Preliminary Traffic Impact Assessment

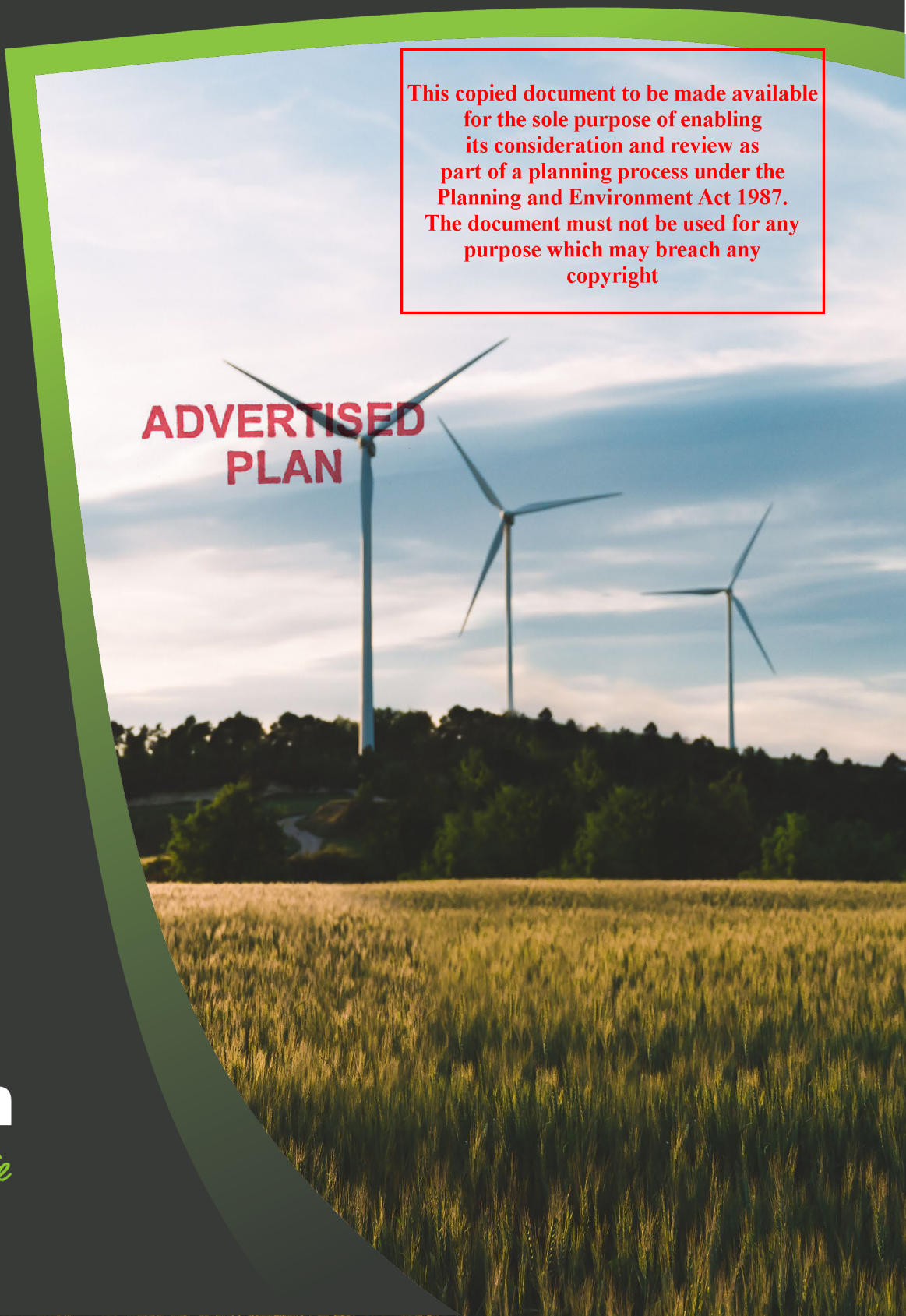
Preliminary Traffic Impact Assessment

Meering West Wind Farm Pty Ltd

Reference: 527201

Revision: C

2026-03-30



aurecon

Bringing ideas to life

Document control record

Document prepared by:

Aurecon Australasia Pty Ltd
ABN 54 005 139 873
Aurecon Centre
Level 8, 850 Collins Street
Docklands, Melbourne VIC 3008
PO Box 23061
Docklands VIC 8012
Australia

T +61 3 9975 3000
F +61 3 9975 3444
E melbourne@aurecongroup.com
W aurecongroup.com

Document control		aurecon				
Report title		Preliminary Traffic Impact Assessment				
Document code			**Project number**		527201	
File path		Https://aurecongroup.sharepoint.com/sites/527201/5_WorkingFiles/Traffic/TIA/Post-Final/Meering West Wind Farm TIA Post-FINAL.docx				
Client		Meering West Wind Farm Pty Ltd				
Client contact		Phil Burn	**Client reference**			
Rev	**Date**	**Revision details/status**	**Author**	**Reviewer**	**Verifier** (if required)	**Approver**
A.01	2025-06-24	Draft	J. Perry	K. Richter		
A	2025-07-02	Final	J. Perry	K. Richter	G. Austin	S. Stewart
B.01	2025-10-24	Updated based on request for further information	K. Richter	K. Richter	G. Austin	
B	2025-10-31	Final	G. Austin	G. Austin	S. Stewart	S. Stewart
C	2026-03-30	Technical updates	S. Poulios	G. Austin		S. Stewart
Current revision		**C**				

Approval			
Author signature	*S. Poulios*	Approver signature	S. Stewart
Name	S. Poulios	Name	Sharon Stewart
Title	Civil Engineer	Title	Principal, Environment and Planning

Executive Summary

Aurecon Australasia Pty Ltd (Aurecon) has been engaged by Meering West Wind Farm Pty Ltd to facilitate the environmental and planning assessments and approvals for the Meering West Wind Farm Project (the Project), located near Meering West in Northern Victoria. This Project is situated approximately 250 kilometres (km) north of Melbourne and 100 km north of Bendigo. The Project encompasses around 20,000 hectares (ha) of farmland within the Gannawarra and Loddon Local Government Areas.

The Project includes the development of up to 164 wind turbines, complemented by ancillary infrastructure including one permanent meteorological mast, a Battery Energy Storage System (BESS), a terminal substation, collector stations, underground electricity cables and an internal above ground powerline. A temporary construction compound and two concrete batching plants will be established during the construction phase. The construction phase is expected to span approximately three years, and the Project will have an operational life projected at around 40 years.

Aurecon was commissioned by Meering West Pty Ltd (the Proponent) to undertake a Preliminary Traffic Assessment to inform the development of the Project.

Existing conditions

A desktop review was completed of the publicly available information in relation to the traffic conditions in and around the Project Area, it was found that:

- The Project is located within and is bordered by land within the Farming Zone. It is expected that the use of the local roads within the Project Area would be typically relatively low volume with the majority of traffic associated with local farming and property access. During harvest traffic volumes will be increased and include large vehicles and equipment.
- There are two declared roads (Kerang-Quambatook Road and Boort-Kerang Road) under the jurisdiction of Department of Transport and Planning proximate to the site. While local roads that connect in and around the site fall under the jurisdiction of either Loddon Shire or Gannawarra Shire Councils. The local roads range from sealed bidirectional roads to unsealed single lane gravel roads.
- There are no formal pedestrian or cyclist paths within the general vicinity.
- Project Area has four school bus routes and three bus/coach routes passing through and in the general area.
- The Robinvale railway line passes through the Project Area, however, only freight services operate along the line. There are level crossings present on Boort-Quambatook Road and Fleming Road.
- Traffic volume data is available for Kerang-Quambatook Road and Boort-Kerang Road which indicate these roads have low daily traffic volumes.
- Over the past five-year period there have been no recorded crashes within the Project Area. There were three serious crashes on Kerang-Quambatook Road and two other injury crashes on local roads proximate to the Project area, however no trend identified.

Construction

- **Traffic volume increase**: It is conservatively estimated that there would be traffic generation of up to 677 vehicles per day (1,354 trips) and AM/PM peak hour 500 trips. This represents a large increase to the surrounding road network however traffic volumes are expected to remain well within the capacity of the network, given existing conditions. However it is recommended that:
  - Adoption of traffic management protocols such as car-pooling and shuttle buses to reduce workforce personal vehicle trips are considered to reduce the impact of light vehicle movements on the road network and level of car parking that needs to be provided at construction sites.
  - CTMPs be developed and implemented to communicate and manage the routes which workers and heavy vehicles utilise during construction. This will reduce the risk of vehicles using sections of road which are not suitable for project access.

Subject to confirmation of anticipated construction phase traffic (both workers and construction vehicles), as well as the construction activity schedule, the increase in construction traffic with standard mitigation and management protocols adopted for large rural wind farm developments would not be expected to have any material adverse impact on the road network performance.

- **Access considerations:** The Project has proposed 68 separate access points for turbine access tracks with the majority connecting into local unsealed roads. All access points onto the public road network (and intersecting access tracks) are to be considered in regard to safe intersection sight distance, vehicle types and movements with appropriate mitigations adopted to facilitate safe access as necessary. Road infrastructure improvements are expected to be required and the extent of these to be established based on Project requirements, engagement with authorities and design standards. Suitable road improvements and upgrades may include road widening and/or pavement upgrades.
- **Preliminary oversized vehicle delivery route assessment:** The largest typical transport vehicle for the wind farm construction is the blade transport truck. The length of the blade transport truck, including the blades, is expected to be blades of 84.6 m and truck length of up to 93.8 m total.

  A preliminary proposed route has been identified for the wind turbine blade loaded vehicles from the Port of Geelong to the Project Area and key impacts are to typical roadside furniture requiring relocation. This would include signage, streetlights, power poles, traffic signals, level crossing infrastructure. In addition some additional hardstand areas may be required to accommodate swept paths.

  Mitigation measures for the delivery of wind turbine components are outlined below.

  - The OSOM and OD vehicles will require permits to travel and adhere to the relevant road authority permit conditions and/or policies and guidelines to provide for safe movement and management of impacts to other users.
  - A detailed OD/OSOM Transport Route Audit assessment is to be undertaken by a transport contractor once the dimensions and/or masses of the OD/OSOM vehicles are identified to assess route options and identify further constraints and required alterations (including height and width clearances (such as wires and trees), and bridges). This assessment and early identification of constraints, allows planning of routes and temporary removal of hazards and mitigation upgrades to minimise risk of damage and delays.
  - During movements TMPs in place will ensure appropriate permits are received and plan for escort vehicles, minimise disruptions or delays to the road network movements, schedule movements outside peak hours where possible.
- **Road condition and maintenance:** Increased heavy vehicles over the construction period may escalate wear and tear on the road surface. However, it is expected that agreements with road authorities (Council and Department of Transport and Planning (DTP)) will ensure timely repairs of any damage in the road corridors by use of dilapidation surveys. Prior to construction, road dilapidation surveys will be prepared for all local roads which will be regularly used during construction.
- **Impact to active transport:** The Project area does not have any formal pedestrian or cyclist paths however appropriate mitigation will be incorporated in the TMPs
- **Impact to public transport:** The increase in construction traffic would not be expected to have an adverse impact on the road network performance, therefore bus services are unlikely to experience a material impact due to the Project. To reduce the likelihood of an incident involving school buses the frequency, volume and bus stop locations of school bus routes will be documented in a TMP and associated mitigation such as avoiding these routes at key school times to reduce interaction. Engagement with bus operators will also be undertaken.
- **Impact to freight:** The freight network will need to be considered in the TMP, including the adoption of appropriate mitigation protocols as necessary to limit the impact of the additional anticipated traffic on freight services and infrastructure (level crossings). This may include avoiding roads with level crossings when planning access routes for construction vehicles to the site.

This is a preliminary assessment and further traffic assessment is expected as the Project progresses.

Any required traffic management treatments, and internal and external mitigation works, are to be identified and addressed by way of an approved CTMP or TMP, to be prepared by the construction contractor to the satisfaction of the relevant authorities. This is the responsibility of the Proponent and would be prepared in consultation with the construction contractor.

Operations and decommissioning

The operational and decommissioning phase traffic is expected to have a lower traffic impact than the construction phase.

Contents

Figures

Tables

Appendices

Glossary

Acronym	Definition
AADT	Annual Average Daily Traffic
Aurecon	Aurecon Australasia Pty Ltd.
BESS	Battery Energy Storage System
CTMP	Construction Traffic Management Plan
db	Decibel
db(A)	A-Weighted decibel
DTP	Department of Transport and Planning
EPA	Environment Protection Authority
FZ	Farming Zone
GW	gigawatt
ha	hectares
HML	Higher Mass Limit
HV	Heavy vehicle
HV%	Percentage of heavy vehicles
km	kilometres
kV	Kilovolt
LV	Light vehicle
m	Metres
MW	Megawatts
MWh	Megawatt hours
OD	Over Dimension
OSOM	Over Size Over Mass
The Project	Meering West Wind Farm Project
The Proponent	Meering West Wind Farm Pty Ltd
TIA	Traffic Impact Assessment
TMP	Traffic Management Plan
Project Area	The area in which construction will take place and for which approvals will be sought.
VNI West	Victoria to New South Wales Interconnector West

1 Introduction

Aurecon Australasia Pty Ltd (Aurecon) has been engaged by Meering West Wind Farm Pty Ltd to facilitate the environmental and planning assessments and approvals for the Meering West Wind Farm Project (the Project), located near Meering West in Northern Victoria.

1.1 Purpose

This Preliminary Traffic Impact Assessment (TIA) specifically sets out a desktop assessment of the anticipated traffic and transport risks of the proposed Project, as can be identified at this stage of the project planning. This includes consideration of the following:

- Review the existing conditions of the Project Area and transport network (desktop review)
- Develop traffic movement estimates generated by the proposed wind farm and its distribution, primarily during construction phases
- Preliminary assessment of delivery route of the largest components between Port of Geelong and the site
- Consideration of access, potential impacts to road condition and public transport

While preparing this assessment, a desktop review of the Project Area and its environs has been completed, development plans reviewed, and available traffic data collected and analysed.

Relevant standards and guidelines relied upon are noted and referenced as necessary throughout this report.

1.2 Assumptions and limitations

The following assumptions and limitations apply to this report:

- This report is preliminary due to the early stage of the Project and information available. Further traffic assessment will be required in subsequent stages.
- Based on a desktop review using publicly available information and information provided by the Proponent. No site visit or data collection was undertaken (except for the preliminary route assessment).
- It is assumed that all data provided by the Proponent is correct at the time of writing (but may change as the Project progresses and is refined).
- A staged schedule and breakdown of construction workers, vehicle volumes and types per activity/location has not been defined at this stage and volumes may be more or less depending on construction schedule and requirements.
- The Project is considering up to 84.6 m long blades (Vestas V172 84.6 m) as these are one of the largest currently available. The Proponent provided details for the vehicle to be used. Further assessment is required once the Original Equipment Manufacturer (OEM) specification is known, onboarding of a transportation contractor and determination of the final transportation vehicles occurs.
- The Project has not yet undertaken design or review of roads or access points to determine road/intersection upgrades which may be required within the Project site area. Access points provided are for both temporary and permanent access, with the large components in some cases having separate points of access. The access is preliminary, subject to change post design reviews and may vary for the range of vehicle types.

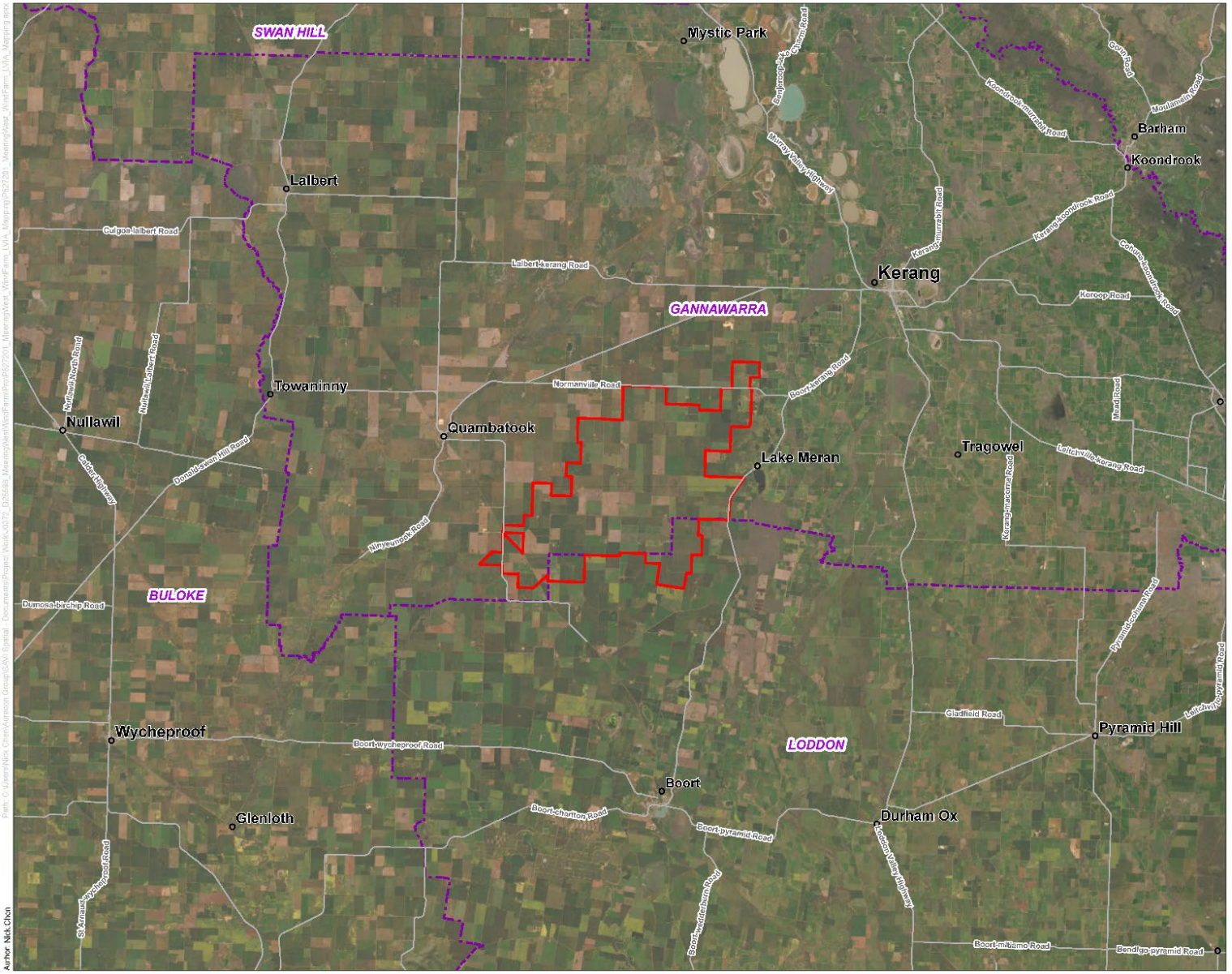
2 The Project

The following section provides an overview of the Project, including highlighting the key infrastructure components, as well as important details regarding construction and operational information for the Project.

2.1 Project area

The Project is located within the Loddon and Gannawarra municipalities. The Meering West Wind Farm is situated in Northern Victoria, approximately 250 km north of Melbourne, around 110 km north of Bendigo and 25 kms south-west of Kerang.

The Project encompasses approximately 20,000 ha, with most of the area located within the Shire of Gannawarra with a smaller Project component located within the Shire of Loddon. The landscape is predominantly characterised by agricultural land, featuring cropped fields that are well-maintained and utilised mostly for dryland cropping. The environment is largely flat to gently undulating.



Notes:

Basemap: Vicmap, Esri, TomTom, Garmin, FAO, NOAA, USGS, Earthstar Geographics

Data source: DEWLP (2023), Aurecon (2023)

Date: 19/03/2025 Version: 1

A3 scale: 1:300,000
0 5 10 Kilometers

Job No: P527201
Coordinate System: GDA 1994 MGA Zone 54

Meering West Wind Farm
Regional Context

Author: Nick Chen

Figure 2-1 Regional Context

2.2 Project description

The Project includes the following permanent and ancillary infrastructure, further details on the project infrastructure is shown in Figure 2-2.

2.2.1 Permanent core and ancillary infrastructure

- 164 wind turbines with adjoining hardstand
- An operations and maintenance building, including a car park and an office
- Internal access tracks
- 1000 MW / MWh Battery Energy Storage System (BESS)
- A terminal station connecting to VNI West
- Collector stations
- Permanent meteorological monitoring mast
- Internal above ground power line
- Utility installations

2.2.2 Temporary ancillary infrastructure

- A construction office and compounds, including site offices, car parking, storage and amenities
- Concrete batching plant
- Temporary civil works
- Laydown areas

Table 2-1 Key Parameters

Feature	Parameters	Quantity
Turbines		
Maximum Hub Heights	194 m	164
Maximum Blade Length*	84.6 m	
Maximum Tip Height	280 m	
Ancillary Infrastructure - Permanent		
BESS	Up to 8 ha	1
Operation and maintenance building	Up to 4 ha	1
Terminal station	Up to 4 ha	1
Collector station	Up to 4 ha	4
Permanent meteorological monitoring masts.	-	1 (existing)
Ancillary Infrastructure – Temporary		
Construction compound	Up to 10 ha	1
Concrete batching plant	1 ha	2
Hardstand area	50m x 40m	164

*as noted in Section 1.2 the blade length assessed for this report is Vestas V172 84.6m blade

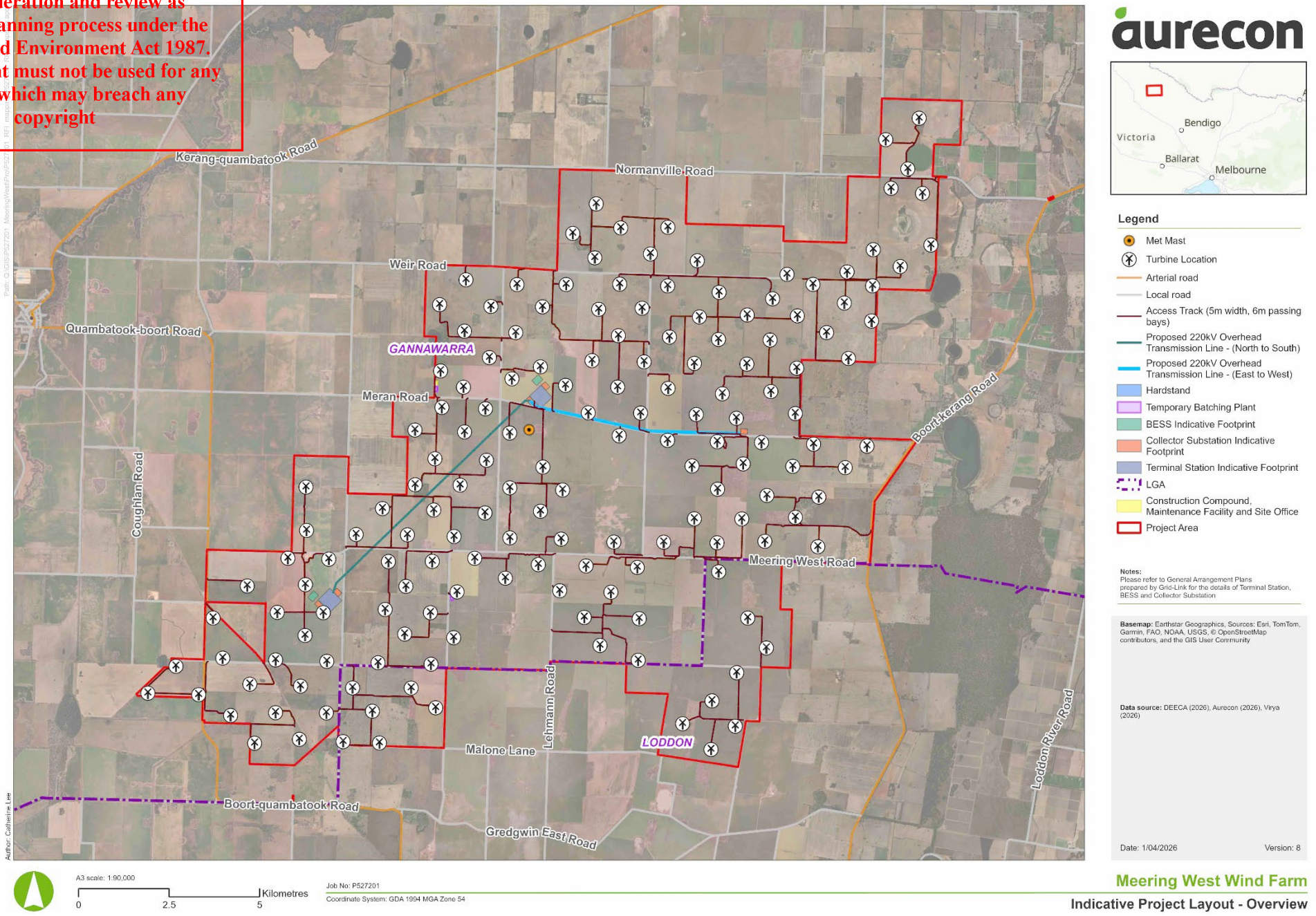


Figure 2-2 Indicative Project Layout

2.3 Construction phase

2.3.1 Schedule

The anticipated construction phase for the Project is expected to last for approximately three years with the potential phases in Table 2-2. Specific dates and phase schedule are not yet known however construction is anticipated to start in 2029.

Construction work is expected to occur six days per week. The assumed construction times are as follows (based on normal Environment Protection Authority (EPA) work hours):

- Monday to Friday 7:00 am – 6:00 pm
- Saturday 9:00 am – 1:00 pm.

Variations to these hours would be for overnight deliveries such as turbines, blades and transformers.

Table 2-2 Indicative construction phases and length (data source: Meering West Wind Farm)

Construction Phase	Potential stage length
A - Establish site offices, compounds and concrete batching batch plants	1-2 weeks
B - Gate installation, commence track construction, commence turbine foundation excavations and hard stands	18 months
C - Electrical work, cables, collectors, internal powerline, the terminal station	18 months
D - Turbine installation	24 months
E - Final commissioning and site demobilisation	6 months

2.3.2 Vehicle types

Construction related vehicle movements will comprise trips associated with construction workers as well as component and material deliveries. Workers will travel using light vehicles (LVs) to and from site and it is expected that most equipment and plant deliveries will occur via vans, heavy rigid vehicles and truck and trailer combinations. There will also be concrete agitators, truck and dogs and water trucks required for the works.

Some components however will be delivered using extendable trailers, platform trailers and OD and/or OSOM vehicles.

Construction vehicle types will be confirmed following appointment of a construction team. Appropriate traffic management measures will be identified prior to construction commencing for each vehicle type, as necessary, and be detailed in an appropriate Construction Traffic Management Plan or Traffic Management Plan. This will especially be the case for OD / OSOM vehicles.

The largest typical transport vehicle for the wind farm construction is expected to be the loaded blade transport truck. The length of the blade transport truck for the purpose of assessment, including the blades is expected to be blades of 84.6 m and truck length of up to 93.8 m total.

2.3.3 Site access and routes

It is expected that the majority of traffic including heavy vehicles and turbine component delivery will occur from Boort-Kerang Road to the east of the Project area. The two roads which are expected to provide primary access are Meran Road and Meering West Road. Secondary access from the west via from Quambatook-Boort Road is expected and accessed from Meran Road, Meering West Road and Flemming Road.

Permanent access points and internal access tracks are proposed to allow for the movement of vehicles are to be constructed. These are shown on Project Area (red) and internal access tracks to the permanent and temporary infrastructure locations (brown) and are illustrated previously in Figure 2-2.

The access tracks will be upgraded to the indicative cross-section detailed by the Proponent as per Figure 2-3. All access points onto the public road network (and intersecting access tracks) are to be considered with regard to safe intersection sight distance, vehicle types and movements with appropriate mitigations adopted to facilitate safe access as necessary. An overview of the site access points for the turbines and access tracks along the internal road network is provided in Table 2-3. A desktop review of available aerial imagery has identified that there are approximately 101 access points proposed.

Table 2-3 Location of access tracks and components along the internal road network

Road name	Access points*	WTGs	Temporary and permanent facilities
Meran Road	19	36	■ Construction compound ■ Maintenance facility ■ Site office ■ Temporary concrete batching plant ■ Terminal Station ■ BESS ■ Collector substation ■ Met Mast
Weir Road	14	28	-
Meering West Road	17	28	■ Construction compound ■ Maintenance facility ■ Site office ■ Temporary concrete batching plant ■ Terminal Station ■ BESS ■ Collector substation
White Elephant Road	5	7	-
Flemming Road	3	3	-
Fleming Road	9	12	-
Slatter Road	3	6	-
Lehmanns Road	2	4	-
Dear Road	3	7	-
Boort - Kerang Road	1	5	-
Normanville Road	4	6	-
Boort - Quambatook Road	4	4	-
Noske Road	3	4	■ Temporary concrete batching plant
Woods Road	3	3	-
English Road	2	2	-
Bulch Road	1	1	-
Crump Road	2	2	-
Malone Lane	2	2	-
Reserve Road	2	2	-

English Road	2	2	-
Total	**101**	**164**	**-**

*does not include separate large component delivery access points which may be used

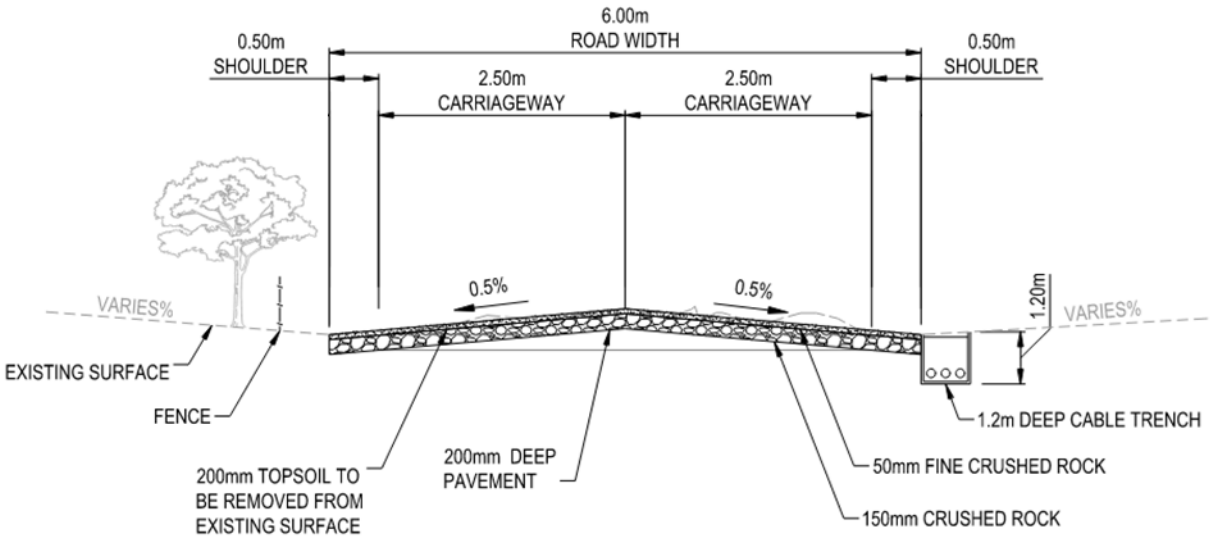


Figure 2-3 Indicative internal access track cross-section

Routes

During the construction phase, it is anticipated that workers will travel to and from surrounding towns to the Project Area. Kerang, Bendigo, Quambatook, Boort, Swan Hill, Cohuna, Pyramid Hill, Baraham, Koondrook and Wedderburn are possible population centres that workers may reside or be accommodated in.

It is expected that construction vehicles will originate from major population centres, quarries, and ports. Based on this assumption, heavy vehicles are expected to arrive from Geelong, Bendigo, Kerang, Boort, Swan Hill and Pyramid Hill. Traffic distribution for both workers and construction vehicles are detailed further in Section 4.

A staged schedule and breakdown of vehicle volumes and types per activity/location has not been defined at this stage, therefore based on the surrounding road network, the key access roads for workers and construction vehicles to travel to and from the Project Area are likely to include:

- Boort-Kerang Road
- Quambatook-Boort Road
- Boort-Quambatook Road

Most of the wind turbine components and some equipment will be imported from overseas. The Port of Geelong has been assumed as the arrival port given the project location and this port's ability to process wind turbine component for Victorian projects.

2.3.4 Parking

The Project site covers a total area of 20,000 ha. Only a small percentage of the Project site will be required to accommodate wind turbines and other infrastructure. It is anticipated that proximate laydown areas and parking will be able to be provided across the project site clear of any public roads as construction progresses. This is applicable to both construction and operational stages (albeit at a lower capacity for operational stage).

2.4 Operation and maintenance phase

The operational life of the wind farm is expected to be 40 years. Operation and maintenance phase activities are expected to consist of the following:

- Use of operational and maintenance building
- Routine servicing and maintenance of the wind turbines, battery energy storage system (BESS), substations and transmission network
- Maintenance of internal access tracks
- Environmental monitoring.

Regular maintenance tasks are anticipated to generate minimal traffic movements and are typically undertaken using standard road vehicles, generally light vehicles. Though major works are not routine, there is the expectation that infrequently major works may need to occur which would require access by an OSOM vehicle.

The Proponent has advised that up to 30 full time workers will be required for the operation of the Project. Additional workers will attend the site for maintenance work and environmental monitoring. The location of the operational and maintenance building is on Meran Road.

2.5 Decommissioning phase

No information is currently available about the decommissioning phase traffic; however, it is expected that any traffic impacts would be less than the construction phase traffic. Decommissioning is estimated to take 12 months, and it is expected that concrete foundations and access tracks remain in ground, with turbines split up and removed.

3 Existing conditions

3.1 Land zoning

Under the Gannawarra and Loddon Planning Schemes, the Project is located within a Farming Zone (FZ) and is bordered by FZ on all sides. It is therefore expected that the vehicle use of the local roads within the Project Area would typically be relatively low with most traffic associated with farming and property access. During harvest volumes will be increased and include large vehicles and equipment.

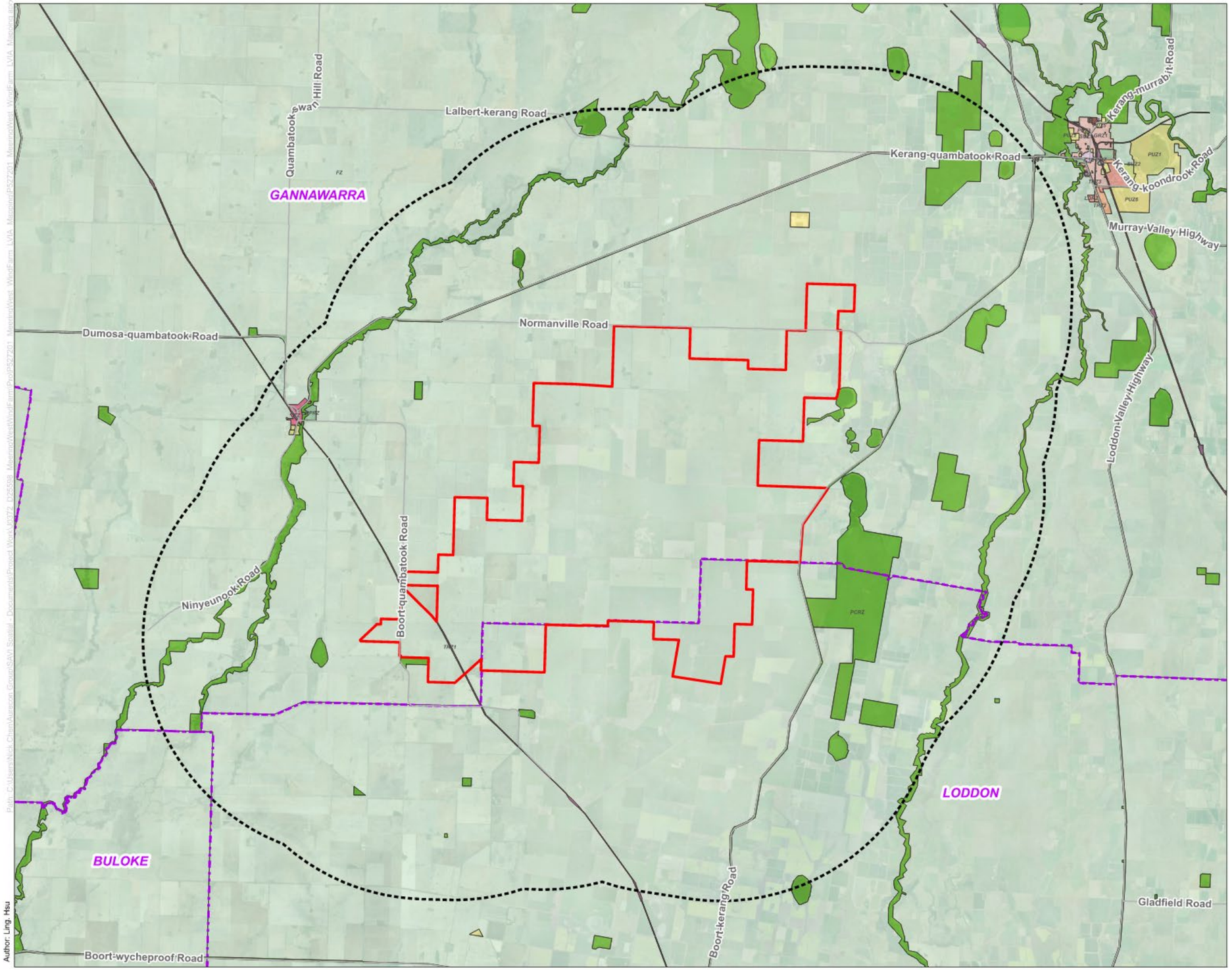
The location of the Project Area in relation to planning zones is shown in Figure 3-1 on the following page.

3.2 Road network

There are multiple roads in the vicinity of the Project Area as well as within and along the Project Area boundary which may be used to access and traverse the site, depending on the origin and class of the vehicle. These roads are shown in Figure 3-2 and the existing road network characteristics in the vicinity of the Project are summarised in on the following page. There are no current provisions for bicycles or pedestrians on the roads assessed.

Several roads in the vicinity of the project are B-Double, higher mass limit (HML) or over-size over-mass (OSOM) approved routes, with many roads north of Meering West Road having conditional approvals requiring access in dry conditions only.

The preliminary route proposed to be utilised from the port to the Project area is discussed in Section 1.1.1, and will be assessed in more detail as the project progresses.



aurecon

Legend

- Road
- Project Area
- Study Area
- LGA

Planning Zones

- C1Z - Commercial 1 Zone
- C2Z - Commercial 2 Zone
- FZ - Farming Zone
- GRZ - General Residential Zone
- IN1Z - Industrial 1 Zone
- IN3Z - Industrial 3 Zone
- LDRZ - Low Density Residential Zone
- MUZ - Mixed Use Zone
- PCRZ - Public Conservation and Resource Zone
- PPRZ - Public Park and Recreation Zone
- PUZ1 - Public Use Zone (Service and Utility)
- PUZ2 - Public Use Zone (Education)
- PUZ3 - Public Use Zone (Health and Community)
- PUZ5 - Public Use Zone (Cemetery/crematorium)
- PUZ6 - Public Use Zone (Local Government)
- SUZ - Special Use Zone
- TZ - Township Zone
- TRZ1 - Transport Zone 1
- TRZ2 - Transport Zone 2
- TRZ3 - Transport Zone 3

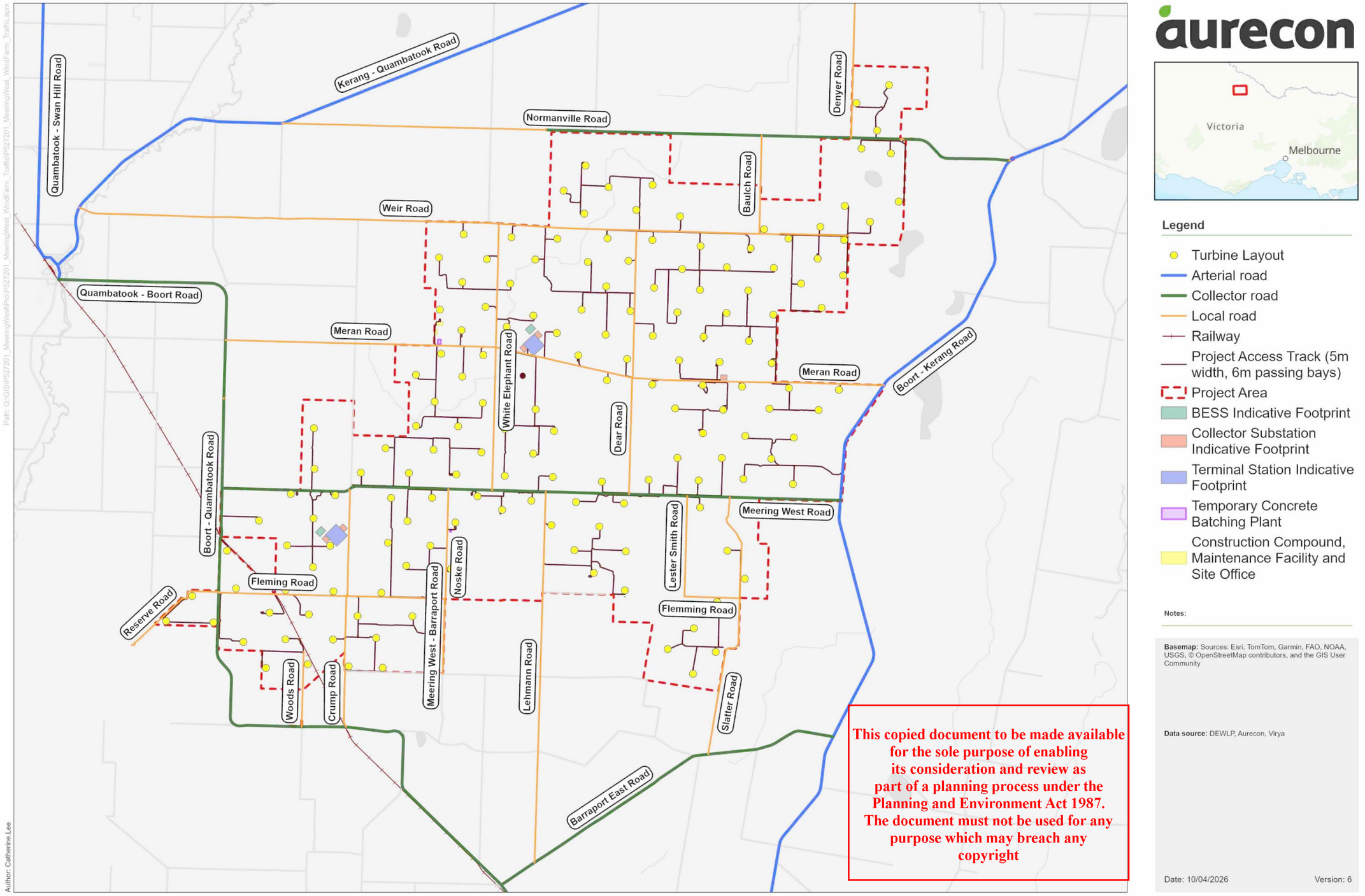
Source: Esri Basemap, DEECA (2024), Aurecon (2024)

Date: 7/04/2025 Version: 1

Meering West Wind Farm

Planning Zones

Figure 3-1 Land zoning map



aurecon

Legend

- Turbine Layout
- Arterial road
- Collector road
- Local road
- Railway
- Project Access Track (5m width, 6m passing bays)
- Project Area
- BESS Indicative Footprint
- Collector Substation Indicative Footprint
- Terminal Station Indicative Footprint
- Temporary Concrete Batching Plant
- Construction Compound, Maintenance Facility and Site Office

Notes:

Basemap: Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Data source: DEWLP, Aurecon, Virya

Date: 10/04/2026 Version: 6

A3 scale: 1:100,000

0 2.75 5.5 Kilometres

Job No: P527201

Coordinate System: GDA 1994 MGA Zone 54

Meering West Wind Farm

Road network in vicinity of Project Area

Author: Catherine.Lee

Path: Q:\GIS\P527201_MeeringWestProj\P527201_MeeringWest_WindFarm_Traffic\P527201_MeeringWest_WindFarm_Traffic.aprx

Figure 3-2 Road network in vicinity of Project Area

Table 3-1 Existing road conditions

Road		Hierarchy	Posted speed limit (km/hr)	Wearing course	Number of lanes (per direction)	Approx. carriageway width (m)	Approx. lane width (m)	Approx. shoulder width (m)	Shoulder type	B-Double approved	OSOM approved	HML approved
Department of Transport and Planning (DTP)												
Kerang-Quambatook Road		Arterial	80	Sealed	One	10.5	3.0	2.0	Gravel	Y	Y	Y
Boort-Kerang Road		Arterial	100	Sealed	One	9.0	3.0	1.5	Gravel	Y	Y	Y
Loddon Shire Council												
Quambatook-Boort Road		Collector	80	Sealed	One	6.2	3.1	1.0	Gravel	Y	-	Y
Barraport East Road		Collector	100*	Sealed	One	7.4	3.3	0.9	Gravel	-	-	-
Woods Road		Local		Unsealed	One lane total	3.5	-	-	-	-	-	-
Meering West-Barraport Road		Local		Unsealed	One lane total	5.5	-	-	-	-	-	-
Lehmanns Road		Local		Unsealed	One	8.4	4.2	-	-	-	-	-
Gannawarra Shire Council												
Normanville Road	West of Fawcett Ln	Local	100*	Unsealed	One	2.9	2.9	-	-	C	-	C
	Fawcett Ln to 1.4km west of Manuel Rd	Collector		Unsealed	One	7.2	3.6	-	-	Y	-	Y
	1.4km west of Manuel Rd to Boort-Kerang Road	Collector		Sealed	One	8.2	3.6	1.5	Gravel	Y	-	Y
Meering West Road	Boort-Kerang Rd to 1km west of Lester Smith Rd	Collector		Sealed	One lane total	6.1	-	1.7	Gravel	Y	-	Y
	Quambatook-Boort Road to 1km west of Lester Smith Rd	Local		Unsealed	One	10.0	5.0	-	-	Y	-	Y
Baulch Road		Local		Unsealed	One lane total	6.6	-	-	-	Y	-	Y
Weir Road		Local		Unsealed	One lane total	5.0	-	-	-	C	-	C
Meran Road		Local		Unsealed	One lane total	7.0	-	-	-	C	-	C
Dear Road		Local		Unsealed	One lane total	6.5	-	-	-	C	-	C
Crump Road (north of Fleming Road)		Local		Unsealed	One lane total	7.1	-	-	-	-	-	-
Noske Road		Local		Unsealed	One lane total	4.0	-	-	-	-	-	-
Lester Smith Road		Local		Unsealed	One lane total	6.0	-	-	-	-	-	-
Reserve Road		Local		Unsealed	One lane total	5.0	-	-	-	-	-	-
Flemming Road		Local		Unsealed	One lane total	4.0	-	-	-	-	-	-
Fleming Road		Local		Unsealed	One lane total	3.8	-	-	-	C	-	C
Private												
Slatter Road		Access	100*	Unsealed	One lane total	6.4	-	-	-	-	-	-
White Elephant Road		Access		Unsealed	One lane total	9.0	-	-	-	C	-	C
Crump Road (Fleming Rd to Boort-Quambatook Rd)		Access		Unsealed	One lane total	4.4	-	-	-	-	-	-

*Y = Approved; C = Approved with conditions; N = Not approved; * = Posted speed limit not confirmed - Assumed 100km/h as Victoria default rural speed limit on unsigned roads.*

3.3 Active transport

Due to the remote rural location of the Project Area, there are currently no formal pedestrian or cyclist paths within the general vicinity of the Project Area.

3.4 Public transport

There are school buses and public bus services in proximity to the Project Area, these are summarised in Figure 3-3 and Figure 3-4 and include:

- Regional bus services - Quambatook Lalbert Community Bus Committee operates two regional bus services in proximity to the Project Area:
  - Quambatook to Kerang – this service runs along Kerang - Quambatook Road to the north of the Project Area
  - Quambatook to Boort – this service runs along Boort - Quambatook Road and passes through the Project Area
  - The bus stops for these regional bus services are located within the local towns (Quambatook, Kerang, Boort) with no additional stops along the route.
- Regional coaches - There are V-Line coach services that run between Melbourne and Swan Hill via Bendigo and Wedderburn. These services travel through Quambatook, passing through the Project Area as they continue along Boort-Quambatook Road to Boort.
  - Inbound to Melbourne, a single coach service arrives in Quambatook at 9.46 am on Mondays, Wednesdays, and Fridays.
    - Outbound to Swan Hill, a single coach service arrives in Quambatook at 5.22 pm on Mondays, Wednesdays, and Fridays.
  - In addition to bus stops in Quambatook and Boort (and other local towns along the route), there are also bus stops along Boort-Quambatook Road at the following locations:
    - At Crump Road in Gredgwin
    - Approx. 130m north of Barraport West Road in Barraport

School buses - Several school bus routes operate within the vicinity of the Project Area, with multiple routes traversing the Project's internal road network, including:

- Boort-Quambatook Road
- Meering West Road
- Normanville Road.

3.5 Rail network

The Robinvale railway freight line passes through the Project Area; however, no passenger services currently operate along the line. Freight trains are active along this line through Quambatook and Boort, however services are limited. Train stations for the freight services are located in Quambatook, Oakvale, Gredgwin and Barraport.

There are numerous locations where the railway line intersects with the road network, with level crossings located on the following roads within the Project Area:

- Boort-Quambatook Road (multiple)
- Fleming Road

These level crossings are passively controlled and are treated with Give Way signs.

If it is anticipated that heavy vehicles will be traversing over level crossings for the delivery of construction materials it will be necessary to engage with and seek and obtain relevant approvals from both road (Gannawarra Shire Council and Loddon Shire Council) and rail authorities and the asset (level crossing) owner as necessary (ARTC, Vline, VicTrack).

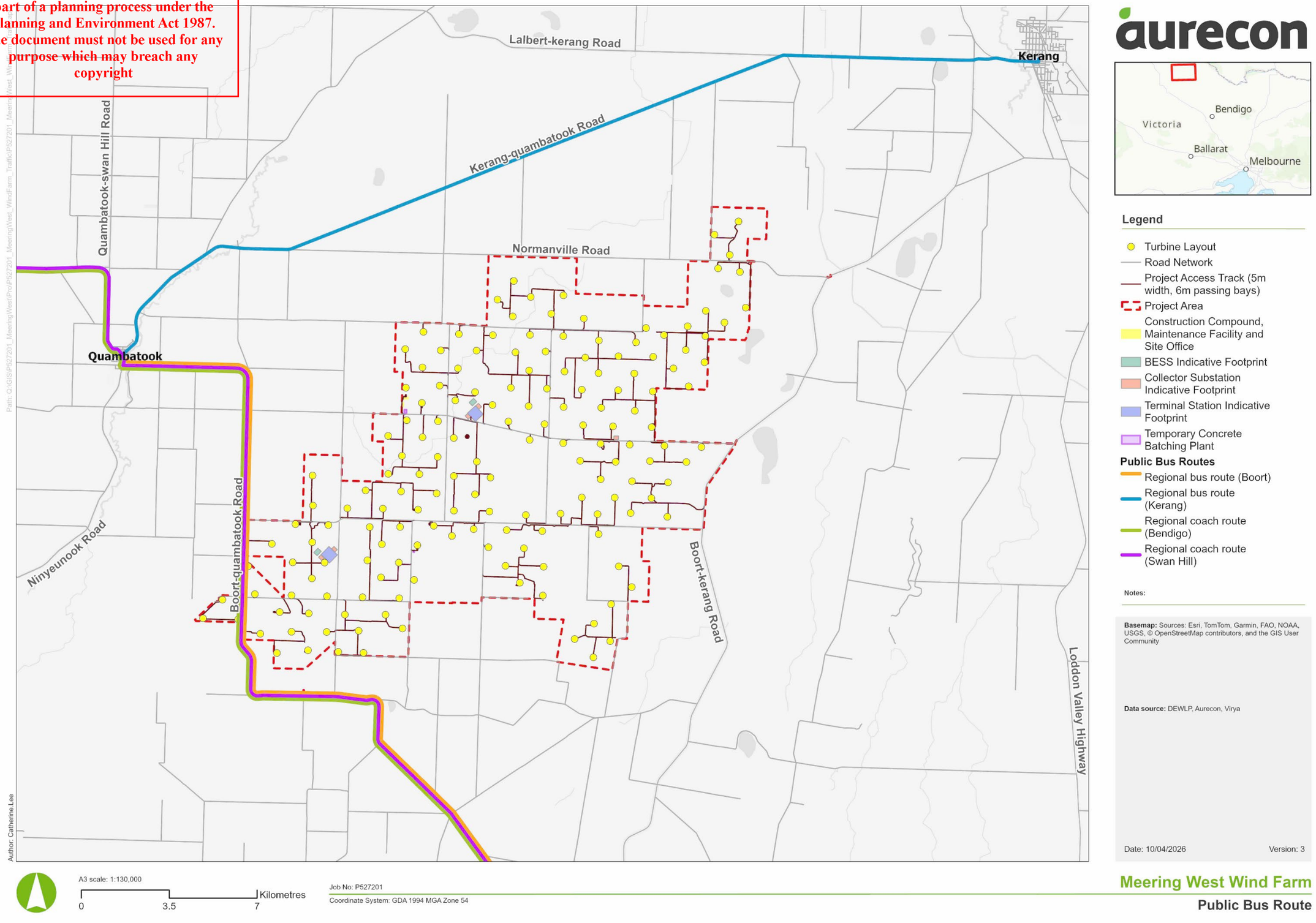
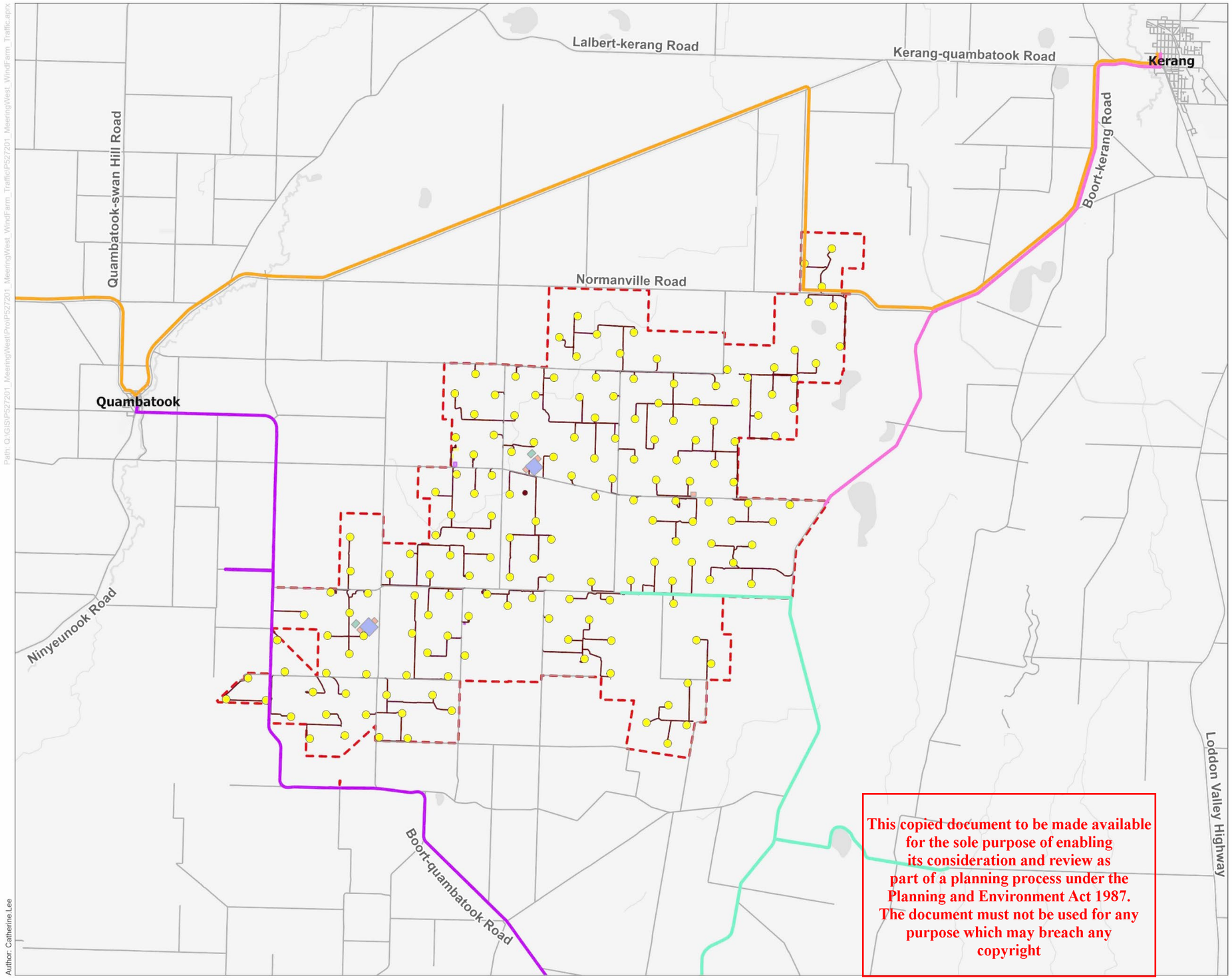


Figure 3-3 Regional bus routes in vicinity of the Project Area



aurecon

Legend

- Turbine Layout
- Road Network
- Project Access Track (5m width, 6m passing bays)
- BESS Indicative Footprint
- Collector Substation Indicative Footprint
- Terminal Station Indicative Footprint
- Construction Compound, Maintenance Facility and Site Office
- Temporary Concrete Batching Plant
- Project Area

Bus Route

- School bus route (1379-001,1379-003)
- School bus route (1379-002)
- School bus route (3144-001)
- School bus route (3321-002)

Notes:

Basemap: Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Data source: DEWLP, Aurecon, Virya

Date: 10/04/2026 Version: 5

A3 scale: 1:130,000

0 3.5 7 Kilometres

Job No: P527201

Coordinate System: GDA 1994 MGA Zone 54

Meering West Wind Farm

School Bus Route

Figure 3-4 School bus routes in vicinity of the Project Area

3.6 Traffic volumes

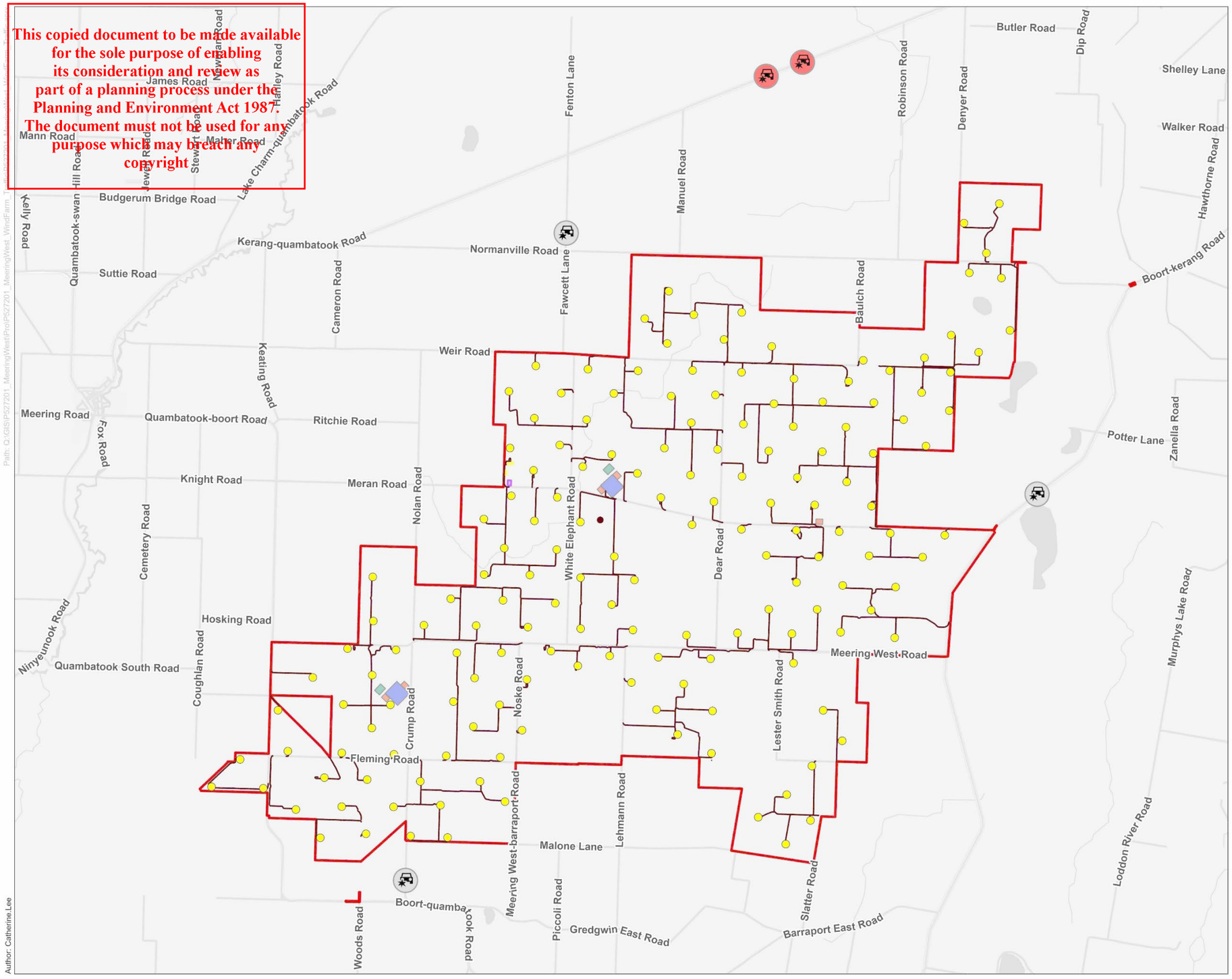
Traffic volume data is available for all DTP managed roads (Table 3-2), these indicate the roads are of low use. No public traffic data is available for the council managed roads but these would typically expect to cater for less traffic than arterial roads.

Table 3-2 Traffic volumes DTP managed roads (2020)

Road	Eastbound/Southbound AADT (HV%)	Westbound/Northbound AADT (HV%)	Total AADT (HV%)
Kerang-Quambatook Road	337 (12)	361 (12)	700 (11)
Boort-Kerang Road	299 (9)	375 (15)	670 (12)

3.7 Crash history

There were five crashes in the vicinity of the project area over the last five-year reporting period (September 2020 to September 2025) (Figure 3-5). Of these crashes, all were single vehicle incidents involving passenger vehicles. Additionally, four out of five crashes occurred at night, dawn, or dusk. No vulnerable road users or heavy vehicles were involved in the crashes.



Legend

- Turbine Layout
- Project Access Track (5m width, 6m passing bays)
- Road Network
- Project Area
- BESS Indicative Footprint
- Collector Substation Indicative Footprint
- Terminal Station Indicative Footprint
- Construction Compound, Maintenance Facility and Site Office
- Temporary Concrete Batching Plant

Historical Crashes Location

- Serious injury
- Other injury

Notes:

Basemap: Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Data source: DEWLP, Aurecon, Virya

Date: 10/04/2026 Version: 4

Author: Catherine.Lee

A3 scale: 1:100,000

0 2.5 5 Kilometres

Job No: P527201

Coordinate System: GDA 1994 MGA Zone 54

Meering West Wind Farm

Crashes within the vicinity of the Project Area

Figure 3-5 Crashes in vicinity of Project Area (2020 to 2025)

4 Traffic assessment

The following section sets out the expected traffic volumes, access routes, and subsequent impacts to the road network during the project stages.

4.1 Construction phase

4.1.1 Traffic volume increase

Traffic generation

Workers

Aurecon's experience in preparing construction traffic impact assessments has indicated that depending on the number of turbines and length of construction programme these projects can involve between 500 and 600 people working across different elements of the project at peak construction activity. It is conservatively estimated that the number of full-time workers expected on site is up to 600 per day during peak construction.

To determine the peak hour worst-case traffic volumes generated by the Project, it is assumed that workers will travel to site at a rate of 1.2 workers per light vehicle between 6:00 am – 7:00 am and travel from site between 6:00 pm – 7:00 pm (representing the worker AM and PM peak hours).

On the above basis, the peak traffic generation for light vehicles is 500 to site, and 500 leaving site, in the AM and PM peaks respectively. This equates to a daily traffic generation of 1,000 light vehicle movements.

At this stage prior to a schedule being developed the length of time peak construction work force will be required is unknown, it should be noted the peak workforce may be more or less depending on the construction requirements and will be spread across a wide area depending on the delivery schedule for the 164 turbines.

General construction vehicles

During construction working hours there will be heavy vehicles travelling to and from the various parts of the Project Area (and externally) to deliver materials, equipment, and conduct construction operations (among other tasks).

The overall required heavy vehicle movements for construction were provided by the Proponent. The average hourly traffic volumes for the busiest construction period were then estimated based on the following assumptions:

- Although the schedule of construction has not been developed it is understood that the construction phases may overlap. Therefore, it has been conservatively assumed that core construction will be undertaken over an 18-month period.
- Given the site work hours are 7:00 am – 6:00 pm, it is assumed that deliveries and equipment will be travelling to and from site between approximately 8:00 am – 5:00 pm (over 9 hours). No deliveries are assumed to occur in the first hour (workers undertaking pre-starts and setting up) and the last hour (workers preparing to leave site).
- It is assumed that all deliveries will occur on weekdays.

The average daily and hourly construction traffic volumes are 316 daily heavy vehicle trips (two-way) and 36 heavy vehicle trips (two-way) in a single hour (peak). The construction traffic breakdown by project phase is summarised in Table 4-1.

Table 4-1 Construction traffic generation

Construction phase	Total movements (one-way – 18months)	Average daily movements (one-way)*	Average daily movements (two-way)	Average hourly movements (one-way)	Average hourly movements (two-way)
Total	55,172	158	316	18	36

*All vehicle movements have been averaged over an 18-month period and weekdays only as no construction schedule is available

Based on the above, the expected peak construction vehicle traffic generation will equate to 18 heavy vehicles trips into and 18 heavy vehicles trips out of the Project Area in a single hour. This is referred to hereafter as the midday peak hour as these are assumed to occur outside of the morning and afternoon peak hours.

OSOM movements

There are up to 164 wind turbines anticipated for the Project. Wind turbine component delivery volume has not been provided or accounted for in the construction traffic breakdown in Table 4-1.

Subject to the final turbine design, each turbine may require the transportation of up to 16 individual components, as outlined in Table 4-2. The delivery of these components will necessitate the use of OSOM vehicles, such vehicles are anticipated to travel from the Port of Geelong to the Project site overnight.

OSOM movements typically trigger accompanying pilot and escort vehicle requirements, subject to the overall dimensions (length and width) of the OSOM vehicle configurations, it is estimated that three escort vehicles will accompany each OSOM delivery.

All OSOM movements will be scheduled outside of peak traffic hours to minimise disruption to the road network. There may be other specialist components which are OSOM not yet identified. An estimation of the number of OSOM trips based on the construction of 164 wind turbines and their associated support infrastructure is provided in Table 4-2.

The total OSOM deliveries anticipated during the Turbine Installation Phase (24 months) is 2,624 which if averaged over this period is five per day, with the inclusion of escort vehicles this is estimated as 14 per day. For the return journey to the port, the OSOM capability is stowed, and the vehicles operate as a standard heavy vehicle.

Table 4-2 Indicative quantity of turbine components to be transported to the Project

Turbine component	Estimated volume of components per turbine	Escort vehicles per turbine	Total movements (one-way)			Total movements associated with OSOM deliveries (two-way)
			OSOM	Escort vehicles	Total	
Tower*	Up to 7 segments	21	1,148	3,444	4,592	9,184
Nacelle (Hub, nacelle, drive train, transformer, generator)*	Up to 6 individual components	18	984	2,952	3,936	7,872
Blades	3	9	492	1,476	1,968	3,936
Total movements (24-month period)			2,624	7,872	10,496	20,992
Total daily movements			5	14	19	37

**Yanco Delta Wind Farm Traffic Impact Assessment, Jacobs, September 2022* (original source: *Siemens Gamesa Renewable Energy* (2021))

Total traffic generation

A summary of the anticipated traffic generation to and from the site for the peak construction day and peak hours is provided in Table 4-3.

Table 4-3 Total traffic generation

Vehicle type	No. vehicles per day	Vehicle Movements				
		AM Peak (one-way)	PM Peak (one-way)	Midday Peak (one-way)	Overnight (one-way)	Daily (two-way)
Light	514	500	500	-	14	1,028
Heavy*	163	-	-	18	-	321
OSOM*	5	-	-	-	5	5*
Total	**677**	**500**	**500**	**18**	**19**	**1,354**

**The OSOM capability will be stowed when returning to the Port, so these vehicles will operate as standard heavy vehicles on return. The five return trips have been included in the Daily (two-way) movements for heavy vehicles.*

Traffic distribution

Workers

Assuming the workforce is not housed in specifically provided accommodation but sourced from local populations, the workforce would be likely to travel to and from population centres such as Kerang, Quambatook, Boort, Swan Hill, Cohuna, Pyramid Hill, Baraham (and Koondrook), Wedderburn and Bendigo. Based on the populations of these towns, an estimated workforce traffic distribution has been presented in Table 4-4.

No main site access has been identified however, Meering West Road and Meran Road are existing roads that lead through the Project Area and connect to key roads in both the east and west. Based on this, it has been assumed that the key roads for site access will include Boort-Kerang Road and Quambatook-Boort Road. Any additional access points at the northern or southern end of the Project Area may trigger additional access roads for consideration.

Table 4-4 Indicative origin of construction workers during peak construction

Township / locality	Population	Estimate number of workers	Peak hour trips (one-way)	Daily trips (two-way)	Primary access road
Kerang	3,960	15	13	25	Boort-Kerang Road (Northern)
Quambatook	229	1	1	1	Quambatook-Boort Road
Boort	940	4	3	6	Boort-Kerang Road (Southern)
Swan Hill	21,403	82	69	137	Quambatook-Boort Road
Cohuna	2,415	9	8	15	Boort-Kerang Road (Northern)
Pyramid Hill	598	2	2	4	Boort-Kerang Road (Southern)
Barham/Koondrook	2,670	10	9	17	Boort-Kerang Road (Northern)
Wedderburn	951	4	3	6	Boort-Kerang Road (Southern)
Bendigo	122,647	472	394	787	Boort-Kerang Road (Southern)
Total	**155,813**	**600**	**500**	**1000**	

Construction vehicles

Construction vehicles are likely to originate from major population centres, quarries, and ports. Based on this assumption, heavy vehicles are expected to arrive from the following locations: Geelong, Kerang, Boort, Pyramid Hill, Swan Hill and Bendigo. Bendigo and Swan Hill have been assumed as the primary origin locations for the HV trips with an even split of heavy vehicle volumes for the remaining surrounding towns is presented in Table 4-5. The percentage of heavy vehicles originating from Geelong has been assumed as 5% to account for any materials that need to be sourced exclusively from the Port, however it is expected that majority of HV trips will originate from closer towns when feasible.

As noted previously the OSOM deliveries and escort vehicles will originate from Geelong Port, noting the high load route has been assumed for the distribution and the returning vehicles would be the following day.

Table 4-5 Indicative origin of general heavy construction vehicles during peak construction

Township / locality	Percentage of HV trips	Midday peak trips (one-way)	Daily trips (two-way)	Primary access road
Geelong	5%	1	16	Boort-Kerang Road (Southern)
Kerang	15%	3	47	Boort-Kerang Road (Northern)
Boort	15%	3	47	Boort-Kerang Road (Southern)
Pyramid Hill	15%	3	47	Boort-Kerang Road (Southern)
Swan Hill	25%	4	79	Quambatook-Boort Road
Bendigo	25%	4	79	Boort-Kerang Road (Southern)
TOTAL	**100%**	**18**	**316**	

The distribution of the traffic generated from the workers and construction vehicles on the surrounding road network is demonstrated in Figure 4-1.

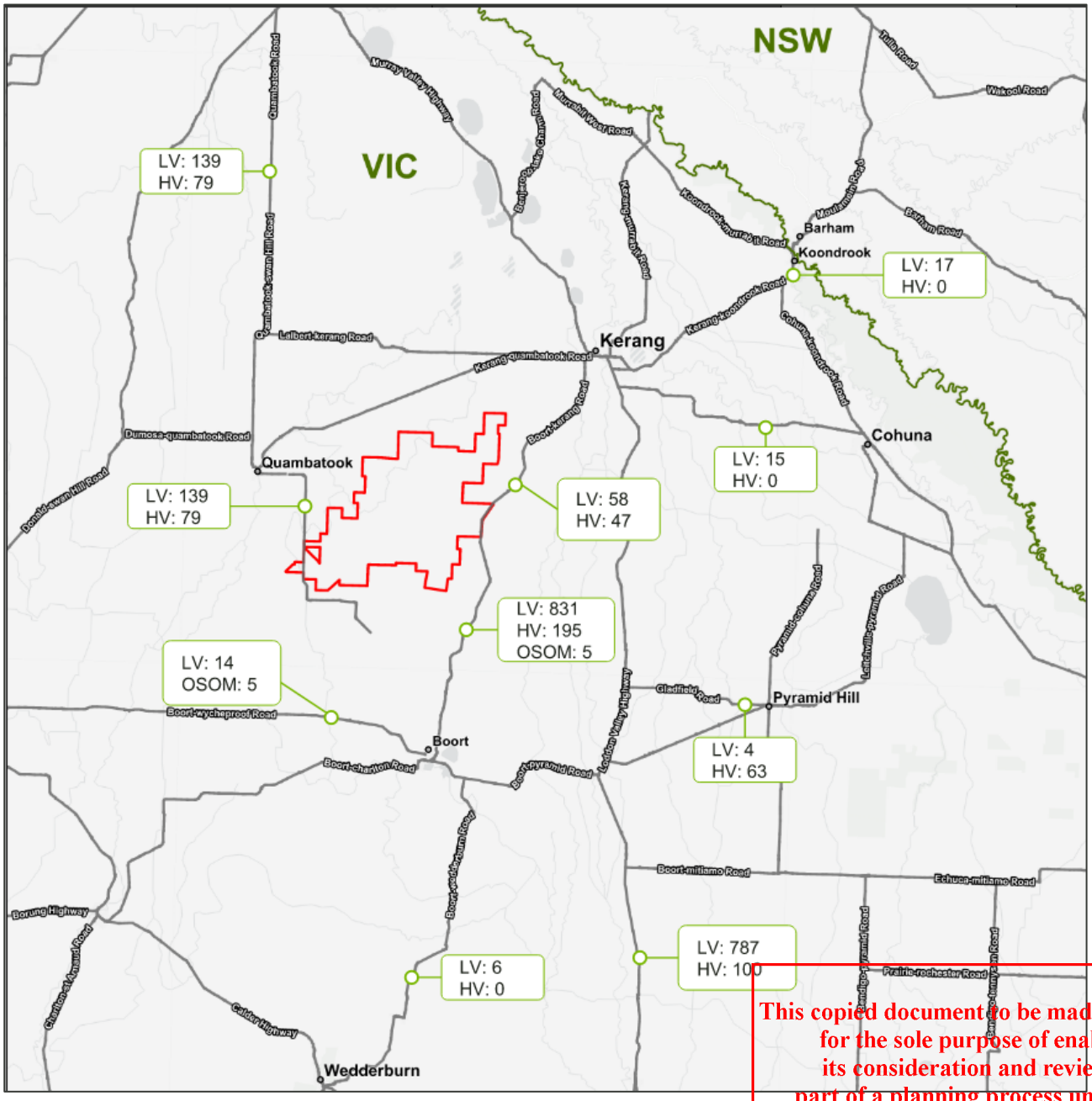


Figure 4-1 Distribution of additional daily traffic (two-way) on surrounding road network

Traffic impact

The above-described traffic generation and distribution were applied at a high level to the Project Area's external access roads, which results in the traffic assignment summarised in Table 4-6 below. The expected additional vehicle trips per day, during peak construction activities, on the external access roads are:

- 105 vehicles (two-way) on Boort-Kerang Road (Northern section)
- 1026 vehicles (two-way) on Boort-Kerang Road (Southern section)
- 218 vehicles (two-way) on Quambatook-Boort Road

This additional traffic will then be distributed further along the local access roads around and within the Project Area depending on destination. This additional traffic does not include the five OSOM vehicles that are anticipated to traverse along Boort-Kerang Road (southern section) each day.

Table 4-6 Construction traffic assignment (surrounding road network)

Road	Daily traffic (two-way)	Hourly traffic (one-way)

				AM peak			Miday peak			PM peak		
	LV	HV	Total	LV	HV	Total	LV	HV	Total	LV	HV	Total
Boort-Kerang Road (Northern section)	58	47	105	29	-	29	-	3	3	29	-	29
Boort-Kerang Road (Southern section)	831	195	1026	402	-	402	-	11	11	402	-	402
Quambatook-Boort Road	139	79	218	69	-	69	-	4	4	69	-	69
Total	**1028**	**321**	**1349**	**500**	**-**	**500**	**-**	**18**	**18**	**500**	**-**	**500**

The additional anticipated construction traffic presents a large increase to the surrounding road network however are still expected to be within the capacity of the network. The following is recommended to reduce the traffic volumes and therefore impacts on operation, road deterioration and safety:

- Adoption of traffic management protocols such as car-pooling and shuttle buses are considered to reduce workforce personal vehicle trips which can help reduce the quantity of light vehicle movements on the road network and level of car parking that needs to be provided at construction sites.
- CTMPs be developed and implemented to communicate and manage the routes which workers and heavy vehicles utilise during construction. This will reduce the risk of vehicles using sections of road which are not suitable for project access.

Subject to confirmation of anticipated construction phase traffic (both workers and construction vehicles), as well as the construction activity schedule, the increase in construction traffic with standard mitigation and management protocols adopted for large rural wind farm developments would not be expected to have any material adverse impact on the road network performance.

4.1.2 Preliminary oversized vehicle delivery route assessment

A preliminary route assessment (Appendix A) was undertaken for transport of the Project wind turbine blades and high loads. A long list of three route options for each were evaluated via a desktop assessment. This evaluation considered the route geometry and physical constraints (such as height restrictions and weight limits). Stakeholder engagement of the long list options was undertaken with Geelong Port, Rex J Andrews, and DTP. Based on the long list evaluation and stakeholder engagement, a preferred Blade Route and High Loads Route were shortlisted for further assessment.

A site inspection drive was undertaken for the shortlisted routes and swept path assessment on key intersections of the blade route to identify constraints and impacts.

The preferred route for the blades was determined as per Figure 4-2 which is outlined in Table 4-7 and swept paths undertaken at key intersections to determine impact as per Table 4-8.

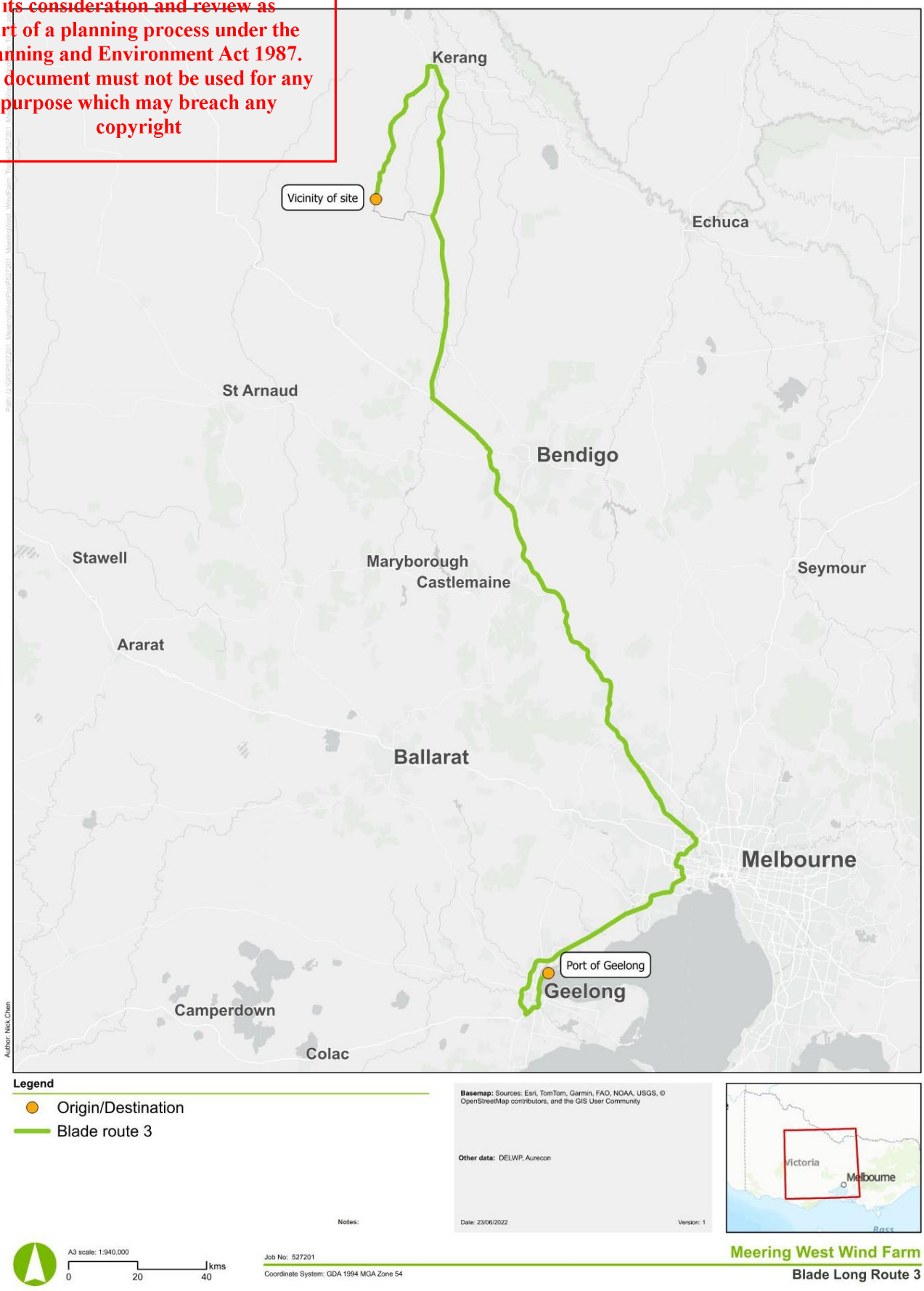


Figure 4-2 Preliminary wind turbine blade delivery route

Table 4-7 Summary of blade delivery route

Route Path	Considerations
384 km The Esplanade > RT onto Sea Breeze Parade > LT onto Abery Road > through onto Corio Quay Road > Merge onto Princes Highway > RT onto Princes Freeway M1 > Merge onto Princes Freeway M1 > Merge onto Metropolitan Ring Road M80 > LT onto Keilor Park Dr > LT onto Calder Freeway M79 > LT onto Calder Alternative Highway A790 > LT onto Calder Highway A79 > RT onto Bridgewater-Serpentine Road > LT onto Murray Valley Highway > LT onto Kerang-Quambatook Road > LT onto Boort-Kerang Road	15 x through or turn movements which may require alterations and have impacts which are to be investigated. 3x level crossings to be transferred which will require approvals from rail operators/owners. Bridge height constraints are noted along Princes Freeway on NHVR data. However, as this route has been previously used for blade delivery with approx. 5.2 m height and is recommended by a transportation contractor the listed height constraints are to be confirmed with DTP. ■ Metropolitan Farm Road (4.8 m) ■ Little River Road (5.0 m) ■ Princess Highway onramp (5.0 m) ■ Dohertys Road (5.0 m) ■ Duncans Road (5.09 m)

Table 4-8 Blade transport vehicle swept path assessment summary.

No.	Location	Identified impacts
1	The Esplanade right turn onto Sea Breeze Pde	No impacts identified
2	Sea Breeze Pde left turn onto Abery Rd	Signs and holding rails on traffic islands
3	Abery Rd through roundabout to Corio Quay Rd	Streetlights, power pole, signs, level crossing flashing lights (note: the level crossing is a siding that appears to be no longer used, this should be confirmed)
4	Corio Quay Rd merge onto Princes Hwy	Signs, pavement widening
5	Princes Hwy right turn onto Princes Fwy	Signs, streetlight
6	Metropolitan Ring Rd left turn onto Keilor Park Dr	Signs, streetlight, additional hardstand which will require levelling
7	Keilor Park Dr left turn onto Calder Fwy	Signs, dynamic signs (for ramp signals), traffic signals (options to avoid traffic signals or mitigate impacts to be investigated)
8	Calder Hwy through roundabout onto Calder Alternative Hwy	Streetlights It is assumed the W-beam barrier on the west of the off-ramp is low enough for the blade to pass over.
9	Calder Alternative Hwy through roundabout at Lockwood Rd	Streetlights, signs, widen trafficable apron on central island
10	Calder Alternative Hwy left turn onto Calder Hwy	Signs, traffic islands to be made trafficable, bus stop shelter, pavement widening, level crossing infrastructure (boom gates, flashing lights, fencing)
11	Calder Hwy right turn onto Bridgewater-Serpentine Rd	Streetlight, power pole, signs, bollards, pavement widening, make traffic island trafficable
12	Bridgewater-Serpentine Rd left turn onto Loddon Valley Hwy	Signs, streetlight, pavement widening
13	Bend on Murray Valley Hwy through Kerang	Signs

No.	Location	Identified impacts
14	Murray Valley Hwy left turn/merge onto Kerang-Quambatook Rd	Sign
15	Kerang-Quambatook Rd left turn onto Bort-Kerang Rd	Signs, pavement widening

Based on the assessment for the wind turbine blade delivery:

- signage may be impacted at most turns (including dynamic signs at one location)
- streetlights may be impacted at seven locations
- power poles may be impacted at two locations
- traffic signals may be impacted at one location
- level crossing infrastructure (boom gates and/or flashing lights) may be impacted at two locations
- additional hardstand/pavement widening may be required at seven locations.
- no tree removal is expected at this stage.

The above impacts are subject to further assessment and ultimately dependent on the final approved route. Options to avoid impacting traffic signals and level crossing infrastructure or mitigation of the impacts if they are unavoidable is to be investigated further.

The high load route desktop and site observations that Beaufort-Lexton Road, between Lexton and Beaufort is lined with trees that overhang the road. Further assessment is required to ensure there is enough height clearance to use the road without long-term impacts to these trees.

Mitigation measures for the delivery of wind turbine components are outlined below.

- The OSOM and OD vehicles will require permits to travel and adhere to the relevant road authority permit conditions and/or policies and guidelines to provide for safe movement and management of impacts to other users.
- A detailed OD/OSOM Transport Route Audit assessment is to be undertaken by a transport contractor once the dimensions and/or masses of the OD/OSOM vehicles are identified to assess route options and identify further constraints and required alterations (including height and width clearances (such as wires and trees), and bridges). This assessment and early identification of constraints, allows planning of routes and temporary removal of hazards and mitigation upgrades to minimise risk of damage and delays.
- TMPs in place will ensure appropriate permits are received and plan for escort vehicles, minimise disruptions or delays to the road network movements, schedule movements outside peak hours where possible.

4.1.3 Site access

The Project has proposed approximately 68 separate access points for component access with the majority connecting into local roads within the Project area. The Project area has a multitude of roads and intersections which present a variety of access strategy options which are to be developed as part of the TMPs depending on vehicle types, origins and destinations (which are currently unknown).

The roads which are to be used within the Project area are to be assessed for their ability to carry the expected weights during construction, suitability of condition, grading and if widening is required to facilitate access. Notably the oversized wind turbine components and transformer may require road improvements and upgrades, including reforming and drainage especially on unsealed roads as per Table 3-1. The grades, condition and weight of the local roads require further investigation during design to determine any alterations and upgrades.

The following is recommended as the Project progresses:

- All access points onto the public road network (and intersecting access tracks) are to be considered with regard to safe intersection sight distance, vehicle types and movements with appropriate mitigations adopted to facilitate safe access as necessary.
- Swept path assessment of general construction vehicles at intersections not pre-approved to determine any upgrades required
- Road infrastructure improvements are expected to be required and the extent of these to be established based on Project requirements, engagement with authorities and design standards. Suitable road improvements and upgrades may include road widening and/or pavement upgrades.

4.1.4 Road condition and maintenance

Road condition generally deteriorates over time due to factors including pavement fatigue, lack of regular maintenance or severe weather events. Other factors include wear and tear at intersections due to vehicle breaking and turning movements, particularly heavy vehicles.

Increased heavy vehicles over the construction period may escalate wear and tear on the road surface and road infrastructure, such as level crossings. However, it is expected that agreements with road authorities (Council and DTP) will ensure timely repairs of any damage in the road corridors (including at level crossings).

Prior to construction, road dilapidation surveys will be prepared for all local roads which will be regularly used during construction. The surveys will assess and record the existing condition of the road surface and be used to inform discussions with the relevant road authorities on potential treatments that are required prior to and during construction. On completion of construction, a road condition assessment will be prepared by the Proponent to identify any outstanding damage to roads from the project and measures to address these areas will be agreed in consultation with the relevant road authority.

4.1.5 Impact to public transport

As discussed in Section 3.4 there are several public bus and school bus routes in and around the Project Area. The increase in construction traffic as discussed in Section 4.1.1 is expected to be appropriately mitigated and therefore is unlikely to have any material impact on the road network performance. Therefore bus services are unlikely to experience a material impact due to the Project.

The likelihood of a crash involving a school bus due to more heavy vehicles on the road from the construction activities may increase. To reduce the likelihood of a crash occurring, the frequency, volume and bus stop locations of school bus routes will be documented in a TMP and associated mitigation protocols such as avoiding these routes at these times can be adopted to reduce potential interactions. Engagement with bus operators will also be undertaken.

4.1.6 Impact to active transport

The Project area does not have any formal pedestrian or cyclist paths however appropriate mitigation will be incorporated in the TMPs with regard to safety and it is expected that the local community will be informed about any matters that may be relevant to active transport movements, for example trips to bus stops.

4.1.7 Impact to freight

The freight network will need to be considered in the TMP, including the adoption of appropriate mitigation protocols to limit the impact of the additional anticipated traffic on freight services and infrastructure (level crossings) such as avoiding roads with level crossings when planning access routes for construction vehicles to the site.

4.2 Operation phase

There is expected to be in the order of 30 technicians accessing the site per day during the operational phase, this may be up to 30 light vehicles on the surrounding road network. The operational phase traffic will have a negligible impact compared to the construction phase traffic.

4.3 Decommissioning phase

No information is currently available about the decommissioning phase traffic; however, it is expected to be an impact less than the construction phase traffic.

4.4 Cumulative impacts

The Normanville Wind Farm is a proposed development located immediately north of the Project area which will consist of 17 turbines. Construction is anticipated to start in 2027 and be operational by 2028.

The Normanville Wind Farm is expected to be constructed prior to the commencement of construction of the Project and therefore no overlap of impacts is expected during construction. Operational traffic for wind farms is low and therefore cumulative impacts are likely to be negligible.

5 Summary

This assessment has been undertaken to identify preliminary traffic and transport risks that may be relevant to the ongoing design or implementation of the Project. Based on the above discussion and analysis, the following traffic and transport considerations have been noted for the Project:

Existing conditions

A desktop review was completed of the publicly available information in relation to the traffic conditions in and around the Project Area, it was found that:

- The Project is located within and is bordered by land within the Farming Zone. It is expected that the use of the local roads within the Project Area would be typically relatively low volume with the majority of traffic associated with local farming and property access. During harvest traffic volumes will be increased and include large vehicles and equipment.
- There are two declared roads (Kerang-Quambatook Road and Boort-Kerang Road) under the jurisdiction of Department of Transport and Planning proximate to the site. While local roads that connect in and around the site fall under the jurisdiction of either Loddon Shire or Gannawarra Shire Councils. The local roads range from sealed bidirectional roads to unsealed single lane gravel roads.
- There are no formal pedestrian or cyclist paths within the general vicinity.
- Project Area has four school bus routes and three bus/coach routes passing through and in the general area.
- The Robinvale railway line passes through the Project Area, however, only freight services operate along the line. There are level crossings present on Boort-Quambatook Road and Fleming Road.
- Traffic volume data is available for Kerang-Quambatook Road and Boort-Kerang Road which indicate these roads have low daily traffic volumes.
- Over the past five-year period there have been no recorded crashes within the Project Area. There were three serious crashes on Kerang-Quambatook Road and two other injury crashes on local roads proximate to the Project area, however no trend identified.

Construction

- **Traffic volume increase**: It is conservatively estimated that there would be traffic generation of up to 677 vehicles per day (1,354 trips) and AM/PM peak hour 500 trips. This represents a large increase to the surrounding road network however traffic volumes are expected to remain well within the capacity of the network, given existing conditions. However it is recommended that:
  - Adoption of traffic management protocols such as car-pooling and shuttle buses to reduce workforce personal vehicle trips are considered to reduce the impact of light vehicle movements on the road network and level of car parking that needs to be provided at construction sites.
  - CTMPs be developed and implemented to communicate and manage the routes which workers and heavy vehicles utilise during construction. This will reduce the risk of vehicles using sections of road which are not suitable for project access.

  Subject to confirmation of anticipated construction phase traffic (both workers and construction vehicles), as well as the construction activity schedule, the increase in construction traffic with standard mitigation and management protocols adopted for large rural wind farm developments would not be expected to have any material adverse impact on the road network performance.
- **Access considerations:** The Project has proposed 68 separate access points for turbine access tracks with the majority connecting into local unsealed roads. All access points onto the public road network (and intersecting access tracks) are to be considered in regard to safe intersection sight distance, vehicle types and movements with appropriate mitigations adopted to facilitate safe access as necessary. Road

infrastructure improvements are expected to be required and the extent of these to be established based on Project requirements, engagement with authorities and design standards. Suitable road improvements and upgrades may include road widening and/or pavement upgrades.

- **Preliminary oversized vehicle delivery route assessment:** The largest typical transport vehicle for the wind farm construction is the blade transport truck. The length of the blade transport truck, including the blades, is expected to be blades of 84.6 m and truck length of up to 93.8 m total.

  A preliminary proposed route has been identified for the wind turbine blade loaded vehicles from the Port of Geelong to the Project Area and key impacts are to typical roadside furniture requiring relocation. This would include signage, streetlights, power poles, traffic signals, level crossing infrastructure. In addition some additional hardstand areas may be required to accommodate swept paths.

  Mitigation measures for the delivery of wind turbine components are outlined below.

  - The OSOM and OD vehicles will require permits to travel and adhere to the relevant road authority permit conditions and/or policies and guidelines to provide for safe movement and management of impacts to other users.
  - A detailed OD/OSOM Transport Route Audit assessment is to be undertaken by a transport contractor once the dimensions and/or masses of the OD/OSOM vehicles are identified to assess route options and identify further constraints and required alterations (including height and width clearances (such as wires and trees), and bridges). This assessment and early identification of constraints, allows planning of routes and temporary removal of hazards and mitigation upgrades to minimise risk of damage and delays.
  - During movements TMPs in place will ensure appropriate permits are received and plan for escort vehicles, minimise disruptions or delays to the road network movements, schedule movements outside peak hours where possible.

- **Road condition and maintenance:** Increased heavy vehicles over the construction period may escalate wear and tear on the road surface. However, it is expected that agreements with road authorities (Council and Department of Transport and Planning (DTP)) will ensure timely repairs of any damage in the road corridors by use of dilapidation surveys. Prior to construction, road dilapidation surveys will be prepared for all local roads which will be regularly used during construction.
- **Impact to active transport:** The Project area does not have any formal pedestrian or cyclist paths however appropriate mitigation will be incorporated in the TMPs
- **Impact to public transport:** The increase in construction traffic would not be expected to have an adverse impact on the road network performance, therefore bus services are unlikely to experience a material impact due to the Project. To reduce the likelihood of an incident involving school buses the frequency, volume and bus stop locations of school bus routes will be documented in a TMP and associated mitigation such as avoiding these routes at key school times to reduce interaction. Engagement with bus operators will also be undertaken.
- **Impact to freight:** The freight network will need to be considered in the TMP, including the adoption of appropriate mitigation protocols as necessary to limit the impact of the additional anticipated traffic on freight services and infrastructure (level crossings). This may include avoiding roads with level crossings when planning access routes for construction vehicles to the site.

This is a preliminary assessment and further traffic assessment is expected as the Project progresses.

Any required traffic management treatments, and internal and external mitigation works, are to be identified and addressed by way of an approved CTMP or TMP, to be prepared by the construction contractor to the satisfaction of the relevant authorities. This is the responsibility of the Proponent and would be prepared in consultation with the construction contractor.

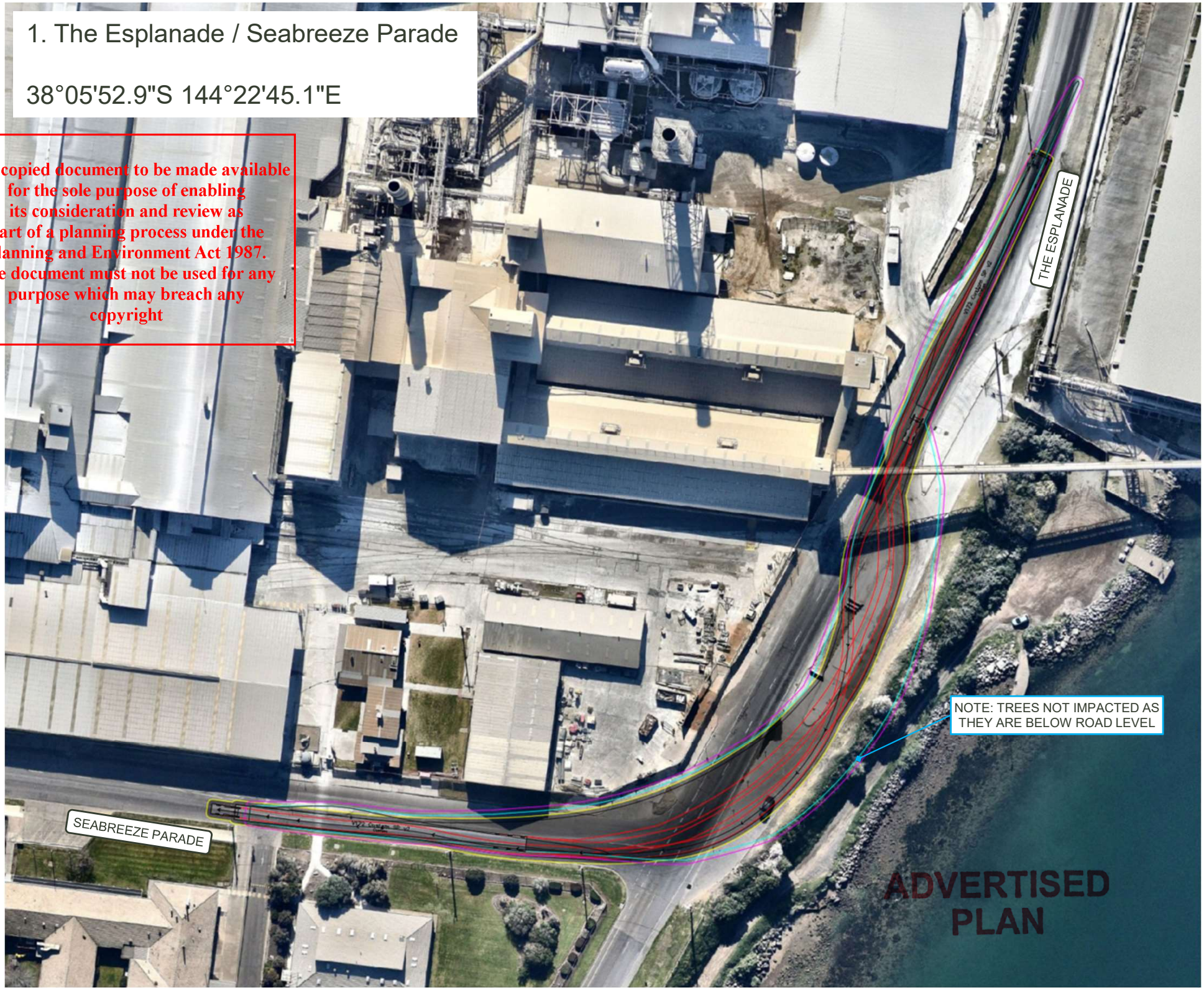
Operations and decommissioning

The operational and decommissioning phase traffic is expected to have a lower traffic impact than the construction phase.

Appendix A – Preliminary Route Assessment

1. The Esplanade / Seabreeze Parade

38°05'52.9"S 144°22'45.1"E



2. Seabreeze Parade / Abery Road

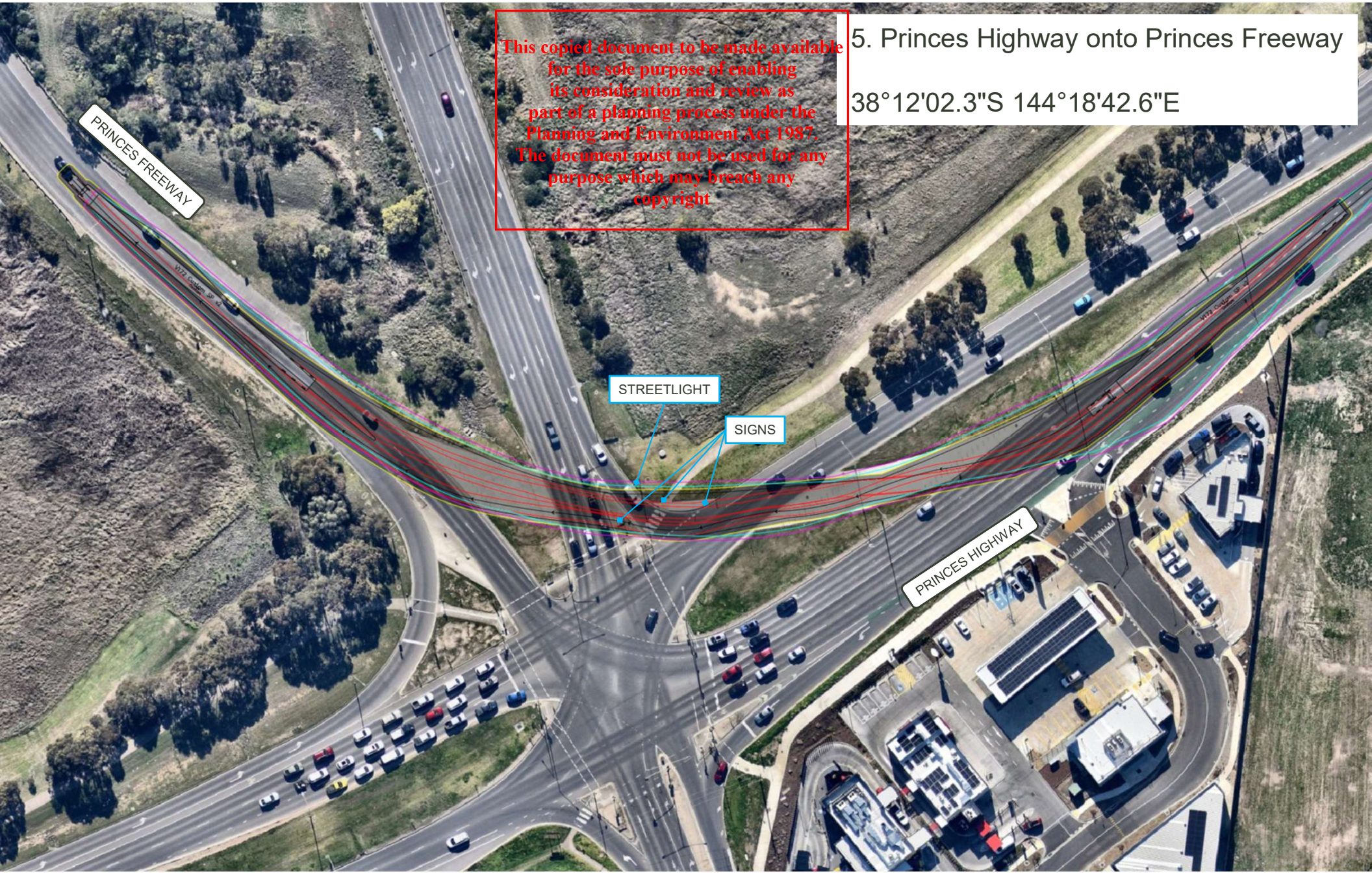
38°05'49.0"S 144°22'19.9"E

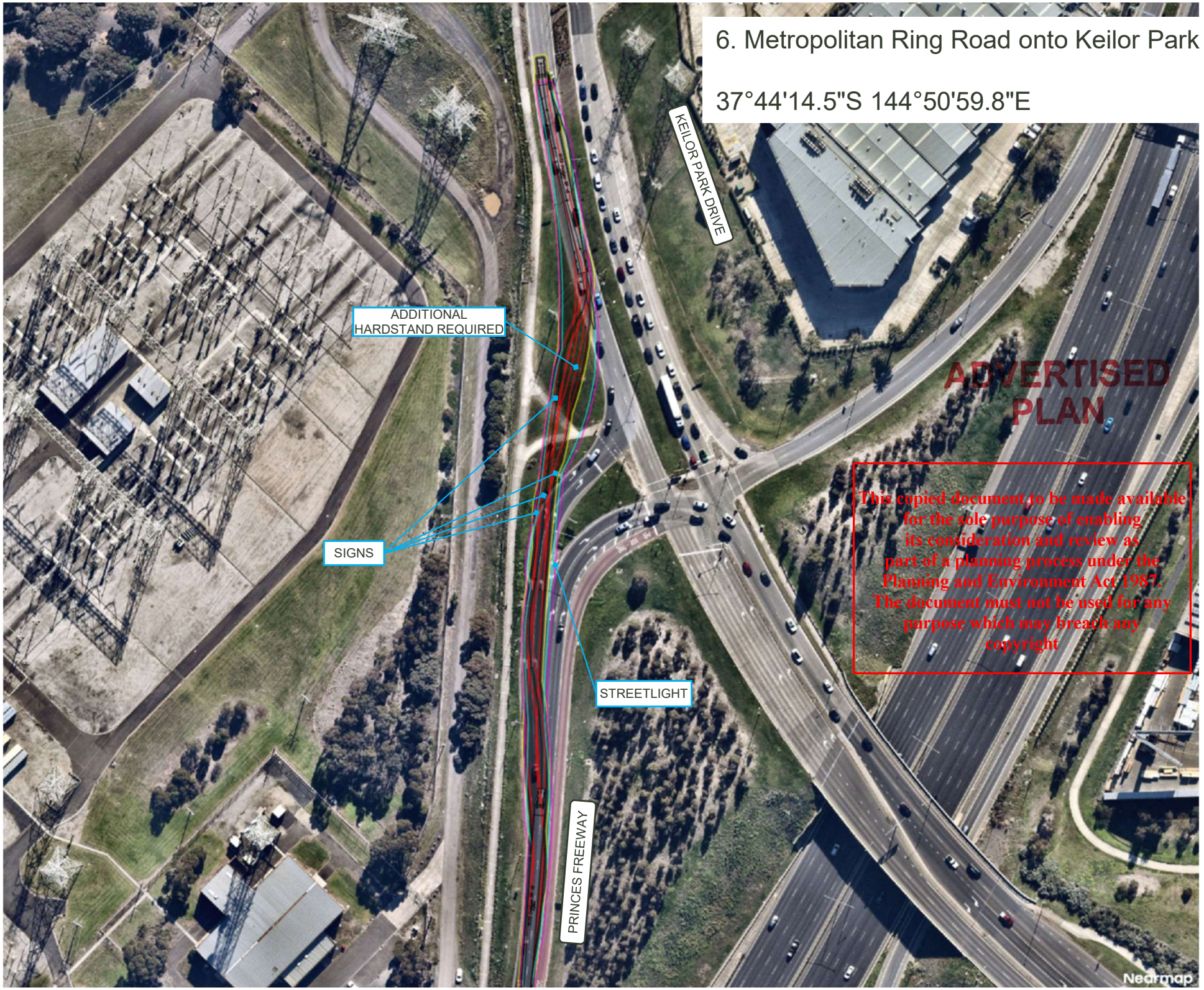

3. Abery Road / Corio Quay Road
38°06'01.4"S 144°21'55.4"E
ABERY ROAD
STREETLIGHT
LEVEL CROSSING FLASHING LIGHTS
STREETLIGHTS
ADVERTISED PLAN
POWER POLE
SIGNS
CORIO QUAY ROAD
This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

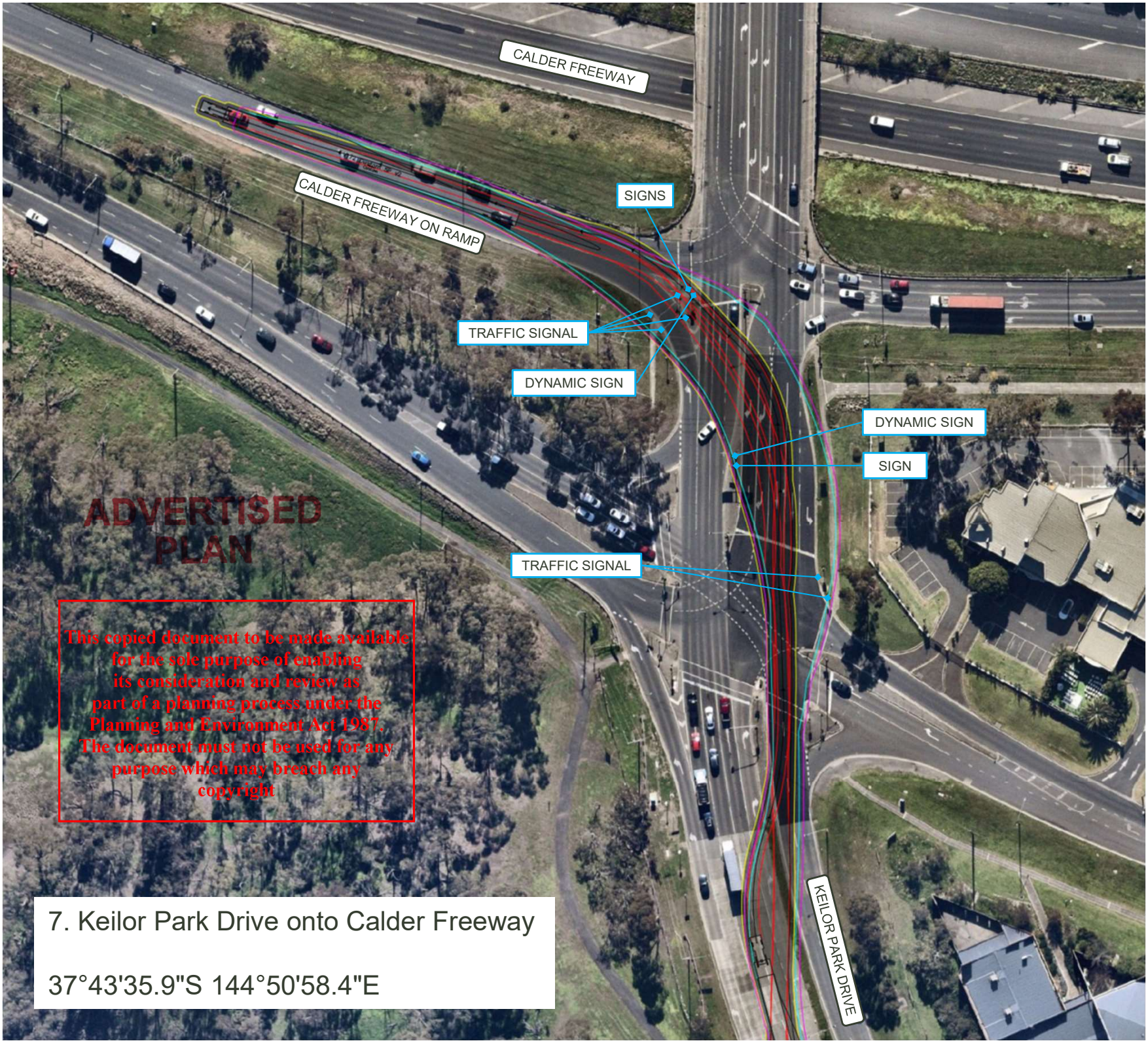

4. Corio Quay Road onto Princes Highway
38°06'50.5"S 144°21'17.5"E
PRINCES HIGHWAY
CORIO QUAY ROAD
PAVEMENT WIDENING
SIGNS
ADVERTISED PLAN
This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

5. Princes Highway onto Princes Freeway

38°12'02.3"S 144°18'42.6"E

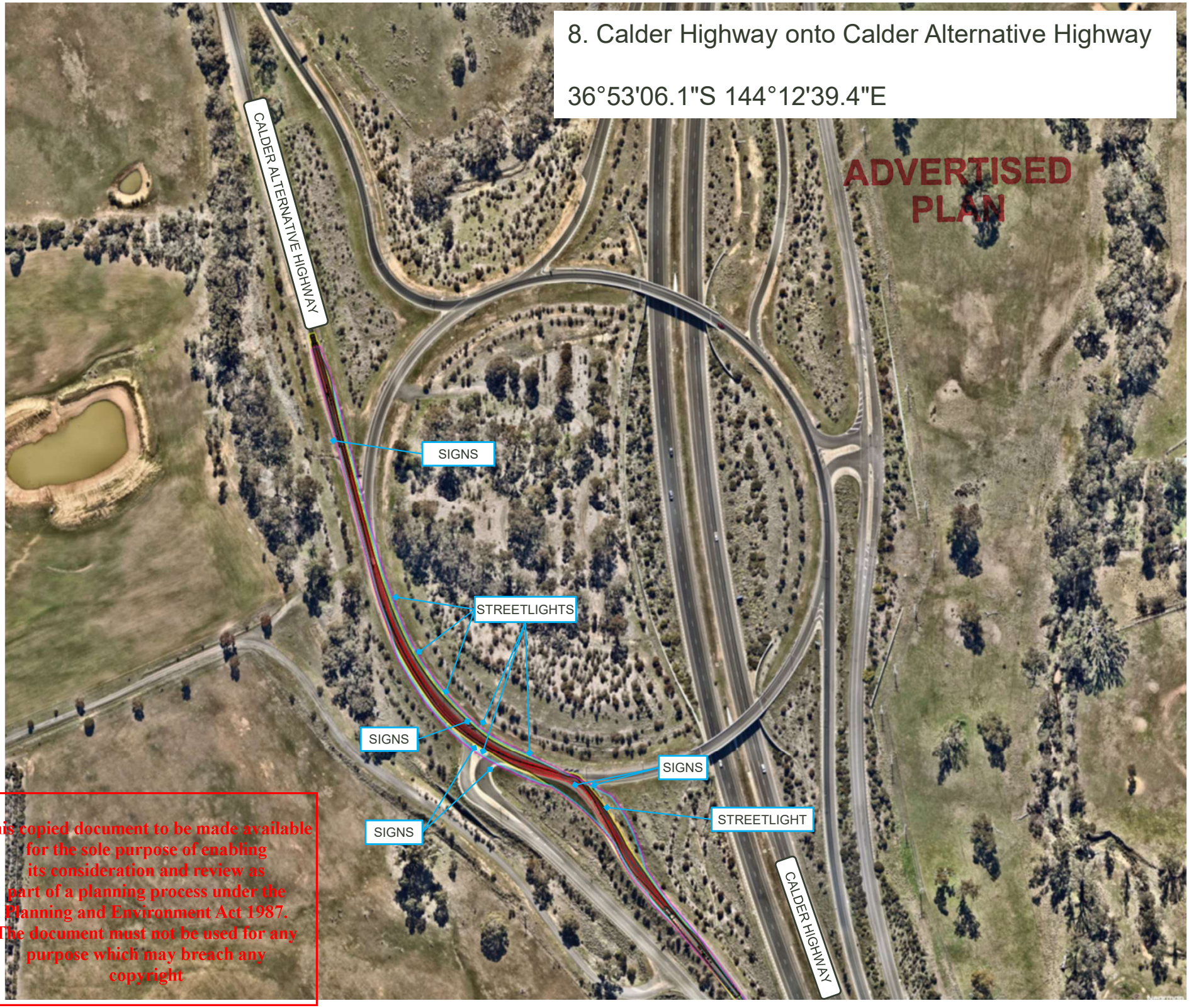



6. Metropolitan Ring Road onto Keilor Park Drive
37°44'14.5"S 144°50'59.8"E
KEILOR PARK DRIVE
ADDITIONAL HARDSTAND REQUIRED
SIGNS
STREETLIGHT
PRINCES FREEWAY
ADVERTISED PLAN
This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright
Nearmap



7. Keilor Park Drive onto Calder Freeway

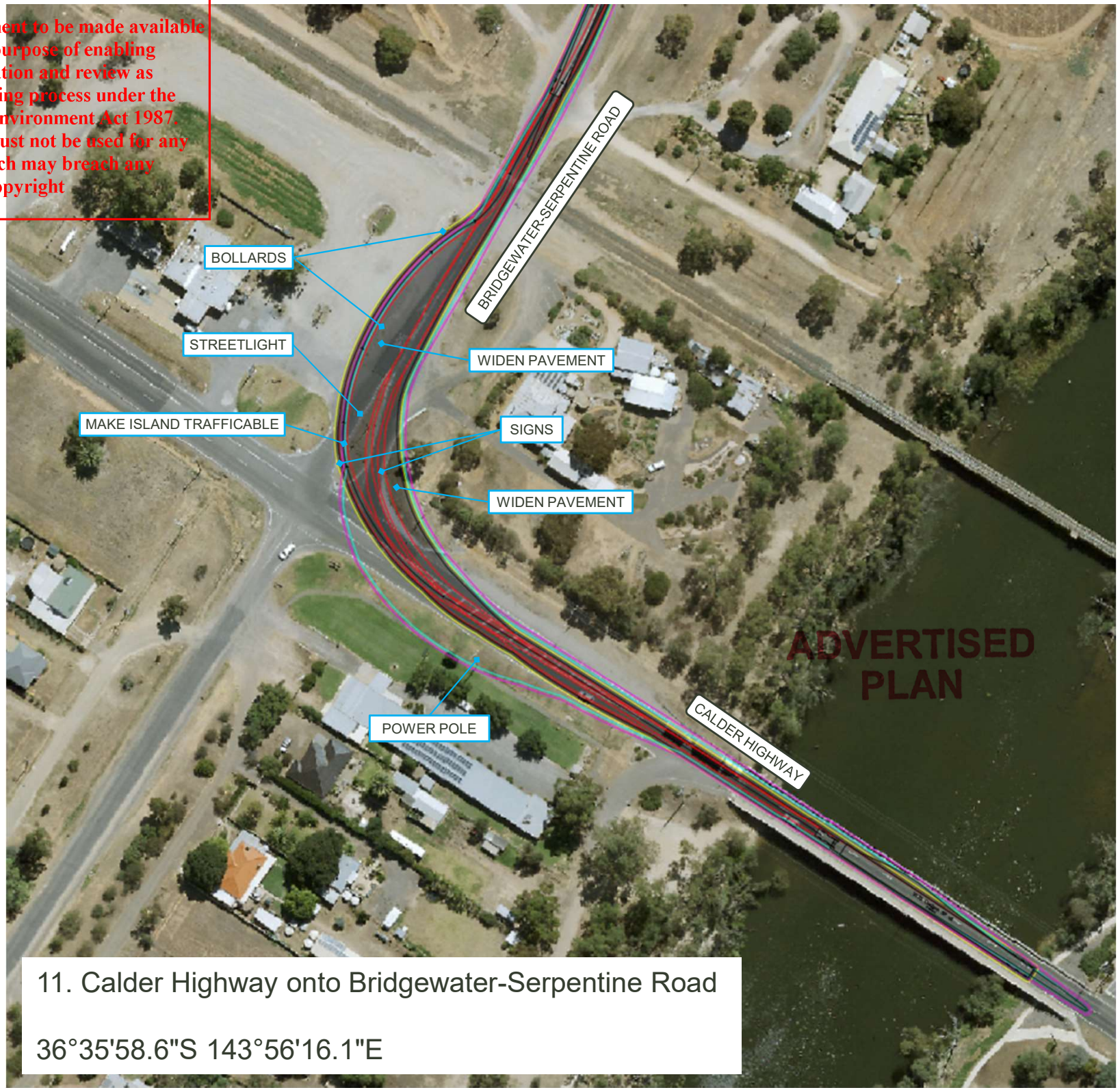
37°43'35.9"S 144°50'58.4"E



9. Calder Alternative Highway roundabout

36°48'34.3"S 144°09'31.7"E


10. Calder Alternative Highway onto Calder Highway
36°44'08.7"S 144°07'58.3"E
CALDER HIGHWAY
BUS STOP SHELTER
WIDEN PAVEMENT
SIGNS
MAKE ISLANDS TRAFFICABLE
SIGNS
LEVEL CROSSING BOOM GATES, FLASHING LIGHTS AND FENCING
CALDER ALTERNATIVE HIGHWAY
This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright
ADVERTISED PLAN



11. Calder Highway onto Bridgewater-Serpentine Road

36°35'58.6"S 143°56'16.1"E

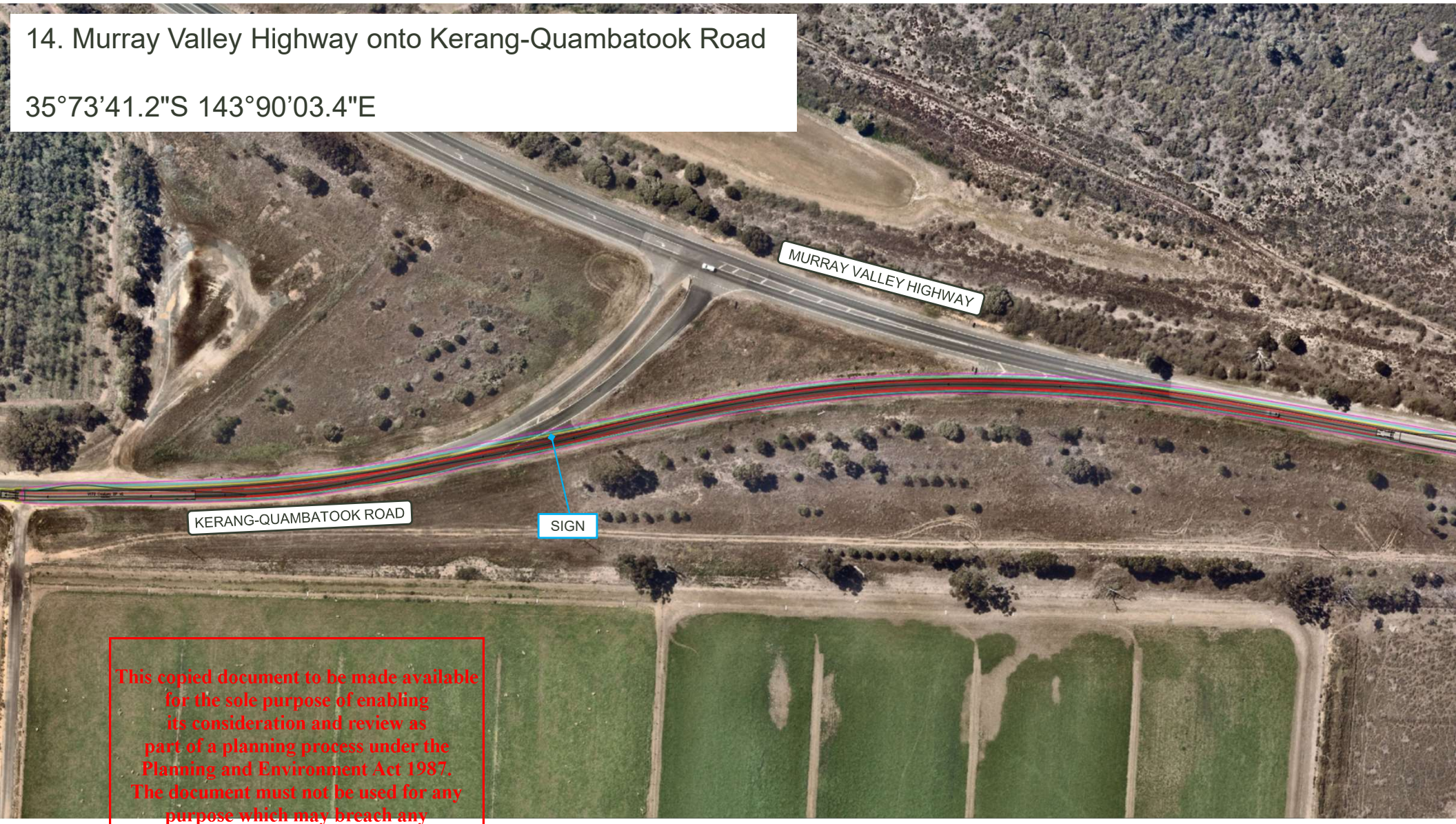

12. Bridgewater-Serpentine Road onto Loddon Valley Highway
36°24'46.5"S 143°58'28.4"E
This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright
ADVERTISED PLAN
SIGNS
STREETLIGHT
ADDITIONAL HARDSTAND REQUIRED
LODDON VALLEY HIGHWAY
BRIDGEWATER-SERPENTINE ROAD

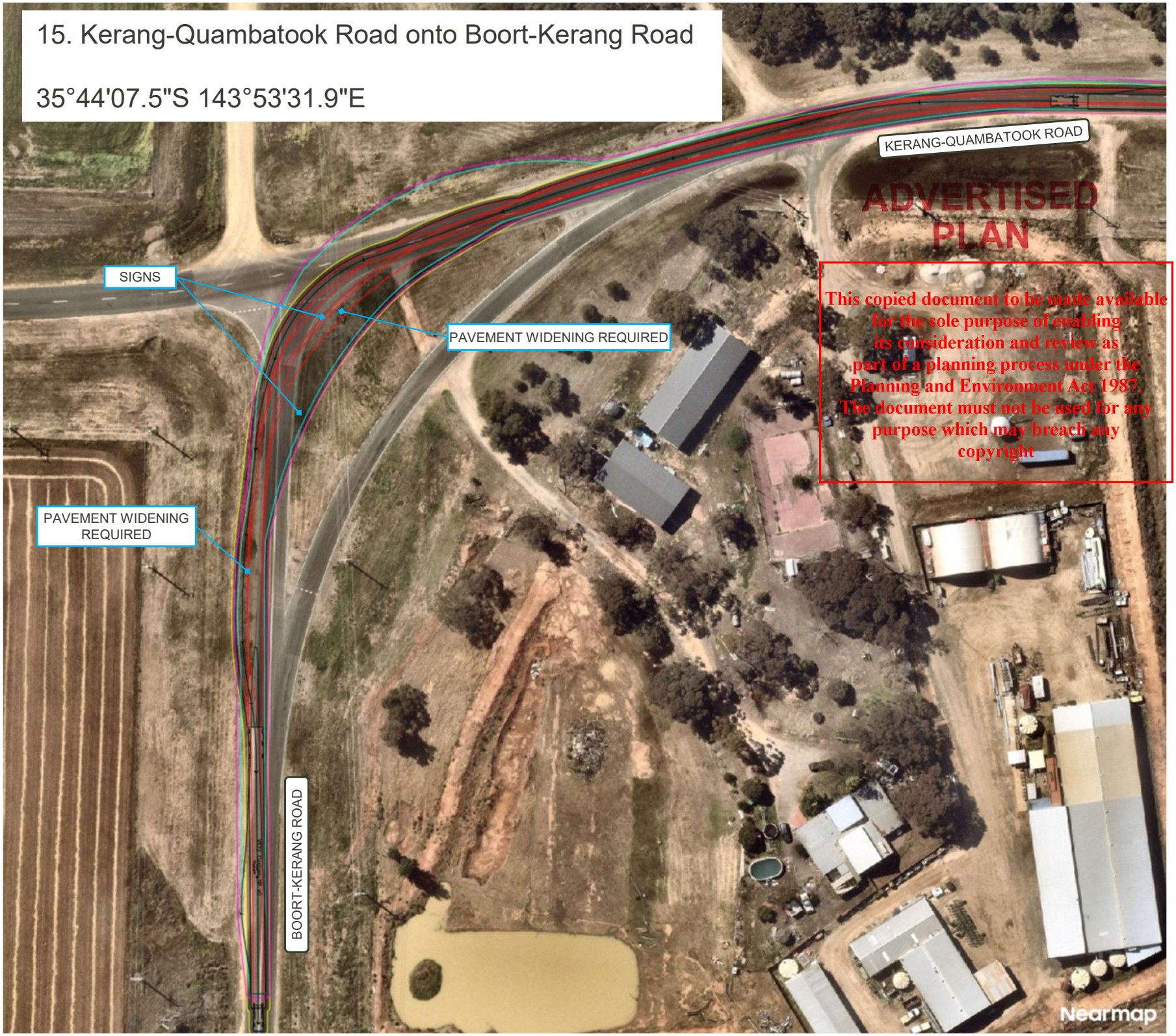
13. Murray Valley Highway through Kerang

35°73’53.7"S 143°66’36"E

14. Murray Valley Highway onto Kerang-Quambatook Road

35°73’41.2"S 143°90’03.4"E




15. Kerang-Quambatook Road onto Boort-Kerang Road
35°44'07.5"S 143°53'31.9"E
KERANG-QUAMBATOOK ROAD
ADVERTISED PLAN
This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright
SIGNS
PAVEMENT WIDENING REQUIRED
PAVEMENT WIDENING REQUIRED
BOORT-KERANG ROAD
Nearmap