<u>37°42'59.4"S</u> 143°26'15.7"E

Moreton Hill Wind Farm, Skipton VIC



27 October 2023 Prepared for MHWF Nominees Pty Ltd

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Company Information

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IMPACT[®] Snap Shot

Development Proposition				
Location	<u>37°42'59.4"S 143°26'15.7"E</u> Glenelg Highway, Skipton VIC			
Use	Proposed Wind Farm			
Duration	12 months			
Staff	Up to 200 during the peak construction activity			
Yield	421 MW, 62 turbines (252 metre tip height)			
	Traffic Considerations			
Haulage Route				
	Primary Haulage Route			
	Port of Portland - Madeira Packet Road - Henty Highway - Princes Highway - Portland-Casterton Road - Glenelg Highway - Henty Highway - Dunkeld-Cavendish Road - Glenelg Highway			
	From Skipton, different routes can be taken to the eight (8) site access points as follows:			
	Site Access 1 & 8			
	Glenelg Highway - Skipton-Geelong Road / Rokewood-Skipton Road			
	Site Access 2			
Turbine Blade	Glenelg Highway - Skipton-Geelong Road / Rokewood-Skipton Road - Spring Hill Road / Notmans Road			
Deliveries (OSOM)	Site Access 3			
	Glenelg Highway - Pitting-Lismore Road			
	Site Access 4			
	Glenelg Highway - Skipton-Geelong Road / Rokewood-Skipton Road - Mount Bute Road			
	Site Access 5			
	Glenelg Highway - Spring Hill Road			
	Site Access 6 & 7			
	Glenelg Highway - Skipton-Geelong Road / Rokewood-Skipton Road - Lismore- Pittong Road			
Other Delivery Vehicles	Access to the construction compound by heavy vehicle deliveries will primarily be via Glenelg Highway to the north and Rokewood-Skipton Road towards the centre of the site to the various site access points - thereafter vehicles will travel along the local roads or access tracks to each turbine site as required. Vehicle deliveries will be contained within roads that are either pre-approved or conditionally approved (dry weather) for B-double & HML travel. It is proposed to			
	upgrade existing local roads to all weather roads.			



Traffic Impact		
Traffic Generation	The site is estimated to generate in the order of 577 daily vehicle movements during peak construction (comprising 129 heavy vehicles, 444 light vehicles and 4 OD vehicles). This level of additional traffic can comfortably be accommodated by the external road network. It is however recommended that local gravel roads be upgraded to an all-weather standard during the construction period.	
Recommended Measures	We recommend the proponent enter into a maintenance agreement with Council to ensure roads are adequately maintained during the construction period. Outside of construction (i.e. during operation) the site is not expected to have a significant impact on local roads, and maintenance can revert to Council.	
Sight Distances	Based on a review of horizontal and vertical alignment and vegetation in the area, the sight distance at future turbine access points is deemed to be in accordance with the relevant standards.	
Traffic Management		
Traffic Management Plan	It is recommended that a detailed Traffic Management Plan (TMP) be prepared once the detailed design is complete and prior to commencement of the project, to confirm requirements for mitigation and management works.	
Conclusion		

Subject to the recommendations provided, there are no traffic and transport grounds that should prohibit the issue of a permit for development of Moreton Hill Wind Farm.



2 Introduction

2.1 Engagement

IMPACT[®] have been engaged by MHWF Nominees Pty Ltd to undertake an assessment of the traffic implications of the proposed Moreton Hill Wind Farm located in located in the Central Highlands region of western Victoria.

Specifically, **IMPACT**[®] have been requested to explore the viability of transporting the wind turbine blades to the subject land from the Port of Portland.

The purpose of this investigation is to confirm what (if any) changes and / or mitigation measures are required to the existing road infrastructure and immediate surrounds, to transport larger turbine components to the subject land.

This Traffic Impact Assessment has been prepared to accompany the Project's approval documentation.

In preparing this assessment we have referenced the following:

- Traffic Impact Assessment prepared by RE Future; '20210828 MOR Traffic Impact Assessment Final';
- The site plan developed by RE Future; '20230424 MHWF Site Plan'; and
- Shire of Corangamite and Shire of Golden Plains Planning Schemes, including:
 - Clause 52.32 Wind Energy Facilities;
 - Clause 35.07 Farming Zone;
 - Clause 36.04 Transport Zone 2; and
 - o Clause 52.29 Land Adjacent to the Principal Road Network.



3 Moreton Hill Wind Farm

3.1 Location

The proposed Moreton Hill Wind Farm development is located in the Central Highlands region of western Victoria, within the Golden Plains Shire and the Corangamite Shire, approximately 35 km southwest of Ballarat.

The wind farm site is largely bound by the Glenelg Highway in the north, Linton-Mannibadar Road in the east, Lismore-Pittong Road in the south and Mount Bute Road in the west. Rokewood Skipton Road bisects the Project site from east to west.

The closest towns to the Project are Skipton and Linton, approximately 5 km to the west and east of the Project.

Figure 1 provides an illustration of the subject land in the context of Victoria (and also the Port of Portland), whilst Figure 2 overleaf shows the subject land in a more local context.



Figure 1

Location of Development Site (Victorian Context)





Figure 2 Location of Development Site (Local Context)

The subject land is comprised mainly of flat-lying to gently sloping open paddocks, which have historically been used for grazing activities.

3.2 Existing Road Network

The following section provides a brief summary of the classification, alignment and design of each road (local and arterial) in proximity to the subject site.

3.2.1 Glenelg Highway

Glenelg Highway is a Primary State Arterial Road which is generally aligned in east-west direction and extending to the west from Ballarat to Hamilton in the south west of Victoria. East of Ballarat, Glenelg Highway continues as the Midland Highway.

In the vicinity of the site, Glenelg Highway has been constructed with one lane of traffic each direction with a road pavement measuring approximately 8 - 8.5 metres wide.

Figure 3 overleaf illustrates a typical cross section of Glenelg Highway near the subject site.

Glenelg Highway operates with a posted speed limit of 100km/hr adjacent to the subject site.





Figure 3 Glenelg Highway typical section adjacent subject site (Source MHWF Pty Ltd)

3.2.1.1 Existing Traffic Volumes - Glenelg Highway

Data published by VicRoads indicates that on average, Glenelg Highway carries in the order of 1,400 vehicles per day in the vicinity of the subject site.

A further breakdown of the data reveals a combined peak count of up to 436 vehicles per hour (split relatively evenly between northbound and southbound vehicles) and typically occurs between 8:00am-9:00am and 4:00pm-6:00pm; between these times traffic is typically in the order of 310-350 vehicles per hour on weekdays.



The daily traffic profile along Glenelg Highway is illustrated at Figure 4.

Figure 4 Daily Traffic Profile - Glenelg Highway between Pitfield-Scarsdale Road and Wills Street¹

¹ Data sourced from VicRoads Traffic Profile Viewer: <u>https://public.tableau.com/app/profile/vic.roads/viz/TrafficProfiles_2/TrafficProfiles</u>



3.2.2 Rokewood-Skipton Road

Rokewood-Skipton Road is a Secondary State Arterial Road which is generally aligned in the northwest southeast direction and extending from Glenelg Highway in Skipton in the northwest to Colac-Ballarat Road in Rokewood to the southeast.

In the vicinity of the site, Glenelg Highway has been constructed with one (1) lane of traffic each direction with a road pavement measuring approximately seven (7) metres wide.

Figure 5 illustrates a typical cross section of Rokewood-Skipton Road near the subject site.

Rokewood-Skipton Road operates with a posted speed limit of 80km/hr adjacent to the subject site.

Data published by VicRoads indicates that on average, Rokewood-Skipton Road carries in the order of 900 vehicles per day in the vicinity of the subject site.



Figure 5 Rokewood-Skipton Road typical section adjacent subject site (Source MHWF Pty Ltd)

3.2.3 Lismore-Pittong Road

Lismore-Pittong Road is classified as a local road which extends in a north south direction from Glenelg Highway and turns into Crawfords Road to the south.

Lismore-Pittong Road is constructed with an approximate 7.4 metres wide pavement with a single lane of each direction.

Most traffic currently utilising Lismore-Pittong Road are likely to be accessing particular lots of surrounding land.

Figure 6 overleaf illustrates a typical cross section of Lismore-Pittong Road near the subject site.



Figure 6 Lismore-Pittong Road typical section adjacent subject site (Source MHWF Pty Ltd)



3.2.4 Spring Hill Road

Spring Hill Road is classified as a minor rural / rural access road extending in a north south direction between Glenelg Highway and Skipton-Geelong Road.

Spring Hill Road is typically constructed with a gravel road pavement measuring approximately 4.5 - 5 metres in width.

Most traffic currently utilising Spring Hill Road are likely to be local residents of the surrounding lots.

3.2.5 Francis Lane

Francis Lane is classified as a minor rural / rural access road extending in an east west direction between Moreton Hill Road and Linton-Mannibadar Road.

Francis Lane is typically constructed with a gravel road pavement measuring approximately 5.5 - 6 metres in width.

Most traffic currently utilising Francis Lane are likely to be local residents of the surrounding lots.

Figure 7 illustrates a typical cross section of Francis Lane near the subject site.



Figure 7 Francis Lane typical section adjacent subject site (Source MHWF Pty Ltd)

3.2.6 Watkins Road

Watkins Road is classified as a minor rural / rural access road extending in an east west direction between Smiths Road and Mount Bute Road.

Watkins Road is typically constructed with a gravel road pavement measuring approximately 3.5 - 4.5 metres in width.

Most traffic currently utilising Watkins Road are likely to be local residents of the surrounding lots.

Figure 8 illustrates a typical cross section of Watkins Road near the subject site.



Figure 8 Watkins Road typical section adjacent subject site (Source MHWF Pty Ltd)



3.2.7 Parkers Road

Parkers Road is classified as a minor rural / rural access road extending in an east west direction between Rankin Road and Lismore-Pittong Road.

Parkers Road is typically constructed with a gravel road pavement measuring approximately 4.5 - 5.5 metres in width.

Most traffic currently utilising Watkins Road are likely to be local residents of the surrounding lots.

Figure 9 illustrates a typical cross section of Parkers Road near the subject site.



Figure 9 Parkers Road typical section adjacent subject site (Source MHWF Pty Ltd)

3.2.8 Rankin Road

Rankin Road is classified as a minor rural / rural access road extending in a north south direction between Rokewood-Skipton Road and Parkers Road.

Rankin Road is typically constructed with a gravel road pavement measuring approximately 4.5 - 5.5 metres in width.

Most traffic currently utilising Watkins Road are likely to be local residents of the surrounding lots.



Figure 10 illustrates a typical cross section of Rankin Road near the subject site.

Figure 10 Rankin Road typical section adjacent subject site (Source MHWF Pty Ltd)



3.2.9 Rowes Lane

Rowes Lane is classified as a minor rural / rural access road extending in a north south direction from Egans Lane in the north to property access in the south.

Rowes Lane is constructed with a gravel road pavement measuring approximately 5.5 - 6.5 metres in width.

Most traffic currently utilising Rowes Lane are likely to be local residents of the property located at the end of Rowes Lane.

Figure 11 illustrates a typical cross section of Rowes Lane near the subject site.



Figure 11 Rowes Lane typical section near subject site (Source MHWF Pty Ltd)

3.2.10 Mount Bute Road

Mount Bute Road is classified as a minor rural / rural access road extending in a north south direction between Rokewood-Skipton Road and Crawfords Road.

Mount Bute Road is typically constructed with a central seal approximately 3.5 - 4.5 metres wide, plus unsealed gravel shoulders approximately 2 - 3 metres on each side.

Most traffic currently utilising Mount Bute Road are likely to be local residents of the surrounding lots.

Figure 12 illustrates a typical cross section of Mount Bute Road near the subject site.

Figure 12 Mount Bute Road typical section near the subject site (Source MHWF Pty Ltd)



3.2.11 Stretchs Road

Stretchs Road is classified as a minor rural / rural access road extending in a north south direction from Rokewood-Skipton Road and ends south of Egans Lane.

Stretchs Road is typically constructed with a central seal approximately 4.5 metres wide.

Most traffic currently utilising Stretchs Road are likely to be local residents of the surrounding lots.

Figure 13 illustrates a typical cross section of Stretchs Road near the subject site.



Figure 13 Stretchs Road typical section near the subject site (Source MHWF Pty Ltd)

3.2.12 Egans Lane

Egans Lane is classified as a minor rural / rural access road extending in an east west direction between Rokewood-Skipton Road and Stretchs Road.

Egans Lane is constructed with a gravel road pavement east of Linton-Naringhil Road measuring approximately 6 - 7 metres in width.

To the west of Linton-Naringhil Road, Egans Lane is constructed with a central seal approximately 6.5 - 7.5 metres wide, plus unsealed gravel shoulders approximately 2.5 - 3 metres on each side.

Most traffic currently utilising Egans Lane are likely to be local residents of the surrounding lots.

Figure 14 illustrates a typical cross section of Egans Lane near the subject site.



Figure 14

Egans Lane typical section near the subject site (Source MHWF Pty Ltd)



3.3 Planning and Policy Context

The site sits within the Corangamite Shire and the Golden Plains Shire Council Local Government Areas (LGA).

A majority of the land within the site is designated as Farming Zone, with no specific planning overlays applicable to this area of land.

Figure 15 provides a visual representation of the Farming Zone applicable within the subject area (FZ light green).



Figure 15 Planning Zones and Overlays

- 3.3.1 Planning Framework
- 3.3.1.1 Clause 52.32 Wind Energy Facilities

Clause 52.32 of the Victorian Planning Provisions outlines the relevant application requirements associated with the development of Wind Energy Facilities. Relevant to traffic and access matters, considerations under Clause 52.32 include:

- Clause 52.32-4 Application Requirements
 - Site and context analysis in relation to the surrounding area;
 - Access to infrastructure



3.3.1.2 Clause 35.07 - Farming Zone

A Wind Energy Facility is a Section 2 use within the Farming Zone subject to meeting the requirements of Clause 52.32.

Relevant to access for the wind energy facility, in considering an application for use and building and works, the decision guidelines listed under Clause 35.07-6 include:

— How the use and development makes use of existing infrastructure and services.

3.3.1.3 Clause 36.04 - Transport Zone 2

Several electrical reticulation cables for the Project are proposed to traverse roads within the Project site, including Rokewood-Skipton Road, which is subject to Transport Zone 2 (TRZ2) under both Golden Plains and Corangamite Planning Schemes. According to Clause 36.04, the purpose of the TRZ2, of relevance to the Project is:

- To provide for the use and development of land that complements, or is consistent with, the transport system or public land reservation.
- To ensure the efficient and safe use of transport infrastructure and land comprising the transport system.

In accordance with Clause 36.04-1 (Table of Uses) a permit is not required for a Section 1 use provided the specified conditions are met (the use must be for a transport purpose and carried out by or on behalf of a relevant transport manager).

Given the conditions cannot be met, a permit is required for the use of land for a wind energy facility (Section 2 use).

According to Clause 36.04-2 (Permit Requirements), a permit is required to construct or carry out building or works associated with a use in Section 2 of Clause 36.04-1.

3.3.1.4 Clause 52.29 - Land Adjacent to the Principal Road Network

The purpose of Clause 52.29 is to:

- Ensure appropriate access to the Principal Road Network or land planned to form part of the Principal Road Network; and
- Ensure appropriate subdivision of land adjacent to the Principal Road Network or land planned to form part of the Principal Road Network.

A permit is required to:

- Create or alter access to:
 - A road in a Transport Zone 2;
 - Land in a Public Acquisition Overlay if a transport manager (other than a municipal council) is the acquiring authority and the acquisition is for the purpose of a road.
- Subdivide land adjacent to:
 - A road in a Transport Zone 2;
 - Land in a Public Acquisition Overlay if a transport manager (other than a municipal council) is the acquiring authority and the acquisition is for the purpose of a road

In response to the above, it is noted that:

The proposal seeks to create or alter access to Rokewood-Skipton Road which is in a Transport Zone 2.

A permit will be required under Clause 52.29 as the Project proposes to upgrade Rankin Road located off Rokewood-Skipton Road.



3.4 VicRoads Road Network Limits

The pre-approved B-Double and Higher Mass Limit (HML) network in the locality of the development site are reproduced as Figure 16.

These network diagrams are typically read as follows:

- Green Roads pre-approved for haulage and typically a permit is not required
- Orange Roads conditionally approved, haulage along these roads are subject to conditions
- Red Roads restrict access, an assessment and permit is required for haulage along these sections
- Unhighlighted Roads require an assessment and approval from the responsible authority.



Figure 16 VicRoads Preapproved B-Double & Higher Mass Limit (HML) Network

As shown in the figures above, both Glenelg Highway and Rokewood-Skipton Road are pre-approved B-Double and HML haulage routes. A majority of the local roads in proximity to the site are not approved for B double and HML access and therefore will need approval from council and NHVR.

3.5 Project Description

The proposal contemplates the development of the subject area as a Wind Farm, comprising a total of 62 wind turbines and will generate up to 421 MW.

The Wind Farm development site will be located across multiple land holdings, with a total land area in the order of 6,200 ha.

Figure 17 overleaf shows the proposed turbine locations in the context of the broader subject area subject site. A more detailed scaled site plan is shown in Appendix A.

As shown in Figure 17, one (1) Site Office Compound is proposed to service the site, to the south of Rokewood-Skipton Road at the intersection of Rankins Road and Hendersons Road. We understand that the construction compound will be used to service all turbine sites within the subject area.

The site will seek to leverage a combination of local roads and private access tracks to connect the turbine sites to the construction compound.



We understand that (where applicable) these roads (including the private access tracks) are to be upgraded / constructed to all weather roads, suitable for the haulage of construction vehicles during the delivery of the Wind Farm project. In addition, where roads are already of a suitable standard, they are to be maintained during construction and restored to their pre-construction condition after the project is complete.

We understand that any access point (to the turbine site or construction compound) will be constructed as required to facilitate access by OSOM delivery vehicles where necessary.

IMPACT® are advised that each turbine will be comprised of the following components:

- Three (3) x 86-metre long turbine blades;
- Up to five (5) x tubular steel tower sections;
- A nacelle which contains the generator, a gear box and electrical equipment;
- Transformer and switch gear (which is also housed inside the turbine:
- A hardstand area (a pad for the turbine and crane);

Eight (8) site access points as illustrated in Figure 18 are proposed around the development with the site compound accessed off the access point located at the intersection of Rokewood-Skipton Road and Rankin Road. Alternate site access points are located at the intersections of Spring Hill Road and Browns Road, Francis Lane and Pittong-Lismore Road, Notmans Road and Browns South Road, Mount Bute Road and Parkers Road, Lismore-Pittong Road and Parker Road, Rokewood-Skipton Road and Stretchs Road as well as at the change in direction of Lismore-Pittong Road south of Parker Road.

The Site Office Compound is located adjacent an amenities block, on-site car park and control buildings.

Five (5) laydown areas are also proposed located near site access points. These laydown areas are located near the intersection of Browns South Road and Moreton Hill Road, Francis Lane and Knights Road, on Notmans Road east of Browns South Road, Stretchs Road and Egans Lane as well as at the change in direction of Lismore-Pittong Road south of Parker Road.

The Wind Farm will link to the Berrybank Terminal Station using an underground 220kV transmission line. This line will originate from the on-site substation, proceed southward through private property near Rankin/Gillepies Road, head east near Lismore Pittong Road, and then travel south on Willowvale Road within the road reserve before connecting to the Berrybank Terminal Station.

The Wind Farm will have an expected operating life of 25-30 years.





Figure 17 Proposed Development Footprint







4 Vehicle Access Routes

4.1 Construction Materials Delivery Routes

The source location and delivery routes (as discussed below) for all components is yet to be confirmed. The following sections outline the most likely scenario as currently understood by **IMPACT**[®].

4.1.1 Gravel / Aggregate

IMPACT[®] are advised that the site will require in the order of 567,000 tonnes of gravel aggregate.

The gravel is to be sourced by local contractors, who will leverage local quarries from David Eldridge Quarry Skipton or from DE Quarry Solutions in Ballarat.

We understand that some additional blending materials may be sourced further afield (such as Ballarat) and then blended with the gravel aggregate on-site. These deliveries will be brought into the construction compounds via Glenelg Highway.

Based on the foregoing, the impact of most aggregate delivery vehicles will typically be limited to Glenelg Highway, Skipton-Geelong Road / Rokewood-Skipton Road and Pittong-Lismore Road.

4.1.2 Water Deliveries

We are advised that external water deliveries required for construction and dust suppression will be sourced locally from either Skipton or Linton.

4.1.3 Concrete Trucks

Two temporary concrete batching plants are proposed. One near the site entrance located near the intersection of Rokewood-Skipton Road and Rankin Road and one located on Notmans Road.

Concrete materials are to be sourced from batching plants in Ballarat, Melbourne and Geelong. Thereafter, concrete will be mixed on-site and then distributed to each turbine site as required.

4.1.4 Steel Reinforcement Deliveries

We understand that steel deliveries will be most likely be delivered from Ballarat.

We expect that delivery vehicles will use the shortest route possible whilst leveraging the pre-approved HML roads (discussed in Section 3.4). Accordingly, vehicles will likely arrive from the north-east (via Glenelg Highway).

4.2 Wind Turbine Components

IMPACT® understands that Port of Portland will be the point of entry for the major Wind Farm components.

A haulage route has been identified and an assessment has been undertaken in Section 5 to confirm the validity of the proposed haulage route.



4.3 Construction Staff

During the delivery of the project, it is expected that the majority of staff will typically reside in either Geelong or Ballarat.

We understand that most staff will travelling to / from the site via Glenelg Highway (for those coming from Ballarat to the east) or via Rokewood-Skipton Road (for those coming from Geelong to the south-east). We expect there will be muster points external to the site (likely within each regional centre) where staff meet and get bussed into the subject site.

The remaining staff (managerial / senior) will likely drive to the site along the same route.

4.4 Site Access Strategy

4.4.1 Construction Materials Vehicle Deliveries

Delivery Route

Based on the foregoing, we note that materials deliveries are typically being sourced from Ballarat or Geelong. A majority of deliveries will arrive at the construction compound via Glenelg Highway before being distributed to each individual turbine site as required.

Recommendations

Regarding site access for these delivery vehicles, we recommend the following:

 Site access tracks and local roads providing access to/from turbine units be constructed / upgraded to a standard which permits heavy vehicle access & turbine component delivery for all weather events.

4.4.2 Turbine Component Delivery

Delivery Route

Components for the Wind Farm will typically be delivered from Portland via the route described in Section 5.

Section 5 provides a preliminary assessment of the proposed route and details the likely mitigation measures required or problem areas throughout the regional delivery area.

Locally, vehicles will arrive at the site via the eight (8) proposed access points, before being delivered to the relevant turbine site.

<u>Recommendations</u>

Regarding local site access for these delivery vehicles (noting Section 5 discusses these vehicles in a regional context), we recommend the following:

- Site access tracks and local roads (where required) be widened at intersection to facilitate the largest (i.e. turbine) component delivery vehicles.
 - \circ $\,$ This will also ensure that each road / site access can geometrically cater to all other construction traffic.

4.4.3 Staff Vehicles

<u>Travel Route</u>

We are advised that most staff will drive to/from the subject site, including managerial staff where vehicles will arrive from the east and south-east (Ballarat or Geelong).



5 Vehicle Access Route- Turbine Blades

5.1 Prelimianry Investigation

5.1.1 Haulage Vehicle Paramters

IMPACT[®] have been advised that the Project seeks to use turbine blades that are up to 86 metres in length as illustrated in Figure 19.

Additionally, it is noted that the rear trailer / wheels of the vehicle can be 'detached' and steered separately from the prime mover. This function is used to help refine vehicle movements and navigate around intersections / 'Pinch Points' that are too tight to follow the main trailer.



Figure 19 Turbine Blade Delivery Vehicle Specifications

5.1.2 Route Review

The Project requires the delivery of components to the subject land to eight (8) site access points.

This investigation considers the route bringing components in from the Port of Portland to the subject land.

The following sets out an initial review of the route between this port and the subject land. The purpose of this high-level review is to identify relevant 'pinch points' along this route and where further detailed analysis is required to confirm maneuverability.

5.1.2.1 Port of Portland

It is expected that turbine blades will be delivered to a laydown area within the Port of Portland, from here the blades will be loaded onto the delivery vehicles and transported to the various site access points along the route as indicatively illustrated in Figure 20 overleaf and described below.

Note: This route is not based on the shortest distance between the subject land port of delivery, but one that would help to minimize the number of 'pinch points' and thus reduce the impact of vehicle haulage along the delivery route.





Figure 20Proposed Turbine Blade Delivery Route - Port of PortlandSpecifically, vehicles will take the route / roads to the subject site shown in Table 1 overleaf.



Dord	Distance Travelled
Madeira Packet Pead State Arterial Pead	Approximately 10 kilometres
Hopty Highway State Arterial Pogd	Approximately 22 kilometres
Princes Lighway - Slate Arterial Dead	Approximately 6 kilometree
Philices Highway - Slale Arlena Road	Approximitately 6 kilometres
Porilana-Casterion Road - State Arterial Decid	Approximately 52 kilometres
Gleneig Highway - Slale Arterial De ad	Approximately 58 kilometres
Henry Highway - State Arterial Road	Approximately 23 kilometres
Dunkeia-Cavenaisn Roda - State Arterial Roda	Approximately 29 kilometres
Clanala Lliaburau State Arterial Dead	A paper of the OO billing street
Gieneig Highway - State Arferial Roda	Approximately 99 kilometres
Skipton-Geelong Road continuing onto Rokewood-Skipton Road - State Arterial Road	Approximately 10 kilometres
Site Entry 2	
Glenelg Highway - State Arterial Road	Approximately 99 kilometres
Skipton-Geelong Road continuing onto Rokewood-Skipton Road - State Arterial Road	Approximately 4 kilometres
Spring Hill Road continuing onto Notmans Road - Local Council Road (Corangamite Shire Council)	Approximately 3 kilometres
Site Entry 3	
Glenelg Highway - State Arterial Road	Approximately 110 kilometres
Pitting-Lismore Road - Local Council Road (Corangamite Shire Council)	Approximately 3 kilometres
Site Entry 4	
Glenelg Highway - State Arterial Road	Approximately 99 kilometres
Skipton-Geelong Road continuing onto Rokewood-Skipton Road - State Arterial Road	Approximately 7 kilometres
Mount Bute Road - Local Council Road (Corangamite Shire Council)	Approximately 5 kilometres
Site Entry 5	
Glenelg Highway - State Arterial Road	Approximately 104 kilometres
Spring Hill Road - Local Council Road (Corangamite Shire Council)	Approximately 1 kilometre
Site Entry 6	
Glenelg Highway - State Arterial Road	Approximately 99 kilometres
Skipton-Geelong Road continuing onto Rokewood-Skipton Road - State Arterial Road	Approximately 12 kilometres
Lismore-Pittong Road - Local Council Road (Corangamite Shire Council)	Approximately 4 kilometres
Site Entry 7	
Glenelg Highway - State Arterial Road	Approximately 99 kilometres
Skipton-Geelong Road continuing onto Rokewood-Skipton Road - State Arterial Road	Approximately 12 kilometres
Lismore-Pittong Road - Local Council Road (Corangamite Shire Council)	Approximately 5 kilometres
Site Entry 8	
Glenelg Highway - State Arterial Road	Approximately 99 kilometres
Skipton-Geelong Road continuing onto Rokewood-Skipton Road - State Arterial Road	Approximately 15 kilometres

Table 1 Proposed Delivery Route from the Port of Portland to the Subject Site



Turbine Blade 'Pinch Points'

The above route (Figure 20) was reviewed against the turbine blade vehicle dimensions (Figure 19) to determine where further analysis might be warranted.

Specifically, when performing this investigation, the following intersections / movements were considered to require further analysis to confirm if access is achievable and the extent of impact / mitigation required to facilitate that movement. The 'pinch points' that were identified are listed in Table 2.

 Table 2
 Port of Portland to Rokewood-Skipton Road Road 81m Turbine Blade 'Pinch Points'

Indicator	Movement Description	Location
PA	Left turn from Cliff Street onto Madeira Packet Road	<u>38°21'19"S 141°36'52"E</u>
PB	Madeira Packet Road right and left to stay onto Madeira Packet Road	<u>38°22'62"S 141°37'30"E</u>
PC	Madeira Packet Road sweeping right bend to stay on Madeira Packet Road	<u>38°22'48"S 141°36'21"E</u>
PD	Madeira Packet Road through to Madeira Packet Road (at Cape Nelson Road)	<u>38°22'05"S 141°35'39"E</u>
PE	Madeira Packet Road left onto Henty Highway	<u>38°21'03"S 141°35'16"E</u>
PF	Henty Highway left turn to stay on Henty Highway	<u>38°19'25.7"S 141°35'50.8"E</u>
PG	Henty Highway left turn onto Princes Highway	<u>38°07'25.1"S 141°38'00.3"E</u>
PH	Princes Highway right onto Portland-Casterton Road	<u>38°05'01.2"S 141°35'31.2"E</u>
PI	Portland-Casterton Road right onto Glenelg Highway	<u>37°35'02.2"S 141°25'08.6"E</u>
PJ	Glenelg Highway left onto Henty Highway	<u>37°43'21.7"S 141°59'38.8"E</u>
PK	Dunkeld-Cavendish Road left onto Glenelg Highway	<u>37°39'21.7"S 142°18'38.9"E</u>
PL	Glenelg Highway right onto Spring Hill Road	<u>37°40'47.2"S 143°25'32.1"E</u>
PM	Glenelg Highway right turn onto Pittong-Lismore Road	<u>37°40'07.4"S 143°29'01.3"E</u>
PN	Pittong-Lismore Road left turn onto Francis Lane	<u>37°41'50.3"S 143°28'41.8"E</u>
PO	Glenelg Highway right to Skipton-Geelong Road / Rokewood-Skipton Road	<u>37°41'11.1"S 143°22'12.5"E</u>
PP	Rokewood-Skipton Road left turn onto Spring Hill Road / Notmans Road	<u>37°42'45.4"S 143°24'05.6"E</u>
PQ	Rokewood-Skipton Road right turn onto Mount Bute Road	<u>37°43'53.1"S 143°24'59.7"E</u>
PR	Rokewood-Skipton Road right turn onto Pittong-Lismore Road	37°45'07.8"S 143°28'03.7"E

5.1.2.2 Site Access 'Pinch Points'

In addition to the delivery routes (outlined above) between the port of delivery and the subject land, analysis is also to be undertaken for several local intersections which will act as the 'site access' points into the subject land. These access points / movements are described below.

- Site Access 1
 - o Right turn onto Rankin Road;
- Site Access 2
 - Left turn onto Browns South Road;
- Site Access 3
 - o Left turn onto Francis Lane;
- Site Access 4
 - o Left and right turn onto Parkers Road and Watkins Road through the site access point;
- Site Access 5
 - o Slight right turn into site access from Spring Hill Road;
- Site Access 6
 - Right turn onto Parker Road;
- Site Access 7
 - o Right turn following Lismore-Pittong Road and right turn into turbine location; and
- Site Access 8
 - o Right turn onto Stretchs Road



5.2 Swept Path Review

Once the above 'pinch points' were established, a detailed analysis was undertaken for the most critical pinch points.

We understand that MHWF have undertaken a swept path analysis using AutoTurn for the proposed route.

To undertake this analysis, turning inputs based on the specifications produced in Figure 19 have been adopted.

Furthermore, each plan has been prepared based on available aerial imagery, sourced for various resources including Google Earth, Nearmap Imagery & Bing Maps.

The following sets out our assessment and findings for each of the critical 'pinch points' based on this model / simulation. A full scaled plan of each of the images provided below is also attached as Appendix C.

5.2.1 Risk Ratings

As part of this investigation a series of risk ratings have been applied to each critical 'pinch point' / movement and are based on several factors, including (but not necessarily limited to):

- Viability / likelihood of an option being approved by an authority and time delay associated with approvals;
- Possible cost implications of recommended mitigation measures;
- Possible safety implications of the proposal; and
- Perceived aesthetic of the proposal and risk of pushback from stakeholders (including locals)

The following risk ratings were subsequently adopted:

- Low
 - A mitigation / movement that is expected to have both a low likelihood and low impact when assessed against the above factors;
- Medium
 - A mitigation / movement that may have either a high likelihood or high impact against one of the above factors;
- High
 - A mitigation / movement that is expected to have a high likelihood and high impact against the above factors.



5.2.2 Origin - Port of Portland

Pinch Point 1 - 'PF'



Movement Description

Delivery vehicles will approach the intersection on the correct side of the road.

Whilst navigating through the intersection, vehicles will swing wide onto the centre island before using the left turn slip lane.

Vehicles may drive off the existing road pavement onto the grass.

On the departure side of the intersection, the vehicles will remain on the correct side of the road. The vehicles wheels may go off the road onto the central divide until the vehicles can straighten back up to be on the existing road pavement.

Required Mitigation Measures

No major conflicts identified.

Street signs located on either side of the left turn slip lane will need to be temporarily removed during transport. Temporary signs should be put in place during construction and moved into place after vehicles navigate the corner.

In addition, multiple frangible light poles will need to be removed temporarily and replaced following construction. Temporary lighting should be utilised during construction activities.

Additional fill will be required where vehicles 'cut through' the corner.

Overall risk rating for this movement is low to medium.



Pinch Point 2 - 'PG'



Movement Description	Required Mitigation Measures
Delivery vehicles will approach the intersection on the opposite side of the road.	No major conflicts identified. Additional fill will be required where vehicles leave the existing road pavement.
Whilst navigating through the intersection, vehicles will utilise the left turn slip lane on the existing road pavement.	
On the departure side of the intersection, the vehicles will remain on the correct side of the road. The vehicles wheels currently go off the road onto the dirt shoulder until the vehicles can straighten	

Overall risk rating for this movement is low.

back up to be on the existing road pavement.



Pinch Point 3 - 'PH'



Movement Description	Required Mitigation Measures
Delivery vehicles will approach the intersection on	No major conflicts identified.
the opposite side of the road.	Signs around corner will need to be temporarily
Vehicles will turn to the right utilising both sides of	removed during transport. Temporary signs should be put in place during construction and moved into place after vehicles navigate the corner. On-site confirmation recommended to confirm locations of signage.
le road pavement.	
road pavement on the departure road before straightening up on the opposite side of the existing road pavement.	

Overall risk rating for this movement is low.

On-site confirmation recommended to confirm extent of impact (if any) on nearby signage.



Pinch Point 4 - 'Pl'



Movement Description

Delivery vehicles will approach the intersection on the opposite side of the road.

Vehicles will swing out to the far left side of the existing road pavement before turning to the right.

vehicles will drive over the central island on the departure side of the intersection.

The vehicles will utilise both sides of the road pavement on the departure road before straightening up on the opposite side of the existing road pavement.

Required Mitigation Measures

No major conflicts identified.

Signs on the approach road and the central island of the departure road will need to be temporarily removed during transport. Temporary signs should be put in place during construction and moved into place after vehicles navigate the corner.

In addition, multiple frangible light poles will need to be removed temporarily and replaced following construction. Temporary lighting should be utilised during construction activities.

Additional fill will be required where vehicles 'cut through' the central island on the departure road.

Overall risk rating for this movement is low to medium.



Pinch Point 5 - 'PJ'



Movement Description	Required Mitigation Measures
Delivery vehicles will approach the intersection on the correct side of the road.	No major conflicts identified. Signs along the slip lane and the central island of the departure road will need to be temporarily removed during transport. Temporary signs should be put in place during construction and moved into
Vehicles swing wide over the central island with the turbine overhanging over the opposite side of the road.	
Whilst navigating through the intersection, vehicles use the left turn slip lane, driving off the existing road pavement onto the grass.	place after vehicles navigate the corner. In addition, multiple frangible light poles may need to be removed temporarily and replaced following
Vehicles will drive over the central island on the departure side of the intersection.	construction. Temporary lighting should be utilised during construction activities.
The vehicles will utilise the opposite side of the road pavement on the departure road before until the vehicles can straighten back up to be on the existing road pavement.	On-site confirmation recommended to confirm locations of signage.
	Additional fill will be required where vehicles 'cut through' the central island on the departure road.

Overall risk rating for this movement is low.

On-site confirmation recommended to confirm extent of impact (if any) on nearby signage.



Pinch Point 6 - 'PK'



Movement Description

Delivery vehicles will approach the intersection using both sides of the road.

Whilst navigating through the intersection, vehicles will swing from the left to the opposite side of the road.

The vehicles will swing wide to the opposite side of the road pavement on the departure until the vehicles can straighten back up to be on the existing road pavement.

Required Mitigation Measures

No major conflicts identified.

Signs on the approach and departure road will need to be temporarily removed during transport. Temporary signs should be put in place during construction and moved into place after vehicles navigate the corner.

Overall risk rating for this movement is low.



Pinch Point 7 - 'PL'



Movement Description	Required Mitigation Measures
Delivery vehicles will approach the intersection using the correct side of the road.	No major conflicts identified.
Whilst navigating through the intersection, vehicles will utilise both sides of the approach road when turning right.	be temporarily removed during transport. Temporary signs should be put in place during construction and moved into place after vehicles
Vehicles may drive off the existing road pavement over the corner of the intersection as well as over the side of the departure road after turning right.	navigate the corner. On-site confirmation recommended to confirm clearance to signage on the departure road that
The vehicles will drive onto both sides of the road pavement on the departure until the vehicles can	may need to be temporarily removed during transport.
straighten back up to be on the right side of the departure road.	Additional fill will be required where vehicles 'cut the corner of the intersection' and overswing onto the

side of the departure road.

Overall risk rating for this movement is low.

On-site confirmation recommended to confirm extent of impact (if any) on nearby signage.


Pinch Point 8 - 'PM'



Movement Description

Delivery vehicles will approach the intersection using the correct side of the road.

Whilst navigating through the intersection, vehicles will swing to the left and then turn right using both sides of the road and will drive over the corner of the intersection.

The vehicles will swing wide on the correct side of the existing road pavement on the departure road and will drive over the central island on the left side of the road.

Vehicles will then utilise the opposite side of the road until the vehicles can straighten back up to be on the correct side of the existing road pavement.

Required Mitigation Measures

No major conflicts identified.

Signs on the approach and departure road will need to be temporarily removed during transport. Temporary signs should be put in place during construction and moved into place after vehicles navigate the corner.

On-site confirmation recommended to confirm clearance to signage on the departure road that may need to be temporarily removed during transport.

Additional fill will be required where vehicles 'cut the corner of the intersection' and overswing onto the side of the departure road.

Overall risk rating for this movement is low.

On-site confirmation recommended to confirm extent of impact (if any) on nearby signage.



Pinch Point 9 - 'PN'



Movement Description

Delivery vehicles will approach the intersection using the correct side of the road.

Whilst navigating through the intersection, vehicles will swing onto the opposite side of the road and drive off the existing road pavement onto the grass.

The vehicles turn, cutting the corner on the grass and swinging wide onto the opposite side of the departure road.

The vehicles drive over the grass on the opposite side of the road until the vehicles can straighten back up to be on the correct side of the existing road pavement.

Overall risk rating for this movement is low.

Required Mitigation Measures

No major conflicts identified.

Signs on the approach and departure road will need to be temporarily removed during transport. Temporary signs should be put in place during construction and moved into place after vehicles navigate the corner.

Existing cypress pine to be removed and reinstated once construction / deliveries have concluded.

Additional fill will be required where vehicles 'cut the corner of the intersection' and overswing on both the approach and departure.



Pinch Point 10 - 'PO'



Movement Descri	iption
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Delivery vehicles will approach the intersection using the correct side of the road.

Whilst navigating through the intersection, vehicles will swing wide onto the side of the road on the grass.

The vehicle then turns using both lanes of the road and swings wide on the other side of the road over the grass.

The vehicles swing wide onto the opposite side of the existing pavement again until the vehicles can straighten back up to be on the correct side of the existing road pavement.

Required Mitigation Measures

No major conflicts identified.

Signs on the approach and departure road will need to be temporarily removed during transport. Temporary signs should be put in place during construction and moved into place after vehicles navigate the corner.

Potential impact on existing vegetation to be investigated on site. If vegetation is impacted relocation of power pole can mitigate vegetation impact.

On-site confirmation recommended to determine if vehicles travel over drainage in this area.

Additional fill will be required where vehicles 'cut the corner of the intersection' and overswing on both the approach and departure.

Overall risk rating for this movement is low to medium.

On-site confirmation recommended to confirm extent of impact (if any) on nearby drainage and vegetation.



Pinch Point 11 - 'PP'



Movement Description

Delivery vehicles will approach the intersection using the correct side of the road.

Whilst navigating through the intersection, vehicles will turn onto the opposite side of the existing road pavement.

The vehicles then straighten back up to be on the correct side of the existing road.

Overall risk rating for this movement is low.

Required Mitigation Measures

No major conflicts identified.

A sign on the corner of the intersection will need to be temporarily removed during transport. Temporary signs should be put in place during construction and moved into place after vehicles navigate the corner.



Pinch Point 12 - 'PQ'



Movement Description	Required Mitigation Measures
Delivery vehicles will approach the intersection using the correct side of the road. Whilst navigating through the intersection, vehicles will utilise the full existing road pavement when turning.	No major conflicts identified. Possibility of the fence to the east of the departure road requires removal to perform the movement and is to be reinstated once construction / deliveries have concluded.
The vehicles then straighten back up to be on the correct side of the existing road.	

Overall risk rating for this movement is low.

On-site confirmation recommended to confirm extent of impact (if any) on nearby fence.



Pinch Point 13 - 'PR'



Movement Description

Delivery vehicles will approach the intersection using the correct side of the road.

Whilst navigating through the intersection, vehicles will swing wide and drive off the existing road pavement onto the grass.

The vehicles turn, cutting the corner on the grass and swinging wide onto the opposite side of the departure road.

The vehicles drive over the grass on the opposite side of the road until the vehicles can straighten back up to be on the correct side of the existing road pavement.

Required Mitigation Measures

No major conflicts identified.

Possibility of the fence to the east of the departure road requires removal to perform the movement and is to be reinstated once construction / deliveries have concluded.

Signs on the corner of the intersection may need to be temporarily removed during transport. Temporary signs should be put in place during construction and moved into place after vehicles navigate the corner.

Additional fill will be required where vehicles 'cut the corner of the intersection' and overswing on both the approach and departure.

Overall risk rating for this movement is low.

On-site confirmation recommended to confirm extent of impact (if any) on signage.



5.2.2.1 Summary - Pinch Points

These intersections include three (3) Low to Medium impact intersections ('PF' or Henty Highway / Henty Highway, 'PI' or Portland-Casterton Road / Glenelg Highway and 'PO' Glenelg Highway / Skipton-Geelong Road), with the remaining as low impact intersections.

The above route investigation revealed that most intersections required relatively minor mitigation measures.

We note however that there were some more critical mitigation measures required, as detailed in Table 3.

Table 3 Summary of Critical Impacts / Mitigation Measures - Port of Portland

Impact	Mitigation Measure / Note	Applicable Intersection
Impact on vegetation (public)	Confirmation and approval required from relevant road authority / arborist	PN PO
Impact on drainage system (public)	Confirmation and approval required from relevant road authority	PO

As above, we note that each of the proposed deliveries will require escort / pilot vehicles along their entire length. Pilot vehicles will be responsible for stopping / temporarily holding traffic when delivery trucks move through relevant pinch points.

Note: Rear steering will be used by vehicles at most intersections to assist in movement and minimising the extent of impact required.

Based on the foregoing, the following overall risk rating has been adopted for the delivery of turbine blades from the Port of Portland. This risk rating is based on the highest observed risk at any one intersection along the route.

Overall Risk Rating – Low to medium.

5.2.3 Site Access Pinch Points

In addition to the port of delivery route (discussed above), **IMPACT**[®] have also been asked to investigate several local access points swept paths.

The following sets out our review of the provided site access swept paths.



Pinch Point 1 - 'Site Access 1 Location 1'



Mo	ovemeni	t Des	script	tion
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Delivery vehicles will approach the intersection on the correct side of the existing road pavement.

Vehicles will then swing out wide onto the grass on the side of the road before turning right into the site access.

The vehicle comes out wide over some vegetation on the east side of the site access road until the vehicle can straighten up onto the road pavement.

Required Mitigation Measures

No major conflicts identified.

Potential additional fill may be required where vehicles swing wide on the approach before turning.

Potential impact on existing non-native vegetation to be investigated. If removal is required, vegetation may be reinstated once construction / deliveries have concluded.

Overall risk rating for this movement is low to medium.

On-site confirmation recommended to confirm extent of impact (if any) on nearby non-native vegetation.



Pinch Point 2 - 'Site Access 1 Location 2'



Movement Description	Required Mitigation Measures
Delivery vehicles will approach the intersection using the full existing road pavement. Vehicles will then turn right cutting the corner and driving over the surrounding grass. Vehicles then straighten up onto the private access.	No major conflicts identified. Potential additional fill may be required where vehicles cut the corner on the approach before turning.



Pinch Point 3 - 'Site Access 1 Location 3'



Movement Description	Required Mitigation Measures
Delivery vehicles will approach the intersection using the full existing road pavement. Vehicles will then cut the corner driving over the grass to the east before turning left into the private access.	No major conflicts identified. Potential additional fill may be required where vehicles cut the corner on the approach before turning.
The vehicles will then straighten up to drive through the site access.	



Pinch Point 4 - 'Site Access 2'



Movement Description	Required Mitigation Measures
Delivery vehicles will approach the intersection using the full existing road pavement. Vehicles will then cut the corner driving over the grass to the north before turning left into the private access. The vehicles will then straighten up to drive through the site access.	No major conflicts identified. Potential additional fill may be required where vehicles swing wide on the approach before turning. No vegetation will be impacted.

Overall risk rating for this movement is low to medium.



Pinch Point 5 - 'Site Access 3 Location 1'



Movement Description

Delivery vehicles will approach the intersection on the correct side of the existing road pavement.

Vehicles will then swing out to the opposite side of the road and drive over the grass before performing a left turning movement.

The blade will overhang to the west when the vehicle swings out to the opposite side of the road.

The vehicle will then turn left, cutting the corner of the intersection.

The vehicle drives over the grass until it can straighten up to drive through the site access.

Overall risk rating for this movement is low to medium.

Required Mitigation Measures

No major conflicts identified.

Additional fill is required where vehicles swing wide on the approach before turning and where they cut the corner when turning.

Existing Cypress pine on the approach to be removed and reinstated once construction / deliveries have concluded.



Pinch Point 6 - 'Site Access 3 Location 2'



Movement Description	Required Mitigation Measures
Delivery vehicles will approach using the full width of the existing road pavement. Vehicles will turn to the left and the blade will overhang to the south when the vehicle turns.	No conflicts identified. Expected that vehicles can undertake this movement without any notable mitigation measures.
The vehicles then out to the east until it can straighten up to drive through the site access.	



Pinch Point 7 - 'Site Access 3 Location 3'



Movement Description

Delivery vehicles will approach using the full width of the existing road pavement.

Vehicles will swing wide to drive over the correct side of the road and onto the grass to the north.

The blade will overhang to the north when the vehicle turns.

The vehicles will swing wide and drive onto the grass to the east until it can straighten up to drive through the site access.

Required Mitigation Measures

No major conflicts identified.

The fence to the east of the departure road requires removal to perform the movement and is to be reinstated once construction / deliveries have concluded.

Additional fill is required where vehicles swing wide on the approach and departure.

Overall risk rating for this movement is low to medium.



Pinch Point 8 - 'Site Access 3 Location 4'



Movement Description	Required Mitigation Measures
Delivery vehicles will approach using the full width of the existing road pavement. Vehicles will swing wide over the surrounding grass before performing a sharp right turn towards the west.	No major conflicts identified. The fence to the east of the departure road requires removal to perform the movement and is to be reinstated once construction / deliveries have concluded.
Upon turning, the vehicles will drive off the existing road pavement and onto the surrounding grass area. The vehicles will swing wide and drive onto the grass to the south until it can straighten up to drive through the site access.	Additional fill is required where vehicles swing wide on the approach and departure.
The blade will overhang to the north and east when	

Overall risk rating for this movement is low to medium.

Impact

Pinch Point 9 - 'Site Access 3 Location 5'



Movement Description	Required Mitigation Measures
Delivery vehicles will approach using the full width of the existing road pavement.	No major conflicts identified. Additional fill is required where vehicles swing wide
Upon turning, the vehicles will drive off the existing road pavement and onto the surrounding grass area. The vehicles will swing wide and drive onto	on me approach and aepanore.

The blade will overhang to the west and south when the vehicle turns.

the grass to the south until it can straighten up to

Overall risk rating for this movement is low.

drive through the site access.



Pinch Point 10 - 'Site Access 4 Location 1'



Movement Description	Required Mitigation Measures
Delivery vehicles will approach using the full width of the existing road pavement.	No major conflicts identified.
	Additional fill is required where vehicles cut the
Vehicles will perform a left turn towards the east.	corner on the approach.
Upon turning, the vehicles will cut the corner and drive off the existing road pavement and onto the surrounding grass area.	Potential impact on existing planted vegetation to be investigated. If removal is required, vegetation maybe reinstated once construction / deliveries
The vehicles will then swing wide and drive onto the grass to the south until it can straighten up to drive through the private access.	have concluded.

Overall risk rating for this movement is low to medium.

On-site confirmation recommended to confirm extent of impact (if any) on nearby planted vegetation.



Pinch Point 11 - 'Site Access 4 Location 2'



Movement Description	Required Mitigation Measures
Delivery vehicles will approach using the full width	No major conflicts identified.
of the existing road pavement.	Additional fill is required where vehicles cut the
Vehicles will perform a left turn towards the east.	corner on the approach.
Upon turning, the vehicles will cut the corner and drive off the existing road pavement and onto the surrounding grass area.	Potential impact on existing planted vegetation to be investigated. If removal is required, vegetation must be reinstated once construction / deliveries
The vehicles will then swing wide and drive onto the	have concluded.
grass to the south until it can straighten up on the existing pavement.	Spotter required to supervise reverse movement along with temporary signage for other road users
The vehicles will then reverse back into the private access to the west.	to reduce speeds coming up to the intersection.

Overall risk rating for this movement is low to medium.

On-site confirmation recommended to confirm extent of impact (if any) on nearby planted vegetation.



Pinch Point 12 - 'Site Access 5'



Movement Description

Delivery vehicles will approach the intersection using the correct side of the road.

Whilst navigating through the intersection, vehicles will swing out to the left before turning into the site access while remaining entirely on the road pavement.

The blade will overhang slightly to the east when the vehicle is turning.

The vehicles then continue into the site access.

Required Mitigation Measures

No conflicts identified.

Expected that vehicles can undertake this movement without any notable mitigation measures.



Pinch Point 13 - 'Site Access 6'



Movement Description	Required Mitigation Measures
Delivery vehicles will approach swinging wide to the east over the surrounding grass area. Vehicles will perform a right turn towards the west. Upon turning, the vehicles will drive over the surrounding grass to the south of the departure road until it can straighten up to drive through the site access	No major conflicts identified.
	Additional fill is required where vehicles cut the
Vehicles will perform a right turn towards the west.	corner on the approach.
Upon turning, the vehicles will drive over the surrounding grass to the south of the departure road until it can straighten up to drive through the site access.	
The blade will overhang to the east and south when the vehicle is turning.	



Pinch Point 14 - 'Site Access 7 Location 1'



Movement Description	Required Mitigation Measures
Delivery vehicles will approach swinging wide and driving on the surrounding grass area to the west. Vehicles will perform a left turn towards the east	No major conflicts identified. Additional fill is required where the vehicles swing wide on the approach
utilising the full road pavement.	Existing vegetation to be removed and reinstated
Upon turning, the vehicles will swing wide to the south before straightening up through the private access.	once construction / deliveries have concluded.
The blade will overhang to the south and west	

Overall risk rating for this movement is low to medium.



when the vehicle turns.

Pinch Point 15 - 'Site Access 7 Location 2'



Movement Description	Required Mitigation Measures
Delivery vehicles will approach swinging wide on the existing road pavement. Vehicles will perform a right turn towards the west. Upon turning, the vehicles will drive in the opposite lane of the existing road pavement until it can straighten up to drive through the site access.	No conflicts identified. Expected that vehicles can undertake this movement without any notable mitigation measures.



Pinch Point 16 - 'Site Access 7 Location 3'



Movement Description

Delivery vehicles will approach on the opposite side of the road and then swing wide to the left on the existing road pavement.

Vehicles will then turn right into the private access.

The blade will overhang to the south and west when the vehicle turns.

Required Mitigation Measures

No major conflicts identified.

Additional fill is required where the vehicles swing wide on the departure.



Pinch Point 17 - 'Site Access 8 Location 1'



Movement Description

Delivery vehicles will approach swinging wide on the existing road pavement.

Vehicles will perform a right turn towards the south where they will swing wide and drive off the existing road pavement and onto the surrounding grass area.

Upon turning, the vehicles will utilise the full existing road pavement until it can straighten up to drive through the site access.

The blade will overhang to the north when the vehicle turns.

Overall risk rating for this movement is low.

Required Mitigation Measures

No major conflicts identified.

Additional fill is required where the vehicles swing wide on the approach.



Pinch Point 18 - 'Site Access 8 Location 2'



Movement Description	Required Mitigation Measures
Delivery vehicles will approach swinging wide onto	No major conflicts identified.
the surrounding grass to the west before turning left towards the east.	Additional fill is required where the vehicles swing wide on the approach and cuts the corner when
When turning, the vehicles will cut through the	turning.
corner of the intersection over the surrounding grass.	The fence on the inside corner of the intersection potentially requires removal to perform the
Upon turning, the vehicles will utilise the full existing road pavement until it can straighten up to drive through the site access.	movement and is to be reinstated once construction / deliveries have concluded.
The blade will overhang to the west when the vehicle turns.	

Overall risk rating for this movement is low to medium.

On-site confirmation recommended to confirm extent of impact (if any) on nearby fence.



Pinch Point 19 - 'Site Access 8 Location 3'



Movement Description	Required Mitigation Measures
Delivery vehicles will approach swinging wide onto	No major conflicts identified.
the surrounding grass to the north before turning right.	Additional fill is required where the vehicles swing wide on the approach and cuts the corner when
When turning, the vehicles will cut through the	turning.
corner of the intersection over the surrounding grass.	The fence on the inside corner of the intersection potentially requires removal to perform the
Upon turning, the vehicles will utilise the full existing road pavement until it can straighten up to drive through the site access.	movement and is to be reinstated once construction / deliveries have concluded.
The blade will overhang to the north when the vehicle turns.	

Overall risk rating for this movement is low to medium.

On-site confirmation recommended to confirm extent of impact (if any) on nearby fence.



5.2.3.1 Discussion / Summary - Site Access Points

The site access investigation shows the possible impact of vehicles moving into the subject land at possible access locations.

Table 4 shows a summary of each site access intersection and its associated risk rating.

 Table 4
 Site Access Impacts and Risk Measures

Intersection	Risk Measure	Comments
Site Access 1 (Location 1) - Right turn from Rokewood-Skipton Road into Rankin Road (south)	Low to Medium Risk	Possibility of existing vegetation to be removed.
Site Access 1 (Location 2) - Right turn from Rankin Road into Hendersons Road (west)	Low Risk	No major changes required.
Site Access 1 (Location 3) - Left turn from Rankin Road into Parkers Road (east)	Low Risk	No major changes required.
Site Access 2 - Left turn from Notmans Road into private access (north)	Low to Medium Risk	No major changes required.
Site Access 3 (Location 1) - Left turn from Pitting Lismore Road into private access (south-east)	Low to Medium Risk	Existing Cypress pine tree to be removed.
Site Access 3 (Location 2) - Left turn from Francis Lane into private access (north)	Low Risk	No changes expected.
Site Access 3 (Location 3) - Right turn from Francis Lane into private access (south)	Low to Medium Risk	Fence needs to be removed.
Site Access 3 (Location 4) - Right turn from Francis Lane into private access (west)	Low to Medium Risk	Fence needs to be removed.
Site Access 3 (Location 5) - Left turn from access road into private access (north-east).	Low Risk	No major changes required.
Site Access 4 (Location 1) - Left turn from Mount Bute Road into Parkers Road (east)	Low to Medium Risk	Possibility of existing planted vegetation to be removed.
Site Access 4 (Location 2) - Left turn from Mount Bute Road into Parkers Road (east) then reverse into Watkins Road (west)	Medium Risk	Possibility of existing planted vegetation to be removed. Reversing manoeuvre through the intersection requiring a spotter and temporary signage.
Site Access 5 - Right turn from Spring Hill Road into private access (south)	Low Risk	No changes expected.
Site Access 6 - Right turn from Lismore-Pittong Road into Parker Road (west)	Low Risk	No major changes required.
Site Access 7 (Location 1) - Left turn from Lismore- Pittong Lane into private access (east)	Low to Medium Risk	Existing vegetation to be removed.
Site Access 7 (Location 2) - Right turn on Lismore- Pittong Lane (west)	Low Risk	No changes expected.
Site Access 7 (Location 3) - Right turn from Lismore- Pittong Lane into private access (north)	Low Risk	No major changes required.
Site Access 8 (Location 1) - Right turn from Rokewood-Skipton Road into Stretchs Road (south)	Low Risk	No major changes required.
Site Access 8 (Location 2) - Left turn from Stretchs Road into Egans Lane (east)	Low to Medium Risk	Possibility of fence to be removed.
Site Access 8 (Location 3) - Right turn from Egans Lane into Rowes Lane (south)	Low to Medium Risk	Possibility of fence to be removed.

As above, we note that each of the proposed deliveries will require escort / pilot vehicles along their entire length. Pilot vehicles will be responsible for stopping / temporarily holding traffic when delivery trucks move through relevant pinch points.



6 Traffic Considerations

6.1 Traffic Generation

6.1.1 General

Typically, all internal Wind Farm construction traffic is limited to internal access roads, with only deliveries and staff movements required to travel across the external road network.

Accordingly, we expect that all delivery vehicle movements will travel to the relevant turbine hardstand areas (as required).

6.2 Key Traffic Generation Assumptions

The following section sets out our key assumptions to estimate traffic movements generated by the subject site.

6.2.1 Project Delivery Timeframe & Construction Periods

We are advised that the proposed Wind Farm construction and delivery will occur across an approximate 12 month period.

Furthermore, we have adopted the following delivery stages for the project:

- General Construction Activities
 - These are assumed to occur throughout the duration of the project construction;
- Site Set-Up
 - This stage is assumed to be undertaken and completed over a 12 week period;
- Roads & Hard standings
 - This is assumed to be undertaken over a 53 week period (approximately the total construction period);
 - This stage will be undertaken concurrently with the foundation construction and turbine erection components;
- Foundation construction
 - This stage will occur after the relevant roads / hardstands have been constructed for each turbine site;
 - A construction period of approximately ten (10) weeks has been adopted for this component of works;
- Turbine erection (including delivery) & Cable Installation
 - This stage will occur after the relevant roads, hardstands & foundations has occurred;
 - This stage is assumed to be undertaken over an approximate 22 week period, occurring after (but also at the same time) as the previous stages; and
- Testing and operations
 - This stage is expected to occur after the delivery of turbines and is anticipated to last approximately 21 weeks.



6.2.2 Delivery Route & Materials Assumptions

Of significance, we note the following in relation to site generated vehicle movements:

- Water for construction will be trucked and stored at each construction compound
 - No external movements are required for water deliveries;
 - Dust suppression vehicles will be utilised along relevant local roads and access tracks as required.
- Concrete will be batched on-site within the batching plants;
 - No concrete truck delivery vehicles will be required;
 - Aggregate and materials for concrete will be delivered to the batching plants before being distributed locally as concrete to each turbine site as required.
- Aggregate for access track construction will be delivered from a local quarry
 - Some additional movements may be required from further afield to mix into the aggregate.
 - Wind turbine components will be imported with:
 - Three (3) blades per turbine;
 - Five (5) tower sections per turbine; and
 - A single nacelle, drive train, hub/spinner & power module per turbine.
- A total of 567,000 tonnes of aggregate will be required for roads and hardstands
 - Sources from established quarries within the vicinity of the site and sourced further afield if needed (to ensure appropriate quality)
 - A total of 55,800 cubic metres of concrete will be required for turbine foundations
 - All concrete is batched on-site.

6.3 Construction Traffic Generation

External traffic generated by the site will be split across three (3) broad categories:

- General traffic (LV) generated by staff / visitors to/from the site (i.e. utes, vans and private cars)
- Over Dimensional (OD) used for the delivery of long / heavy WTG components: and
- Other heavy vehicles (HV) which are used for the delivery of the smaller WTG components and construction materials.

The values quoted are given as two-way delivery movements. We note however that for each inbound trip to the site there will also be an unloaded return trip. Delivery vehicles will be unloaded on the return trip and collapsed to regulation dimensions where applicable.

Further, it is anticipated that staffing movements will be split evenly between Ballarat and Geelong.

Table 5 summarises the likely traffic mix of vehicle movements generated over the 12-month construction period.

Table 5 Estimated Construction Traffic

Heavy Vehicles	41 172 total HV movements*	Peak of 129 HV movements / dav*
Over Dimensional Vehicle	1,261 total OD movements*	Peak of 4 OD movements / day*
Light Vehicle	141,714 total LV movements	Peak of 444 LV movements / day
Type of Vehicle	Total Vehicle Movements	Peak Daily Movements

* Includes both loaded and unloaded trips, for each loaded trip there will be one loaded (return) trip, where the transport vehicle will be collapsed to regulation dimensions where applicable.

**Conservatively assumes all vehicle traffic peaks during the same period.



6.4 Wind Farm Operating Traffic Generation

The site will operate with a small full-time maintenance crew. Accordingly, apart from the initial construction phase, the proposal is anticipated to have a negligible impact upon traffic on the local road network.

Details of likely traffic generation during operation are as follows:

- Routine maintenance at the site is expected to occur once per day and be carried out by a crew of approximately 15 people. Accordingly, 30 vehicle movements are expected to occur along the local road network per day. All other movements are internal to the site; and
- Occasional maintenance will occur when components of the development need to be replaced, such as replacing a blade or gearbox. This is expected to occur very occasionally and will be subject to approval processes with the relevant authorities.

In the context of the Wind Farm construction and background traffic along Glenelg Highway, operating traffic will be minimal. By virtue of the minimal traffic along other local roads, project traffic will be noticeable, but not yield any significant impact on these roads.

6.5 Traffic Impact

6.5.1 Declared Main Roads

Most heavy vehicle and light vehicle traffic will seek to leverage Glenelg Highway and Rokewood-Skipton Road as a connection to the subject site construction compound. Both Glenelg Highway and Rokewood-Skipton Road are arterial roads managed by VicRoads and forms part of a pre-approved B-Double/HML haulage routes.

Arterial roads managed by VicRoads are generally designed to accommodate large volumes of heavy traffic and over-dimensional loads. As such they are normally sufficient for the transport of the turbine components and construction materials required to build a Wind Farm.

The proposed development will generate up to 577 daily vehicle movements (288 round trips), comprising 444 light vehicles, 129 heavy vehicles and 4 OD vehicles during the respective peak construction periods for each movement.

Data sourced from VicRoads indicates that Glenelg Highway generally carries in the order of 1,400 vehicles per day in the locality of the subject site.

Classified as a primary state arterial road, Glenelg Highway has an environmental capacity for up to 7,000 vehicles on a daily basis.

During the construction stage of the development Glenelg Highway is predicted to carry up to a total of 1,977 vehicles per day. This level of traffic is comfortably within the environmental capacity of the road and will be comfortably absorbed by Glenelg Highway, with no long-term impact to its performance.

Data sourced from VicRoads indicates that Rokewood-Skipton Road generally carries in the order of 900 vehicles per day in the locality of the subject site.

Classified as a secondary state arterial road, Rokewood-Skipton Road has an environmental capacity for up to 7,000 vehicles on a daily basis.

During the construction stage of the development Rokewood-Skipton Road is predicted to carry up to 1,477 vehicle movements on a daily basis. This level of traffic is comfortably within the environmental capacity of the road and will be comfortably absorbed by Henty Highway, with no long-term impact to its performance.



6.5.2 Local Roads

By contrast, not all local roads are designed to accommodate heavy traffic and over-dimensional loads.

In this instance, the local roads contained within and utilised by the proposed development are part of the pre-approved B-Double/HML network (either conditionally or unconditionally as discussed above).

Accordingly, it is assumed that these roads have been designed appropriately to accommodate heavy vehicle traffic (during dry weather) and should be able to adequately cater to heavy vehicle traffic generated by the site.

Notwithstanding, to help ensure and mitigate the impact of construction traffic generated by the subject site, we expect that proponent will enter into an upgrade and maintenance agreement with Corangamite Shire and Golden Plains Shire Councils for relevant sections of the impacted roads.

As proposed, relevant sections of local roads (and newly constructed access track) will have the capacity to facilitate heavy vehicle access after wet weather events (rather than dry weather only) to mitigate potential lengthy construction delays.

6.5.3 Over-Dimensional Deliveries

The proposed Over-Dimensional (OD) haulage route from Portland is discussed in Section 5. As discussed in this section access for turbine delivery vehicles to the subject land is feasible, subject to mitigation measures (detailed in the relevant section).

Noting their similarity, deliveries for the remaining turbine components will seek to leverage previously approved and adopted delivery routes for nearby Wind Farm sites.

6.5.4 Transmission Line Connection

The Wind Farm will connect to the Berrybank Terminal Station via a 220kV underground line.

Starting at the on-site substation, it will pass through private lands by Rankin/Gillespie Road, move eastward near Lismore Pittong Road, continue south on Willowvale Road, and then reach the Berrybank Terminal Station.

The impacts on public roads along the transmission line corridor are expected to be minor and limited to a short construction time frame. Further details of the Traffic Management for these works will be prepared within a Construction Traffic Management Plan (CTMP) report which will be submitted to Council for approval prior to works commencing.

6.6 Road Maintenance

6.6.1 Declared Roads

Given the construction period is relatively short we expect that VicRoads will retain maintenance responsibilities for these roads.

6.6.2 Local Roads

As discussed above, we recommend local roads be upgraded to a standard where they can facilitate construction traffic outside of dry weather periods.

We expect that the proponent and Council will form a maintenance agreement for the upkeep of these roads during the construction period.

The following sections cover possible items that could form part of this agreement where necessary.



6.7 Sight Distance Assessment

AustRoads Guide to Road Design - Part 4A: Unsignalised Intersections sets out the sight distance requirements for unsignalised intersections. The Austroads Guide provides SISD values for commuter and heavy vehicles at varying design speeds. The SISD values for all intersections approaching the site access' is shown in Table 6.

Table 6 Sight Distance Requirements

Road	Speed Limit (km/h)	Sight Distance (m) Passenger Cars	Sight Distance (m) Heavy Vehicles
Glenelg Highway	100 km/h	238	317
Rokewood-Skipton Road	80 km/h	177	227
Lismore-Pittong Road	100 km/h	238	317
Spring Hill Road / Notmans Road	100 km/h	238	317
Francis Lane	100 km/h	238	317
Spring Hill Road	100 km/h	238	317
Mount Bute Road	100 km/h	238	317
Rankin Road	100 km/h	238	317
Parkers Road	100 km/h	238	317
Stretchs Road	100 km/h	238	317
Egans Lane	100 km/h	238	317
Rowans Lane	100 km/h	238	317

IMPACT[®] has undertaken an assessment of the sight distance available from future access locations to specific turbine sites throughout the subject land. In regards to the available sight distances we note the following:

- Land in the area is generally flat, with little vertical geometry impacting on available sight lines;
- All new site access points are located on straight sections of road, where horizontal geometry does
 not impact on available sight distances; and
- Landscaping / vegetation in the area is generally limited, or where proximate to a site access point is set back a sufficient distance such that sight lines are not impacted.

Based on the foregoing, we expect that sight distances available from each new site access point exceed the minimum required by the AustRoads standards.

Notwithstanding the above, we recommend that prior to construction, sight lines at each proposed site access point be tested and confirmed on-site (and vegetation trimmed where required).



7

Traffic Management

Subject to the appointment of a supplier / construction contractor, multiple aspects (as discussed above) may be subject to review. In addition, construction / work programs for the project will not be fully resolved until closer to the project commencement.

As such, subject to the confirmation of the above details, there is potential for changes to the existing road conditions and other assumptions as considered within this report.

Based on the foregoing, and our experience with similar projects, we expect that a detailed Traffic Management Plan (TMP) will need to be prepared prior to the commencement of the construction of the project to confirm any mitigation measures and management works required at that time.

The TMP would be implemented as a condition of any Development Consent issued for the Wind Farm and would be developed in consultation with Council, VicRoads, MHWF Nominees Pty Ltd, MHWF and any other relevant stakeholders to provide a more accurate indication of traffic impacts and generally identify responsibilities for road maintenance and upgrades throughout the construction period.

In general, the TMP should include:

- Confirmation of the Wind Farm construction timeframe and work stages.
- Confirmation of expected traffic volumes generated by the Wind Farm for all stages or work.
- Identification / confirmation of the proposed haulage routes (for all HV and OD/OSOM movements).
- A mechanism to review identified haulage route road conditions prior to the commencement of works.
- Mechanisms / agreements (if deemed necessary) to maintain haulage route roads and road infrastructure, including local public roads used by site traffic during construction works and to reinstate roads to at least pre-construction conditions.
- Qualify any requirement for specific work stage construction traffic management plans.
- Qualify and identify any relevant mechanisms for OD vehicle permits and traffic management requirements.

Please note that this is not an exhaustive list, and that the final TMP requirements will be as per those outlined in the Development Consent.



APPENDIX A Scaled Site Plan





Legend 10 m contours Site Substation Water tanks Hardstands	MORETON HILL WIND FARM			SQUAD	SQUADRON RENERGY	
 Met Mast locations Temporary Batching Plants Wind Turbines Laydown areas MV Poles Office and maintenance compound 	Title Site Plan					
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APPENDIX B Haulage Route - Swept Path Analysis

— 86m Turbine Blade Truck Swept Paths




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Legend	Body		[1] T	Company MC	DRETON HILL WIND F	ARM
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n TURBINE BLADE LINCES HWY				
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n TURBINE BLADE 8B				
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L Blade Envelope			107		SWEPT PATH ANAL	YSIS - 86r
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