompanied by an EIS prepared by or on behalf of the applicant in the form prescribed by the Regulations.

This assessment forms part of the EIS in order to comply with the SEARs and assess traffic and transport impacts of the Project in accordance with any relevant Government legislation, plans, policies and guidelines.

2.1.2 Roads Act 1993

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

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

2.2 Regulatory policies/relevant guidelines

2.2.1 Future Transport Strategy 2056

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

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

- Customer focused – Customers' experiences and their end-to-end journeys are seamless, interactive and personalised, supported by technology and data
- Successful places – The liveability, amenity and economic success of communities and places are enhanced by transport
- A strong economy – In 2056, the transport system powers NSW's $1.3 trillion economy and enables economic activity across the State
- Safety performance – Every customer enjoys safe travel, regardless of transport mode or location, across a high-performing, integrated and efficient network
- Accessible services – Transport enables everyone to get the most out of life, wherever they live and whatever their age, ability or personal circumstances

- Sustainability – The transport system is economically, environmentally and socially sustainable, operationally resilient, affordable for customers and supports emissions reductions.

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

2.2.2 Guide to Traffic Generating Developments

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

The *Guide to Traffic Generating Developments* has been used to guide the structure and development of this traffic and transport impact assessment.

2.2.3 EIS Guidelines – Roads and Related Facilities

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

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

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

2.2.4 NSW Planning Guidelines for Walking and Cycling

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

The *NSW Planning Guidelines for Walking and Cycling* have not been used in this assessment as there are no formal pedestrian or cycling facilities in the vicinity of the Project (discussed further in **Section 4.7**).

2.2.5 Guide to Traffic Management Part 3: Traffic Studies and Analysis

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

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

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

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

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

2.2.7 Roads and Maritime Supplements to Austroads Guides

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

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

2.2.8 2026 Road Safety Action Plan

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

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

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

2.2.9 Heavy Vehicle Access Policy Framework

The Heavy Vehicle Access Policy Framework (TfNSW, 2018) outlines a strategic approach to heavy vehicle access in NSW for both State and council managed roads. The overarching policy objective of the Framework is to achieve safe and efficient movements of road freight in NSW. The Framework provides a staged approach to introducing access for Higher Productivity Vehicles (HPVs) on key freight networks as priority targeted infrastructure upgrades are completed.

The Newell Highway (A39), which would be used as part of the Project transport route, has been identified as a priority freight corridor to receive infrastructure upgrades and ultimately provide access by notice for HPVs such as Modern Road Trains which meet Level 3 Performance Based Standards (PBS).

3. Assessment methodology

3.1 Study area

The study area for this traffic and transport impact assessment is shown in **Figure 3-1** and comprises the transport network servicing the Project. It includes the roads which form part of the proposed access routes for construction, operation and decommissioning vehicles. These roads include Jerrys Lane, Liddles Lane, Kidman Way (B87), Newell Highway (A39) and Sturt Highway (A20).

The oversized overmass (OSOM) route study additionally considers impacts to roads located outside of the study area that form part of the proposed OSOM haulage route between the Port of Geelong and the Project. These roads are further described in **Section 5.12**.

3.2 Methodology

To assess the potential impact of the Project on the transport and traffic network, the following methodology has been used to identify and, where possible, quantify the following:

- Impacts on road network capacity and performance – assessed using a mid-block capacity assessment (refer to **Section 3.2.1**) and a turn warrant assessment (refer to **Section 3.2.2**) to determine the performance of the road network with and without vehicles associated with the construction, operation and decommissioning phases of the Project
- Impacts on public transport – assessed through an analysis of proposed changes to public transport operations including routes and stop infrastructure to determine impacts on public transport customers
- Impacts on pedestrians and cyclists – assessed through an analysis of proposed changes to cycleways and footpaths to determine potential impacts on access as well as availability of pedestrian and cycling infrastructure during construction, operation and decommissioning phases of the Project
- Impacts on road safety – assessed through an analysis of safety issues and trends associated with the roads forming part of the proposed access routes to the Project
- Cumulative impacts – assessed through a quantitative analysis of the performance of the road network with vehicle movements generated by other major projects expected to be occurring concurrently with the Project using currently available public information
- Impacts of OSOM vehicles – assessed through an analysis of OSOM requirements and an OSOM route study including a swept path analysis of intersections to identify the modifications or upgrades required to accommodate OSOM movements
- Provide details of measures to manage potential impacts including required road upgrades and other traffic control measures.

Further details on the road network capacity and performance assessment, including the turn warrant assessment, are provided below.

3.2.1 Mid-block capacity assessment

A mid-block capacity assessment has been used in this study to assess the impact of the Project on road capacity and performance. This approach is considered to be appropriate given the rural location of the Project where intersections are less frequent, and as such, are less of a determinant of rural road capacity (RMS, 2002). Further details on the performance indicators and lane capacity assumptions used in the assessment are provided below.

3.2.1.1 Performance indicators

The criteria for evaluating road performance used in this study is Level of Service (LoS). **Table 3-1** outlines the LoS categories and definitions provided in Austroads *Guide to Traffic Management Part 3: Traffic Studies and Analysis* (Austroads, 2017). LoS is a qualitative measure that describes the operational conditions within a traffic stream and the perception of these by motorists and / or passengers. LoS ranges from A (best) to F (worst). In rural areas, LoS C can be considered a minimum desirable standard; a deterioration of the LoS under this level would imply that remedial measures to maintain the existing LoS should be sought.

In this study, LoS has been determined using the volume-to-capacity (V/C) ratios outlined in the *Guide to Traffic Management Part 3: Traffic Studies and Analysis* (Austroads, 2017) and the *Highway Capacity Manual 2010* (Transportation Research Board, 2010).

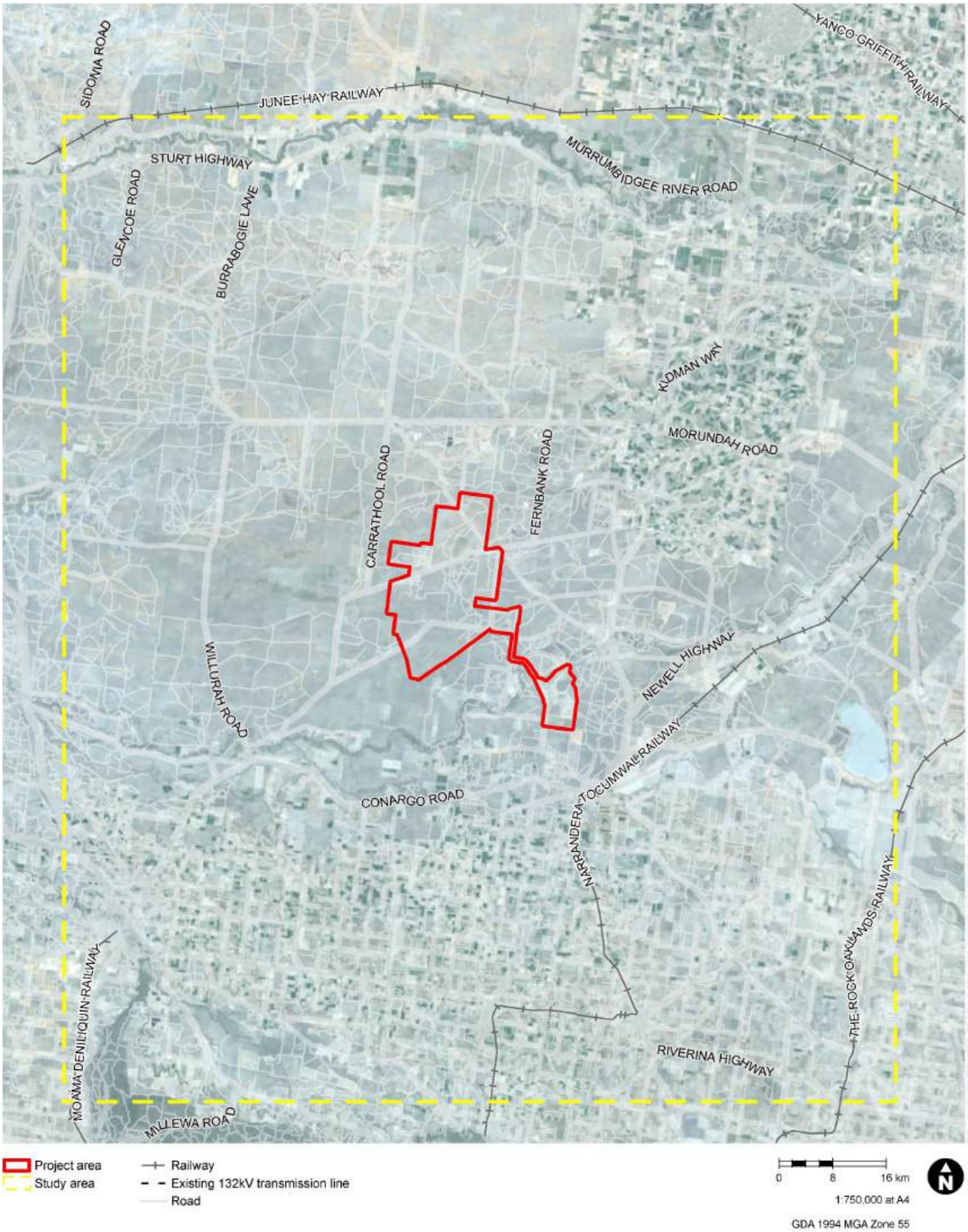

Figure 3-1 Study area

Table 3-1 Level of Service definitions and criteria for mid-block sections

Level of Service	Description	Volume-to-capacity (V/C) threshold		
		Two-lane highway	Local road[1]	Town[2]
A	LOS A is a condition of free flow in which individual drivers are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high, and the general level of comfort and convenience provided is excellent.	0.32	0.24	0.22
B	LOS B is in the zone of stable flow and drivers still have reasonable freedom to select their desired speed and to manoeuvre within the traffic stream, although the general level of comfort and convenience is little less than that of the Level of Service A.	0.50	0.38	0.35
C	LOS C is also in the zone of stable flow, but most drivers are restricted to some extent in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience declines noticeably at this level.	0.71	0.55	0.51
D	LOS D is close to the limit of stable flow but is approaching unstable flow. All drivers are severely restricted in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience is poor, and small increases in traffic flow will generally cause operational problems.	0.91	0.77	0.73
E	LOS E occurs when traffic volumes are at or close to capacity and there is virtually no freedom to select desired speeds or to manoeuvre within the traffic stream. Flow is unstable and minor disturbances within the traffic stream will cause a traffic-jam.	1.00	1.00	1.00
F	LOS F describes unstable flow. Such conditions exist within queues forming behind bottlenecks. The projected flow rate can exceed the estimated capacity of a given location. Flow break-down occurs and queuing and delays result.	>1.00	>1.00	>1.00

Source: Adapted from the Guide to Traffic Management Part 3: Traffic Studies and Analysis (Austroads, 2017)

Notes:

[1] Where free flow speed is taken as between 60 km/h and 80 km/h

[2] Where free flow speed is taken as 50 km/h

3.2.2 Austroads warrants for turn treatments

Section 2.3.6 of *Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings* (Austroads, 2018) provides guidance on the preferred left and right turn treatments for major roads at unsignalised intersections based on traffic flows.

The graph used for the selection of turn treatments on roads with a design speed greater than 100 kilometres per hour is shown in **Figure 3-2**. The major road traffic volume parameter (Q_M) referenced in this figure is determined as per **Figure 3-3** and **Table 3-2.**

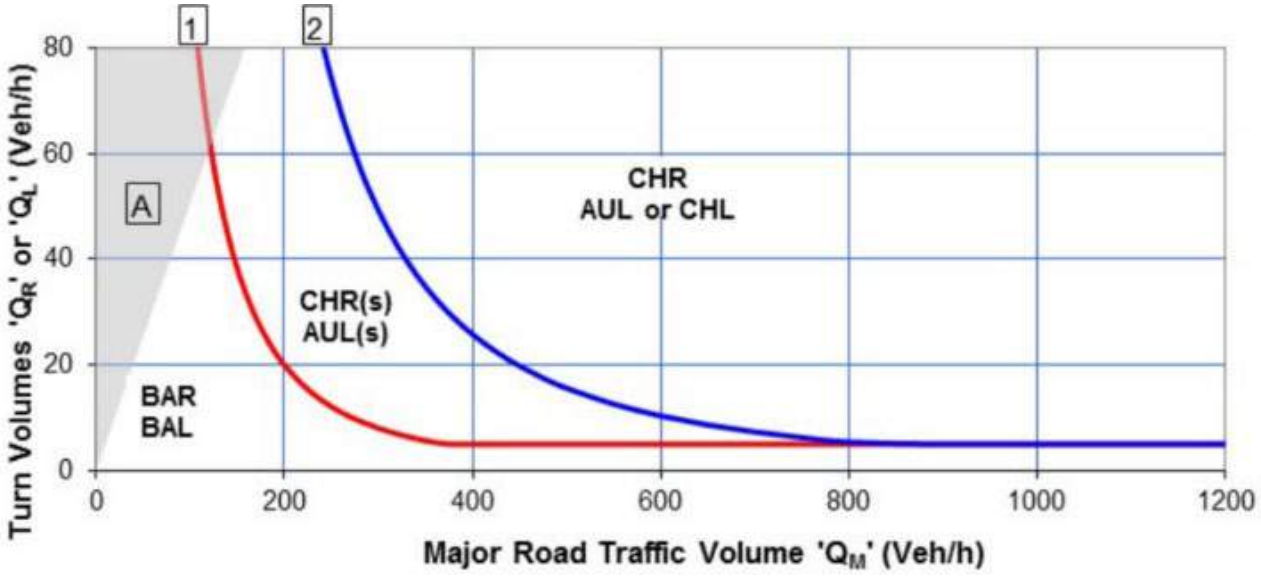

Figure 3-2 Warrants for turn treatments on major roads with a design speed ≥ 100 km/h

Source: Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings Management

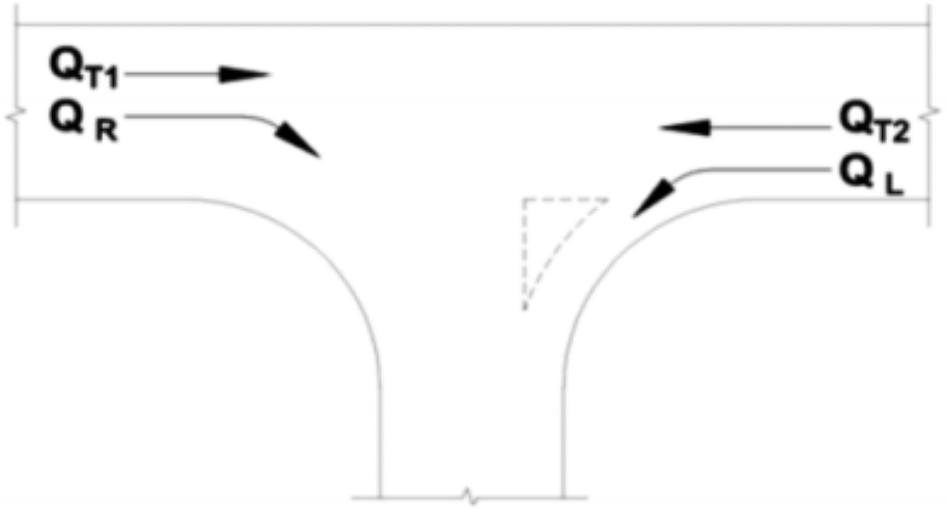

Figure 3-3 Major road traffic volume parameters

Source: Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings Management

Table 3-2 Calculation of the major road traffic volume (QM)

Road type	Turn type	Splitter island	Q_M (veh/hr)
Two-lane two way	Right	No	= $Q_{T1} + Q_{T2} + Q_L$
	Left	Yes or no	= Q_{T2}

Source: Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings Management

3.3 Assumptions

3.3.1 Lane capacities

3.3.1.1 Uninterrupted flow facilities

Section 4.2 of Austroads *Guide to Traffic Management Part 3: Traffic Studies and Analysis* specifies the capacity for a two-lane highway to be 1,700 passenger car units per hour (pcu/h) for each direction of travel. Accordingly, a capacity of 1,700 pcu/h for each direction of travel has been adopted for two-lane highways in the study area, including Kidman Way (B87), Newell Highway (A39) and Sturt Highway (A20).

Local unsealed roads have reduced capacity resulting from lower vehicle operating speeds (due to factors such as reduced vehicle control) and increased headways between vehicles (due to factors such as dust). As such, a capacity of 1,000 pcu/h for each direction of travel has been conservatively assumed for unsealed local roads in the study area, including Liddles Lane and Jerrys Lane.

3.3.1.2 Interrupted flow facilities

Table 5.1 in Austroads *Guide to Traffic Management Part 3: Traffic Studies and Analysis* sets out typical mid-block capacities for various types of urban roads with interruptions from cross and turning traffic at minor intersections. A capacity of 900 pcu/h for each direction of travel has been adopted for the section of the Newell Highway (Jerilderie Street) that passes through the township of Jerilderie due to the presence of occasional parked vehicles adjacent to the road and minor interruptions from cross and turning traffic.

3.3.2 Annual background traffic growth

The annual background traffic growth rate used in this assessment has been estimated based on the average growth in Annual Average Daily Traffic (AADT) observed on key roads within the study area. As shown in **Table 3-3**, Kidman Way (B87) has observed an average annual growth rate of 1.2 per cent since 2010 and Newell Highway (A39) has observed an annual growth rate of 1.4 per cent since 2010. Sturt Highway (A20) has experienced the highest average annual growth rate in the study area at 3.3 per cent since 2012. In the absence of historical data for Liddles Lane and Jerrys Lane, an annual background traffic growth rate of 1.2 per cent has been conservatively assumed based on the closest road with available data (Kidman Way (B87)).

Table 3-3 Annual Average Daily Traffic (AADT) growth rate of key roads within the study area

Road	Data source(s)	Year range of data	Average annual growth rate (%)
Liddles Lane	N/A	N/A	1.2[1]
Jerrys Lane	N/A	N/A	1.2[1]
Kidman Way (B87)	TfNSW Traffic Volume Viewer and traffic survey	2010 to 2022	1.2
Newell Highway (A39)	TfNSW Traffic Volume Viewer	2010 to 2022	1.4
Sturt Highway (A20)	TfNSW Traffic Volume Viewer	2012 to 2022	3.3

[1] Average annual growth rate has been estimated based on the closest road with available data

4. Existing road and transport environment

4.1 Road network

Access to the Project would be via a network of local council and State managed roads including Liddles Lane, Jerrys Lane, Wilson Road, Kidman Way (B87), Newell Highway (A39) and Sturt Highway (A20). These roads are described in further detail below.

4.1.1 Liddles Lane

Liddles Lane is a 19 kilometre unsealed local road which extends in the east-west direction between Kidman Way (B87) and Wilsons Road. The road is located approximately 19 kilometres north of the southern terminus of Kidman Way (B87) and connects to Kidman Way (B87) and Wilsons Road via uncontrolled T-intersections. Liddles Lane has no posted speed limit.

Liddles Lane is predominately used for local access to land zoned RU1 – Primary Production and associated dwellings. The road has previously been graded to a width of approximately 18 metres, however, light vegetation is generally present on both sides of the road due to the very low traffic volumes present, as shown in **Figure 4-1**. The road is managed by Murrumbidgee Council.

Figure 4-1 Liddles Lane, facing in the western direction
Image source: Jacobs site visit, September 2021

4.1.2 Jerrys Lane

Jerrys Lane is a 11 kilometre unsealed local road which extends in the east-west direction between Kidman Way (B87) and Liddles Lane. The road is located approximately 13 kilometres north of the southern terminus of Kidman Way (B87) and connects to Kidman Way (B87) and Liddles Lane via uncontrolled T-intersections. Jerrys Lane has no posted speed limit.

Jerrys Lane is predominately used for local access to land zoned RU1 – Primary Production and associated dwellings. The road is managed by Murrumbidgee Council.

4.1.3 Wilson Road

Wilson Road is a 48 kilometre local road which generally extends in the north-south direction between Jerilderie and Argoon. The road is unsealed north of Moonbria Road. Wilson Road has no posted speed limit and is predominately used for local access to land zoned RU1 – Primary Production and associated dwellings. The road is managed by Murrumbidgee Council and Edward River Council.

4.1.4 Kidman Way (B87)

Kidman Way (B87) is a 644 kilometre sealed State road which provides north-south connectivity throughout the Riverina and Far West regions of NSW. The southern terminus of Kidman Way (B87) intersects with the Newell Highway (A39) via a priority controlled ('Give way') T-intersection located 16 kilometres north of Jerilderie. As shown in **Figure 4-2**, the northern terminus of Kidman Way (B87) intersects with the Sturt Highway (A20) via a priority controlled ('Give way') T-intersection.

Near the Project, Kidman Way is a single carriageway road with one lane in each direction. The road has a posted speed limit of 100 kilometres per hour and features relatively narrow, sealed shoulders on both sides. Kidman Way (B87) is managed by TfNSW.

Figure 4-2 Kidman Way (B87) at Sturt Highway (A20), facing south
Image source: Google Street View, November 2020

4.1.5 Newell Highway (A39)

Newell Highway (A39) is a 1,060 kilometre sealed State road which forms part of the National Land Transport Network. The road generally extends parallel to the coast of NSW, approximately 400 kilometres inland, and functions as the principal route for freight and passenger movements between Queensland and Victoria. Near the Project, Newell Highway (A39) is a single carriageway road with one lane in each direction, as shown in **Figure 4-3**. The road has a posted speed limit of 110 kilometres per hour which reduces to 50 kilometres per hour near the township of Jerilderie. Newell Highway (A39) is managed by TfNSW.

Figure 4-3 Newell Highway (A39), facing north
Image source: Google Street View, September 2019

4.1.6 Sturt Highway (A20)

The Sturt Highway (A20) is a 950 kilometre sealed State road that functions as the major interstate corridor for freight and passenger movements between Adelaide to Sydney. The road forms part of the Australian National Highway Network and generally comprises a single carriageway with one lane in each direction. The Sturt Highway connects to Kidman Way (B87) via a priority controlled ('Give way') T-intersection located to the north of the Project. The road has a posted speed limit of 110 kilometres per hour. Sturt Highway (A20) is shown in **Figure 4-4** and is managed by TfNSW.

Figure 4-4 Sturt Highway (A20) between Newell Highway (A39) and Kidman Way (B87), facing east
Image source: Google Street View, November 2020

4.2 Heavy vehicle haulage routes

Near the Project, Kidman Way (B87), Newell Highway (A39) and Sturt Highway (A20) all permit 25/26-metre B-double and 4.6-metre-high vehicles (TfNSW, 2022a). These roads are also part of the NSW oversize overmass load carrying vehicles network (which permits eligible vehicles operating under the Multi-State Class 1 Load Carrying Vehicles Mass Exemption Notice and the Multi-State Class 1 Load Carrying Vehicles Dimension Exemption Notice). Roads forming part of the NSW oversize overmass load carrying network near the Project are shown in **Figure 4-5** (TfNSW, 2022b).

Heavy vehicle access to the Project from the north would be via the Sturt Highway (A20) and Kidman Way (B87). Heavy vehicle access to the Project from the south is expected to be via Newell Highway (A39), Kidman Way (B87) and Liddles Lane. Oversize and overmass haulage routes are detailed in **Section 5.12**.

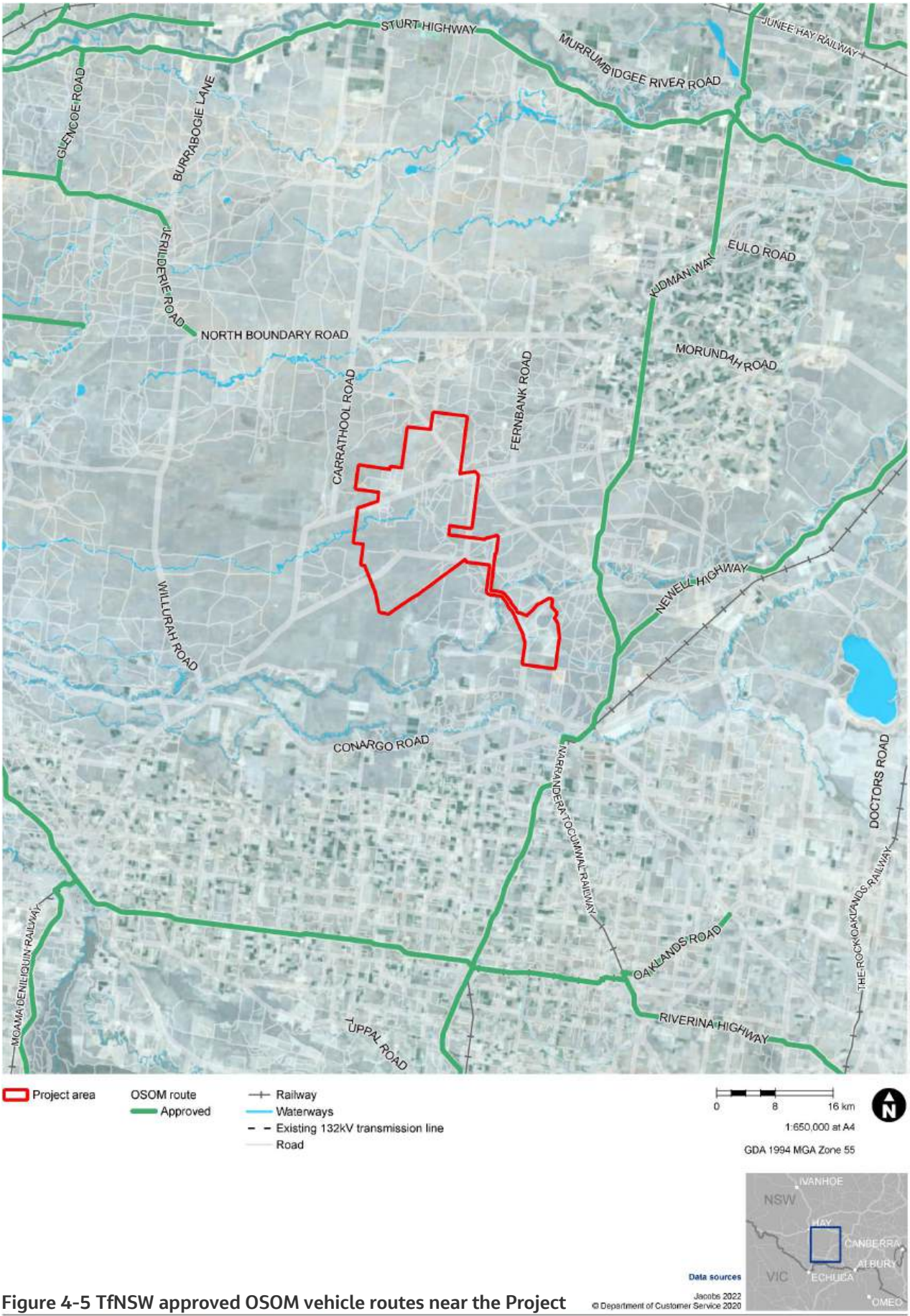

Figure 4-5 TfNSW approved OSOM vehicle routes near the Project

4.3 Traffic volumes and patterns

4.3.1 Liddles Lane

Traffic counts were undertaken on Liddles Lane near Kidman Way (B87) on Wednesday 4 May, 2022. The counts indicate that traffic volumes on Liddles Lane are very low, with two light vehicles travelling in the eastbound direction and two vehicles travelling in the westbound direction on an average weekday.

4.3.2 Kidman Way (B87)

Traffic counts were undertaken on Kidman Way (B87) near Liddles Lane on Wednesday 4 May, 2022. The weekday traffic profile for the road in shown in **Figure 4-6**.

The counts indicate that Kidman Way experiences a morning peak hour from 10:00 am to 11:00 am and an evening peak hour from 4:00 pm to 5:00 pm. Near Liddles Lane, peak hour volumes on Kidman Way (B87) typically range between 64 and 77 vehicles. Kidman Way (B87) exhibits a slight southbound directional peak during the morning peak hour and a slight northbound directional peak during the evening peak hour. Heavy vehicles account for approximately 39 per cent of the total traffic travelling on Kidman Way (B87).

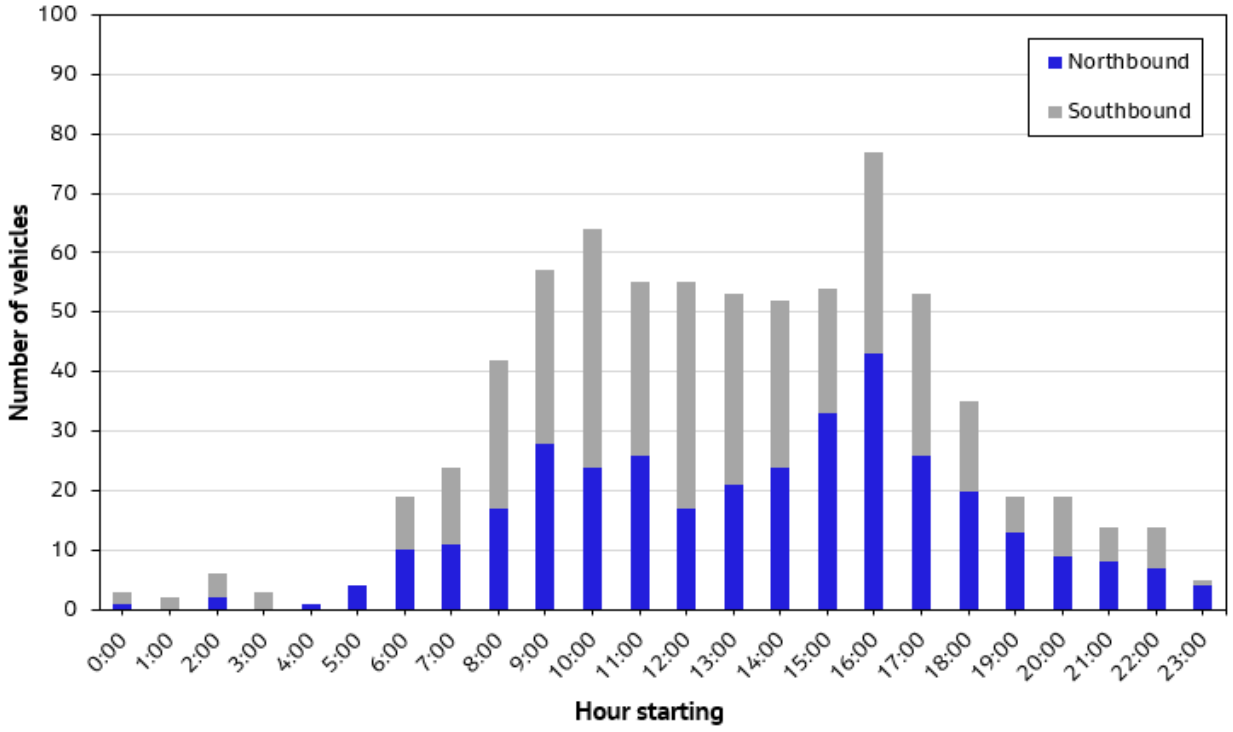

Figure 4-6 Weekday traffic profile of Kidman Way near Liddles Lane
Data source: Traffic counts, May 2022

4.3.3 Newell Highway (A39)

Traffic volumes on the Newell Highway (A39) were obtained from the TfNSW permanent classifier station (ID JRDSTC) located to the south of the Project, 330 metres east of Showground Road, Jerilderie (TfNSW, 2022c). The average annual weekday traffic volumes on the Newell Highway are shown in **Table 4-1**. In 2021, approximately 1,720 vehicles (two-way) were recorded to travel along the road on an average weekday.

Table 4-1 Average annual weekday traffic volumes on the Newell Highway

Direction of travel	2017	2018	2019	2020	2021
Northbound	1,056	1,025	1,072	835	847
Southbound	1,055	1,013	1,049	825	872
Total	**2,111**	**2,038**	**2,121**	**1,660**	**1,719**

Data source: TfNSW Traffic Volume Viewer, April 2022

The average weekday traffic profile for the Newell Highway (A39) is shown in **Figure 4-7**. The road has a morning peak hour from 11:00 am to 12:00 am and an evening peak hour from 2:00 pm to 3:00 pm. Near Showground Road, peak hour volumes on the Newell Highway typically range between 133 and 134 vehicles. Heavy vehicles comprise approximately 50 per cent of the total traffic travelling on the Newell Highway.

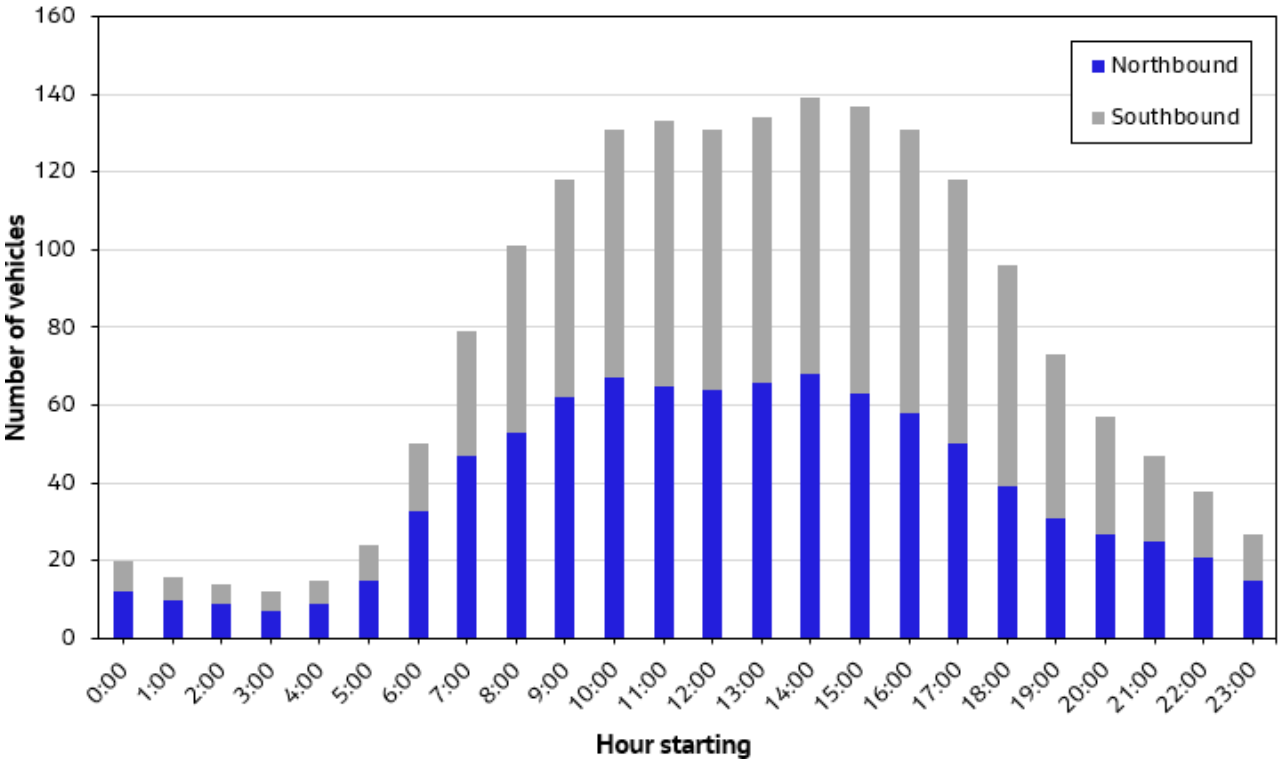

Figure 4-7 Weekday traffic profile of Newell Highway (A39), 330 metres east of Showground Road
Data source: TfNSW Traffic Volume Viewer, April 2022

4.3.4 Sturt Highway (A20)

Traffic volumes on the Sturt Highway (A20) were obtained from the TfNSW permanent classifier station (ID NNDSTC) located to the north-east of the Project, 190 metres north of Innisvale Road, Euroley (TfNSW, 2022c). The average annual weekday traffic volumes on the Sturt Highway (A20) are shown in **Table 4-2**, where approximately 1,210 vehicles (two-way) used the road on an average weekday in 2021.

Table 4-2 Average annual weekday traffic volumes Sturt Highway

Direction of travel	2017	2018	2019	2020	2021
Eastbound	627	598	650	570	599
Westbound	630	597	644	566	608
Total	**1,257**	**1,195**	**1,294**	**1,136**	**1,207**

Data source: Transport for NSW Traffic Volume Viewer, April 2022

The average weekday traffic profile for the Sturt Highway (A20) is shown in **Figure 4-8**. The road has a morning peak hour from 9:00 am to 10:00 am and an evening peak hour from 3:00 pm to 4:00 pm. Near Innisvale Road, peak hour volumes on the Sturt Highway (A20) typically range between 87 and 104 vehicles. Heavy vehicles comprise approximately 46 per cent of the traffic travelling along the Sturt Highway.

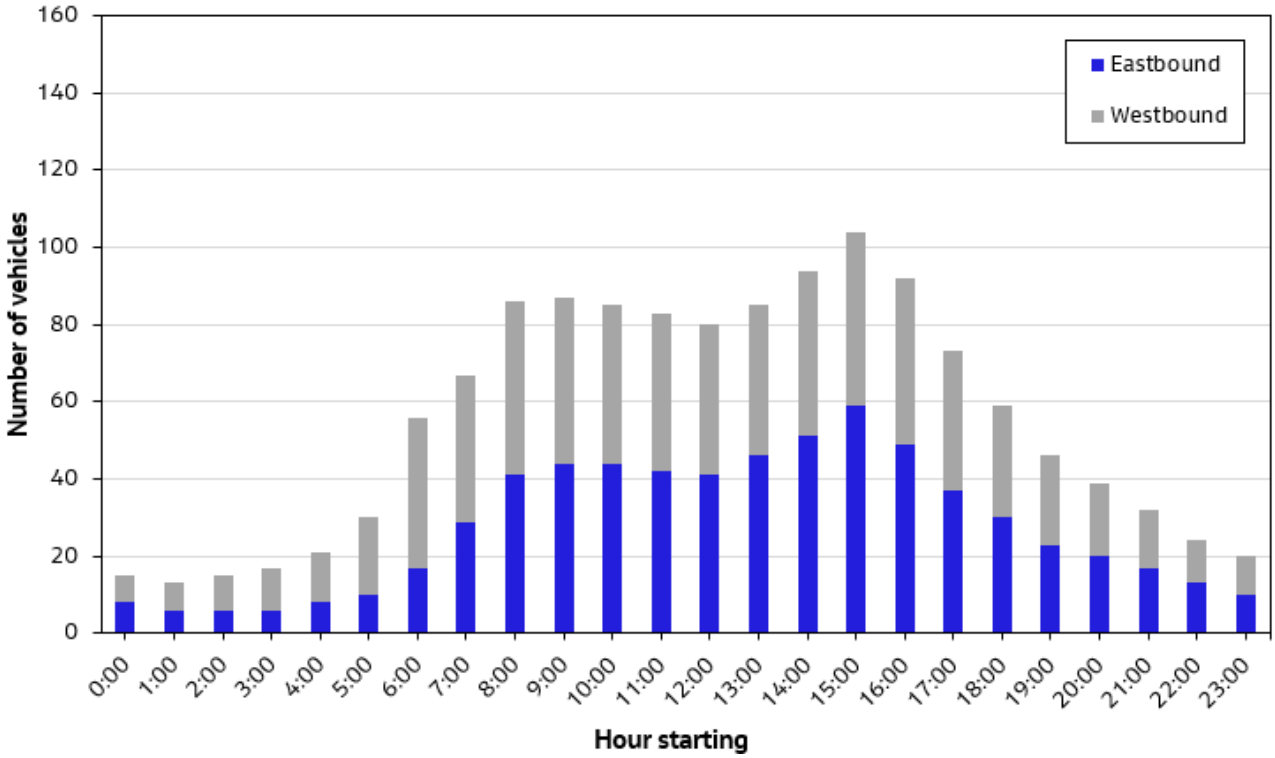

Figure 4-8 Weekday traffic profile of Sturt Highway (A20), 190 metres north of Innisvale Road
Data source: Transport for NSW Traffic Volume Viewer, April 2022

4.3.5 Traffic volumes on the local road network by day of week

A breakdown of the number of vehicles travelling on the local road network by the day of week is shown in **Figure 4-9**. Traffic volumes travelling on the local road network are greater on weekdays compared to weekends, with Fridays experiencing the overall highest cumulative network volume.

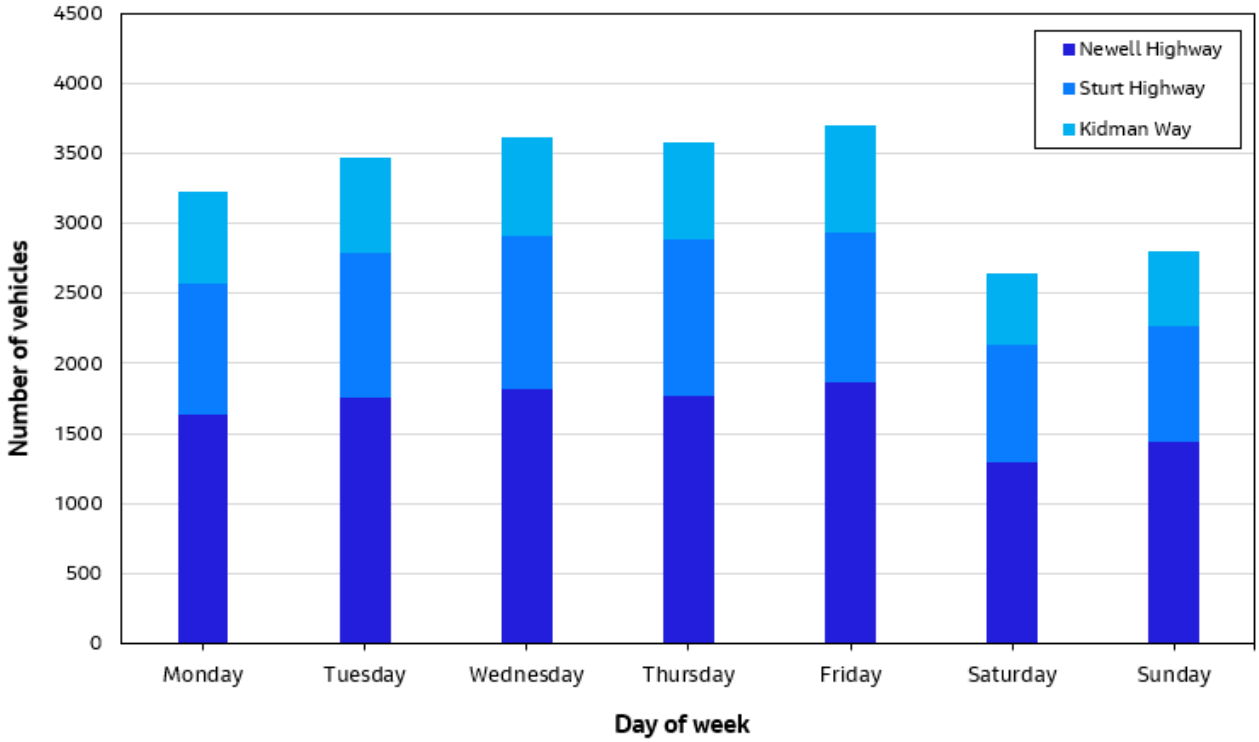

Figure 4-9 Traffic volumes on the local road network by day of week
Data source: Transport for NSW Traffic Volume Viewer, April 2022

4.4 Existing road performance

A mid-block capacity assessment was undertaken to assess the existing capacity and performance of key roads in the study area. The results are presented in **Table 4-3** for the morning and evening peak hours of the respective roads.

The results of the mid-block capacity assessment indicate that all roads currently operate satisfactorily at a LoS A. These results indicate that the network is currently operating well within its capacity, which is primarily due to the low volumes present.

Table 4-3 Existing road performance (2022)

Road	Peak period	Direction of travel	Volume (pcu/hr)	Volume-to-capacity ratio (V/C)	Level of Service
Liddles Lane	AM	Eastbound	<5	<0.01	A
		Westbound	<5	<0.01	A
	PM	Eastbound	<5	<0.01	A
		Westbound	<5	<0.01	A
Jerrys Lane	AM	Eastbound	<5	<0.01	A
		Westbound	<5	<0.01	A
	PM	Eastbound	<5	<0.01	A
		Westbound	<5	<0.01	A
Kidman Way (B87)	AM (10:00 am to 11:00 am)	Northbound	33	0.02	A
		Southbound	56	0.03	A

Road	Peak period	Direction of travel	Volume (pcu/hr)	Volume-to-capacity ratio (V/C)	Level of Service
	PM (4:00 pm to 5:00 pm)	Northbound	61	0.04	A
		Southbound	48	0.03	A
Newell Highway (A39)	AM (11:00 am to 12:00 pm)	Northbound	95	0.06	A
		Southbound	107	0.06	A
	PM (2:00 pm to 3:00 pm)	Northbound	102	0.06	A
		Southbound	109	0.06	A
Jerilderie Street	AM (11:00 am to 12:00 pm)	Northbound	95	0.11	A
		Southbound	107	0.12	A
	PM (2:00 pm to 3:00 pm)	Northbound	102	0.11	A
		Southbound	109	0.12	A
Sturt Highway (A20)	AM (9:00 am to 10:00 am)	Eastbound	62	0.04	A
		Westbound	64	0.04	A
	PM (3:00 pm to 4:00 pm)	Eastbound	81	0.05	A
		Westbound	61	0.04	A

4.5 Road safety

A review of crash data was undertaken to provide an assessment of safety issues and trends associated with the proposed access and haulage routes to the Project. Crash data for was sourced from TfNSW's Centre for Road Safety database (TfNSW Centre for Road Safety, 2022d). The crash data comprised self-reported crashes in the five-year period from January 2016 to December 2020.

4.5.1 Crash analysis

In the five-year period from 2016 to 2020, a total of 39 crashes were reported on roads within the study area. Approximately 38 per cent of crashes (15 crashes) occurred on the Newell Highway, 31 per cent of crashes (12 crashes) occurred on the Sturt Highway and 31 per cent of crashes (12 crashes) occurred on Kidman Way. The number of crashes by reporting year and location is summarised in **Figure 4-10**. The total number of crashes reported on roads within the study area peaked in 2018 and has since observed a decreasing trend.

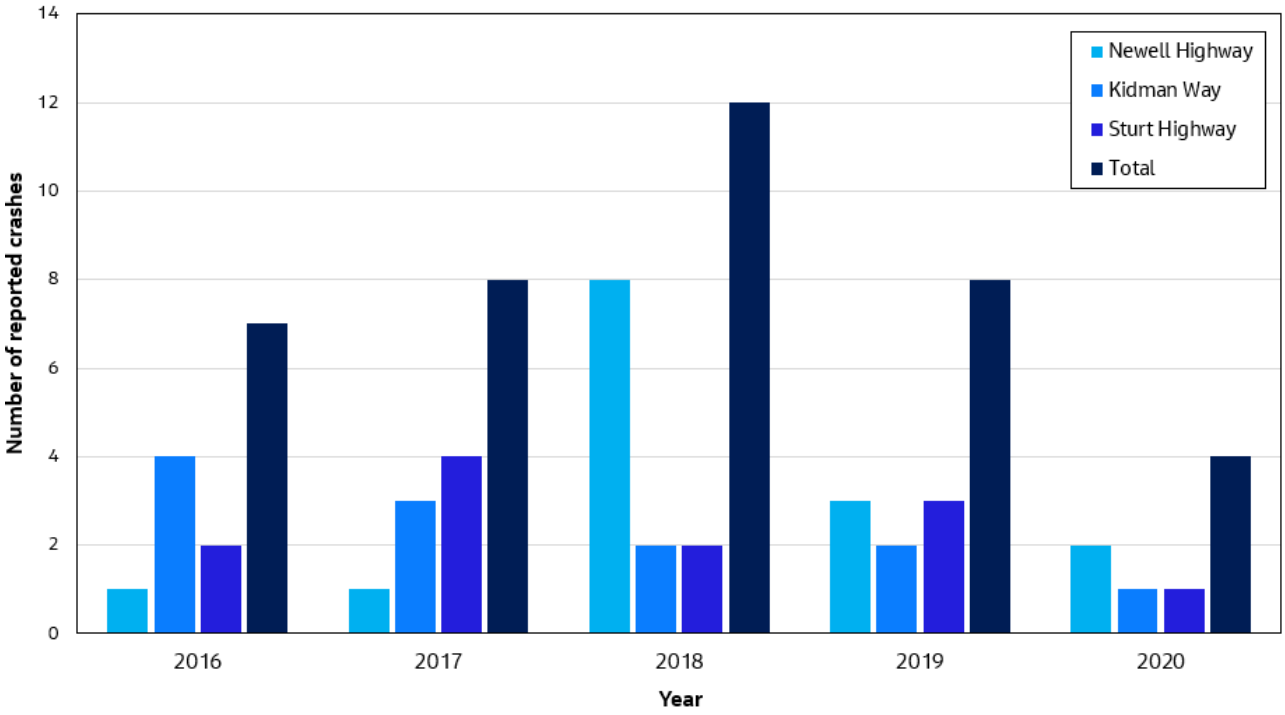

Figure 4-10 Number of crashes by reporting year

Data source: NSW Centre for Road Safety (2016-2020)

Figure 4-11 shows the breakdown of crashes by injury severity. The majority of crashes that occurred in the study area (51.3 per cent) resulted in a towaway with no casualty. Kidman Way (B87) and Sturt Highway experienced the highest proportion of casualty crashes (where one or more people were injured or killed). Sturt Highway (A20) experienced the highest proportion of fatal crashes, with 16.7 per cent of all crashes resulting in a fatality. Conversely, Newell Highway (A39) had no fatalities in the five-year period from 2016 to 2020.

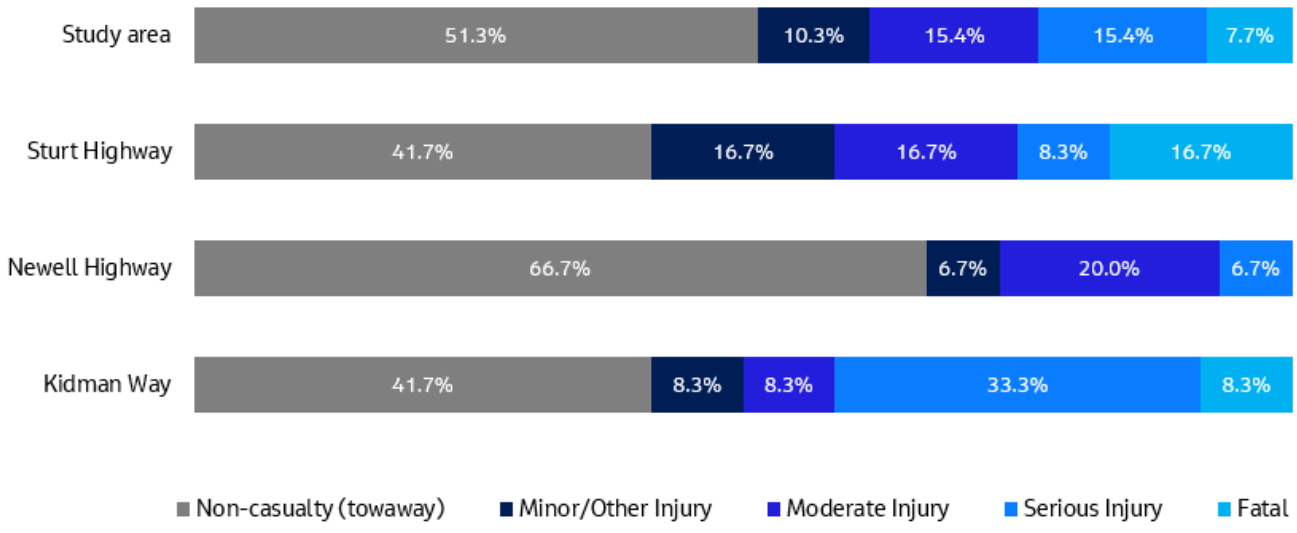

Figure 4-11 Crashes by injury severity

Data source: NSW Centre for Road Safety (2016-2020)

The number of crashes by road user movement (RUM) group[1] are shown in **Figure 4-12**. The most common crash type involved vehicles travelling off the road on a straight section (38.8 per cent of all crashes), followed by vehicles travelling off the road on a curve (16.7 per cent of all crashes). 14.8 per cent of all crashes occurred on the road, including the collision of a vehicle with an animal or object on the carriageway.

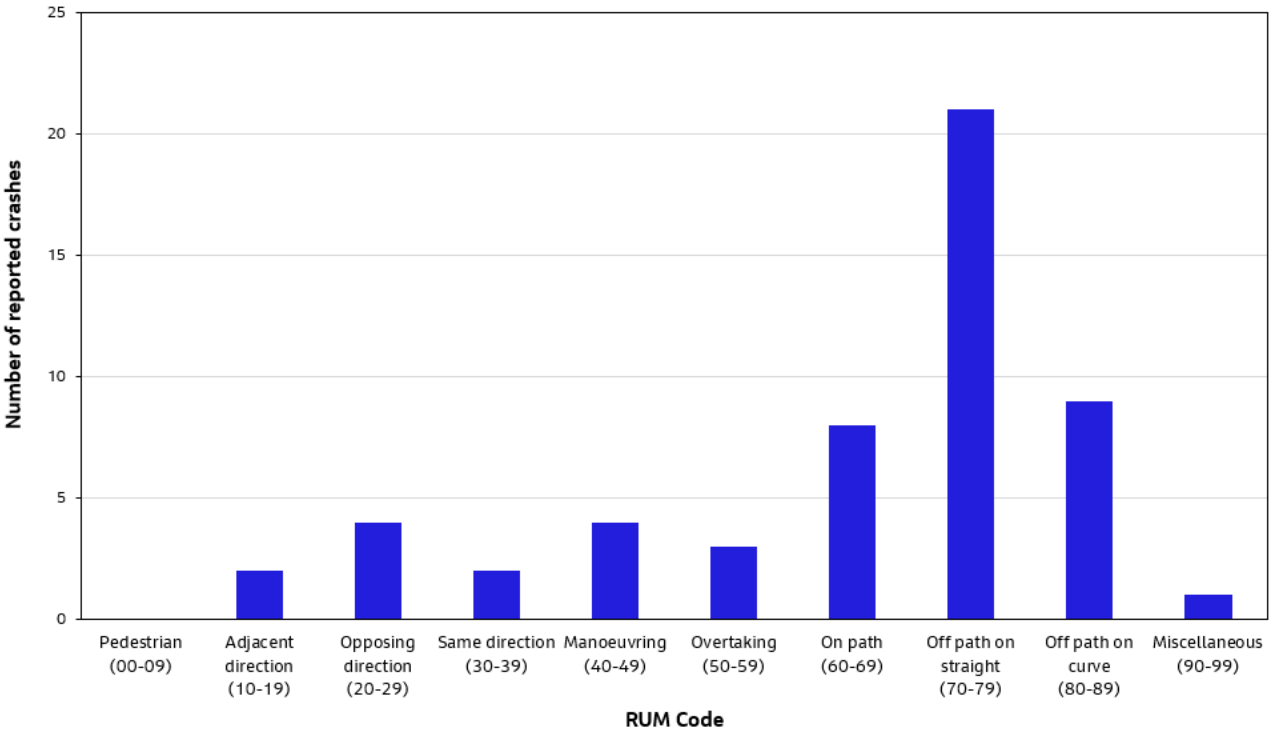

Figure 4-12 Crashes by road user movement (RUM) group

Data source: NSW Centre for Road Safety (2016-2020)

The proportion of crashes by lighting condition and road pavement condition is shown in **Figure 4-13**. The majority of crashes (54 per cent) reported on roads within the study area between 2016 and 2020 occurred at dawn, dusk or in darkness. Approximately 8 per cent of crashes occurred on a road with wet pavement.

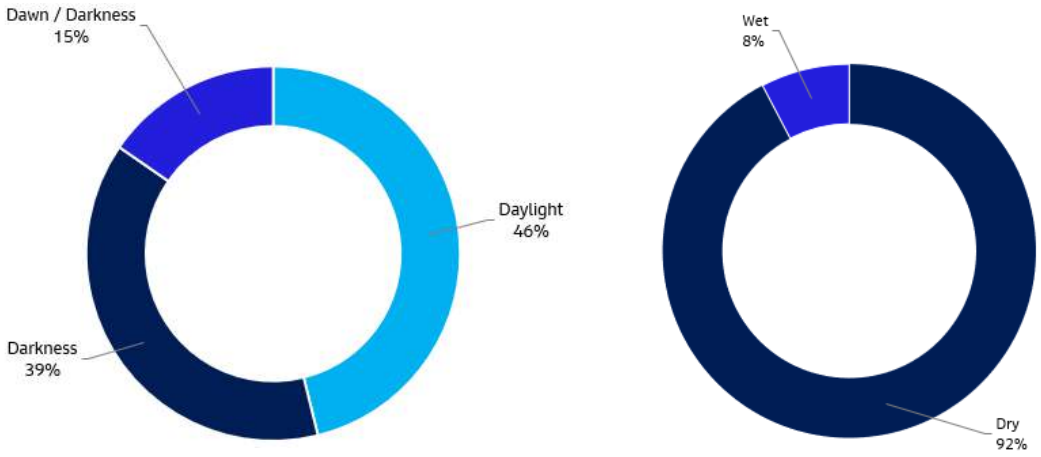

Figure 4-13 Crashes by lighting and road pavement conditions

Data source: NSW Centre for Road Safety (2016-2020)

[1] RUM group refers to road user movement group, which includes a group of movements or actions (classified by a RUM number) undertaken by the vehicles involved directly before the crash.

Crashes by contributing factor are shown in **Figure 4-14**. Approximately 28 per cent of crashes in the area involved speeding and 23 per cent involved fatigue as a contributing factor.

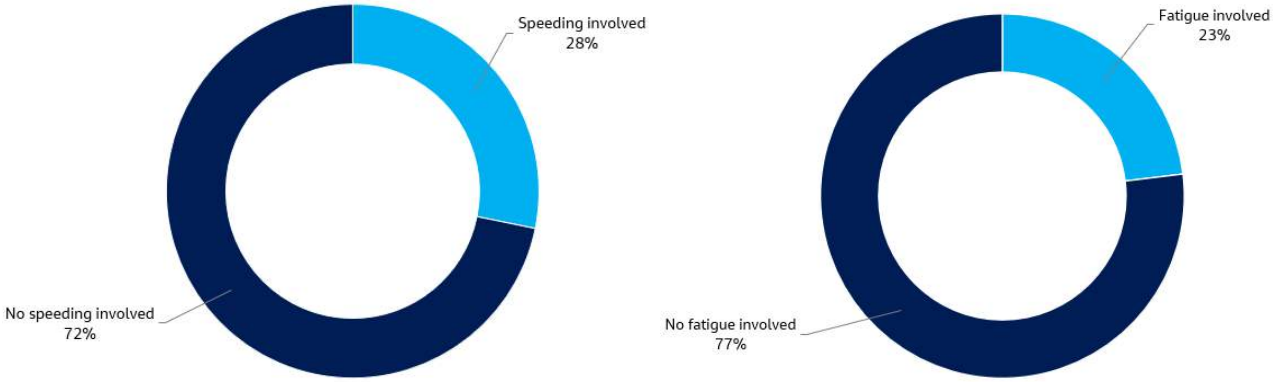

Figure 4-14 Crashes by contributing factors
Data source: NSW Centre for Road Safety (2016-2020)

4.6 Public transport network

4.6.1 Bus services

There are no local public bus services in the study area. However, two regional coach services operate on sections of Kidman Way (B87) and the Newell Highway (A39), including the Wagga Wagga to Echuca service (operated by NSW TrainLink) and the Griffith to Melbourne via Shepparton service (operated by V/Line).

As shown in **Table 4-4**, the Wagga to Echuca service operates at a frequency of one bus in each direction on Monday, Wednesday, Friday and Sunday. The Griffith to Melbourne service operates at a frequency of one bus in each direction per day. The nearest bus stop to the Project is located at the Service Station on Jerilderie Street near Smith Street, Jerilderie.

Table 4-4 Regional coach services operating in the study area

Route	Operator	Departing stop	Departure time(s)
733 - Wagga Wagga to Echuca	NSW TrainLink	Service Station on Jerilderie Street near Smith Street (Stop ID 27162)	16:15pm on Monday, Wednesday, Friday and Sunday
734 - Echuca to Wagga Wagga			10:15am on Monday, Wednesday, Friday and Sunday
Griffith to Melbourne via Shepparton	V/Line	Service Station on Jerilderie Street near Smith Street (Stop ID 17486)	9:19 pm on weekdays 11:33 pm on weekends
Melbourne to Griffith via Shepparton			3:49 am on weekdays 4:27 am on Saturday 1:32 pm on Sundays

Source: TfNSW and V/Line, May 2022

In addition to the regional coach services, a number of dedicated school bus services operate in the vicinity of the Project. These school bus services generally operate twice each weekday with the morning services commencing from approximately 7:30 am and the afternoon services commencing from 3:00 pm.

The school bus services are operated by Dysons and include the following routes:

- N2419 Finley – Jerilderie Route 1
- N0152 Finley – Jerilderie Route 2
- N2420 Finley – Wunnamurra – Jerilderie
- N1008 Jerilderie – Colombo Creek
- N0711 Jerilderie – Willawa
- N0622 Coleambally – Cadell
- N0623 Coleambally – Yamma
- N0699 Coleambally – Rowan
- N0725 Coleambally – Darlington Point
- N0758 Coleambally – North
- N1155 Coleambally – Fairlie Grange
- N1314 Coleambally – South
- N1315 Coleambally – Egansford
- N2464 Darlington Point – Gum Creek.

4.6.2 Rail services

The inactive Narrandera Tocumwal Railway Line is located 9.5 kilometres to the south-east of the Project. The railway line has been closed since 1988.

4.7 Pedestrian and cycling network

There are no formal pedestrian or cycling facilities provided in the study area with the exception of concrete footpaths located on both sides of Jerilderie Street within the township of Jerilderie.

4.8 Crown land

4.8.1 Crown roads

As shown in **Figure 4-15**, a number of Crown roads are located within the Project. Crown roads generally provide public access to privately owned and leasehold land, where little or no subdivision has occurred since the original Crown subdivision of NSW in the early nineteenth century. The majority of these roads are located in rural areas and many have never been constructed, so may contain significant native vegetation. Crown roads are administered by the Department of Planning and Environment under the *NSW Roads Act 1993*.

4.8.2 Travelling Stock Routes

Travelling Stock Routes (TSRs) are parcels of Crown land reserved under the *Crown Land Management Act 2016* for use by travelling stock. TSRs consist of stock routes, which are corridors that connect smaller watering and camping reserves, generally spaced 10 to 20 kilometres apart (based on a day's walk for cattle or sheep).

Within the study area, sections of the Newell Highway (A39) and Sturt Highway (A20) (to the east of Kidman Way) are designated as Livestock Highways. TSRs of medium conservation value are also located along sections of Kidman Way (B87) and Mclennons Bore Road as shown in **Figure 4-16.**

In addition, the following reserves are located near the Project:

- Jerrys reserve (R48268) – located on the eastern side of the Jerrys Lane and Liddles Lane intersection
- The Yanco reserve (R48269) – located on the eastern side of Kidman Way (B87) south of Boyd Lane
- Middle Park Tank reserve (R48269) – located on the eastern side of Kidman Way (B87), north of Boyd Lane
- Kidman Way reserve (R10817) – located on the western side Kidman Way (B87), south of Jerrys Lane intersection
- Jukes reserve (R58370) – located on the southern side of Moonbria Road, west of Wilsons Road
- Woodpark reserve (R43322) – located on the southern side of Wilson Road, near Milthorpe Lane
- McLennons Bore Road (R2154) – located on the northern and southern sides of McLennons Bore Road.

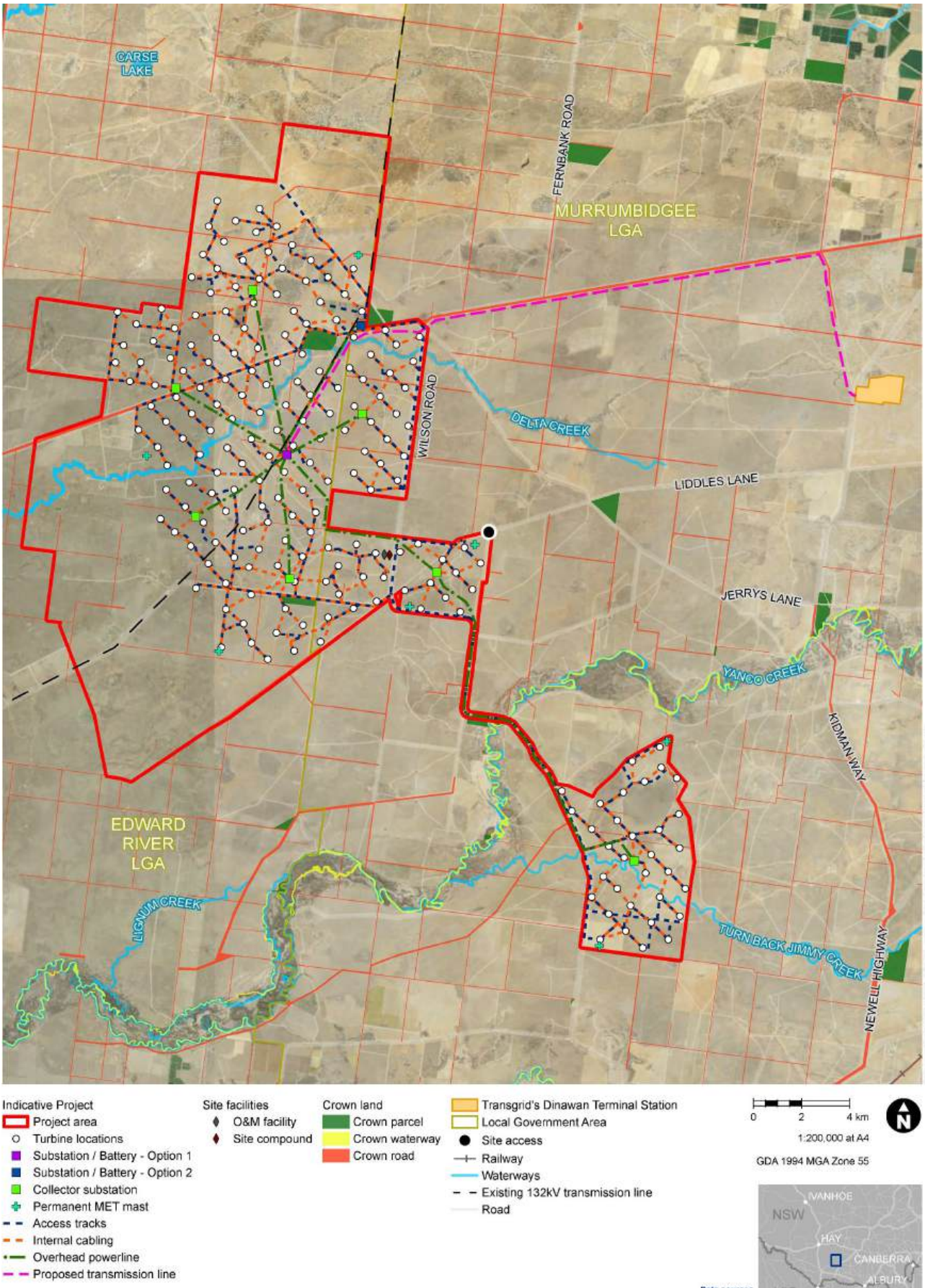

Figure 4-15 Crown land near the Project

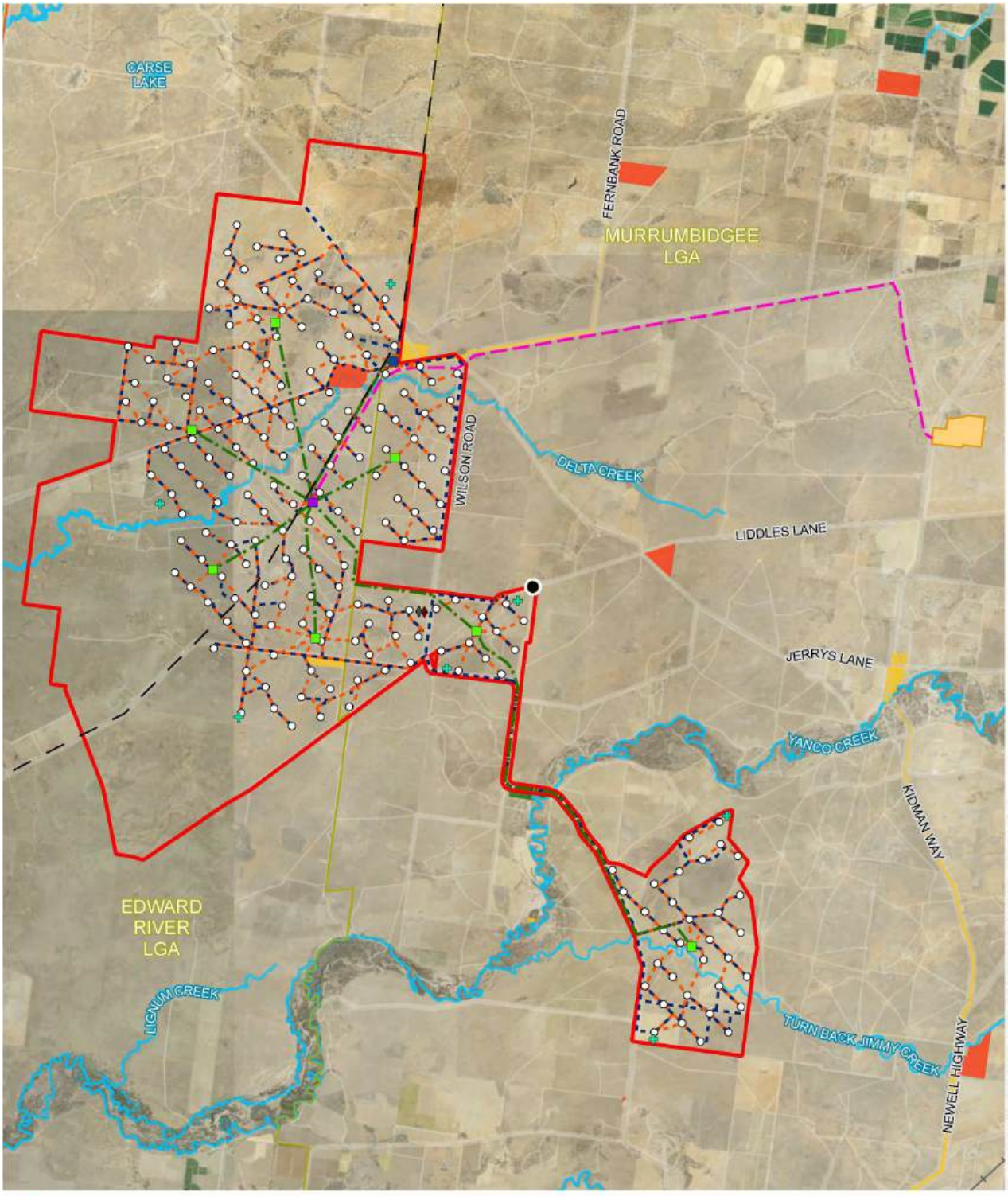

Figure 4-16 Travelling Stock Routes near the Project

5. Potential construction impacts

5.1 Construction schedule

Subject to planning approval, construction of the Project is expected to commence in 2024/2025. The construction duration of the Project would be approximately 36 months. Commercial operations of the first commissioned WTGs would commence in 2025/2026, in line with the completion and commissioning of the Dinawan Terminal Station and Project EnergyConnect.

An indicative construction schedule is shown in **Table 5-1**. The precise timing of construction activities, however, would be adapted based on construction needs.

5.2 Construction hours

The majority of construction activities would be carried out during the following hours:

- 7 am - 6 pm Monday to Friday
- 8 am - 1 pm on Saturdays
- No work on Sundays or Public Holidays.

Certain activities would require work to be conducted outside normal work hours. This is relevant for wind farm construction, as the cranes used for installation of WTGs cannot operate in high winds. In order to minimise delays in construction program, work outside of standard construction hours would be required to make up for time lost during high wind days. Other activities that would be carried out outside of the standard daytime construction hours or extended hours may include:

- Work to prevent damage to concrete tower bases and trenches
- Work to reduce the safety risk of open trenches and reduce the risk of tower self-oscillation
- Concrete pours, in-ground electrical work and WTG installation
- Work determined to comply with the relevant noise management level at the nearest sensitive receiver
- The delivery of materials outside approved hours as required by the NSW Police or other authorities for safety reasons
- Emergency situations where it is required to avoid the loss of lives and properties and/or to prevent environmental harm
- Situations where agreement is reached with Project landowners and neighbours.

5.3 Construction site access

Access to the Project would be via a designated and upgraded access track from Liddles Lane, four kilometres east of Wilson Road. The site access would be constructed in accordance with Austroads Guide to Road Design and would take into account Safe Intersection Sight Distance (SISD).

Table 5-1 Indicative construction schedule

Construction phase	Year 1				Year 2				Year 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Site set-up and civil works												
Road construction												
Excavation & foundation construction												
Electrical installation												
Turbine delivery and erection												
Turbine commissioning and testing												
Construct electrical substations												
Construct transmission line												
Commission operational infrastructure												
Decommission temporary structures												

5.4 Construction traffic generation and distribution

There are no published traffic generation rates for wind farms in the TfNSW trip generation guidelines. Accordingly, a first principles approach has been adopted to determine the amount of traffic generated by the Project. The main traffic generating activities associated with the construction of the Project include the transportation of staff and the haulage of raw construction materials, turbine components and other specialist equipment to the Project. Further details on these traffic generating activities are provided in the sections below.

5.4.1 Construction staff

The workforce is anticipated to comprise up to 300 employees during peak construction periods, generating up to 600 trips per day. For the purpose of this traffic and transport assessment, a single 'trip' is defined as consisting of two one-way movements. A 'movement' is defined as a single, one-way, vehicle pass-through. For instance, the 600 trips generated by construction staff consists of 300 movements to the Project area and 300 movements from the Project area per day. Outside of peak construction periods, the Project is anticipated to consist of a workforce made up of up to 150 people per day, generating 300 trips per day.

The peak hours of traffic generation would be the hour prior to shift commencement (6:00 am to 7:00 am) and hour after shift end (6:00 pm to 7:00 pm). It is anticipated that construction staff would travel to the Project using a mix of light vehicles including sedans, four-wheel drives, light utility trucks and vans.

Construction staff are expected to commute daily to the Project from established accommodation facilities within local townships. The origin of construction workers is assumed to be approximately proportionate to the local township population and inversely proportionate to the distance between the local township and the Project, with 30 per cent of workers expected to access the Project via Kidman Way (B87) from the north and 70 per cent of workers expected to access the Project via the Newell Highway (A39) and Kidman Way (B87) from the south. The indicative number of workers commuting from each local township is shown in **Table 5-2**.

Table 5-2 Indicative origin of construction workers

Township / locality[1]	Population	Distance to Project (km)	Number of workers
Barooga	1820	114	11
Berrigan	1260	91	9
Carrathool	300	143	4
Cobram	6010	113	29
Coleambally	1330	51	13
Corowa	5500	156	26
Darlington Point	1020	80	9
Daysdale	190	114	4
Deniliquin	6880	85	34
Finley	2520	81	15
Jerilderie	1030	45	12
Koonoomoo	260	107	5
Leeton	11240	127	52
Oaklands	240	96	5
Tocumwal	2680	102	15
Urana	300	83	5

Township / locality[1]	Population	Distance to Project (km)	Number of workers
Whitton	500	106	5
Yanco	510	120	5
Yarrawonga	7930	133	37
Yarroweyah	550	127	5
		Total	**300**

[1] Based on townships identified in Table 4-5 in the Project's Socio-economic impact assessment technical report (Jacobs, 2022)

5.4.2 Turbine components and specialist equipment

Turbine components and other specialist equipment would be imported from overseas. The components are expected to be shipped to the Port of Geelong and then transported to the Project utilising the road network.

Subject to the final turbine design, each turbine is expected to involve the transportation of up to 19 individual components. As shown in **Table 5-3**, this would include up to seven tubular steel tower sections, up to six nacelle modules and six blades. OSOM vehicles would be required to deliver the turbine components to the Project. It is anticipated that a convoy of three OSOM vehicles would travel from the Port of Geelong to the Project overnight. In addition, two or three light vehicles would escort each convoy of OSOM vehicles. All OSOM movements would occur outside of peak traffic periods to minimise impacts on the road network. OSOM vehicle requirements and haulage routes are detailed in **Section 5.12**.

Other specialist components (e.g. BESS modules) originating from Port Geelong are expected to be delivered in standard shipping containers by heavy vehicles. The majority of heavy traffic movements from Port Geelong are anticipated to occur between 7:00 am to 6:00 pm and are assumed to be distributed evenly within the time period.

Table 5-3 Indicative quantity of turbine components to be transported to the Project

Turbine component	Description	Quantity per turbine	Vehicle movements per turbine	Project quantity
Tower	Tapered tubular steel tower sections	Up to 7 sections	Up to 7	1,470
Nacelle	Several modularised options are available to optimise transportation including: ▪ 3 modules (heaviest module <89t) - Hub, nacelle and drive train ▪ 4 modules (heaviest module <81t) - Hub, nacelle, drive train and transformer ▪ 6 modules (heaviest module <59t) - Hub, nacelle, drive train, transformer and generator	Up to 6 modules	Up to 6	1,260
Blades	Split blade design (two-pieces per blade, three blades per turbine) fiberglass infusion and carbon pultruded-moulded components.	6	6	1,260
	Total	**19**	**19**	**3,990**

Source: Siemens Gamesa Renewable Energy, 2021

5.4.3 Raw materials and equipment

Traffic generated by the transportation of raw material and equipment was calculated using the quantities and volumes required to construct the Project and the available loading or cubic capacity of haulage vehicles. The following assumptions were developed in consultation with the Proponent to determine the number of trips generated by the transportation of raw materials and equipment during construction of the Project:

- Gravel required for the construction of internal access tracks would be 100 per cent sourced internally from the on-site gravel pit(s)
- Concrete would be 100 per cent sourced internally from the on-site concrete batch plants
- Water for concrete production would be sourced and transported externally to site
- Sand and other fine aggregates for concrete production would be 100 per cent sourced internally from the on-site gravel pit(s)
- Gravel and other coarse aggregates for concrete production would be 100 per cent sourced externally from local quarries. Multiple local quarry sources have been assumed, with deliveries predominately arriving via the road network from the south (30 per cent/70 per cent north/south directional traffic split assumed)
- Heavy machinery would be sourced locally from townships including Deniliquin and transported via low-loader. Heavy machinery is assumed to remain on-site for the duration of several assignments
- Other miscellaneous equipment (e.g. prefabricated site offices, fencing, portaloos, concrete batch plants) and materials (e.g. reinforcing steel, fuel, cement) would be sourced from local suppliers, with deliveries predominately arriving via the road network from the south (30 per cent/70 per cent north/south directional traffic split assumed).

For the assessment, it has been assumed that typical heavy vehicles would comprise Truck and Dog Trailers (3 Axle Rigid Truck and 4 Axle Dog Trailer) and Semi-Trailers. However, it is acknowledged that 26 metre B-double heavy and Performance Based Standards (PBS) vehicles could be used, which may achieve higher productivity and reduce the total number of heavy vehicle movements required.

5.4.4 Summary of construction traffic generation and distribution

Table 5-4 provides a summary of the anticipated traffic movements on the local and State road network as a result of the Project. Detailed calculations are provided in **Appendix A**. The following assumptions were made in the calculation of average daily and peak hour trips:

- All light vehicle movements associated with the transportation of construction staff to the Project would occur within one hour before shift start (6:00 am to 7:00 am on weekdays and 7:00 am to 8:00 am on Saturdays) and one hour after shift end (6:00 pm to 7:00 pm on weekdays and 1:00 pm to 2:00 pm on Saturdays)
- The traffic generation rate in the peak periods is expected to be one light vehicle per worker
- The majority of heavy traffic movements are expected to occur during standard working hours and would be distributed evenly within the time period
- OSOM vehicle movements assumed to occur as a convoy of three OSOM vehicles and would occur overnight.

Table 5-4 Indicative average and peak construction traffic generation

	Daily trips		Peak hour trips	
Vehicle class	Average construction	Peak construction	Average construction	Peak construction
Light	385	610	190	300
Heavy	85	160	5	10
Oversized overmass	6	6	0	0
Total	**476**	**776**	**195**	**310**

The expected distribution of vehicles on the local road network during the morning and evening peaks is shown in **Figure 5-1** and **Figure 5-2**, respectively.

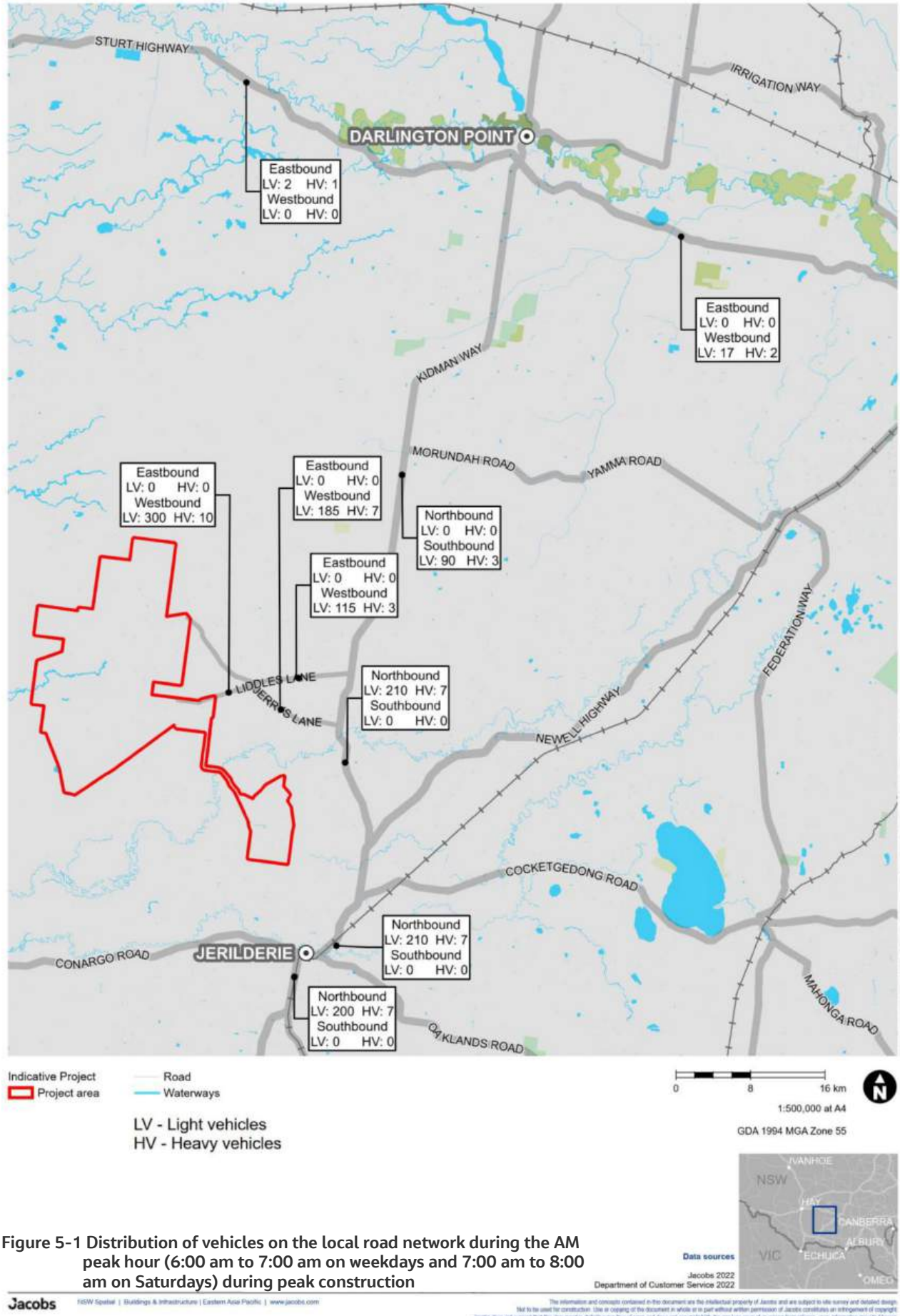

Figure 5-1 Distribution of vehicles on the local road network during the AM peak hour (6:00 am to 7:00 am on weekdays and 7:00 am to 8:00 am on Saturdays) during peak construction

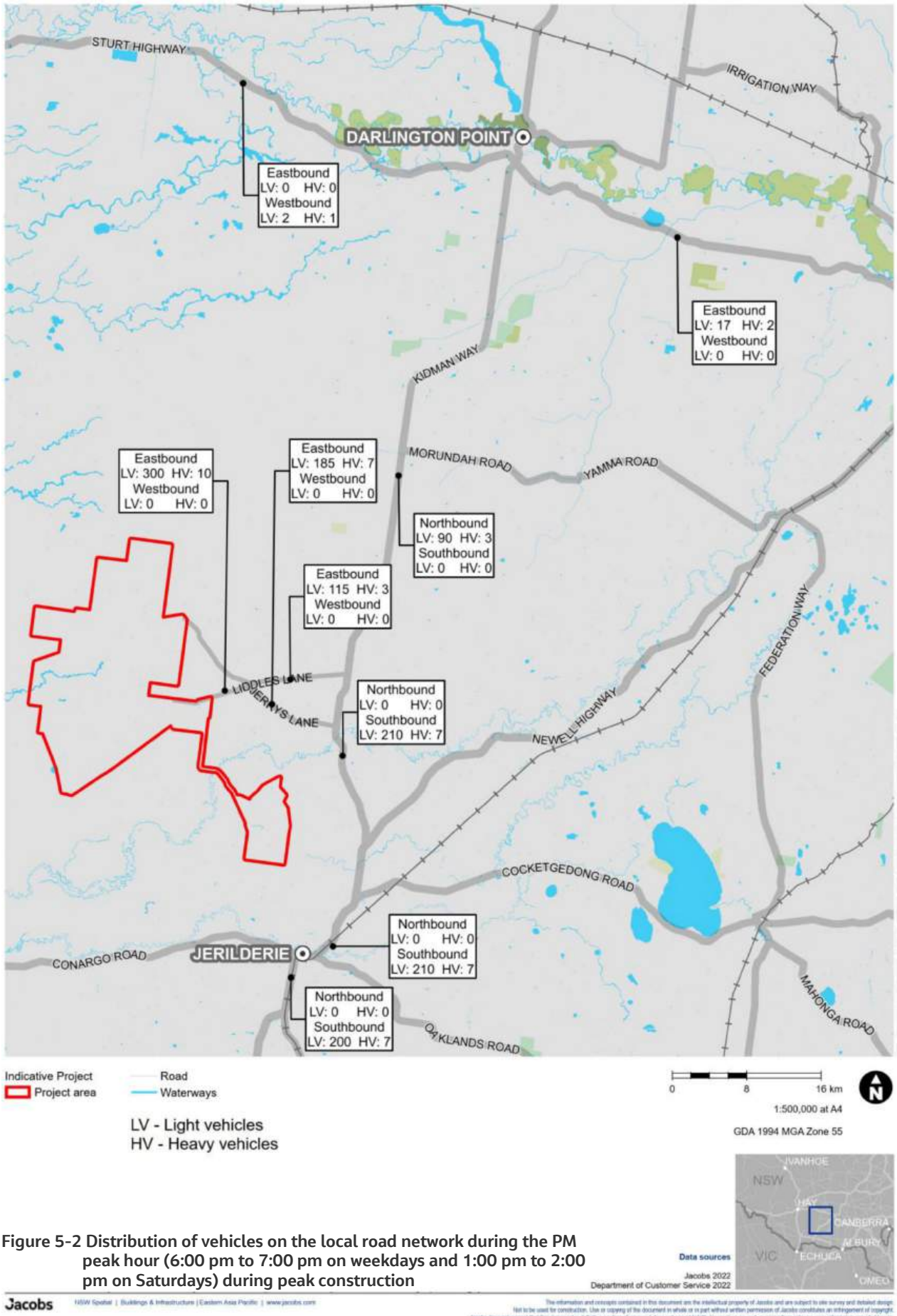

Figure 5-2 Distribution of vehicles on the local road network during the PM peak hour (6:00 pm to 7:00 pm on weekdays and 1:00 pm to 2:00 pm on Saturdays) during peak construction

5.5 Impacts on road capacity and performance

A mid-block capacity assessment has been conducted to assess the impact of the Project on road capacity and performance. As discussed in **Section 3.2.1**, this approach is considered to be appropriate given the rural location of the Project where intersections are less frequent, and as such, are less of a determinant of rural road capacity (Roads and Traffic Authority, 2002).

The mid-block capacity assessment was undertaken for 6:00 am to 7:00 am and from 6:00 pm to 7:00 pm on weekdays only as these periods present the highest cumulative traffic volumes during the construction of the Project and therefore represent a worst-case scenario as the available spare capacity of the road network is at its most limited during these periods. It should be noted that the capacity assessment is conservative as it assumes that:

- All light vehicle movements associated with the transportation of construction staff to the Project would occur within one hour before shift start (6:00 am to 7:00 am) and one hour after shift end (6:00 pm to 7:00 pm)
- The traffic generation rate in the peak periods would be one light vehicle per worker (i.e., no car-pooling or shuttle buses are assumed), generating a maximum of 300 one-way vehicle movements during each of the peak hour periods
- Construction of the Project would commence in 2024/2025 and would be completed over approximately 36 months. Accordingly, the year 2027 has been selected as the assessment year as it encompasses the greatest background traffic and therefore presents as the worst-case scenario.

The results of the mid-block capacity assessment for the 'without Project' (without vehicles associated with construction of the Project) and the 'with Project' (with vehicles associated with peak construction of the Project) scenarios are presented in **Table 5-5.** The results indicate that all roads would operate satisfactorily at a LoS A in 2027 without the construction of the Project. These results indicate that the network will be operating well within its capacity in 2027, which is primarily due to the low volumes present. Under the 'with Project' scenario (with vehicles associated with construction of the Project) all roads in the study area are expected to continue to perform at a LoS A, with the exception of one section of Liddles Lane (west of Jerrys Lane) and one section of the Newell Highway located within the township of Jerilderie (Jerilderie Street). These sections of road would experience a decrease in LoS from A to B during the morning and evening peak hours, however the flow of traffic would remain within the zone of stable flow and is above the LoS C that is commonly accepted as a minimum desirable standard for road networks in rural areas. Therefore, impacts to road performance would be minor and the existing road network is expected to have sufficient capacity to accommodate the traffic demand during the peak construction period of the Project.

Table 5-5 Comparison of mid-block peak hourly Level of Service during Project construction (2027)

Road	Road type	Peak period	Direction of travel	Without construction of Project			With construction of Project		
				Volume (pcu/hr)	Volume to capacity ratio (V/C)	Level of Service (LoS)	Volume (pcu/hr)	Volume to capacity ratio (V/C)	Level of Service (LoS)
Liddles Lane	Local (unsealed, no posted speed limit)	AM	Eastbound	<5	<0.01	A	<5	<0.01	A
			Westbound	<5	<0.01	A	321	0.32	B
		PM	Eastbound	<5	<0.01	A	320	0.32	B
			Westbound	<5	<0.01	A	<5	<0.01	A
Jerrys Lane	Local (unsealed, no posted speed limit)	AM	Eastbound	<5	<0.01	A	<5	<0.01	A
			Westbound	<5	<0.01	A	200	0.20	A
		PM	Eastbound	<5	<0.01	A	199	0.20	A
			Westbound	<5	<0.01	A	<5	<0.01	A
Kidman Way (B87)	Highway (sealed, 100 km/h)	AM	Northbound	16	0.01	A	240	0.14	A
			Southbound	11	0.01	A	101	0.06	A
		PM	Northbound	30	0.02	A	120	0.07	A
			Southbound	24	0.01	A	248	0.15	A
Newell Highway (A39)	Highway (sealed, 110 km/h)	AM	Northbound	56	0.03	A	280	0.16	A
			Southbound	29	0.02	A	29	0.02	A
		PM	Northbound	70	0.04	A	70	0.04	A
			Southbound	99	0.06	A	323	0.19	A
Jerilderie Street (A39)	Town (sealed, 50 km/h)	AM	Northbound	56	0.06	A	270	0.30	B
			Southbound	29	0.03	A	29	0.03	A

Road	Road type	Peak period	Direction of travel	Without construction of Project			With construction of Project		
				Volume (pcu/hr)	Volume to capacity ratio (V/C)	Level of Service (LoS)	Volume (pcu/hr)	Volume to capacity ratio (V/C)	Level of Service (LoS)
		PM	Northbound	70	0.08	A	70	0.08	A
			Southbound	99	0.11	A	313	0.35	B
Sturt Highway (A20)	Highway (sealed, 110 km/h)	AM	Eastbound	34	0.02	A	36	0.02	A
			Westbound	66	0.04	A	87	0.05	A
		PM	Eastbound	58	0.03	A	80	0.05	A
			Westbound	53	0.03	A	55	0.03	A

5.6 Turn warrant assessment

Turn warrant assessments were performed using the morning peak period of construction traffic generation (6:00 am to 7:00 am) to determine whether traffic associated with Project construction would require a higher-order turn treatment in comparison to the forecast 2027 traffic volumes. Morning peak traffic volumes have been used in the assessment as they present the hourly period with the greatest major road traffic volume (Q_M), and as such, represent a worst-case scenario. The results are shown in **Table 5-6**.

Table 5-6 Turn warrant assessment (AM peak hour)

			Left turn from Kidman Way			Right turn from Kidman Way		
Scenario	Major Road	Minor Road	Q_M (veh/h)	Q_L (veh/h)	Recommended treatment	Q_M (veh/h)	Q_R (veh/h)	Recommended treatment
Kidman Way / Liddles Lane								
Without Project	Kidman Way	Liddles Lane	10	<5	Basic left	30	<5	Basic right
With Project	Kidman Way	Liddles Lane	10	40	Basic left	60	70	Basic right
Kidman Way / Jerrys Lane								
Without Project	Kidman Way	Jerrys Lane	10	<5	Basic left	25	<5	Basic right
With Project	Kidman Way	Jerrys Lane	10	170	Basic left	190	20	Basic right

Notes:

80/20 Jerrys Lane/Liddles Lane traffic split assumed for northbound light vehicles

20/80 Jerrys Lane/Liddles Lane traffic split assumed for southbound light vehicles

The turn warrant assessment indicates that a basic left-turn and basic right-turn treatment is sufficient at the Kidman Way / Liddles Lane and Kidman Way / Jerrys Lane intersections under the 'without Project' and 'with Project' scenarios. Therefore, construction traffic volumes would not trigger a higher-order turn treatment at assessed intersections.

It is acknowledged that the results of this turn warrant assessment assume an 80 per cent/20 per cent Jerrys Lane/Liddles Lane traffic split for light construction vehicles travelling on Kidman Way in the northbound direction and a 20 per cent/80 per cent Jerrys Lane/Liddles Lane traffic split for light construction vehicles travelling on Kidman Way in the southbound direction.

5.7 Impacts on road safety

As outlined in **Section 4.5.1**, no crashes were reported at the Kidman Way / Liddles Lane and Kidman Way / Jerrys Lane intersections during the five-year period between 2016 and 2020. Additional vehicles using these intersections are unlikely to have an impact on future crash frequency due to overall low construction traffic volumes, and good available sight distances to key intersections in the study area. In addition, the turn warrant assessments (which are based on achieving a specific level of safety performance) indicate that the existing turn treatments would be suitable to accommodate the forecast traffic volumes generated by the Project. Beyond these key intersections, all roads in the study area are expected to have sufficient spare mid-block capacity to accommodate additional traffic volumes generated by the Project without adversely impacting the operation or safety of the existing road network.

As outlined in **Section 4.5.1**, 39 per cent of crashes in the area occurred in dark lighting conditions. The majority of construction vehicle movements are anticipated to occur outside of periods with dark lighting in line with the proposed construction hours outlined in **Section 5.2**. Moreover, 28 per cent of crashes in the area involved speeding and 23 per cent involved fatigue as a contributing factor. To minimise the risks of speeding and fatigue, as well as other road safety risks and contributing factors, appropriate driver induction,

training, safety measures and protocols will be detailed in a Construction Traffic Management Plan (CTMP) and Driver Code of Conduct. All construction personnel will be required to adhere to the CTMP and Driver Code of Conduct. The Driver Code of Conduct is further discussed in **Chapter 9**.

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

All OSOM vehicle movements will be subject to a separate Transport Management Plan which will identify the potential impacts of OSOM vehicles on road safety and detail the relevant safety measures to be implemented, where required.

5.8 Impacts on public transport

5.8.1 Bus services and facilities

Impacts to regional coach or local school bus services are expected to be negligible given the available spare capacity of the road network and the occurrence of peak construction traffic movements outside of typical school travel periods and the timetabled coach services. The construction of the Project would not impact the operation of bus stops.

5.8.2 Rail services and facilities

As discussed in **Section 4.6**, there are no active rail facilities near the Project. However, rail level crossings are located on the proposed OSOM haulage route from Port Geelong. OSOM combinations in excess of 26 metres in length or 4.9 metres in height are permitted to traverse all level rail crossings on the proposed OSOM haulage route subject to permission from the Victoria Department of Transport. OSOM movements across level rail crossings would be scheduled to not impact rail services. As such, construction of the Project is expected to have a negligible impact on passenger and freight rail services.

5.9 Impacts on pedestrians and cyclists

As discussed in **Section 4.7**, there are no pedestrian or cycling facilities located near the Project. Impacts to pedestrians and cyclists would therefore be limited to minor amenity impacts at town centres due to the addition of light and heavy construction vehicles on the road network.

5.10 Impacts on parking

No impacts to existing car parking are expected as parking for construction vehicles would be provided within or next to the construction compound and laydown areas within the Project area, away from public roads.

5.11 Impacts on Crown land

As discussed in **Section 4.8**, a number of Crown roads are located within or near the Project. Primary access to the Project would be via a designated and upgraded access track from Liddles Lane, four kilometres east of Wilson Road. As such, Crown roads would not be relied upon for access to the Project. However, sections of these Crown roads may be used for vehicular access to permanent ancillary infrastructure and temporary facilities. Authority to access and / or use Crown roads during the construction of the Project will be sought from the Department of Planning and Environment in accordance with the *Crown Land Management Act 2016* and the NSW *Roads Act 1993*.

Crown roads within or near the Project generally experience no or very low traffic volumes as they function to provide access to privately-owned land. Accordingly, impacts to other Crown road users are expected to be negligible. Furthermore, the construction of the access track from Liddles Lane would not have any impacts on Crown land.

5.12 Impacts of oversized/overmass vehicles

5.12.1 Overview of oversized/overmass requirements

OSOM vehicles would be required to transport certain oversized or overmass equipment to the Project area during construction. Oversized equipment is expected to originate from Port Geelong and would generate the following OSOM vehicle movements:

- Up to 3,990 one-way oversized vehicle movements to transport turbine components to the Project
- Up to 10 one-way OSOM vehicle movements to transport prefabricated switchrooms structures / control buildings to the Project
- Up to 10 one-way OSOM vehicle movements to transport transformers to the Project.

All OSOM movements would occur overnight or outside of peak traffic periods to minimise impacts on the road network and would be accompanied by two or three light escort vehicles. Impacts on road user safety during transportation would be mitigated through the provision of a Construction Traffic Management Plan (CTMP), which would be developed in consultation with relevant road authorities and local councils of impacted townships.

5.12.2 Proposed oversized/overmass vehicle routes

As shown in **Figure 5-3,** two OSOM vehicle routes have been proposed between the Port of Geelong and the Project. The Shepparton Route Option 1 passes through Shepparton via the Goulburn Valley Freeway (A39) while the Shepparton Route Option 2 uses the existing OSOM approved route around Shepparton via the C391 (River Road, Doyles Road and Grahamvale Road). OSOM vehicles would travel along the following route between the Port of Geelong and the Project:

- Exit Dock laydown area at the Port of Geelong onto The Esplanade
- West on Madden Avenue
- North on Seabeach Parade
- West on St Georges Road
- North on Station Street
- Northeast along Princess Highway (A10)
- Northeast along Princes Freeway (M1) from Corio to Laverton North
- North along Metropolitan Ring Road (M80) from Laverton North to Thomastown
- North along Hume Freeway (M31) from Thomastown to Seymour
- North along Goulburn Valley Freeway (M39) from Seymour to Arcadia
- Continue onto Goulburn Valley Freeway (A39) at Arcadia
- Shepparton Route Option 1
    - Continue north along Goulburn Valley Freeway (A39) through Shepparton
- Shepparton Route Option 2
    - East along River Road (C391) at Kialla
    - Continue north along Doyles Road (C391) and Grahamvale Road (C391)
    - North along Goulburn Valley Freeway (A39) at Congupna
- Continue onto Newell Highway (A39) at Tocumwal
- North along Kidman Way (B87)
- West along Jerrys Lane to the Project.

Reported routes are preliminary proposed routes at the time of writing and are being updated/refined in consultation with relevant road authorities prior to official NHVR application

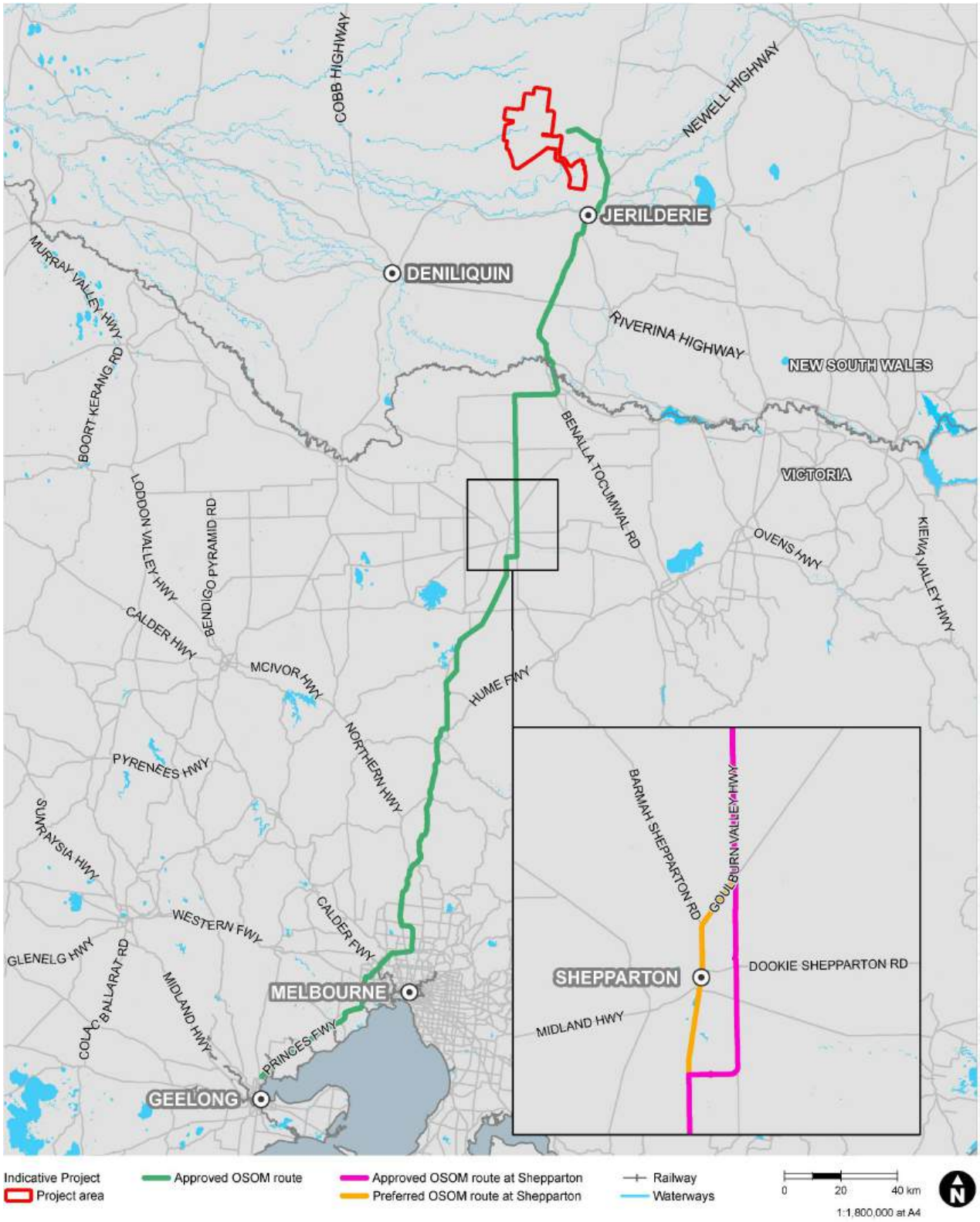

Figure 5-3 Proposed OSOM routes from Port of Geelong to the Project

5.12.3 OSOM route assessment

An OSOM route assessment was conducted to identify potential issues and pinch points on the proposed OSOM haulage routes from the Port of Geelong to the Project. In addition, a series of swept path assessments were undertaken using AutoTURN to identify locations where civil work or modifications would likely be required to facilitate the delivery of OSOM components to the Project. The assessments were performed at intersections and tight bends along the proposed OSOM transport routes using the vehicle dimensions required to transport the WTG blades as the blades are the largest component by size.

While the final design of the WTG is yet to be confirmed, this assessment has assumed a maximum blade length of 86 metres, resulting in an overall delivery vehicle length of 96 metres. The vehicle used in the assessment is shown in **Figure 5-4**. It is acknowledged, however, that the specialised vehicle used to transport the blades would be dependent the final design and the delivery contractor.

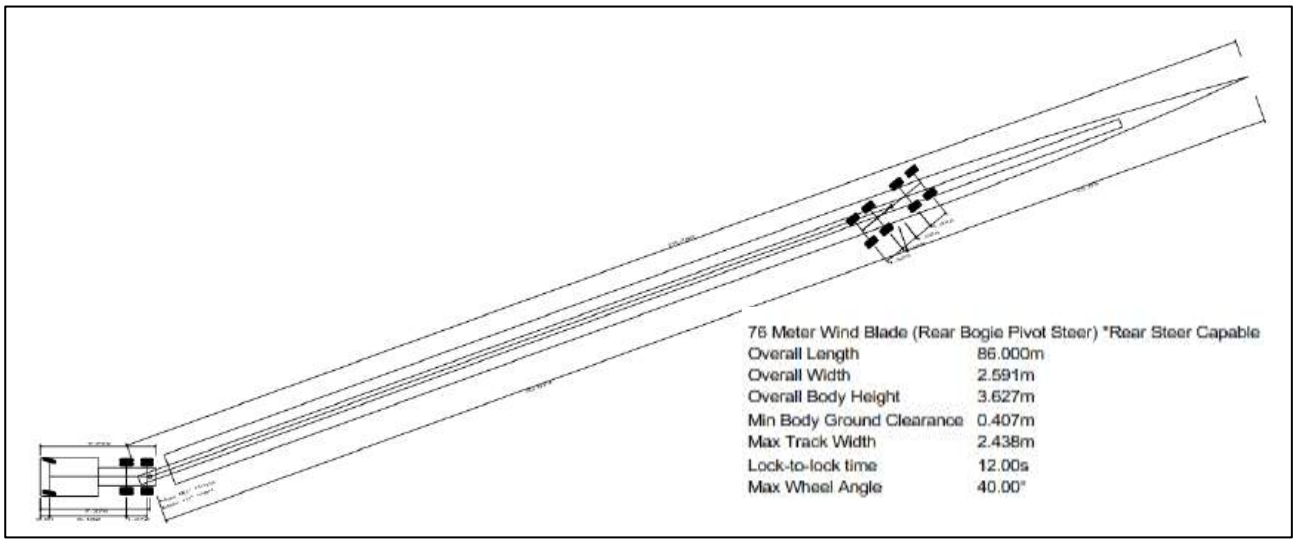

Figure 5-4 Proposed vehicle to transport the WTG blades

The following assessment limitations should be noted:

- The OSOM route assessment has not taken the vertical geometry of the route into account; this should be assessed once vehicle and load dimensions have been confirmed and prior to transportation
- Safe Intersection Sight Distance has not been assessed as the vehicles transporting the WTG equipment will be under escort and using flashing lights on an established road network during hours of reduced traffic volumes
- The OSOM route assessment has not taken into account potential impacts to pavement and culverts at intersections along the route; this should be assessed once vehicle and load dimensions have been confirmed and prior to transportation. Furthermore, a dilapidation report will be submitted with the proposed design in reference to Austroads Design guidelines.
- No survey data was provided for the assessment and instead existing intersection and road geometry was determined by aerial imagery.

Table 5-8 provides an overview of the potential impacts and associated measures required to accommodate the movement of OSOM vehicles on the route passing through Shepparton (Shepparton Route Option 1). **Table 5-9** provides the results for the alternative route (C391) that by-passes Shepparton via River Road and Doyles Road and Grahamvale Road (Shepparton Route Option 2). The swept path assessments are provided in **Appendix C**.

The results of the OSOM route assessment indicate that the route passing through Shepparton (Shepparton Route Option 1) would be the preferred route for OSOM vehicles. As summarised in **Table 5-7,** the OSOM route passing through Shepparton would require less modifications to accommodate the movements and OSOM vehicles would not have to use opposing traffic lanes under traffic management to navigate the section of the route. As OSOM movements are anticipated to occur on this section of the route between 1:00 am and 4:00 am when traffic volumes on the road network are very low and would be accompanied by pilot

vehicles, impacts to the road network at Shepparton and disruptions to other road users on this route are expected to be minimal.

Table 5-7 Comparison of OSOM routes options at Shepparton

Shepparton Route Option 1	Shepparton Route Option 2
There are no physical restrictions on the route, however an exemption permit would need to be obtained from the National Heavy Vehicle Regulator (NHVR).	▪ OSOM vehicles would need to navigate a 90 degree turn at the intersection Goulburn Valley Highway and River Road, requiring the temporary removal of road signs and street lighting, and the use of opposing traffic lanes under traffic management ▪ OSOM vehicles would need to navigate three roundabout that would require the temporary removal of road signs, power poles and vegetation. Clearance of kerb upstand will need to be checked to avoid grounding ▪ Boom gates at the level crossing on Grahamvale Road would likely need to be temporarily removed ▪ Intersection of Goulburn Valley Highway and Grahamvale Road would require the temporary removal of road signs, power poles.

To manage OSOM vehicles, an exception permit will be sought from the National Heavy Vehicle Regulator to enable OSOM movements on the section of Goulburn Valley Freeway (A39) in Shepparton. This permit will undergo a separate approval process and a suitable contractor will be engaged for transportation. As part of the permit, the subcontractor would develop a Transport Management Plan and determine the suitable route and modifications needed based on the required OSOM vehicle dimensions and mass in consultation with the Proponent and the National Heavy Vehicle Regulator. These traffic movements would be undertaken at night under pilot vehicle escort and in accordance with any OSOM permit conditions.

The following agencies have been contacted regarding the preferred OSOM route (Shepparton Route Option 1) and any proposed road modifications (refer to **Table 5-8**) for which they are the designated road authority):

- Victoria Department of Transport
- Greater City of Geelong Council
- Murrumbidgee Council
- Transport for New South Wales.

Table 5-8 OSOM route assessment for preferred route through Shepparton (Route Option 1)

Key	
	Modifications are likely required
	Modifications likely not required; however other actions are needed
	Modifications likely not required

Distance from Port	Location	Potential issue(s)	Actions or modifications required
3.0 km	Madden Avenue	Entry from laydown area to Madden Avenue with Low Overhead cables present.	Checks need to be carried out to ensure there is sufficient clearance under overhead cables.
3.2km	Seabeach Parade right turn from Madden Avenue	Low Overhead cables and street electrical poles.	Further detailed assessment using a vehicle tracking software to confirm that his movement is possible.
3.4 km	St Georges Road left turn from Seabeach Parade	The left turn may not be possible for a 90-metre-long vehicle due to geometric constraints and the presence of electrical poles, road signs and street lighting.	Transport vehicles in excess of 26 metres would have to make use of opposing traffic lanes under traffic management to navigate this bend onto George Street. In addition electrical poles with overhead wires in close proximity to the road may restrict movement of a 90m long transport vehicle.
3.6 km	St Georges Road level crossing	Transportation of blades is likely to impact low overhead cables and level crossing boom gate.	Crossing the rail line will require coordination with rail authorities and a permit will need to be obtained from the Victoria Department of Transport (DoT). In addition, overhead rail signal equipment on approach to level crossing will need to be checked to confirm that the OSOM vehicle and load can pass.
4.0 km	Roundabout at Station Street and St Georges Road	Road signs and vegetation within the roundabout, traffic islands may be impacted. In addition, electrical poles with overhead wires in close proximity to the road may restrict movement of a 90m long transport vehicle.	Street lighting with overhead wires, and vegetation and road sign located within roundabout would need to be temporarily removed.

Distance from Port	Location	Potential issue(s)	Actions or modifications required
4.4 km	189 Station Street to 298 Princes Highway	Low overhead cables	Clearance under the overhead cables would need to be assessed to confirm that the OSOM vehicle and load can pass.
5.1 km	Intersection of Station Street and Princes Highway	Intersection geometry restricts the movement of a 90-metre-long vehicle. Traffic signals, light column with overhead wires and traffic signs impacted. There is also potential impact to BP signage.	The vehicle would need to utilise the southbound lanes of Station Street after departing the roundabout and may also need to cross medians to the enable manoeuvre. In addition, traffic signals, light column with overhead wires and traffic signs would need to be temporarily removed. BP signage may also need to be temporarily removed.
7.7 km	Princes Highway on-ramp under Geelong Ring Road bridge	Overpass bridge	Confirm there is adequate clearance for the OSOM vehicle and load to pass underneath the bridge.
12.6 km	Princes Freeway under Avalon Road bridge	Overpass bridge	Confirm there is adequate clearance for the OSOM vehicle and load to pass underneath the bridge.
16.3 km	Princes Freeway under Beach Road bridge	Overpass bridge	Confirm there is adequate clearance for the OSOM vehicle and load to pass underneath the bridge.
23.1 km	Princes Freeway under Point Wilson Road on-Ramp bridge	Overpass bridge	Confirm there is adequate clearance for the OSOM vehicle and load to pass underneath the bridge.
24.7 km	Bridge over Little River	Bridge over Little River has a 49.5 tonne mass limit	Confirm the OSOM vehicle and load does not exceed the 49.5 tonne mass limit.
25.9 km	Princes Freeway under Little River Road bridge	Structure has minimum clearance of 5 metres for eastbound vehicles	Confirm the OSOM vehicle and load does not exceed 5 metres in height.
29.5 km	Average speed camera gantry	Overhead gantry	Confirm there is adequate clearance for the OSOM vehicle and load to pass underneath the average speed camera gantry.
32.9 km	Sign gantry	Overhead gantry	Confirm there is adequate clearance for the OSOM vehicle and load to pass underneath the sign gantry.

Distance from Port	Location	Potential issue(s)	Actions or modifications required
33.9 km	Princes Freeway under William Thwaites Drive bridge	Overpass bridge	Confirm there is adequate clearance for the OSOM vehicle and load to pass underneath the bridge.
35 km	Princes Freeway under Metropolitan Farm Road bridge	Overpass bridge has a 4.8 metre height clearance eastbound.	Verify that load height does not exceed 4.8 metres in height.
33.9 km	Princes Freeway under Duncans Road bridge	Overpass bridge has a 4.8 metre height clearance eastbound.	Confirm there is adequate clearance for the OSOM vehicle and load to pass underneath the bridge.
41.1 km	Maltby Bypass under Sneydes Road bridge	Overpass bridge	Confirm there is adequate clearance for the OSOM vehicle and load to pass underneath the bridge.
81.1 km	M80 East of Sydney Road to M31 onramp	Road works	Ongoing night road works will require loads wider than 3.5 metres to use an alternative route. The road works are anticipated to be completed by mid-2023.
245 km	Goulburn Valley Highway at Shepparton between River Road and Balaclava Road	OSOM vehicles are restricted	Exemption permit would need to be obtained from the National Heavy Vehicle Regulator (NHVR).
245 km	Level crossing on Goulburn Valley Highway at Shepparton	Overhead rail signal equipment and level rail crossing	Crossing the rail line will require coordination with rail authorities and a permit will need to be obtained from the Victoria Department of Transport (DoT). In addition, the overhead rail signal equipment on the approach to level crossing will need to be checked to confirm that the OSOM vehicle and load can pass.
245 km	Goulburn Valley Highway at Shepparton between Balaclava Road and Brauman Street	OSOM vehicles are conditionally approved	Exemption permit would need to be obtained from the National Heavy Vehicle Regulator (NHVR).

Distance from Port	Location	Potential issue(s)	Actions or modifications required
298 km	Intersection of Goulburn Valley Highway and Murray Valley Highway	Road signs and street lighting	Road signs and street lighting would need to be temporarily removed. In addition, the vehicle would have to make use of opposing traffic lanes under traffic management to navigate the intersection.
303 km	Level crossing at Strathmerton	Level rail crossing	A permit from the DoT would be required for vehicle and equipment combinations that exceed 26 metres in length and 4.6 metres in width.
306 km	Intersection of Murray Valley Highway and Goulburn Valley Highway at Yarraweyah	Road signs, Caltex petrol station signage and street lighting	Road signs, Caltex petrol station signage and street lighting would need to be temporarily removed. In addition, the vehicle may have to make use of opposing traffic lanes under traffic management to navigate the intersection.
321 km	Roundabout at Tuppal Road, Deniliquin Road and Newell Highway	Roundabout	Swept path assessment indicates modifications are likely not required (pending confirmation of route, vehicle and load configurations / dimensions).
380 km	Intersection of Newell Highway with Conargo Road, Jerilderie	Road signs impacted	Swept path assessment indicates road signs would need to be temporarily removed. In addition, the vehicle would have to make use of opposing traffic lanes under traffic management to navigate the intersection.
393 km	Newell Highway onto Kidman Way	Road signs impacted	Swept path assessment indicates minor earthworks may be required to provide level roadside environment to support the path of travel. In addition, the vehicle would have to make use of opposing traffic lanes under traffic management to navigate the intersection.
406 km	Kidman Way onto Jerrys Lane	Pavement edge is not very clear on Google ariel imagery. Intersection requires further investigation	Swept path assessment indicates the intersection would require upgrading with additional hardstand and possible culvert extension. In addition, the vehicle would have to make use of opposing traffic lanes under traffic management to navigate the intersection. Confirm with Council the pipe class of the existing culvert to determine if it will have sufficient capacity to support the expected vehicle loads.
417 km	Jerrys Lane onto Liddles Lane	Left turn movement – radius may be too small for 90m transportation/load combination.	Swept path assessment indicates vegetation clearance and intersection widening would likely be required.

Distance from Port	Location	Potential issue(s)	Actions or modifications required
423 km	Right hand bend on Liddles Lane	Right hand bend – radius may be too small for 90 metre transportation/load combination.	Carriageway widening and removal of fence may be required
425 km	Liddles Lane intersection with Wilson Road	Left turn movement – radius may be too small for 90m transportation/load combination.	Swept path assessment indicates the intersection would require upgrading with extra hard standing
425 km	Liddles Lane intersection with Wilson Road Unsealed roads	Right turn movement – radius may be too small for 90m transportation/load combination.	Swept path assessment indicates the intersection would likely require widening
428 km	Wilson Road southbound into Moonbria Road – unsealed road	Right turn movement – radius may be too small for 90m transportation/load combination.	Swept path assessment indicates the intersection would likely require widening
437 km	Wilson Road bridge over Yanco Creek	Wilson Road is not an OSOM approved route.	Bridge weight structure should be assessed to determine suitability for equipment and load combination to be transported along this route.

Table 5-9 OSOM route assessment for the alternative route bypassing Shepparton (Route Option 2)

Key	
	Modifications are likely required
	Modifications likely not required; however other actions are needed
	Modifications likely not required

Distance from Port	Location	Potential issue(s)	Actions or modifications required
240 km	Goulburn Valley Highway Right turn to River Road	Right turn movement is likely to impact street lighting column and road signs	Road signs and street lighting would need to be temporarily removed. In addition, the vehicle may have to make use of opposing traffic lanes under traffic management to navigate the intersection.
247 km	Roundabout with Doyles Road/Midland Highway and Benalla Road	Roundabout island impacted. Blades may likely pass over island which may impact road signs and vegetation.	Road signs and some vegetation including some established trees within the roundabout would need to be temporarily removed to allow for transport vehicle to travel across parts of the roundabout. Clearance of kerb upstand will need to be checked to avoid grounding.
249 km	Roundabout with Doyles Road and Old Dookie Road	Roundabout island impacted. Blades may likely pass over island which may impact road signs.	Road signs would need to be temporarily removed to allow for transport vehicle to travel across parts of the roundabout. Clearance of kerb upstand will need to be checked to avoid grounding.
250 km	Roundabout with Doyles Road and New Dookie Road	Roundabout island impacted. Blades may likely pass over island which may impact road signs.	Road signs would need to be temporarily removed to allow for transport vehicle to travel across parts of the roundabout. Clearance of kerb upstand will need to be checked to avoid grounding.
251 km	S-bend at level crossing on Grahamvale Road	Geometry of s-bend may be unsuitable for 90-metre-long transport vehicle/equipment combination.	Crossing the rail line will require coordination with rail authorities and a permit will need to be obtained from the DoT. In addition, road signs, street lighting and boom gate at level crossing would need to be temporarily removed and the vehicle may have to make use of opposing traffic lanes under traffic management to navigate the bend.

Distance from Port	Location	Potential issue(s)	Actions or modifications required
275 km	Intersection of Goulburn Valley Highway and Grahamvale Road	Road signs and possibly street lighting impacted	Road signs and possibly street lighting would need to be temporarily removed. A reverse camber is noted at this location. This will need to be check and verified that any adverse crossfall is suitable for transport vehicle and load combination making this turn.

5.13 Impacts of hazardous or dangerous goods

The transport of hazardous or dangerous goods is not expected to be required for the construction of the Project.

If transport of hazardous or dangerous goods is required, transport will be undertaken in accordance with the following standards and codes:

- State Environmental Planning Policy (Resilience and Hazards) 2021
- Australian Code for the Transport of Dangerous Goods by Road & Rail (National Transport Commission 2020)
- AS/NZS 4452:1997 The storage and handling of toxic substances (Joint Standards Australia/Standards New Zealand 1997).

6. Potential operation impacts

6.1 Operational traffic generation and distribution

Operation of the Project would occur 24 hours per day, 365 days per year. Traffic generation resulting from operation of the Project would be limited to a small number of traffic movements associated with specialist maintenance staff, functional tests and facility upkeep activities.

The operational workforce is anticipated to comprise up to 30 employees, generating up to 60 trips per day (30 movements to the Project and 30 movements from the Project per day), as shown in **Table 6-1**. For the purpose of this traffic assessment, is has been conservatively assumed that all 30 employees would arrive and depart concurrently during the peak hours.

Operational staff would likely commute to the Project daily from local townships using a mix of light vehicles only. The geographic origin of staff is anticipated to be similar to construction workers, with 30 per cent of workers expected to access the Project area via Kidman Way (B87) from the north and 70 per cent of workers expected to access the Project area via the Newell Highway (A39) and Kidman Way (B87) from the south.

Table 6-1 Indicative operational traffic generation

Vehicle class	Daily trips	Peak hour trips (one-way)
Light	60	30
Heavy	-	-
OSOM	-	-

6.2 Impacts on road capacity and performance

A mid-block capacity assessment has been undertaken to assess the operational impacts of the Project on road capacity and performance. It should be noted that the mid-block capacity assessment is conservative as it assumes that:

- All light vehicle movements associated with the transportation of operational staff to the Project would occur within one hour before shift start (6:00 am to 7:00 am) and one hour after shift end (6:00 pm to 7:00 pm)
- The traffic generation rate in the peak periods would be one light vehicle per worker, generating a maximum of 30 one-way vehicle movements during each of the peak hour periods
- Individual WTGs are expected to have an operational lifespan of approximately 30 years. As such, operation of the Project has been assumed to occur up until the year 2057. Accordingly, the year 2057 has been selected as the assessment year as it encompasses the greatest background traffic growth and therefore presents as the worst-case scenario.

The results of the mid-block capacity assessment for the 'without Project' (without vehicles associated with operation of the Project) and the 'with Project' (with vehicles associated with operation of the Project) scenarios are presented in **Table 6-2**. The results indicate that all roads would operate satisfactorily at a LoS A in 2057 without the operation of the Project. Under the 'with Project' scenario, all roads in the study area are expected to continue to perform at a LoS A. Therefore, no impacts to road performance are anticipated and the road network is expected to have sufficient capacity to accommodate the forecast workforce traffic generated during the operation of the Project.

Table 6-2 Comparison of mid-block peak hourly Level of Service during Project operation (2057)

Road	Road type	Peak period	Direction of travel	Without operation of Project			With operation of Project		
				Volume (pcu/hr)	Volume to capacity ratio (V/C)	Level of Service (LoS)	Volume (pcu/hr)	Volume to capacity ratio (V/C)	Level of Service (LoS)
Liddles Lane	Local (unsealed, no posted speed limit)	AM	Eastbound	<5	<0.01	A	<5	<0.01	A
			Westbound	<5	<0.01	A	32	0.03	A
		PM	Eastbound	<5	<0.01	A	30	0.03	A
			Westbound	<5	<0.01	A	<5	<0.01	A
Jerrys Lane	Local (unsealed, no posted speed limit)	AM	Eastbound	<5	<0.01	A	<5	<0.01	A
			Westbound	<5	<0.01	A	22	0.02	A
		PM	Eastbound	<5	<0.01	A	20	0.02	A
			Westbound	<5	<0.01	A	<5	<0.01	A
Kidman Way (B87)	Highway (sealed, 100 km/h)	AM	Northbound	23	0.01	A	43	0.03	A
			Southbound	15	0.01	A	25	0.01	A
		PM	Northbound	42	0.02	A	52	0.03	A
			Southbound	35	0.02	A	55	0.03	A
Newell Highway (A39)	Highway (sealed, 110 km/h)	AM	Northbound	85	0.05	A	105	0.06	A
			Southbound	45	0.03	A	45	0.03	A
		PM	Northbound	107	0.06	A	107	0.06	A
			Southbound	152	0.09	A	172	0.10	A
Jerilderie Street (A39)	Town (sealed, 50 km/h)	AM	Northbound	85	0.09	A	105	0.12	A
			Southbound	45	0.05	A	45	0.05	A

Road	Road type	Peak period	Direction of travel	Without operation of Project			With operation of Project		
				Volume (pcu/hr)	Volume to capacity ratio (V/C)	Level of Service (LoS)	Volume (pcu/hr)	Volume to capacity ratio (V/C)	Level of Service (LoS)
		PM	Northbound	107	0.12	A	107	0.12	A
			Southbound	152	0.17	A	172	0.19	A
Sturt Highway (A20)	Highway (sealed, 110 km/h)	AM	Eastbound	90	0.05	A	90	0.05	A
			Westbound	173	0.10	A	175	0.10	A
		PM	Eastbound	154	0.09	A	156	0.09	A
			Westbound	141	0.08	A	141	0.08	A

6.3 Impacts on road safety

Operation of the Project is anticipated to have negligible impacts on road safety due to the low operational traffic volumes expected.

6.4 Impacts on public transport

6.4.1 Bus services and facilities

Impacts to regional coach or local school bus services during the operation of the Project would be negligible due to the low operational traffic volumes anticipated.

6.4.2 Rail services and facilities

Operation of the Project would not impact rail operations as there are no active rail facilities in the vicinity of the Project.

6.5 Impacts on pedestrians and cyclists

As discussed in **Section 4.7**, there are no formal pedestrian or cycling facilities near the Project. As such, the Project would have no impact on pedestrians or cyclists. Amenity impacts at town centres due to the addition of operational vehicles on the road network would be negligible given the low operational traffic volumes anticipated.

6.6 Impacts on parking

No impacts to parking are expected as parking for operational vehicles would be provided within or next to the permanent operational and maintenance facility, away from public roads.

6.7 Impacts on Crown land

Crown roads may be used to access permanent ancillary infrastructure to perform functional tests and maintenance or facility upkeep activities during the operation of the Project. Authority to access and/or use Crown roads during the operation of the Project will be sought from the Department of Planning and Environment in accordance with the *Crown Land Management Act 2016* and the NSW *Roads Act 1993*. Impacts to other Crown road users are expected to be negligible given the low existing traffic volumes and very low operational traffic volumes generated by the Project.

Operation of the Project would not impact TSRs in the vicinity of the Project.

7. Potential decommissioning impacts

7.1 Decommissioning traffic generation and distribution

Following the end of economic life (approximately 30 years), the Project would either be decommissioned or refurbished with upgrades to power generation infrastructure. The decommissioning process would likely involve the removal of above-ground infrastructure, including WTGs, electrical infrastructure and maintenance buildings unless required for the future land use of the Project.

Traffic generation associated with the decommissioning of the Project is anticipated to be less than number of trips generated by the construction phase. This is because the process would likely only involve the removal of above ground infrastructure and the transportation raw materials (e.g. for concrete production) would not be required. As such, traffic generation has conservatively been assumed to be approximately 50 per cent of traffic generated by the construction phase of the Project. The traffic generated by the decommissioning of the Project is summarised in **Table 7-1**.

Table 7-1 Indicative decommissioning traffic generation

	Daily trips		Peak hour trips	
Vehicle class	Average	Peak	Average	Peak
Light	195	305	95	150
Heavy	45	80	5	10
Oversized overmass	3	3	0	0
Total	**243**	**388**	**100**	**160**

Impacts on public transport, pedestrians and cyclists, and road safety resulting from the decommissioning of the Project are anticipated to be consistent with the impacts identified for the construction phase of the Project but for a shorter duration. Potential impacts on road capacity and performance are outlined in the following section.

7.2 Impacts on road capacity and performance

A mid-block capacity assessment has been undertaken to assess the potential impacts of Project decommissioning on road capacity and performance. It should be noted that the mid-block capacity assessment is conservative as it assumes that:

- All light vehicle movements associated with the transportation of construction staff to the Project would occur within one hour before shift start (6:00 am to 7:00 am) and one hour after shift end (6:00 pm to 7:00 pm)
- The traffic generation rate in the peak periods would be one light vehicle per worker, generating a maximum of 225 one-way vehicle movements during each of the peak hour periods
- Decommissioning of the Project is assumed to occur 30 years after the commercial operations of the Project (2057). Background traffic growth has been assumed to enable the assessment of a worst-case scenario.

The results of the mid-block capacity assessment for the 'without Project' (without any vehicles associated with the Project) and the 'with Project' (with vehicles associated with the decommissioning of the Project) scenarios are presented in **Table 7-2**.

The results indicate that all roads would operate satisfactorily at a LoS A in 2057 without any vehicles associated with the Project. Under the 'with Project' scenario, all roads in the study area are expected to continue to perform at a LoS A, with the exception of one section of the Newell Highway (A39) located within the township of Jerilderie (Jerilderie Street). The section of the Newell Highway (A39) within the township of Jerilderie would experience a decrease in LoS from A to B during the evening peak hour due to the temporarily reduced road capacity within the township. However, the flow of traffic would remain within the zone of stable flow. Therefore, the future road network is expected to have sufficient capacity to accommodate traffic demand during the decommissioning of the Project and impacts to road performance are anticipated to be minor.

Table 7-2 Comparison of mid-block peak hourly Level of Service during Project decommissioning (2057)

Road	Road type	Peak period	Direction of travel	Without decommissioning of Project			With decommissioning of Project		
				Volume (pcu/hr)	Volume to capacity ratio (V/C)	Level of Service (LoS)	Volume (pcu/hr)	Volume to capacity ratio (V/C)	Level of Service (LoS)
Liddles Lane	Local (unsealed, no posted speed limit)	AM	Eastbound	<5	<0.01	A	<5	<0.01	A
			Westbound	<5	<0.01	A	162	0.16	A
		PM	Eastbound	<5	<0.01	A	160	0.16	A
			Westbound	<5	<0.01	A	<5	<0.01	A
Jerrys Lane	Local (unsealed, no posted speed limit)	AM	Eastbound	<5	<0.01	A	<5	<0.01	A
			Westbound	<5	<0.01	A	101	0.10	A
		PM	Eastbound	<5	<0.01	A	100	0.10	A
			Westbound	<5	<0.01	A	<5	<0.01	A
Kidman Way (B87)	Highway (sealed, 100 km/h)	AM	Northbound	23	0.01	A	135	0.08	A
			Southbound	15	0.01	A	60	0.04	A
		PM	Northbound	42	0.02	A	87	0.05	A
			Southbound	35	0.02	A	147	0.09	A
Newell Highway (A39)	Highway (sealed, 110 km/h)	AM	Northbound	85	0.05	A	197	0.12	A
			Southbound	45	0.03	A	45	0.03	A
		PM	Northbound	107	0.06	A	107	0.06	A
			Southbound	152	0.09	A	264	0.16	A
Jerilderie Street (A39)	Town (sealed, 50 km/h)	AM	Northbound	85	0.09	A	192	0.21	A
			Southbound	45	0.05	A	45	0.05	A

Road	Road type	Peak period	Direction of travel	Without decommissioning of Project			With decommissioning of Project		
				Volume (pcu/hr)	Volume to capacity ratio (V/C)	Level of Service (LoS)	Volume (pcu/hr)	Volume to capacity ratio (V/C)	Level of Service (LoS)
		PM	Northbound	107	0.12	A	107	0.12	A
			Southbound	152	0.17	A	259	0.29	B
Sturt Highway (A20)	Highway (sealed, 110 km/h)	AM	Eastbound	90	0.05	A	91	0.05	A
			Westbound	173	0.10	A	184	0.11	A
		PM	Eastbound	154	0.09	A	165	0.10	A
			Westbound	141	0.08	A	142	0.08	A

8. Potential cumulative impacts

The Project has the potential to generate cumulative traffic impacts with other projects in the area. Accordingly, a search of publicly available information sourced from NSW Major Projects website, local council and proponent websites was carried out to identify other nearby projects that are underway or likely to commence during the construction or operation of the Project. Details of projects identified as having the potential to generate cumulative traffic impacts are provided below.

8.1 Nearby projects

8.1.1 Project EnergyConnect

Transgrid and ElectraNet is approved to construct and operate a new 330 and 500 kilovolt, above-ground transmission line between Robertstown in South Australia (SA) and Wagga Wagga in NSW. The Project EnergyConnect would also include a 20-kilovolt connection from Buronga in NSW to Red Cliffs in north-west Victoria. The project aims to reduce the cost of providing secure and reliable electricity transmission between SA, NSW and Victoria and facilitate the longer-term transition of the energy sector across the National Electricity Market to low emission energy generation sources.

Construction of Project EnergyConnect is anticipated to commence in late 2022, subject to planning approvals. The EIS for the Eastern Section of Project EnergyConnect indicates the upgraded Wagga Wagga substation and the 330kV Dinawan Terminal Station would be operational by August 2024 (Transgrid, 2022). Removal of the construction compounds and remediation works would extend around six months beyond the commissioning phase, with estimated completion in March 2025. Accordingly, traffic generated by the construction and operation of Project EnergyConnect has the potential to result in cumulative traffic impacts to common access roads including Liddles Lane, Kidman Way (B87), Newell Highway (A39) and Sturt Highway (A20).

The indicative number of vehicle movements generated by the construction of Transgrid's Dinawan Terminal Station and accommodation site on Kidman Way is summarised in **Table 8-1**. Heavy vehicle movements originating from the ports would be distributed between the six construction compounds associated with the project, and as such, the numbers in **Table 8-1** represent a worst-case scenario for one particular compound. The potential locations of the ports include Port Kembla, Newcastle, Melbourne or Adelaide. During operation, regular maintenance activities would be required for the substations and transmission lines. Other operational activities would occur as required in the event of an emergency. The EIS for the Eastern Section of the EnergyConnect project estimates an operational workforce of approximately five staff. As such, the operation of the project is assumed to generate up to five light vehicle movements during peak periods.

The concurrent construction of the Project and construction of the EnergyConnect project would generate the greatest cumulative traffic volumes on common access roads. This scenario has therefore been considered in the cumulative traffic assessment in order to assess a worst-case scenario.

Table 8-1 Indicative peak number of vehicle movements

Phase	Road	Peak hour movements	
		Light vehicles	Heavy vehicles
Construction	Liddles Lane	20	10
	Kidman Way (B87)	50	32
	Newell Highway (A39)	28	32
	Sturt Highway (A20)	50	32
	Between ports and construction compounds	-	4

Source: EnergyConnect (NSW – Eastern Section) Traffic and Transport Impact Assessment, WSP 2021

8.1.2 Coleambally BESS

Risen Energy Development Pty Ltd is currently seeking regulatory and environmental planning approval for the construction and operation of a BESS on land located south of Ercildoune Road, approximately 600 metres west of Kidman Way. The BESS footprint would occupy an area of approximately four hectares and consist of approximately 33 sets of battery system cubicles, 33 sets of Power Conversion System cubicles, a power step-up transformer and approximately one kilometre of transmission line connecting the proposal to Coleambally substation.

The EIS for the Coleambally BESS proposal is currently under development with the Scoping Report indicating access to the proposal would be from Kidman Way (B87) and then either Ercildoune Road or Kook Road, with Ercildoune Road the main access road. As such, the concurrent construction or operation of the Project with the Coleambally BESS has the potential to generate cumulative traffic impacts to common access roads including Kidman Way (B87), Newell Highway (A39) and Sturt Highway (A20).

The Coleambally BESS Scoping Report outlines a maximum of 60 light vehicle movements, 20 heavy vehicle movements and ten OSOM daily vehicle movements to be generated by the construction of the proposal, as shown in **Table 8-2**. A maximum of two one-way vehicle trips per day are anticipated during the operation of the proposal.

No information on the project timing was provided in the Coleambally BESS Scoping Report. Accordingly, to assess a worst-case cumulative scenario, construction of the Coleambally BESS is assumed to occur concurrently to the construction of the Project.

Table 8-2 Indicative number of peak hour vehicle movements associated with the Coleambally BESS

Phase	Peak hour movements	
	Light vehicles	Heavy vehicles
Construction	60	5
Operation[1]	5	-

Source: Coleambally BESS Scoping Report, NGH 2021

[1] Values rounded to nearest 5

8.1.3 Woodland BESS

Darlington Point BESS Pty Ltd (a trustee under Risen Energy Development Pty Ltd) is currently seeking regulatory and environmental planning approval for the construction and operation of a BESS approximately 10 kilometres south of Darlington Point. The proposed BESS would have a capacity of 200MW / 800MWh to release to the grid as dispatchable power and would provide grid stability during periods of peak demand.

The EIS for the Woodland BESS is currently under development. The Woodland BESS Scoping Report indicates construction materials and equipment would likely be sourced from local suppliers at Griffith and accommodation for workers is anticipated to available in Darlington Point and Griffith. The proposal would be accessed via Donald Ross Drive off the Sturt Highway. As such, the concurrent construction or operation of the Project with the Woodland BESS has the potential to generate cumulative traffic impacts to Kidman Way (B87) and Sturt Highway (A20).

The number of vehicle movements generated by the construction of the Woodland BESS was not specified in the Scoping Report. Accordingly, the traffic generation during construction has been conservatively estimated based on BESS projects of similar size in NSW and is summarised in **Table 8-3**. The Scoping Report indicates the proposal would provide up to two full-time jobs during the 30 year operational life. As such, the operation of the project is assumed to generate a peak of two one-way light vehicle movements per hour.

As the Scoping Report did not provide information on the proposed timing of the Woodland BESS project, construction of the Woodland BESS is assumed to occur concurrently to the peak construction period of the Project in order to assess a worst-case cumulative traffic scenario.

Table 8-3 Indicative number of peak hour vehicle movements associated with the Woodland BESS

Phase	Peak hour movements	
	Light vehicles	Heavy vehicles
Construction	100	20
Operation[1]	5	-

Source: Woodland Battery Energy Storage System Scoping Report, Risen 2021

[1] Values rounded to nearest 5

8.1.4 Riverina and Darlington Point BESS

In May 2021, Shell Energy and Edify Energy Pty Ltd announced the Riverina and Darlington Point BESS project that would deliver a 100 MW/200 MW BESS that will connect into TransGrid's network at the Darlington Point Substation. The battery will provide 120 MWh of storage capacity, providing grid stability services and supporting the dispatch of electricity during high demand periods and storing energy during periods of low demand or when solar and wind generation is high.

Limited details are available on the proposal; however, construction of the BESS is expected to be completed in 2023. As such, limited cumulative traffic impacts are expected as the construction the BESS would not coincide with construction of the Project. Operational traffic volumes generated by the Riverina and Darlington Point BESS are anticipated to be in line with other renewable energy projects in the area, consisting of up to five light vehicle movements during peak hours.

8.1.5 Dinawan Energy Hub

Dinawan Energy Hub is a proposed hybrid wind, solar and battery storage project that was announced in July 2021. The hub is in the early stages of planning which includes preliminary environmental studies and defining the project footprint. The hub is proposed to be located on the route the Project EnergyConnect , approximately halfway between Coleambally and Jerilderie.

The project would be delivered in two stages:

- Stage One – 1 GW generation capacity
- Stage Two – 1.5 GW generation capacity.

Once approved, it is anticipated that construction of Stage One would begin in 2024 with the first operations to commence in 2025. The number of vehicle movements generated by construction and operation of the Dinawan Energy Hub has not been made available at the time of writing.

8.1.6 Victoria to NSW Interconnector West

Transgrid and the Australian Energy Market Operator (AEMO) are investigating the technical and economic viability of a new interconnector between Victoria and NSW, including a preferred route for a new transmission line between Ballarat, Kerang, Darlington Point (or Dinawan) to Wagga Wagga. The proposal would improve electricity supply security and sharing between Victoria and NSW.

In NSW, the Wagga Wagga to Dinawan section of the project will be delivered as part of the EnergyConnect Project (Transgrid, 2022). As such, traffic generation associated with this part of the works is assumed to be captured in the EnergyConnect Project estimates outlined in **Section 8.1**.

The Dinawan to Kerang section of the project would generate additional traffic on the road network. The number of vehicle movements generated by construction and operation of the project is not available at the time of writing with the regulatory assessment stage expected to be complete by early 2023.

8.1.7 Micro Solar Farm

Green Tech Solar received approval in October 2021 for the construction and operation of a micro solar farm located 25 kilometres to the north-east of Coleambally. The project included approximately 16,000 solar panels installed over an 18 hectare area with a capacity of 5 MW.

The Green Tech Solar Micro Farm CTMP indicates the construction of the project was expected to be completed within the first quarter of 2022. Accordingly, only operational traffic is considered to have the potential to generate cumulative traffic impacts to common access roads including Kidman Way (B87) and Sturt Highway (A20).

The proposed Solar Energy Facility will have remote monitoring in real-time, allowing for constant surveillance and monitoring of the facility without the requirement for staffing on site. Two light vehicles are expected to attend the site every six months during the operational phase, which is for general maintenance of the site.

8.1.8 Keri Keri Wind and Solar Farm

Acciona Energy Australia Global Pty Ltd is currently seeking regulatory and environmental planning approval for the construction and operation of a wind and solar farm on land located east of Balranald in the Riverina Murray region of NSW. The wind farm would include up to 176 WTGs with a total capacity of up to approximately 1,003 MW. The solar farm would have a maximum installed capacity of 500 MW.

Construction of the Keri Keri Wind Farm is anticipated to commence in 2024 with operation planned from 2026 or 2027. Construction of the Keri Keri Solar Farm is also anticipated to commence in 2024 with operation planned from 2026 or 2027. Primary access to the Keri Keri Wind and Solar Farm would be via the Sturt Highway. Secondary access, if required, would be via Keri Keri Road. WTGs are proposed to be transported from ports located in Victoria or South Australia. Accordingly, the concurrent construction or operation of the Project with the Keri Keri Wind Farm and Kerri Kerri Solar Farm has the potential to generation cumulative traffic impacts to Sturt Highway (A20).

The number of vehicle movements generated by construction of the Keri Keri Wind and Solar Farm was not specified in the Scoping Reports (ERM, 2022a, 2022b). Accordingly, the traffic generation associated with the Keri Keri Wind and Solar Farm has been conservatively estimated based on projects of similar size in NSW and the anticipated peak workforce. During the construction phase of the wind farm, a peak workforce of around 400 full time equivalent employees is expected. A peak workforce of 300 full time equivalent employees is expected for the construction of the solar farm. The Scoping Reports (ERM, 2022a, 2022b) indicate that temporary accommodation for construction workers may be sited within the project or may be located off site.

During the operation of the wind farm, the workforce will consist of approximately 12-14 permanent staff, as shown in **Table 8-4**. The Solar Farm Scoping Report did not provide an indication of the number of permanent staff associated with the operation of the solar farm. As such, up to five light vehicle movements have been assumed in line with other solar farm developments in the area.

The concurrent construction of the Project and construction of the Keri Keri Wind and Solar Farm would generate the greatest cumulative traffic volumes on the Sturt Highway (A20). This scenario has therefore been considered in the cumulative traffic assessment in order to assess a worst-case scenario.

Table 8-4 Indicative number of peak hour vehicle movements associated with the Keri Keri project

Phase	Project	Peak hour movements	
		Light vehicles	Heavy vehicles[1]
Construction[2]	Wind	255	10
	Solar	170	10
Operation[2]	Wind	15	-
	Solar	5	-

Source: Keri Keri Wind Farm Scoping Report and Keri Keri Solar Farm Scoping Report, ERM 2022

[1] Heavy vehicle movements generated by the Keri Keri Wind Farm (176 WTGs) is assumed to be approximately 85% of Project (208 WTGs) generated heavy vehicle volumes

[2] Values rounded to nearest 5

8.1.9 Baldon Wind Farm

Goldwind Capital (Australia) Pty Ltd (Goldwind) and Lacour Energy Pty Ltd (Lacour) are proposing to develop the Baldon Wind Farm which will be located to the north of Moulamein in NSW. The project would consist of up to approximately 162 WTGs providing around 1,000 megawatts of power to the national electricity market.

The Scoping Report for the Baldon Wind Farm indicates construction is planned to commence in 2024 and would have a duration of approximately two to three years. The number of vehicle movements generated by construction and operation of the Baldon Wind Farm was not specified in the Scoping Report. Accordingly, the traffic generation associated with the Baldon Wind Farm has been conservatively estimated based on BESS projects of similar size in NSW and is summarised in **Table 8-5**.

The Scoping Report indicates primary access to the project would be directly from the Sturt Highway (A20) via a new access track. Secondary access to the project would be via Maude Road, Dry Lake Road and Baldon Road. As such, the concurrent construction or operation of the Project with the Baldon Wind Farm has the potential to generate cumulative traffic impacts to Sturt Highway (A20). Construction of the Baldon Wind Farm is assumed to occur concurrently to the peak construction period of the Project in order to assess a worst-case cumulative traffic scenario.

Table 8-5 Indicative number of peak hour vehicle movements associated with the Baldon Wind Farm

Phase	Peak hour movements[1]	
	Light vehicles	Heavy vehicles
Construction[2]	240	10
Operation[2]	25	-

[1] Traffic generated by the Baldon Wind Farm (162 WTGs) is assumed to be approximately 80% of Project (208 WTGs) generated traffic

[2] Values rounded to the nearest 5

8.1.10 Bullawah Wind Farm

BayWa r.e. Solar Systems Pty Ltd are proposing to develop the Bullawah Wind Farm which will be located near the junction of Jerilderie Road, North Boundary Road and Willurah Road (south of the Oolambeyan National Park). The project would consist of up to approximately 170 WTGs providing around 1,000 megawatts of power to the national electricity market.

Limited details are available on the proposal, with the scoping phase of the project expected to be completed by mid-2022. Accordingly, the traffic generation associated with the Bullawah Wind Farm has been conservatively estimated based on BESS projects of similar size in NSW and is summarised in **Table 8-6**.

It is assumed that vehicles would likely to access the project via Jerilderie Road, North Boundary Road and Willurah Road. Access to these roads would be via major road including Cobb Highway (B75) and Sturt

Highway (A20). As such, the concurrent construction of the Project with Bullawah Wind Farm has the potential to generate cumulative traffic impacts to Sturt Highway (A20). Construction of the Bullawah Wind Farm is assumed to occur concurrently to the peak construction period of the Project in order to assess a worst-case cumulative traffic scenario.

Table 8-6 Indicative number of peak hour vehicle movements associated with the True Blew Wind Farm

Phase	Peak hour movements[1]	
	Light vehicles	Heavy vehicles
Construction[2]	240	10
Operation[2]	25	-

[1] Traffic generated by the True Blew Wind Farm (170 WTGs) is assumed to be approximately 80% of Project (208 WTGs) generated traffic

[2] Values rounded to the nearest 5

8.2 Cumulative impacts on road capacity and performance

A mid-block capacity assessment has been conducted to assess the impact of the Project and nearby concurrent developments on road capacity and performance. It should be noted that the mid-block capacity assessment is conservative as the greatest cumulative traffic generation scenario between the Project and each nearby development has been considered in order to assess a worst-case scenario.

The results of the mid-block capacity assessment for the 'without Project' (without vehicles associated with construction of the Project and nearby developments) and the 'with Project and nearby concurrent developments' (with vehicles associated with construction of Project and nearby concurrent developments) scenarios are presented in **Table 8-7**.

The results indicate that all roads would operate satisfactorily at a LoS A in 2027 without the construction of the Project. Under the 'with Project and nearby concurrent developments' scenario, all roads in the study area are expected to continue to perform at a LoS A, with the exception of one section of Liddles Lane (located to the east of Jerrys Lane) and one section of the Newell Highway located within the township of Jerilderie (Jerilderie Street). Liddles Lane would experience a decrease in LoS from A to B during the morning and evening peak hours, however the flow of traffic would remain within the zone of stable flow. Jerilderie Street is expected to experience a decrease in LoS from A to C during the morning and evening peak hours. In rural areas, LoS C can be considered a minimum desirable standard. Therefore, the road network is expected to have sufficient capacity to accommodate the cumulative traffic demand and cumulative impacts to road performance are expected to be minor.

Table 8-7 Comparison of mid-block peak hourly Level of Service (2027)

Road	Road Type	Peak period	Direction of travel	Without Project and nearby concurrent developments			With Project and nearby concurrent developments		
				Volume (pcu/hr)	Volume to capacity ratio (V/C)	Level of Service (LoS)	Volume (pcu/hr)	Volume to capacity ratio (V/C)	Level of Service (LoS)
Liddles Lane	Local (unsealed, no posted speed limit)	AM	Eastbound	<5	<0.01	A	30	0.03	A
			Westbound	<5	<0.01	A	351	0.35	B
		PM	Eastbound	<5	<0.01	A	350	0.35	B
			Westbound	<5	<0.01	A	30	0.03	A
Jerrys Lane	Local (unsealed, no posted speed limit)	AM	Eastbound	<5	<0.01	A	0	0.00	A
			Westbound	<5	<0.01	A	200	0.20	A
		PM	Eastbound	<5	<0.01	A	199	0.20	A
			Westbound	<5	<0.01	A	0	0.00	A
Kidman Way (B87)	Highway (sealed, 100 km/h)	AM	Northbound	16	0.01	A	374	0.22	A
			Southbound	11	0.01	A	214	0.13	A
		PM	Northbound	30	0.02	A	233	0.14	A
			Southbound	24	0.01	A	382	0.22	A
Newell Highway (A39)	Highway (sealed, 110 km/h)	AM	Northbound	56	0.03	A	357	0.22	A
			Southbound	29	0.02	A	89	0.05	A
		PM	Northbound	70	0.04	A	130	0.08	A
			Southbound	99	0.06	A	411	0.24	A
Jerilderie Street (A39)	Town (sealed, 50 km/h)	AM	Northbound	56	0.06	A	357	0.40	C
			Southbound	29	0.03	A	89	0.10	A

Road	Road Type	Peak period	Direction of travel	Without Project and nearby concurrent developments			With Project and nearby concurrent developments		
				Volume (pcu/hr)	Volume to capacity ratio (V/C)	Level of Service (LoS)	Volume (pcu/hr)	Volume to capacity ratio (V/C)	Level of Service (LoS)
		PM	Northbound	70	0.08	A	130	0.14	A
			Southbound	99	0.11	A	401	0.45	C
Sturt Highway (A20)	Highway (sealed, 110 km/h)	AM	Eastbound	34	0.02	A	353	0.21	A
			Westbound	66	0.04	A	535	0.31	A
		PM	Eastbound	58	0.03	A	528	0.31	A
			Westbound	53	0.03	A	372	0.22	A

9. Environmental management measures

The following management measures detailed in **Table 9-1** have been developed to specifically manage potential traffic and transport impacts which have been predicted during construction, operation and decommissioning of the Project.

Table 9-1 Traffic and transport management measures

Impact	Reference	Environmental management measure	Responsibility	Timing
Impacts to the local road network	TT1	Construction Traffic Management Plan (CTMP) will be prepared as part of the CEMP and will include: ▪ Confirmation of haulage routes ▪ Access to the Project area, including entry and exit locations ▪ Preferred times of transport to and from the Project area to minimise impacts on the road network ▪ Measures to minimise the number of workers using private vehicles ▪ Management of oversize overmass (OSOM) vehicles ▪ The maximum parameters of the materials to be transported to and from the Project area ▪ Site-specific traffic control measures (including signage) to manage and regulate traffic movement ▪ Relevant traffic safety measures, including driver induction, training, safety measures and protocols ▪ Requirements for, and placement of, traffic barriers ▪ Requirements and methods to consult and inform the local community of impacts on the local road network due to the development-related activities ▪ Consultation with Transport for NSW, Victoria Department of Transport, National Heavy Vehicle Regular (NHVR) and local Council ▪ Consultation with the emergency services to ensure that procedures are in place to maintain safe, priority access for emergency vehicles ▪ A response plan for any construction-related traffic incident ▪ Monitoring, review and amendment mechanisms ▪ Individual traffic management requirements at each phase of construction.	Proponent/ Contractor	Prior to construction
	TT2	Group transport, such as buses for workstreams of more than 20 persons as well as ride sharing systems, will be implemented, where practical, to reduce the number of traffic movements on the local road network.	Contractor	Throughout construction and decommissioning

Impact	Reference	Environmental management measure	Responsibility	Timing
	TT3	Dedicated and demarcated parking areas for light and heavy vehicles will be provided. Vehicles associated with the Project will not be permitted to park on the surrounding public road network.	Proponent/ Contractor	Prior to construction
	TT4	Heavy vehicle movements to and from the Project area will be scheduled to minimise traffic disruption to the surrounding road network. This may include, but is not limited to: ▪ Scheduling the movement of construction material, equipment and waste to occur outside of peak periods where practical ▪ Scheduling heavy vehicle deliveries to be evenly dispersed as far as practical to minimise convoying or platoons and queuing outside the Project area or on the road network.	Proponent/ Contractor	Prior to construction, construction, operation and decommissioning
OSOM vehicles	TT5	A separate OSOM Transport Management Plan will be prepared as part of the CTMP and will include: ▪ Identification of the final OSOM route ▪ Measures to provide an escort for the loads ▪ Times of transporting to minimise impacts on the road network ▪ Location of rest areas and require rest stops along the route ▪ The maximum parameters of the materials to be transported to and from the Project area ▪ Communication strategy and liaising with emergency services and police ▪ Any minor temporary civil infrastructure work which may be required to accommodate OSOM movements.	Proponent/ Contractor	Prior to construction
	TT6	An oversized vehicle permit will be sought for all OSOM vehicle movements where required. The OSOM movements will be in accordance with the permit requirements and be outside of peak traffic periods where possible.	Proponent/ Contractor	Prior to construction
	TT7	The OSOM route will be finalised in consultation with relevant road authorities prior to official NHVR application and will consider potential impacts to pavement and culverts at intersections along the route. The OSOM route assessment this will be assessed once the vehicle and load dimensions have been confirmed prior to transportation.	Proponent/ Contractor	Prior to construction
	TT8	A dilapidation report will be submitted with the proposed design in reference to Austroads Design guidelines.	Proponent/ Contractor	Prior to construction

Impact	Reference	Environmental management measure	Responsibility	Timing
	TT9	A NHVR exemption permit will be obtained for any parts of the final OSOM route which requires access through roads which are restricted or conditionally approved for OSOM vehicles.	Proponent/ Contractor	Prior to construction
	TT10	Detailed 3D swept path assessments will be undertaken for intersections and proposed road upgrades in consultation with relevant road authorities. The design will be developed to the standard and satisfaction of the Victoria Department of Transport and NSW road authorities, including Murrumbidgee Council, Edward River Council and Transport for NSW, as appropriate under Section 138 of the NSW *Roads Act 1993*.	Proponent/ Contractor	Prior to construction
Road safety	TT11	A Driver Code of Conduct will be prepared as part of the CTMP and be used to outline the rules and behaviours which drivers associated with the Project will be required to adhere to. The Driver Code of Conduct will outline arrangements for light and heavy vehicle drivers, including: ▪ General requirements, including site induction requirements ▪ Travelling speeds and safe driving practices, particularly through residential areas and school zones ▪ Fatigue management ▪ Adherence to designated haulage routes and heavy vehicle noise ▪ Public complaint resolution and penalties and disciplinary action.	Proponent/ Contractor	Prior to construction, construction, operation and decommissioning
	TT12	Public roads and Crown roads will not be obstructed by any materials, vehicles, skip bins or the like, under any circumstances.	Proponent/ Contractor	Throughout construction, operation and decommissioning
	TT13	'Trucks Turning' warning signs will be installed on both approaches to the intersection of Kidman Way / Liddles Lane and Kidman Way / Jerrys Lane to advise existing road users of the increased heavy vehicle volumes. The signs will be removed upon the completion of construction work.	Proponent/ Contractor	Throughout construction and decommissioning
	TT14	All vehicles transporting loose materials will have the entire load covered and/or secured to prevent any large items, excess dust or dirt particles depositing onto the roadway during travel to and from the Project area.	Proponent/ Contractor	Throughout construction and decommissioning

Impact	Reference	Environmental management measure	Responsibility	Timing
	TT15	Speed reductions, use of fog lights during periods of low visibility, cessation of work and site shutdowns will be implemented as required during periods of adverse weather.	Proponent/ Contractor	Throughout construction, operation and decommissioning
Access	TT16	Affected parties including emergency services will be notified in advance of any disruptions to traffic and restriction of access impacted by Project activities.	Proponent/ Contractor	Prior to construction, construction operation and decommissioning

9.1 Driver Code of Conduct

To assist in achieving safe outcomes during construction, a Driver Code of Conduct has been prepared and is included in **Appendix B**. The purpose of the Driver Code of Conduct is to minimise the impact of individual driver behaviours on all users of the public roads forming part of the site access routes. The Driver Code of Conduct outlines acceptable behaviour for all vehicle drivers in connection with the Project, including:

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

Prior to involvement in the Project, vehicle drivers will be required to read the Driver Code of Conduct and acknowledge their compliance with it throughout their involvement in the Project. The expectations of the Driver Code of Conduct will be established in the Project induction and will be reiterated through pre-starts.

Heavy vehicle haulage routes will be communicated to haulage contractors during the procurement stage and requirements of the Drivers Code of Conduct, route use and compliance included in their contracts.

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

9.2 Schedule of road upgrades

Table 9-2 provides the schedule of proposed road and intersection upgrade work with the proposed Option 1 route through Shepparton (see **Section 5.12.2**). The site-specific upgrades would be assessed in greater detail once the WTG design and transporting vehicle dimensions are confirmed and as part of the OSOM Transport Management Plan.

Discussions with and approval from the relevant road authorities will be required to undertake the modifications (e.g. temporary road sign removal) or upgrades to the road network. No Crown Roads are proposed to be upgraded, however, authority to access and/or use Crown roads during the construction or operation of the Project will be sought from the Department of Planning and Environment. Further structural investigation will be undertaken for culverts and underground services in collaboration with the relevant road authorities once the final route has been selected and the vehicle specifications and loads are confirmed.

Table 9-2 Schedule of proposed road upgrades

Item	Intersection / road	Road authority	Proposed upgrade	Timing
1	Right turn from Madden Avenue to Seabeach Parade	City of Greater Geelong	Temporary removal of road signs and electrical poles with overhead wires. Property on the northeast corner of Madden Avenue and Seabeach Parade is most likely to be impacted	As required to accommodate OSOM vehicle movements
2	Left turn from Seabeach Avenue to St Georges Road	City of Greater Geelong	Temporary removal of road signs electrical poles with overhead wires. Property on the southwest corner of Seabeach Parade and St Georges Road is most likely to be impacted	As required to accommodate OSOM vehicle movements

Item	Intersection / road	Road authority	Proposed upgrade	Timing
3	Roundabout at Station Street and St Georges Road	City of Greater Geelong	Temporary removal of road signs, street lighting poles with over head wires. Replace landscaping areas with suitable surface for transport vehicle and load.	As required to accommodate OSOM vehicle movements
4	Intersection of Station Street and Princes Highway	Department of Transport (Victoria)	Temporary removal of traffic signals, road signs and street lighting. BP signage may also need to be temporarily removed.	As required to accommodate OSOM vehicle movements
5	Intersection of Goulburn Valley Highway and Murray Valley Highway	Department of Transport (Victoria)	Temporary removal of road signs and street lighting.	As required to accommodate OSOM vehicle movements
6	Intersection of Murray Valley Highway and Goulburn Valley Highway at Yarraweyah	Department of Transport (Victoria)	Temporary removal of road signs, Caltex petrol station signage and street lighting.	As required to accommodate OSOM vehicle movements
7	Intersection of Newell Highway with Conargo Road, Jerilderie	Murrumbidgee Council	Temporary removal of road signs and street lighting.	As required to accommodate OSOM vehicle movements
8	Intersection of Newell Highway and Kidman Way	Murrumbidgee Council	Minor earthworks to provide level roadside environment to support the path of travel	Prior to delivery of OSOM components to Project
9	Intersection of Kidman Way and Jerrys Lane	Murrumbidgee Council	Additional hardstand would be required to accommodate the vehicle swept path. In addition, extension and protection of existing culvert to sustain vehicle loads would likely be required.	Prior to delivery of OSOM components to Project
10	Jerrys Lane	Murrumbidgee Council	Vegetation clearing / trimming and road widening as required along Jerrys Lane to provide a clear path of travel. The unsealed road will also require consideration regarding surface treatment and drainage upgrades to ensure all weather access is achievable.	Prior to delivery of OSOM components to Project

Item	Intersection / road	Road authority	Proposed upgrade	Timing
11	Intersection of Jerrys Lane and Liddles Lane	Murrumbidgee Council	Vegetation clearing and local road widening to accommodate the vehicle swept path.	Prior to delivery of OSOM components to Project
12	Liddles Lane	Murrumbidgee Council	Vegetation clearing / trimming and road widening as required along Liddles Lane to provide a clear path of travel. The unsealed road will also require consideration regarding surface treatment and drainage upgrades to ensure all weather access is achievable.	Prior to delivery of OSOM components to Project
13	Bend on Liddles Lane, east of Wilson Road	Murrumbidgee Council	Local widening of road footprint as required	Prior to delivery of OSOM components to Project
14	Intersection of Liddles Lane and Wilson Road	Murrumbidgee Council	Vegetation clearing and local road widening to accommodate the vehicle swept path.	Prior to delivery of OSOM components to Project
15	Wilson Road	Murrumbidgee Council	Vegetation clearing / trimming and road widening as required along Wilson Road to provide a clear path of travel. The unsealed road will also require consideration regarding surface treatment and drainage upgrades to ensure all weather access is achievable.	Prior to delivery of OSOM components to Project
16	Intersection of Wilson Road and Moonbria Road	Murrumbidgee Council	Vegetation clearing and local road widening to accommodate the vehicle swept path.	Prior to delivery of OSOM components to Project
17	Moonbria Road	Murrumbidgee Council and Edward River Council	Vegetation clearing / trimming and road widening as required along Moonbria Road to provide a clear path of travel. The unsealed road will also require consideration regarding surface treatment and drainage upgrades to ensure all weather access is achievable.	Prior to delivery of OSOM components to Project

Item	Intersection / road	Road authority	Proposed upgrade	Timing
18	Wilson Road bridge over Yanco Creek	Murrumbidgee Council	Bridge weight structure will be assessed to determine suitability for equipment and load combination to be transported along this route.	Prior to delivery of OSOM components to Project

10. Conclusion

This report details the traffic and transport impact assessment for the Yanco Delta Wind Farm Project and addresses the relevant SEARs for the Project. In addition, this report provides an overview of the existing traffic and transport environment, an assessment of potential traffic and transport impacts of the Project and the required mitigation measures.

During construction and decommissioning, the Project would have a minor potential impact on the performance of one section of Liddles Lane (west of Jerrys Lane) and one section of the Newell Highway (A39) located within the township of Jerilderie (Jerilderie Street). The Project is expected to have a negligible potential impact on the performance of Jerrys Lane, Kidman Way (B87), Sturt Highway (A20) and other sections of Liddles Lane and the Newell Highway (A39) during construction and decommissioning. During operation, the Project would have a negligible impact on the performance of Liddles Lane, Jerrys Lane, Kidman Way (B87), Newell Highway (A39) Sturt Highway (A20).

The potential impacts to parking, public transport, crown land users, pedestrians and cyclists during construction, operation and decommissioning of the Project are expected to be negligible. The construction, operation and decommissioning of the Project is expected to have a negligible impact on road safety.

A CTMP implemented by the construction contractor would minimise potential impacts of the Project during construction. Relevant traffic safety measures included in the CTMP would be traffic control and signage, driver conduct, safety protocols and management of OSOM vehicles. Furthermore, a separate OSOM transport management plan would be prepared and would include a detailed overview of management measures for the OSOM movements, including identification of route, escort measures, time of transporting and a communications strategy.

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Appendix A. Construction traffic generation calculations

Table A-1 Quantities of Project components / elements

Project component / element	Quantity	Unit	Infrastructure type
Operational and maintenance facility	1	each	Permanent
Main construction site compound(s)	1	each	Temporary
Concrete batch plants	2	each	Temporary
Main / Primary substation	1	each	Permanent
Collector / Secondary substations	8	each	Permanent
800 MW / MWh BESS	1	each	Permanent
Internal underground / overhead cabling	60	km	Permanent
Poles for internal overhead cabling	100	each	Permanent
Transmission lines to the NEM via Dinawan Terminal Station	32	km	Permanent
Poles for transmissions lines to NEM	100	each	Permanent
Permanent meteorological masts	8	each	Permanent
Gravel borrow pit(s)	2	each	Temporary
WTGs	208	each	Permanent
Crane hardstand areas	208	each	Permanent
Turbine laydown areas	208	each	Temporary
Underground cables	300	km	Permanent
Upgraded site access	20	km	Permanent
Access tracks	270	km	Permanent

Table A-2 Site dimensions and material requirements

Site	Project quantity	Unit	Width (m)	Length (m)	Site area (m^2)	Material	Proportion of site coverage	Material depth (m)	Volume per site (m^3)	Project volume (m^3)
Operational and maintenance facility	1	each	Up to 1 hectare		10,000	Concrete	10%	0.30	300	300
						Gravel / course aggregates	90%	0.30	2700	2700
Temporary construction site compound	1	each	Up to 1 hectare		10,000	Concrete	5%	0.30	150	150
						Gravel / course aggregates	90%	0.30	2700	2700
Concrete batch plants	2	each	50	100	5000	Concrete	5%	0.30	75	150
						Gravel / course aggregates	95%	0.30	1425	2850
Main / Primary substation & Collector / Secondary substations	9	each	Up to 1 hectare each on average f		10,000	Concrete	20%	0.30	600	5400
						Gravel / course aggregates	80%	0.30	2400	21600
800 MW / MWh BESS	1	each	Up to 5 hectares		50000	Concrete	50%	0.30	7500	7500
						Gravel / course aggregates	50%	0.30	7500	7500
Internal underground cabling	300	km	0.5	400	200	Trench sand	-	0.40	80	32000
						Backfill	-	0.80	160	64000
Crane hardstand area	208	each	35	30	1050	Structural fill	100%	0.30	315	65520
Turbine blade laydown and assembly areas	208	each	-	-	6650	Structural fill	100%	0.30	1995	414960
Upgraded site access track from Kidman Way	20	km	6.5	20	130	Gravel / course aggregates	100%	0.40	52	1040
Construction access tracks	270	km	6.4	60	383	Gravel / course aggregates	100%	0.40	153	41310
Footings - poles for internal overhead cabling	100	each	-	-	-	Concrete base	20%	-	1	100
						Cement stabilised backfill	80%	-	3.5	350
Footings - transmission line towers to NEM (4x footings per tower)	400	each	-	-	-	Concrete base	20%	-	2	800
						Cement stabilised backfill	80%	-	7	2800
Footings – permanent	32	each	-	-	-	Concrete base	20%	-	9	288

Site	Project quantity	Unit	Width (m)	Length (m)	Site area (m^2)	Material	Proportion of site coverage	Material depth (m)	Volume per site (m^3)	Project volume (m^3)
meteorological masts (4x footings per tower)						Cement stabilised backfill	80%	-	42	1344
Footings - turbines	208	each	Up to 40m in diameter		-	Concrete	-	-	1000	208000
						Steel reinforcement			50	10500

Table A-3 Vehicle movements required for materials

Site	Construction phase	Material	Material Origin	Project Quantity (m^3)	Project Quantity (tonnes)	Vehicle	Movements based on vehicle loading capacity		Movements based on vehicle cubic capacity		Required movements
							Vehicle Capacity (t)	Movements	Vehicle Capacity (m^3)	Movements	
Operational and maintenance facility	I	Concrete	Internal	300	750	Concrete Agitator	14.9	56	7	48	56
		Gravel / course aggregates	External	2700	4320	Truck & Dog Trailer	16.5	291	60	50	291
		Cement (for concrete)	External	45	68	Semi Trailer	30.5	2	80	1	2
		Sand / fine aggregates (for concrete)	Internal	90	144	Truck & Dog Trailer	16.5	10	60	2	10
		Gravel / course aggregates (for concrete)	External	120	204	Truck & Dog Trailer	16.5	14	60	2	14
		Steel reinforcement (for concrete)	External	135	1067	Semi Trailer	30.5	39	80	2	39
		Water (for concrete)	Internal	60	60	Water Truck	N/A	N/A	10	7	7

Site	Construction phase	Material	Material Origin	Project Quantity (m^3)	Project Quantity (tonnes)	Vehicle	Movements based on vehicle loading capacity		Movements based on vehicle cubic capacity		Required movements
							Vehicle Capacity (t)	Movements	Vehicle Capacity (m^3)	Movements	
Main construction compound	A	Concrete	Internal	2700	6750	Concrete Agitator	14.9	503	7	429	503
		Gravel / course aggregates	External	150	240	Truck & Dog Trailer	16.5	16	60	3	16
		Cement (for concrete)	External	405	608	Semi Trailer	30.5	22	80	6	22
		Sand / fine aggregates (for concrete)	Internal	810	1296	Truck & Dog Trailer	16.5	87	60	15	87
		Gravel / course aggregates (for concrete)	External	1080	1836	Truck & Dog Trailer	16.5	124	60	20	124
		Steel reinforcement (for concrete)	External	8	59	Semi Trailer	30.5	2	80	0	2
		Water (for concrete)	External	540	540	Water Truck	N/A	N/A	10	60	60
Concrete batch plants	A	Concrete	Internal	150	375	Concrete Agitator	14.9	28	7	24	28
		Gravel / course aggregates	External	2850	4560	Truck & Dog Trailer	16.5	307	60	53	307
		Cement (for concrete)	External	23	34	Semi Trailer	30.5	1	80	0	1
		Sand / fine aggregates (for concrete)	Internal	45	72	Truck & Dog Trailer	16.5	5	60	1	5
		Gravel / course aggregates (for concrete)	External	60	102	Truck & Dog Trailer	16.5	7	60	1	7
		Steel reinforcement (for concrete)	External	143	1126	Semi Trailer	30.5	41	80	2	41
		Water (for concrete)	External	30	30	Water Truck	N/A	N/A	10	3	3

Site	Construction phase	Material	Material Origin	Project Quantity (m^3)	Project Quantity (tonnes)	Vehicle	Movements based on vehicle loading capacity		Movements based on vehicle cubic capacity		Required movements
							Vehicle Capacity (t)	Movements	Vehicle Capacity (m^3)	Movements	
Main / Primary substation and Collector / Secondary substations	G	Concrete	Internal	5400	13500	Concrete Agitator	14.9	1007	7	857	1007
		Gravel / course aggregates	External	21600	34560	Truck & Dog Trailer	16.5	2327	60	400	2327
		Cement (for concrete)	External	810	1215	Semi Trailer	30.5	44	80	11	44
		Sand / fine aggregates (for concrete)	Internal	1620	2592	Truck & Dog Trailer	16.5	175	60	30	175
		Gravel / course aggregates (for concrete)	External	2160	3672	Truck & Dog Trailer	16.5	247	60	40	247
		Steel reinforcement (for concrete)	External	1080	8532	Semi Trailer	30.5	311	80	15	311
		Water (for concrete)	External	1080	1080	Water Truck	N/A	N/A	10	120	120
800 MW / MWh BESS	G	Concrete	Internal	7500	18750	Concrete Agitator	14.9	1398	7	1190	1398
		Gravel / course aggregates	External	7500	12000	Truck & Dog Trailer	16.5	808	60	139	808
		Cement (for concrete)	External	1125	1688	Semi Trailer	30.5	61	80	16	61
		Sand / fine aggregates (for concrete)	Internal	2250	3600	Truck & Dog Trailer	16.5	242	60	42	242
		Gravel / course aggregates (for concrete)	External	3000	5100	Truck & Dog Trailer	16.5	343	60	56	343
		Steel reinforcement (for concrete)	External	375	2963	Semi Trailer	30.5	108	80	5	108
		Water (for concrete)	External	1500	1500	Water Truck	N/A	N/A	10	167	167

Site	Construction phase	Material	Material Origin	Project Quantity (m^3)	Project Quantity (tonnes)	Vehicle	Movements based on vehicle loading capacity		Movements based on vehicle cubic capacity		Required movements
							Vehicle Capacity (t)	Movements	Vehicle Capacity (m^3)	Movements	
Internal underground / overhead cabling	D	Trench sand	Internal	32000	51200	Truck & Dog Trailer	16.5	3448	60	593	3448
		Backfill	Internal	64000	105600	Truck & Dog Trailer	16.5	7111	60	1185	7111
Crane hardstand area	C	Structural fill (up to 5 kg/cm2 bearing capacity required)	External	66150	112455	Truck & Dog Trailer	16.5	7573	60	1225	7573
Turbine laydown areas	C	Structural fill (2kg/cm2 bearing capacity required)	Internal	418887	691164	Truck & Dog Trailer	16.5	46543	60	7757	46543
Upgraded site access track from Kidman Way	A	Gravel / course aggregates	External	1040	1768	Truck & Dog Trailer	16.5	119	60	19	119
Construction access tracks	B	Gravel / course aggregates	External	9180	15606	Truck & Dog Trailer	16.5	1051	60	170	1051
Footings - poles for internal overhead cabling	D	Concrete base	Internal	100	100	Concrete Agitator	14.9	7	7	16	16
		Cement (for concrete)	External	15	23	Semi Trailer	30.5	1	80	0	1
		Sand / fine aggregates (for concrete)	Internal	30	48	Truck & Dog Trailer	16.5	3	60	1	3
		Gravel / course aggregates (for concrete)	External	40	68	Truck & Dog Trailer	16.5	5	60	1	5
		Steel reinforcement (for concrete)	External	5	40	Semi Trailer	30.5	1	80	0	1
		Water (for concrete)	External	20	20	Water Truck	N/A	N/A	10	2	2

Site	Construction phase	Material	Material Origin	Project Quantity (m^3)	Project Quantity (tonnes)	Vehicle	Movements based on vehicle loading capacity		Movements based on vehicle cubic capacity		Required movements
							Vehicle Capacity (t)	Movements	Vehicle Capacity (m^3)	Movements	
Footings - poles for transmission s lines to NEM	H	Concrete base	Internal	800	6320	Concrete Agitator	14.9	471	7	127	471
		Cement (for concrete)	External	120	180	Semi Trailer	30.5	7	80	2	7
		Sand / fine aggregates (for concrete)	Internal	240	384	Truck & Dog Trailer	16.5	26	60	4	26
		Gravel / course aggregates (for concrete)	External	320	544	Truck & Dog Trailer	16.5	37	60	6	37
		Steel reinforcement (for concrete)	External	40	316	Semi Trailer	30.5	12	80	1	12
		Water (for concrete)	External	160	160	Water Truck	N/A	N/A	10	18	18
Footings - permanent meteorologi cal masts	E	Concrete base	Internal	288	2275	Concrete Agitator	14.9	170	7	46	170
		Cement (for concrete)	External	43	65	Semi Trailer	30.5	2	80	1	2
		Sand / fine aggregates (for concrete)	Internal	86	138	Truck & Dog Trailer	16.5	9	60	2	9
		Gravel / course aggregates (for concrete)	External	115	196	Truck & Dog Trailer	16.5	13	60	2	13
		Steel reinforcement (for concrete)	External	14	114	Semi Trailer	30.5	4	80	0	4
		Water (for concrete)	External	58	58	Water Truck	N/A	N/A	10	6	6

Site	Construction phase	Material	Material Origin	Project Quantity (m^3)	Project Quantity (tonnes)	Vehicle	Movements based on vehicle loading capacity		Movements based on vehicle cubic capacity		Required movements
							Vehicle Capacity (t)	Movements	Vehicle Capacity (m^3)	Movements	
Footings - turbines	E	Concrete	Internal	210000	525000	Concrete Agitator	14.9	39150	7	33333	39150
		Steel reinforcement	External	10500	82950	Semi Trailer	30.5	3022	80	146	3022
		Cement (for concrete)	External	31500	47250	Semi Trailer	30.5	1721	80	438	1721
		Sand / fine aggregates (for concrete)	Internal	63000	100800	Truck & Dog Trailer	16.5	6788	60	1167	6788
		Gravel / course aggregates (for concrete)	External	84000	142800	Truck & Dog Trailer	16.5	9616	60	1556	9616
		Water (for concrete)	External	42000	42000	Water Truck	N/A	N/A	10	4667	4667

Appendix B. Example Driver Code of Conduct

Driver Code of Conduct

The Driver Code of Conduct is to ensure that light and heavy drivers adhere to safe driving practices. All employees and contractors are to abide by responsible driving and adhering to the Code of Conduct.

1. General requirements

Light and heavy vehicle drivers hauling to and from the Project area must:

- Have undertaken a site induction carried out by a suitably qualified employee
- Hold a valid driver's licence for the class of vehicle that they are operating and carry a current driver's licence while operating a vehicle
- Operate the vehicle in a safe manner to, from and within the site in accordance with all road rules pertaining to the vehicle, particularly in residential areas or at school zones
- Comply with the direction of authorised site personnel when within the site.

All incidents, hazards and near misses, whether resulting in an injury or not, must be reported to site management immediately. This includes incidents, hazards and near misses which have occurred on or while travelling to and from the site.

Regular toolboxes will be held to outline the potential hazards of travel on the designated routes including locations with increased collision risk, damaged road infrastructure, potential noise impacts and school zones.

2. Light and heavy vehicle speed

Light and heavy vehicle drivers are to be made aware of two types of speeding:

- Where a vehicle driver travels faster than the posted speed limit
- Where a vehicle driver travels within the posted speed limit but at a speed which is inappropriate for road conditions e.g. rain, fog, unsealed roads.

All vehicle drivers are to observe the posted speed limits to comply with Australian Road Rules. Drivers must adjust their speed appropriately to suit the road environment and weather conditions. Drivers must adjust their speed appropriately through residential areas and school zones.

3. Light and heavy vehicle driver fatigue

Site personnel fatigue will be managed via the following:

- Unless under exceptional circumstances, work periods shall not exceed 12 hours
- Any extension of this period shall require the approval of site management and where possible alternative transport shall be arranged
- The monitoring of fatigue experienced by employees working extended hours shall rely not only on reporting by employees, but also on observation and assessment by site managers
- Carpooling and bus management will be considered to ensure the drivers are within the 12-hour timeframe to manage fatigue.

Under the *Heavy Vehicle Driver Fatigue Reform* (National Transport Commission 2008), all drivers of trucks and truck combinations over 12 tonne GMV (except for Ministerial Exemption Notices that may apply) are required to operate under one of three fatigue management schemes:

- Standard Hours of Operation
- Basic Fatigue Management
- Advanced Fatigue Management.

All heavy vehicle operators are to be aware of their adopted fatigue management scheme and operate within its requirements.

4. Adherence to designated transport routes

Light and heavy drivers must follow the designated transport routes agreed upon with site personnel to and from the Project area. Heavy vehicles must travel only on heavy vehicle-approved roads and must access the site from Kidman Way (B87), Liddles Lane and/or Jerrys Lane.

5. Safety in residential areas and school zones

Drivers are required to be aware and show care when driving through residential areas and near schools, including between the morning (8:00am to 9:30am) and afternoon (2:30pm to 4:00pm) periods. Drivers are to be mindful of children being dropped off and picked up at bus stops and at schools during these periods. Drivers are to comply with 40km/h speed limit for traffic passing a school bus as well as within school zones. Drivers are to give pedestrians a wide berth and be aware of the pedestrians' safety, road users' safety and their own safety at all times.

Construction vehicle movements will be managed to minimise movements during periods of higher traffic volumes and outside of school pick up and drop off periods.

6. Heavy vehicle noise

If possible, heavy vehicle drivers should not use compression brakes near residential areas as compression brakes can cause excessive noise, especially at night. Compression braking throughout residential areas is only to be used if required for safety reasons. When driving near residential areas, a reduction in speed is recommended to minimise the need to use compression brakes.

All heavy vehicles must be fitted with audible reversing alarms for the safety of all personnel. However, audible reversing alarms can be noisy and heavy vehicle drivers should minimise reversing near residential areas.

7. Public complaint resolution

To assist in the orderly resolution of complaints, site management will keep a register itemising all reported incidents relating to complaints in regard to heavy vehicle driver conduct external to the site.

The incident register is to include (where possible):

1. Date of the complaint
2. Time of the complaint
3. Name of the complainant (if available)
4. How the complaint was received
5. Detailed description of the complaint (including location, driver/heavy vehicle details)
6. What/when actions were taken to resolve the issue
7. The reply to the person/organisation that made the complaint.

Once site management is satisfied that the complaint is substantiated, an investigation of the location and causes of the complaint will be undertaken. Following investigation of the issue, site management will provide feedback to the complainant that details the investigations undertaken, the result of the investigation and measures implemented to ensure that operations remain compliant. A description of any follow-up investigations and the response provided to the complainant will also be recorded in the Complaints Register upon closure of the issue.

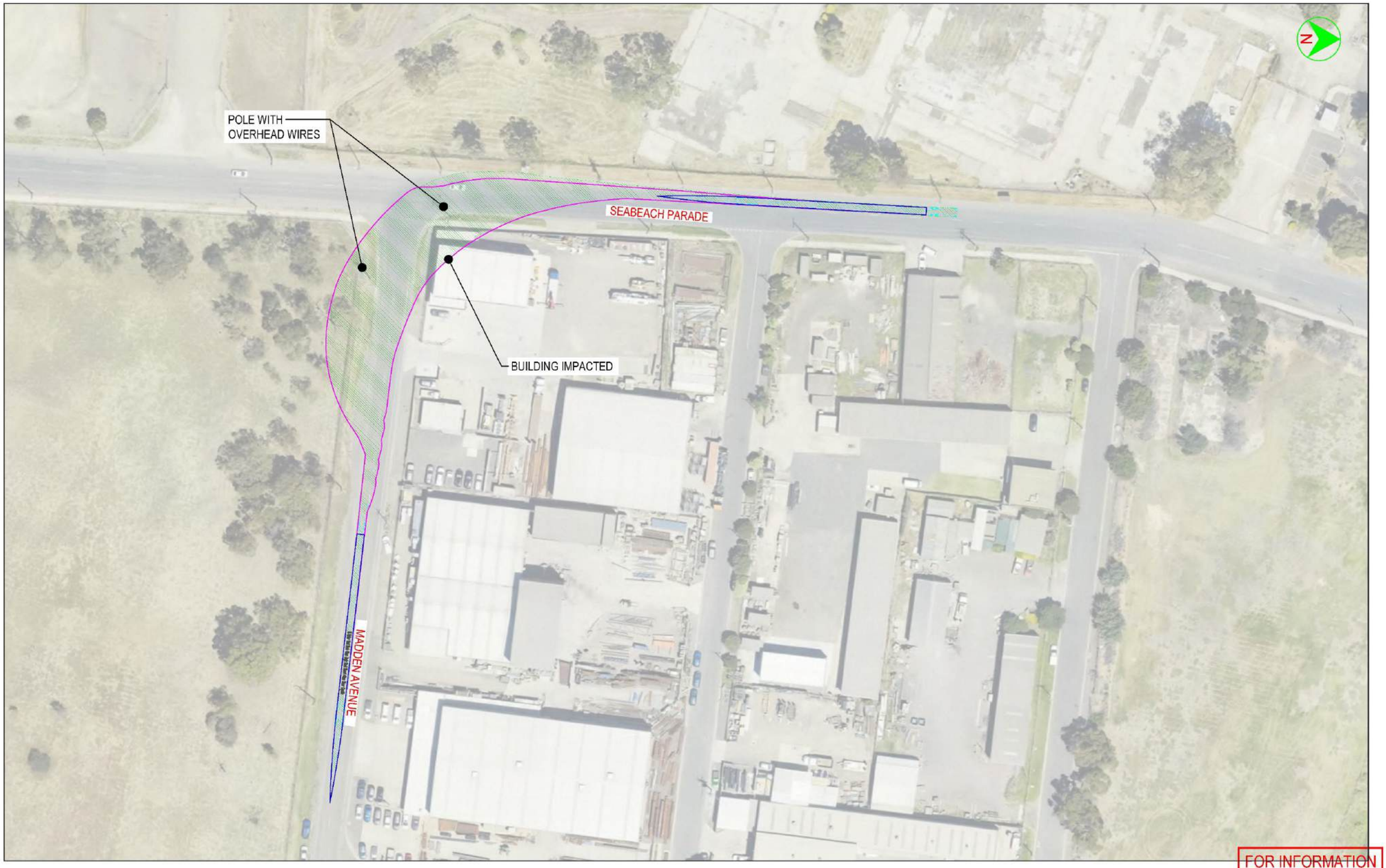
8. Penalties and disciplinary action

Failure to comply with this Driver Code of Conduct will lead to either the issue of a warning notice or disciplinary action If the offending party represents another company then disciplinary action may be treated as suspension or cancellation of a service contract or arrangement with that company.

A warning notice may be issued for a number of reasons, which may include (but not limited to):

- Driving at excessive speed
- Abuse of other road users or customers
- Not carrying out instructions as advised
- Not observing the site speed restrictions
- Not reporting incidents, accidents or near misses.

Appendix C. Oversize overmass swept path assessment



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PREPARED FOR: WIND TURBINE TRANSPORTATION ROUTE ASSESSMENT

YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

A3

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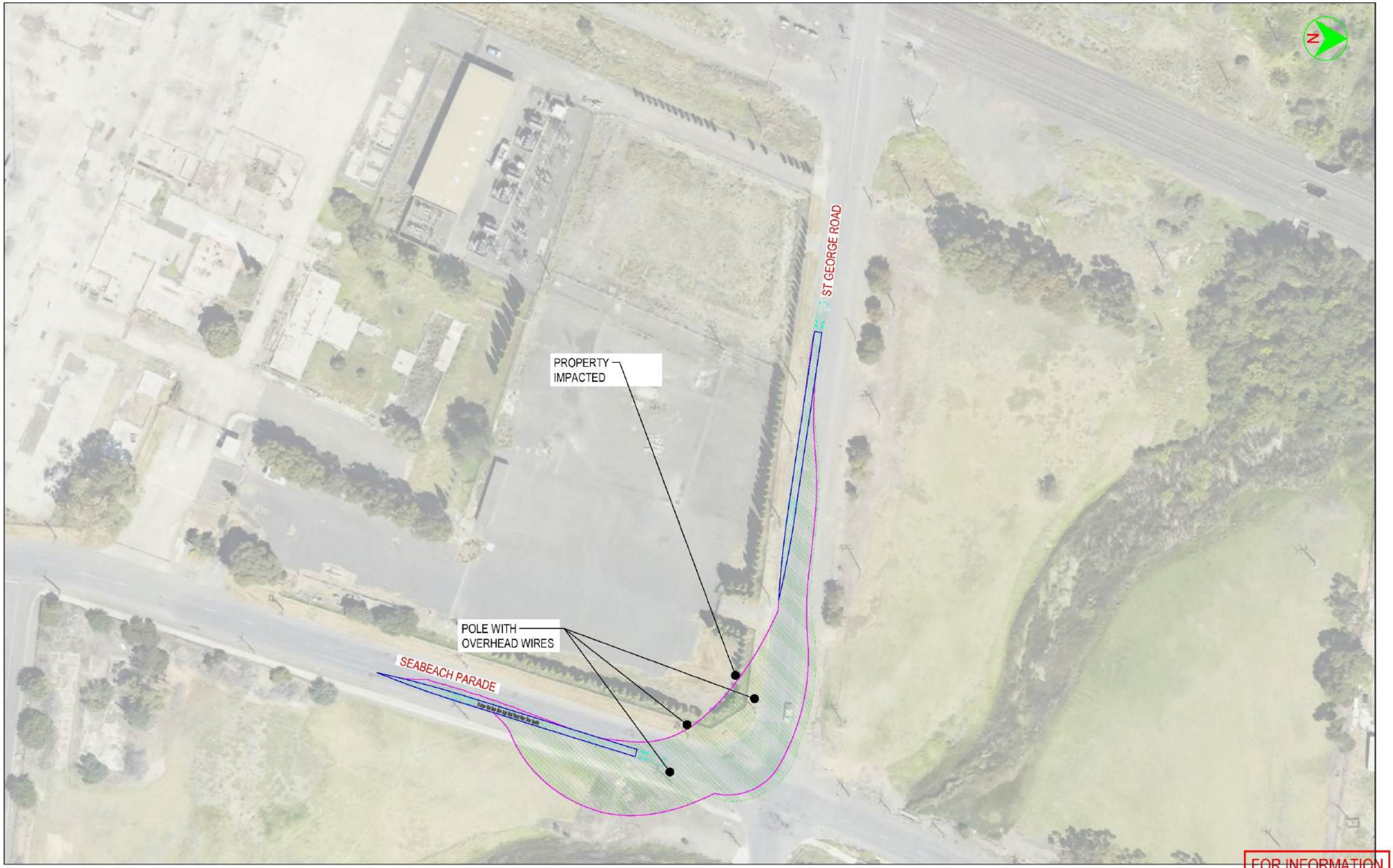

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SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

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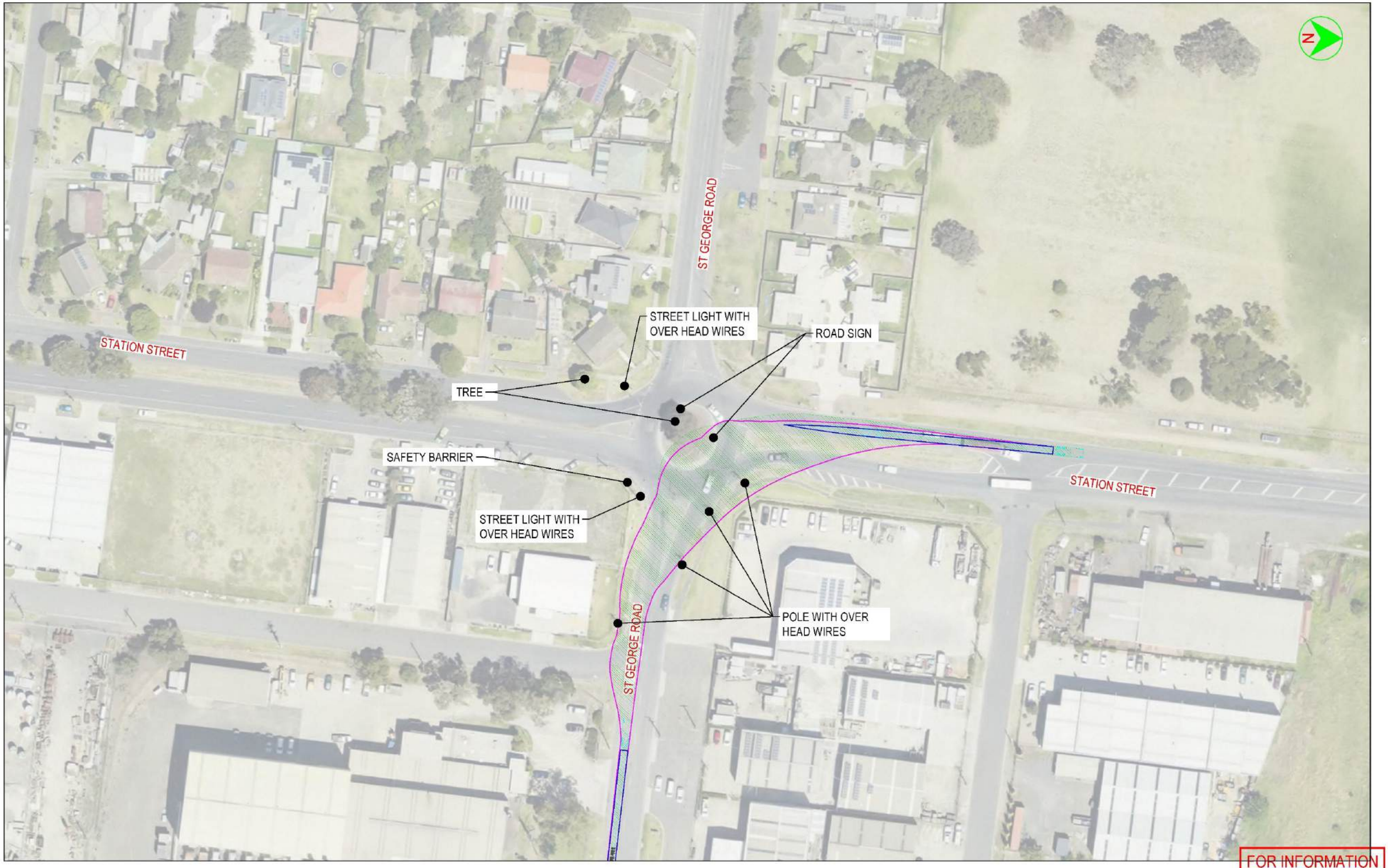

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YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

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YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

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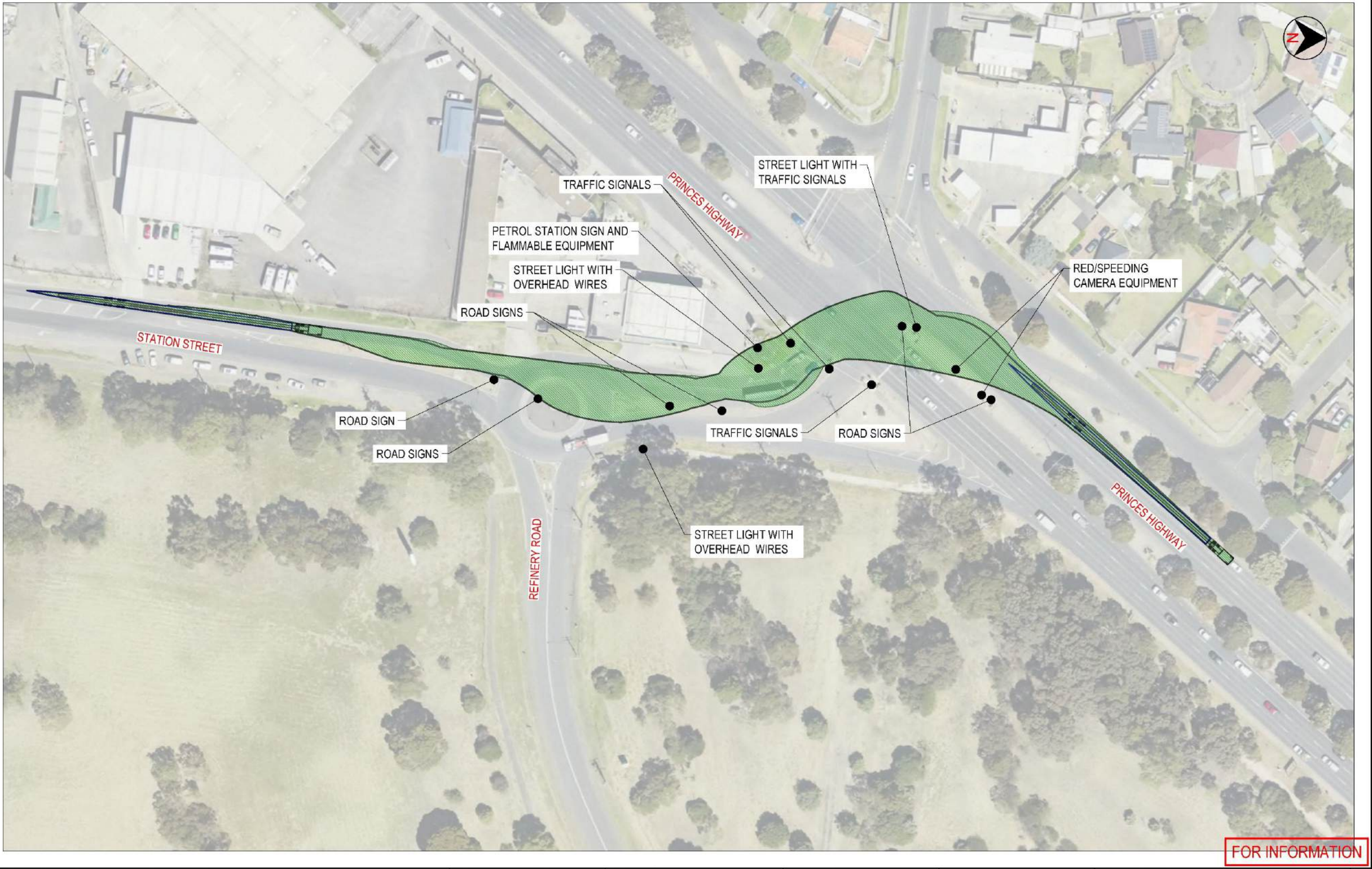

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YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

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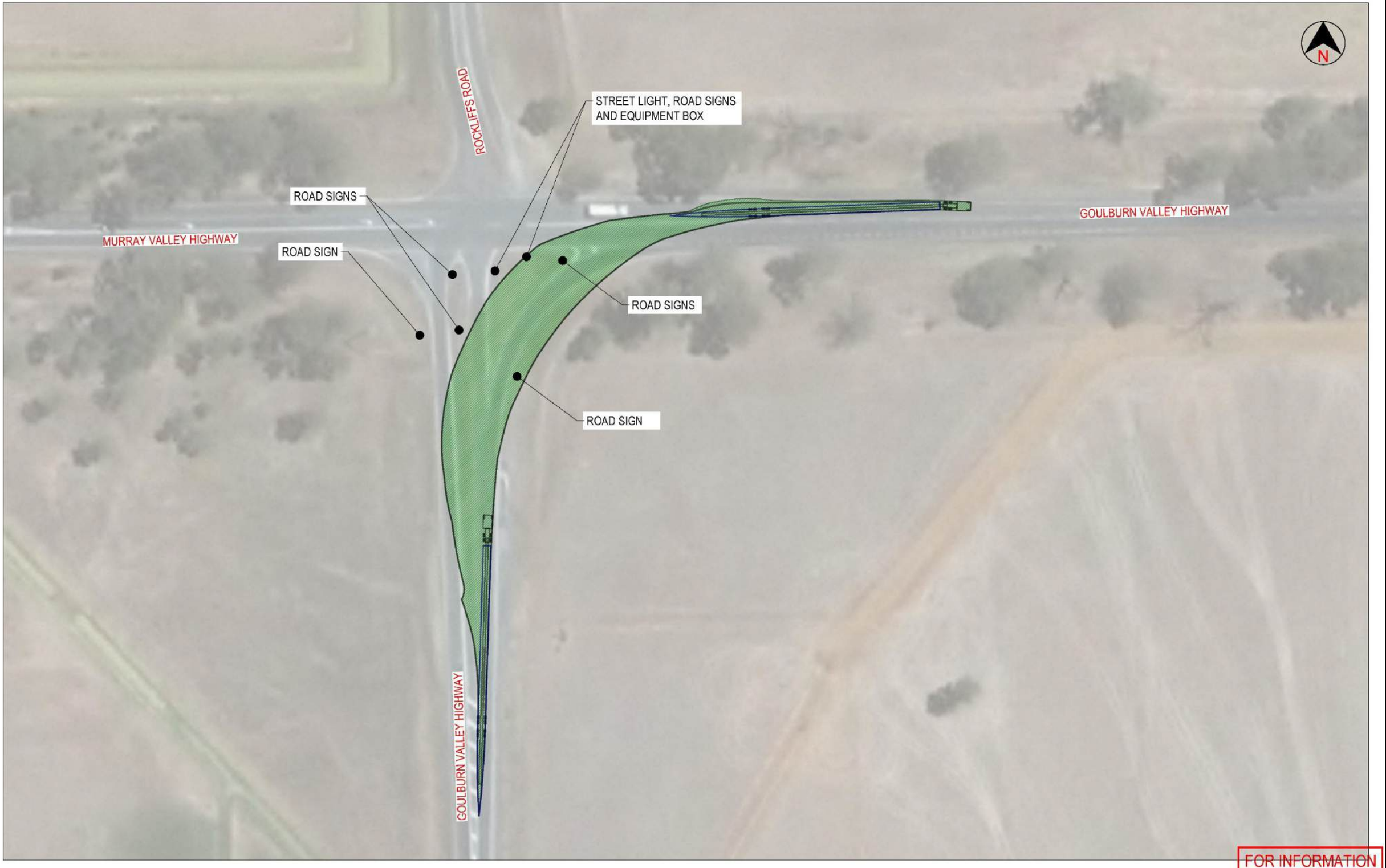

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YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
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DRAWING FILE LOCATION \ NAME - PLOT DATE \ TIME - PLOT BY
C:\Users\coopern2\OneDrive - Jacobs\Yanco Delta Wind Farm\Detail route assessment\[YANCO FUND FARM 86m vehicle Swept Path.dwg - 28/06/2022 5:32:07 PM - COOPERN2

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	REV	DATE	AMENDMENT / REVISION DESCRIPTION	APPROVAL

PROJECT BREAKDOWN STRUCTURE

SCALES ON A3 SIZE DRAWING

SCALE 1:1000 10 0 10 20 AT A3

CO-ORDINATE SYSTEM: MGA ZONE 56 HEIGHT DATUM: AHD

JACOBS DOCUMENT NUMBER

DRAWINGS / DESIGN PREPARED BY

Jacobs

Jacobs Group (Australia) Pty Ltd
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Web: www.jacobs.com

PLOT DATE / TIME		PLOT BY
28/06/2022		COOPERN2

	NAME	DATE
TITLE		
DRAWN	N.COOPER	24.06.2022
DRG CHECK		
DESIGN	N.COOPER	24.06.2022
DESIGN CHECK		
DESIGN MNGR		
PROJECT MNGR		

CLIENT: ViRYA

YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

A3

PREPARED FOR: WIND TURBINE TRANSPORTATION ROUTE ASSESSMENT

REGISTRATION No.

PART

ISSUE STATUS: ISSUED FOR INFFORMATION

EDMS No.

SHEET No.: ROD-0103B

REV: A

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0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION \ NAME - PLOT DATE \ TIME - PLOT BY
C:\Users\coopern2\OneDrive - Jacobs\Yanco Delta Wind Farm\Detail route assessment\YANCO FUIND FARM 86m vehicle Swept Path.dwg - 28/06/2022 5:32:10 PM - COOPERN2

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SCALES ON A3 SIZE DRAWING
SCALE 1:1000 10 0 10 20 AT A3

CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

PROJECT BREAKDOWN STRUCTURE

JACOBS DOCUMENT NUMBER

DRAWINGS / DESIGN PREPARED BY

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PLOT DATE / TIME: 28/06/2022 PLOT BY: COOPERN2

	TITLE	NAME	DATE
DRAWN		N.COOPER	24.06.2022
DRG CHECK			
DESIGN		N.COOPER	24.06.2022
DESIGN CHECK			
DESIGN MNGR			
PROJECT MNGR			

CLIENT: VIRYA

PREPARED FOR: WIND TURBINE TRANSPORTATION ROUTE ASSESSMENT

YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

A3

REGISTRATION No. | PART

ISSUE STATUS: ISSUED FOR INFFORMATION | EDMS No. | SHEET No.: ROD-0104 | REV: A

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50mm ON A3 SIZE ORIGINAL

0 5 10 15 20 25 30 35 40 45

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PROJECT BREAKDOWN STRUCTURE

SCALES ON A3 SIZE DRAWING

SCALE 1:1000 10 0 10 20 AT A3

CO-ORDINATE SYSTEM: MGA ZONE 56 HEIGHT DATUM: AHD

JACOBS DOCUMENT NUMBER

DRAWINGS / DESIGN PREPARED BY

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PLOT DATE / TIME		PLOT BY
28/06/2022		COOPERN2
TITLE	NAME	DATE
DRAWN	N.COOPER	24.06.2022
DRG CHECK		
DESIGN	N.COOPER	24.06.2022
DESIGN CHECK		
DESIGN MNGR		
PROJECT MNGR		

CLIENT

ViRYA

YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

A3

PREPARED FOR
WIND TURBINE TRANSPORTATION ROUTE ASSESSMENT

REGISTRATION No.

PART

ISSUE STATUS: ISSUED FOR INFFORMATION

EDMS No.

SHEET No.: ROD-0105

REV: A

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C:\Users\coopern2\OneDrive - Jacobs\Yanco Delta Wind Farm\Detail route assessment\[YANCO FUIND FARM 86m vehicle Swept Path.dwg - 28/06/2022 5:32:13 PM - COOPERN2

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	REV	DATE	AMENDMENT / REVISION DESCRIPTION	APPROVAL

PROJECT BREAKDOWN STRUCTURE

SCALES ON A3 SIZE DRAWING

SCALE 1:1000 10 0 10 20 AT A3

CO-ORDINATE SYSTEM: MGA ZONE 56 | HEIGHT DATUM: AHD

JACOBS DOCUMENT NUMBER

DRAWINGS / DESIGN PREPARED BY

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	NAME	DATE
TITLE		
DRAWN	N.COOPER	24.06.2022
DRG CHECK		
DESIGN	N.COOPER	24.06.2022
DESIGN CHECK		
DESIGN MNGR		
PROJECT MNGR		

CLIENT: ViRYA

PREPARED FOR: WIND TURBINE TRANSPORTATION ROUTE ASSESSMENT

YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

A3

REGISTRATION No. | PART

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PROJECT BREAKDOWN STRUCTURE

SCALES ON A3 SIZE DRAWING

SCALE 1:1000 10 0 10 20 AT A3

CO-ORDINATE SYSTEM: MGA ZONE 56 | HEIGHT DATUM: AHD

JACOBS DOCUMENT NUMBER

DRAWINGS / DESIGN PREPARED BY

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28/06/2022	COOPERN2

	NAME	DATE
DRAWN	N.COOPER	24.06.2022
DRG CHECK		
DESIGN	N.COOPER	24.06.2022
DESIGN CHECK		
DESIGN MNGR		
PROJECT MNGR		

CLIENT

ViRYA

PREPARED FOR

WIND TURBINE TRANSPORTATION ROUTE ASSESSMENT

YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

A3

REGISTRATION No. | PART

ISSUE STATUS	EDMS No.	SHEET No.	REV
ISSUED FOR INFFORMATION		ROD-0107	A

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0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

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DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	REV	DATE	AMENDMENT / REVISION DESCRIPTION	APPROVAL

PROJECT BREAKDOWN STRUCTURE

SCALES ON A3 SIZE DRAWING

SCALE 1:1000 10 0 10 20 AT A3

CO-ORDINATE SYSTEM: MGA ZONE 56 | HEIGHT DATUM: AHD

JACOBS DOCUMENT NUMBER

DRAWINGS / DESIGN PREPARED BY

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PLOT DATE / TIME 28/06/2022	DRAWN	N.COOPER	24.06.2022
PLOT BY COOPERN2	DRG CHECK		
	DESIGN	N.COOPER	24.06.2022
	DESIGN CHECK		
	DESIGN MNGR		
	PROJECT MNGR		

CLIENT: VIRYA

PREPARED FOR: WIND TURBINE TRANSPORTATION ROUTE ASSESSMENT

YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

A3

REGISTRATION No. | PART

ISSUE STATUS: ISSUED FOR INFFORMATION | EDMS No. | SHEET No.: ROD-0108 | REV: A

FOR INFORMATION

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0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION \ NAME - PLOT DATE \ TIME - PLOT BY
C:\Users\coopern2\OneDrive - Jacobs\Yanco Delta Wind Farm\Detail route assessment\YANCO FUND FARM 86m vehicle Swept Path.dwg - 28/06/2022 5:32:15 PM - COOPERN2

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	REV	DATE	AMENDMENT / REVISION DESCRIPTION	APPROVAL

PROJECT BREAKDOWN STRUCTURE

SCALES ON A3 SIZE DRAWING

SCALE 1:1000 10 0 10 20 AT A3

CO-ORDINATE SYSTEM: MGA ZONE 56 HEIGHT DATUM: AHD

JACOBS DOCUMENT NUMBER

DRAWINGS / DESIGN PREPARED BY

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28/06/2022		COOPERN2

TITLE	NAME	DATE
DRAWN	N.COOPER	24.06.2022
DRG CHECK		
DESIGN	N.COOPER	24.06.2022
DESIGN CHECK		
DESIGN MNGR		
PROJECT MNGR		

CLIENT: ViRYA

PREPARED FOR: WIND TURBINE TRANSPORTATION ROUTE ASSESSMENT

YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

A3

REGISTRATION No. | PART

ISSUE STATUS: ISSUED FOR INFFORMATION | EDMS No. | SHEET No.: ROD-0109 | REV: A

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DRAWING FILE LOCATION \ NAME - PLOT DATE \ TIME - PLOT BY
C:\Users\coopern2\OneDrive - Jacobs\Yanco Delta Wind Farm\Detail route assessment\YANCO FUIND FARM 86m vehicle Swept Path.dwg - 3/11/2022 12:25:39 PM - COOPERN2

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING

REV	DATE	AMENDMENT / REVISION DESCRIPTION	APPROVAL
A	27/092022	SWEPT PATH AMENDED	
B	02/11/2022	SWEPT PATH AMENDED	

PROJECT BREAKDOWN STRUCTURE

JACOBS DOCUMENT NUMBER

SCALES ON A3 SIZE DRAWING
SCALE 1:1000 10 0 10 20 AT A3

CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

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PLOT DATE / TIME: 3/11/2022
PLOT BY: COOPERN2

	NAME	DATE
TITLE		
DRAWN	N COOPER	24.06.2022
DRG CHECK		
DESIGN	N COOPER	24.06.2022
DESIGN CHECK		
DESIGN MNGR		
PROJECT MNGR		

CLIENT: ViRYA

PREPARED FOR: WIND TURBINE TRANSPORTATION ROUTE ASSESSMENT

YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

A3

REGISTRATION No.

PART

ISSUE STATUS: ISSUED FOR INFFORMATION
EDMS No.
SHEET No.: ROD-0110
REV: B

FOR INFORMATION

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0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION \ NAME - PLOT DATE \ TIME - PLOT BY
C:\Users\coopern2\OneDrive - Jacobs\Yanco Delta Wind Farm\Detail route assessment\YANCO FUIND FARM 86m vehicle Swept Path.dwg - 28/06/2022 5:32:19 PM - COOPERN2

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	REV	DATE	AMENDMENT / REVISION DESCRIPTION	APPROVAL

PROJECT BREAKDOWN STRUCTURE

SCALES ON A3 SIZE DRAWING

SCALE 1:1000 10 0 10 20 AT A3

CO-ORDINATE SYSTEM: MGA ZONE 56 | HEIGHT DATUM: AHD

JACOBS DOCUMENT NUMBER

DRAWINGS / DESIGN PREPARED BY

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PLOT DATE / TIME		PLOT BY
28/06/2022		COOPERN2
TITLE	NAME	DATE
DRAWN	N.COOPER	24.06.2022
DRG CHECK		
DESIGN	N.COOPER	24.06.2022
DESIGN CHECK		
DESIGN MNGR		
PROJECT MNGR		

CLIENT

ViRYA

PREPARED FOR

WIND TURBINE TRANSPORTATION ROUTE ASSESSMENT

YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

A3

REGISTRATION No. | PART

ISSUE STATUS: ISSUED FOR INFFORMATION | EDMS No. | SHEET No.: ROD-0111 | REV: A

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0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION \ NAME - PLOT DATE \ TIME - PLOT BY
C:\Users\coopern2\OneDrive - Jacobs\Yanco Delta Wind Farm\Detail route assessment\YANCO FUND FARM 86m vehicle Swept Path.dwg - 28/06/2022 5:32:21 PM - COOPERN2

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	REV	DATE	AMENDMENT / REVISION DESCRIPTION	APPROVAL

PROJECT BREAKDOWN STRUCTURE

SCALES ON A3 SIZE DRAWING
SCALE 1:1000 10 0 10 20 AT A3

CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

JACOBS DOCUMENT NUMBER

DRAWINGS / DESIGN PREPARED BY

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Fax: +61 2 9928 2500
Web: www.jacobs.com

PLOT DATE / TIME: 28/06/2022 PLOT BY: COOPERN2

	TITLE	NAME	DATE
DRAWN		N.COOPER	24.06.2022
DRG CHECK			
DESIGN		N.COOPER	24.06.2022
DESIGN CHECK			
DESIGN MNGR			
PROJECT MNGR			

CLIENT: ViRYA

PREPARED FOR: WIND TURBINE TRANSPORTATION ROUTE ASSESSMENT

YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

A3

REGISTRATION No. | PART

ISSUE STATUS: ISSUED FOR INFFORMATION | EDMS No. | SHEET No.: ROD-0200 | REV: -

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50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION \ NAME - PLOT DATE \ TIME - PLOT BY
C:\Users\coopern2\OneDrive - Jacobs\Yanco Delta Wind Farm\Detail route assessment\YANCO FUIND FARM 86m vehicle Swept Path.dwg - 28/06/2022 5:32:23 PM - COOPERN2

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	REV	DATE	AMENDMENT / REVISION DESCRIPTION	APPROVAL

PROJECT BREAKDOWN STRUCTURE

SCALES ON A3 SIZE DRAWING
SCALE 1:1000 (10 0 10 20 AT A3)

CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

JACOBS DOCUMENT NUMBER

DRAWINGS / DESIGN PREPARED BY

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Fax: +61 2 9928 2500
Web: www.jacobs.com

	NAME	DATE
PLOT DATE / TIME	28/06/2022	
PLOT BY	COOPERN2	
TITLE		
DRAWN	N.COOPER	24.06.2022
DRG CHECK		
DESIGN	N.COOPER	24.06.2022
DESIGN CHECK		
DESIGN MNGR		
PROJECT MNGR		

CLIENT: ViRYA

PREPARED FOR: WIND TURBINE TRANSPORTATION ROUTE ASSESSMENT

YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

A3

REGISTRATION No. | PART

ISSUE STATUS: ISSUED FOR INFFORMATION | EDMS No. | SHEET No.: ROD-0201 | REV: -

FOR INFORMATION

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0 5 10 15 20 25 30 35 40 45 150mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION \ NAME - PLOT DATE \ TIME - PLOT BY
C:\Users\coopern2\OneDrive - Jacobs\Yanco Delta Wind Farm\Detail route assessment\YANCO FUIND FARM 86m vehicle Swept Path.dwg - 28/06/2022 5:32:26 PM - COOPERN2

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	REV	DATE	AMENDMENT / REVISION DESCRIPTION	APPROVAL

PROJECT BREAKDOWN STRUCTURE

SCALES ON A3 SIZE DRAWING

SCALE 1:1000 10 0 10 20 AT A3

CO-ORDINATE SYSTEM: MGA ZONE 56 HEIGHT DATUM: AHD

JACOBS DOCUMENT NUMBER

DRAWINGS / DESIGN PREPARED BY

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PLOT DATE / TIME	PLOT BY	
28/06/2022	COOPERN2	
TITLE	NAME	DATE
DRAWN	N.COOPER	24.06.2022
DRG CHECK		
DESIGN	N.COOPER	24.06.2022
DESIGN CHECK		
DESIGN MNGR		
PROJECT MNGR		

CLIENT

ViRYA

PREPARED FOR

WIND TURBINE TRANSPORTATION ROUTE ASSESSMENT

YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

A3

REGISTRATION No. PART

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0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

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C:\Users\coopern2\OneDrive - Jacobs\Yanco Delta Wind Farm\Detail route assessment\YANCO FUIND FARM 86m vehicle Swept Path.dwg - 28/06/2022 5:32:28 PM - COOPERN2

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	REV	DATE	AMENDMENT / REVISION DESCRIPTION	APPROVAL

PROJECT BREAKDOWN STRUCTURE

SCALES ON A3 SIZE DRAWING
SCALE 1:1000 (10 0 10 20 AT A3)

CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

JACOBS DOCUMENT NUMBER

DRAWINGS / DESIGN PREPARED BY

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PLOT DATE / TIME 28/06/2022		PLOT BY COOPERN2
TITLE	NAME	DATE
DRAWN	N.COOPER	24.06.2022
DRG CHECK		
DESIGN	N.COOPER	24.06.2022
DESIGN CHECK		
DESIGN MNGR		
PROJECT MNGR		

CLIENT
ViRYA

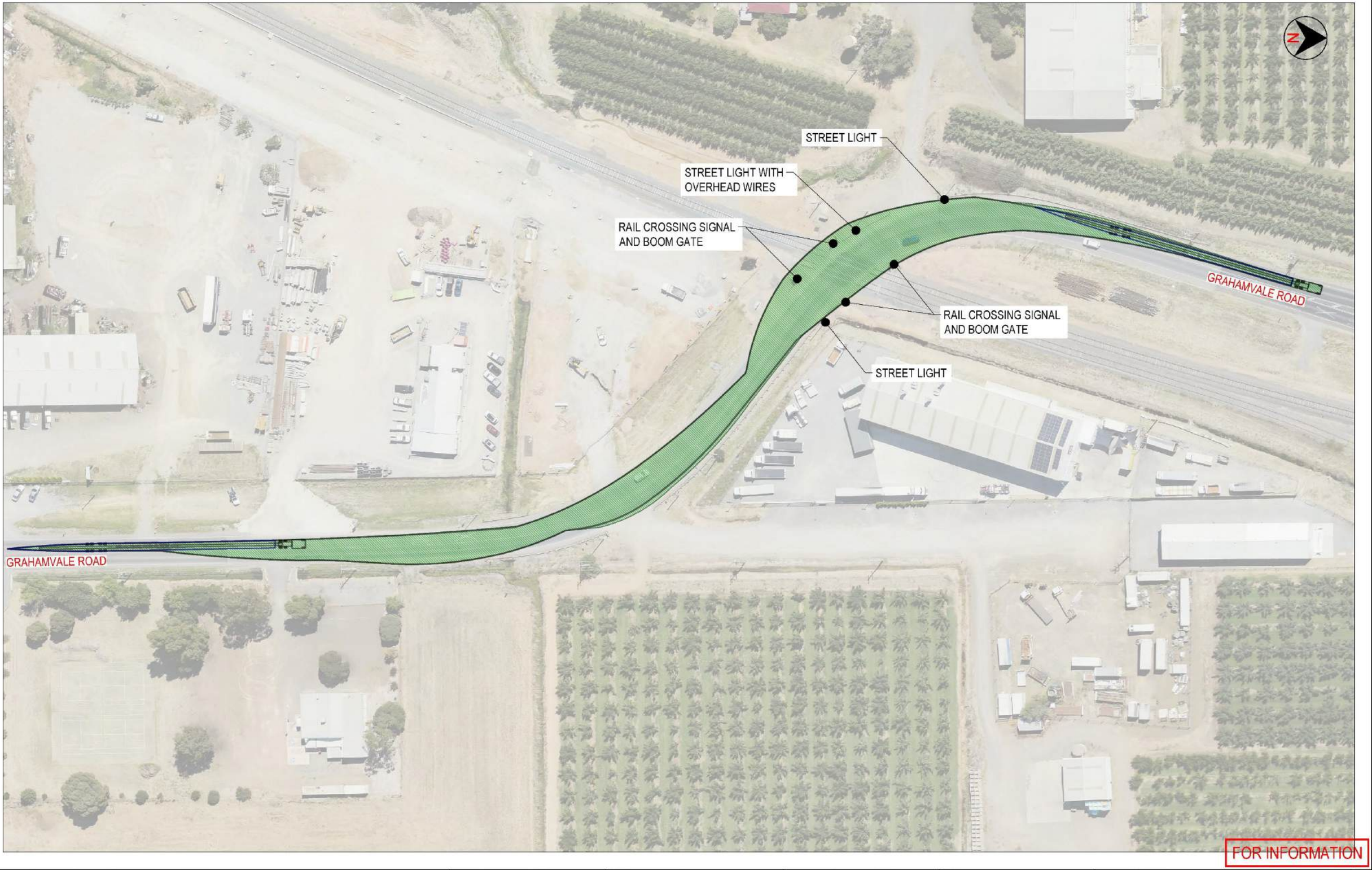
PREPARED FOR
WIND TURBINE TRANSPORTATION ROUTE ASSESSMENT

YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

A3

REGISTRATION No. | PART

ISSUE STATUS: ISSUED FOR INFFORMATION | EDMS No. | SHEET No.: ROD-0203 | REV: -



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0 5 10 15 20 25 30 35 40 45 |60mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION \ NAME - PLOT DATE \ TIME - PLOT BY
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DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	REV	DATE	AMENDMENT / REVISION DESCRIPTION	APPROVAL

PROJECT BREAKDOWN STRUCTURE

SCALES ON A3 SIZE DRAWING
SCALE 1:1000 (10 0 10 20 AT A3)

CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

JACOBS DOCUMENT NUMBER

DRAWINGS / DESIGN PREPARED BY

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	PLOT DATE / TIME 28/06/2022	PLOT BY COOPERN2
TITLE	NAME	DATE
DRAWN	N COOPER	24.06.2022
DRG CHECK		
DESIGN	N COOPER	24.06.2022
DESIGN CHECK		
DESIGN MNGR		
PROJECT MNGR		

CLIENT
ViRYA

PREPARED FOR
WIND TURBINE TRANSPORTATION ROUTE ASSESSMENT

YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

A3

REGISTRATION No. | PART

ISSUE STATUS: ISSUED FOR INFFORMATION | EDMS No. | SHEET No.: ROD-0204 | REV: -

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50mm ON A3 SIZE ORIGINAL

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DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	REV	DATE	AMENDMENT / REVISION DESCRIPTION	APPROVAL

PROJECT BREAKDOWN STRUCTURE

SCALES ON A3 SIZE DRAWING

SCALE 1:1000 10 0 10 20 AT A3

CO-ORDINATE SYSTEM: MGA ZONE 56 | HEIGHT DATUM: AHD

JACOBS DOCUMENT NUMBER

DRAWINGS / DESIGN PREPARED BY

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PLOT DATE / TIME		PLOT BY
28/06/2022		COOPERN2
TITLE	NAME	DATE
DRAWN	N COOPER	24.06.2022
DRG CHECK		
DESIGN	N COOPER	24.06.2022
DESIGN CHECK		
DESIGN MNGR		
PROJECT MNGR		

CLIENT: VIRYA

PREPARED FOR: WIND TURBINE TRANSPORTATION ROUTE ASSESSMENT

YANCO WIND FARM
SWEPT PATH ANALYSIS
76m WIND TURBINE BLADE TRANSPORTER
86m TOTAL LENGTH
ROUTE ASSESMENT

A3

REGISTRATION No. | PART

ISSUE STATUS: ISSUED FOR INFFORMATION | EDMS No. | SHEET No.: ROD-0205 | REV: -