REFERRAL OF A PROJECT FOR A DECISION ON THE NEED FOR ASSESSMENT UNDER THE *ENVIRONMENT EFFECTS ACT 1978*

REFERRAL FORM

The *Environment Effects Act 1978* provides that where proposed works may have a significant effect on the environment, either a proponent or a decision-maker may refer these works (or project) to the Minister for Planning for advice as to whether an Environment Effects Statement (EES) is required.

This Referral Form is designed to assist in the provision of relevant information in accordance with the *Ministerial Guidelines for assessment of environmental effects under the Environment Effects Act 1978* (Seventh Edition, 2006). Where a decision-maker is referring a project, they should complete a Referral Form to the best of their ability, recognising that further information may need to be obtained from the proponent.

It will generally be useful for a proponent to discuss the preparation of a Referral with the Impact Assessment Unit (IAU) at the Department of Environment, Land, Water and Planning (DELWP) before submitting the Referral.

If a proponent believes that effective measures to address environmental risks are available, sufficient information could be provided in the Referral to substantiate this view. In contrast, if a proponent considers that further detailed environmental studies will be needed as part of project investigations, a more general description of potential effects and possible mitigation measures in the Referral may suffice.

In completing a Referral Form, the following should occur:

- Mark relevant boxes by changing the font colour of the 'cross' to black and provide additional information and explanation where requested.
- As a minimum, a brief response should be provided for each item in the Referral Form, with a more detailed response provided where the item is of particular relevance. Cross-references to sections or pages in supporting documents should also be provided. Information need only be provided once in the Referral Form, although relevant cross-referencing should be included.
- Responses should honestly reflect the potential for adverse environmental effects. A Referral will only be accepted for processing once IAU is satisfied that it has been completed appropriately.
- Potentially significant effects should be described in sufficient detail for a reasonable conclusion to be drawn on whether the project could pose a significant risk to environmental assets. Responses should include:
    - a brief description of potential changes or risks to environmental assets resulting from the project;
    - available information on the likelihood and significance of such changes;
    - the sources and accuracy of this information, and associated uncertainties.
- Any attachments, maps and supporting reports should be provided in a secure folder with the Referral Form.
- A CD or DVD copy of all documents will be needed, especially if the size of electronic documents may cause email difficulties. **Individual documents should not exceed 2MB as they will be published on the Department's website.**
- A completed form would normally be between 15 and 30 pages in length. Responses should not be constrained by the size of the text boxes provided. Text boxes should be extended to allow for an appropriate level of detail.
- The form should be completed in MS Word and not handwritten.

The party referring a project should submit a covering letter to the Minister for Planning together with a completed Referral Form, attaching supporting reports and other information that may be relevant. This should be sent to:

Postal address

Minister for Planning
GPO Box 2392
MELBOURNE VIC 3001

Couriers

Minister for Planning
Level 20, 1 Spring Street
MELBOURNE VIC 3001

In addition to the submission of the hardcopy to the Minister, separate submission of an electronic copy of the Referral via email to ees.referrals@delwp.vic.gov.au is required. This will assist the timely processing of a referral.

PART 1 PROPONENT DETAILS, PROJECT DESCRIPTION & LOCATION

1. Information on proponent and person making Referral

Name of Proponent:	**Willatook Wind Farm Pty Ltd**
Authorised person for proponent: **Position:** **Postal address:** **Email address:** **Phone number:** **Facsimile number:**	Richard Barker **Wind Prospect** **P O Box 110, Fitzroy 3065** richard.barker@windprospect.com.au **9005 9075**
Person who prepared Referral: **Position:** **Organisation:** **Postal address:** **Email address:** **Phone number:** **Facsimile number:**	Fi Cotter **Director** **Energy Forms** **Level 2/29-31 King St, Melbourne** fi.cotter@energyforms.com.au **0408587095**
Available industry & environmental expertise: (areas of 'in-house' expertise & consultancy firms engaged for project)	**Planning and environment qualifications with extensive experience in renewable energy projects.** Attachment A: Biodiversity Assessment: Willatook Wind Farm, Willatook, Victoria, September 2018, Ecology and Heritage Partners Pty Ltd Attachment B: Brolga Movements and Spatial Requirements During Breeding, south-west Victoria, November 2013, Ecology and Heritage Partners Pty Ltd Attachment C: Brolga Flocking Surveys, Letter from Brett Lane and Associates, August 2018 Attachment D: Proposed Willatook Wind Farm, Geoheritage Assessment by Environmental GeoSurveys Pty Ltd, by Neville Rosengren, August 2018 Attachment E: Landscape Visual Assessment, Green Bean Design, September 2018

	Attachment F: Willatook Wind Farm, Environmental Noise Assessment, Sonus, September 2018 Attachment G: Traffic Impact Assessment, Willatook Wind Farm, December 2017 by Ratio Consultants Attachment H: Letter by Ecology & Heritage Partners regarding Cultural Heritage matters dated 3 August 2018

2. Project – brief outline

Project title: Willatook Wind Farm

Project location: (describe location with AMG coordinates and attach A4/A3 map(s) showing project site or investigation area, as well as its regional and local context)
The Willatook Wind Farm site (the Site) is located to approximately 22.0 km to the north of Port Fairy and extends across both sides of the Woolsthorpe- Heywood Road, between Penhurst-Warrnambool Road and Hamilton-Port Fairy Road.

The site of the proposed Willatook Wind Farm covers approximately 6,750 hectares of private and public land located within the Moyne Shire district, in south western Victoria.
Refer to **Figure 1 Project Location Plan**, which shows the site location in a regional context.

The 132kV Macarthur Wind Farm high voltage transmission link bisects the site, north to south, linking to the 500kV Moorabool to Portland transmission line at the Tarrone Terminal Station that abuts the southernmost area of the Site south of Woolsthorpe-Heywood Road.

Short project description (few sentences)**:**
The proposed Willatook Wind Farm comprises a maximum of 83 wind turbines and associated permanent and temporary infrastructure. The Development Footprint required to construct the Wind Farm is the area within which disturbance may occur and is an area of 240 ha. Permanent infrastructure will include:

- Hardstand area of 60m x 50m around each wind turbine,
- Approximately 69.6 km of site access tracks, of which 9.2km is existing track,
- Creation and improvement of up to six access points from public roads,
- Permanent anemometry masts,
- Approximately 71.3km of underground cabling trenches with up to 109km of cable,
- Approximately 4.3 km of 132kV overhead lines,
- A collector substation and connection of underground cables to overhead line,
- A terminal substation and connection to the existing SP Ausnet's 500kV Moorabool to Portland high voltage transmission line located within the southern part of the site.

There is approximately 500m of overhead transmission line that is external to the Willatook wind Farm project site including approximately 20m crossing Landers Lane, a public road, and the remainder extending across privately owned land adjoining the Tarrone Terminal Station. This transmission line provides for connection to the existing Tarrone Terminal Station. There is no other overhead transmission line cabling proposed external to the Site.

Temporary infrastructure will include compounds; turbine component lay down areas; and, concrete batching plant/s.

The location of an on-site quarry for use during construction is currently being investigated. If an appropriate site can be confirmed, future approvals will be sought. However, since it is not yet certain that quarry materials will be sourced within the Willatook Wind Farm project boundary, the traffic report and analysis assume all material will be brought to site from external locations. It is the intention of the applicant to seek planning consent for an on-site quarry either as part of the planning permit application for the wind farm or in a separate planning permit application.

Refer to **Figure 2 Infrastructure Layout** which shows the infrastructure within the Site.

Aim/objectives of the project (what is its purpose / intended to achieve?):
The objective of the proposed Willatook Wind Farm is to identify and develop a viable wind energy facility as a source of renewable energy for export to the existing electricity network to supplement Victorian and National electrical energy needs.

It is estimated that the wind farm will generate, on average, 1,400 GWh per year.

Background/rationale of project (describe the context / basis for the proposal, eg. for siting):
A significant transition is occurring both nationally and internationally from traditional forms of electricity generation that use fossil fuel resources to the use of renewable resources such as wind energy. This transition is occurring in response to a number of factors including the lower cost of electricity generated from wind energy, more favourable environmental outcomes and in response to community expectations and government policy. The proposed Willatook Wind Farm would contribute to this transition in Australia.

The Willatook area has many characteristics that enable a wind farm to be constructed and operated in a manner that is sensitive to the local community, environment and ongoing use of the land.

The area within the proposed Willatook Wind Farm site is open farmland where wind turbines can be located appropriate distances from dwellings and other buildings in compliance with the planning scheme. As an area that has been cleared and farmed for many years, the project can be developed to avoid any significant adverse impacts on ecological, landscape or heritage values. Where specific areas of native vegetation or habitat occur on the land, proposed infrastructure has been sited to avoid or otherwise minimise potential impacts.

The area has a strong wind resource and the proposed Site adjoins an existing terminal station providing for a connection to the electricity network without the need for extensive overhead electricity lines. The area also has very good vehicle access to and around the area.

Main components of the project (nature, siting & approx. dimensions; attach A4/A3 plan(s) of site layout if available):
The following is a summary of the permanent and temporary infrastructure required for the proposed Willatook Wind Farm. See **Figure 2 Infrastructure Layout**, which shows the infrastructure that would be constructed within the Site.

Wind turbines
The facility will consist of up to 83 wind turbines with underground and overhead electrical lines to connect to the on-site substation and the existing terminal station.
Each wind turbine will comprise a tower, nacelle and blades with a maximum and minimum blade tip height of 220m and 41m respectively. The towers will be mounted onto a concrete pad footing and there will be an adjacent hardstand area of up to approximately 50 x 60 metres. A hybrid tower (part concrete and part steel) is assumed for the purposes of this referral. The underground cabling and associated trenching would be established within a 3-metre disturbance area, with the cabling at a depth of at least 800mm.
For the purposes of this referral and the planning application, the candidate wind turbine is the GE-158 4.8 MW. **Figure 3 Proposed Wind Turbine Dimensions** is an illustrative drawing of the indicative wind turbine.

Access tracks
It is proposed to build approximately 60.4 km of new access tracks and upgrade 9.2 km of tracks within the site boundary to provide for construction and maintenance access to each wind turbines. The tracks would be up to approximately 12 metres wide during the construction phase, and then reduced to approximately 6 metres wide during the operational phase. The arrangement of the tracks has been designed to minimise the removal of native vegetation as well as minimise the length of access track required. Access from public roads would utilise up to six access points, which are indicated on **Figure 2 Infrastructure Layout**.

Turbine electricity connection, sub-station and external connection
Each wind turbines would be connected to an on site substation by a combination of approximately 109km of underground cabling and potentially up to approximately 4.5km of overhead lines. From the on site substation, an overhead transmission line would connect the wind farm to the existing Tarrone Terminal Station adjoining the southern portion of the site. This existing infrastructure will reduce the need to construct additional infrastructure.
Wind monitoring masts
Five lattice tower wind monitoring masts are proposed, with the locations shown on **Figure 2 Infrastructure Layout**. Each mast would be up to 141m high, in line with the proposed wind turbine hub height.

Temporary construction facilities
During construction of the Wind Farm, temporary infrastructure would include:

- Construction compound with office facilities, associated parking and toilet facilities;
- Temporary laydown areas for wind turbines and electrical equipment;
- Concrete batching plants;

Ancillary components of the project (eg. upgraded access roads, new high-pressure gas pipeline; off-site resource processing): N/A

3. Project description

Key construction activities:

Site preparation

- Creation of site entrances from public roads to the Site.
- Land clearance as required at designated lay down areas and construction compound locations.
- Establish construction compounds and amenities.

Site tracks

- Land clearance as required and topsoil removal along the alignment of proposed access track network.
- Cutting and filling as required by site topography.
- Sourcing of track materials for the construction of access tracks from either an on-site quarry or an off-site quarry.
- Installation of culverts for drainage or watercourse crossings as required.
- Establish access tracks – excavation, laying of bedding materials and track surface material.

Hardstand Areas

- Land clearance as required and topsoil removal at hardstand locations adjacent to each wind turbine location each approximately 60 metres by 50 metres.
- Establish hard stand areas – excavation, laying of bedding materials and hard stand surface material.

Foundations

- Land clearance and topsoil removal at wind turbine locations.
- Establish concrete batching plants.
- Excavation of wind turbine foundations.
- Installation of steel reinforcement.
- Pouring of concrete.
- Curing of concrete followed by backfilling to finished ground level.

Electrical Works

- Land clearance and preparation as required (including up to 3m trenching) to accommodate underground cable routes.
- Laying of underground cables.
- Clearance and preparation as required to accommodate overhead cable routes and installation of wires and cables.
- Clearance and topsoil removal at the on-site substation location.
- Excavate and pour foundations including for any buildings and electrical equipment.
- Construction and fitting out of required buildings.

- Installation of electrical equipment.

Wind Turbines

- Delivery of wind turbine components to the Site with temporarily storage at designated lay down areas as necessary.
- Installation of wind turbines at each turbine location, involving placement and securing the tower sections, followed by the nacelle and rotor.

Finishing

- Connection to the existing Tarrone Terminal Station located adjacent to the Site.
- Testing and commissioning of each turbine.
- Removal of temporary infrastructure, e.g. construction compounds, and general rehabilitation of the Site, including any drainage and landscape works and removal of waste.

Key Operational Activities

Key operational activities are expected to be limited to monitoring (on-site or remotely), maintenance and repairs. This would include routine inspections, servicing and repair of wind turbines, maintenance of access tracks and of the electrical system and buildings and plant, including control systems.

Key decommissioning activities (if applicable):

Within 12 months of all of the wind turbines permanently ceasing to generate electricity, the Wind Farm will be decommissioned. This will include removing all above ground equipment; restoration of all areas associated with the Wind Farm, unless otherwise useful to the ongoing management of the land; and, post decommissioning revegetation.

Is the project an element or stage in a larger project?

☒ No ☐ Yes If yes, please describe: the overall project strategy for delivery of all stages and components; the concept design for the overall project; and the intended scheduling of the design and development of project stages).

Is the project related to any other past, current or mooted proposals in the region?

☐ No ☒ Yes If yes, please identify related proposals.

The Willatook wind farm project was originally mooted around 10 years ago.

4. Project alternatives

Brief description of key alternatives considered to date (eg. locational, scale or design alternatives. If relevant, attach A4/A3 plans):

The location of the Site was selected following an extensive project site selection process across the entire state of Victoria. The Site was selected as a highly suitable location for further feasibility assessment primarily due to the wind resource, proximity to a point of connection to the electricity network, very good road access, relatively low density of dwellings and relatively low risk of significant impacts.

The Wind Farm was initially based on 190 wind turbines, each with a maximum blade tip height of 152m and an associated site capacity of up to 350 MW. Following engagement with landowners; environmental considerations; and, advances in wind turbine technology, the proposal has evolved to the current proposed design consisting of 83 wind turbines, each with a maximum blade tip height of 220m and an associated site capacity of up to 400 MW.

Further evolution of the proposal may occur prior to the lodgement of a planning permit application.

Brief description of key alternatives to be further investigated (if known)**:**

The key alternatives relate to final site design that will be subject to a planning permit application; the final choice of wind turbine; and, potential micro siting of wind turbines and ancillary infrastructure. The choice of wind turbine will be determined by what is available on the market and following a detailed tendering process.

The following factors may yet further influence the final design of the project both prior to and following the lodgement of a planning permit application:

- Ongoing assessment of the potential impacts to flora and fauna
- Ongoing negotiations with neighbouring landowners proximate to the project
- Completion and approval of the Cultural Heritage Management Plan
- Detailed pre-construction geotechnical studies
- The conditions imposed on any planning permit
- The detailed requirements of the Australian Market Operator (AEMO) and SP Ausnet as the Transmission Network System Provider for the proposed transmission connection network regarding the connection works and the associated land requirements.
- Subject to planning approval and other approvals, the model of wind turbine selected for construction.
- The location (if any) of an on-site quarry on the site for the purposes of supplying construction materials.

The applicant considers that changes that may result from the above or other factors can be accommodated within the Site and general project configuration as submitted in this EES referral without any increase in environmental or social impacts.

5. Proposed exclusions

Statement of reasons for the proposed exclusion of any ancillary activities or further project stages from the scope of the project for assessment:
Investigations are being undertaken for a quarry to be developed within the Site. If an on-site quarry is to be pursued, then a separate process via a Works Approval or suitable statutory approval will be undertaken. This could be part of the Wind Farm planning application or a separate application. Therefore, this referral and the planning application will consider the impact of both having a quarry on site as well as obtaining material from offsite in relation to construction and traffic impacts.

6. Project implementation

Implementing organisation (ultimately responsible for project, ie. not contractor)**:**
Willatook Wind Farm Pty Ltd
Implementation timeframe:
It is proposed to commence construction in 2021, commissioning in 2022.
Proposed staging (if applicable): The project may be delivered in multiple stages depending on market conditions.

7.
Description of proposed site or area of investigation

Has a preferred site for the project been selected?

☐ No ☒ Yes If no, please describe area for investigation.
If yes, please describe the preferred site in the next items (if practicable).

General description of preferred site, (including aspects such as topography/landform, soil types/degradation, drainage/ waterways, native/exotic vegetation cover, physical features, built structures, road frontages; attach ground-level photographs of site, as well as A4/A3 aerial/satellite image(s) and/or map(s) of site & surrounds, showing project footprint):

Figure 4 Aerial Photo shows the Site boundary. The activity area is roughly bounded by Kangertong Road to the north, Tarrone Lane to the south, Hamilton-Port Fairy Road to the west and the Moyne River to the east. An existing 500kV transmission powerline extends through the southern part of the site from east to west.

Figure 5 Site Constraints shows the location of features and constraints on the site. **Figure 6 Photo Locations** (and attached photos) provides photographs of typical features of the Site.

The main land use of the Site is agricultural and widespread clearing of the study area and surrounds has resulted in native vegetation being largely restricted to roadside reserves and highly modified isolated occurrences along waterways, gullies and stony knolls, which reflects historic and ongoing land-use practices (ie cropping and grazing).

Vegetation within the majority of the private properties throughout the Site consisted of predominantly introduced vegetation. This includes areas of improved and unimproved pasture dominated by common pasture weeds such as Onion Grass, Cape Weed, Burr Medic Medicago ploymorpha, Squirrel-tail Fescue Vulpia bromoides, Silvery Hair-grass Aira caryophyllea, and Cocksfoot Dactylis glomerate. The majority of properties contain planted windrows of native and exotic trees.

A total of 562.645 hectares of actual or deemed native vegetation occurs on the Site. Ecological Vegetation Classes (EVCs) in the Site include:

- Aquatic Herbland (0.039 ha);
- Basalt Shrubby Woodland (0.675 ha);
- Plains Grassland (3.014 ha);
- Plains Grassy Wetland (195.406 ha);
- Plains Grassy Woodland (8.479 ha);
- Stony Knoll Shrubland (45.900 ha);
- Tall Marsh (1.365 ha).

The balance of 307.406 hectares of DELWP mapped wetland areas in which no actual native vegetation has been identified. **Figure 7** shows the **DELWP Mapped Wetlands**.

Areas not supporting remnant native vegetation have a high cover (>90%) of exotic grass species, many of which have been direct-seeded for use as pasture. Scattered native grasses are generally present in these areas, however they did not have the required 25% cover to be considered a remnant patch. Removal of embedded rock has also been undertaken to facilitate the direct seeding of pasture grasses.

One habitat zone of Plains Grassy Woodland – PGW2, comprising an area of 0.569 ha, is considered to meet the condition thresholds that define the nationally significant *Grassy Eucalypt Woodland of the Victoria Volcanic Plain* ecological community. This habitat zone is

located within the road reserve of Macknights Road (**Figure 3c** of **Attachment A**) and will not be impacted by the proposed Wind Farm.

On the route to the Site, five areas were identified that would be impacted, which are shown in **Appendix B** of **Attachment G**. The EVCs and DELWP mapped wetland types (unvegetated) identified in these areas include:

- Herb-rich Foothill Forest (0.229 ha);
- Freshwater Meadow (0.013 ha);
- Shallow Freshwater Marsh (0.018);
- Stony Rises Woodland (0.012 ha);
- Basalt Shrubby Woodland (0.011 ha).

From a geoscience perspective the terrain of the Site is comprised of two groups of volcanic rocks: a) lavas of Pliocene to early Pleistocene age (two to four million years ago) derived from multiple eruption points between Hamilton and Warrnambool Road; (b) lava derived from the eruption centre of Mount Rouse near Penshurst some 30km to the north and dated around 300,000 years.

Site topography is shown on **Figure 8 Surface Elevation Contours.**

Site area (if known): …6750 (hectares)

Route length (for linear infrastructure) …….69.6……. (km) **and width** ……6…….. (m)

Current land use and development:
Farm land with dwellings. There are 16 dwellings within 1.4km of a proposed wind turbine location, all the owners of which have entered into a contract with the proponent1.

There are 42 dwellings within 2km of a proposed wind turbine location, 24 of which are associated with the project and a further three are disused.

Within 3km of a proposed wind turbine there are 73 dwellings and within 4km (which includes the settlement of Orford) there are 123 dwellings.

Description of local setting (eg. adjoining land uses, road access, infrastructure, proximity to residences & urban centres):

Surrounding land is generally used for farming purposes. Some farms have dwellings. The Tarrone Terminal Station adjoins the Site to the south. The operational Macarthur Wind Farm is located to the north of the Site. The 500kV transmission line runs through the southern portion of the Site.

The small rural hamlet of Orford is located approximately 3km to the south-southwest of the closest wind turbine on the Site and the township of Hawkesdale is located approximately 7.5km to the east-northeast of the closest wind turbine on the Site. The town of Port Fairy is located 22km to the south of the subject land.

There is a network of local roads around the Site.

Figure 9 Road Network and Dwellings shows the Site with the proposed project layout in the context of the local road network and surrounding dwellings.

Planning context (eg. Strategic planning, zoning & overlays, management plans):
The site is affected by the Moyne Planning Scheme.

The land is in the Farming Zone with two Special use Zones that are affected by Environmental Significance Overlays (ESO). The zone and overlay controls are shown in **Figure 10 Planning Overlays**.

One Special Use Zone is Schedule 5 for the proposed Shaw River Power Station and the other is Schedule 6 for the proposed Tarrone Power Station. The ESO Schedule 4 and ESO Schedule 5 apply to the environs around the Power Station areas respectively. Their purpose is to protect the stations from encroachment by sensitive land uses, such as dwellings. The proposal will not compromise the objectives of the ESO's.

The Farming Zone triggers the need for a permit for the use and development of a wind farm. A permit is required for the use and development of a wind energy facility and the removal of native vegetation. Clause 52.32 Wind Energy Facility provides Decision Guidelines and requires consideration of the Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria (DELWP, November 2017). The Guidelines include some example permit conditions for wind energy facilities.

A Bushfire Management Overlay (BMO) applies to part of the land. The Wind Farm is not proposed in the areas where the BMO applies. However, the whole of the Site is in a Designated Bush Fire Prone Area.

The relevant Clauses of the Moyne Shire Planning Policy Framework include:

- Clause 12 Environment and Landscape Values including consideration such as the protection of biodiversity, native vegetation management, and the protection of significant environments and landscapes.
- Clause 13 Environmental Risks and Amenity seeks to ensure that planning adopts best practice environmental management and risk management to avoid or minimise environmental degradation and hazards. The clause includes considerations for the management of natural hazards and climate change, erosion and landslip, noise abatement, and bushfire risk.
- Clause 14 Natural Resource Management where planning is to assist in the conservation and wise use of natural resources including agricultural land, water, land, stone and minerals to support both environmental quality and sustainable development. Considerations include the protection of agricultural land, consideration of catchment planning and management, water conservation and quality.
- Clause 18 Transport including the considerations for integrated transport, and car parking.
- Clause 19 Energy includes the consideration of renewable energy with the objective to promote the provision of renewable energy in a manner that ensures appropriate siting and design considerations are met.
- Clause 22.2 addresses the policies related to the environment in the Moyne Shire. There are policies relating to rare species; ground water discharge; hilltop and ridgeline protection; flora and fauna; public land; and, management of coastal landscapes. All the relevant planning policy provisions will be addressed in any future approval.

Local government area(s): Moyne Shire Council

8. Existing environment

Overview of key environmental assets/sensitivities in project area and vicinity
(cf. general description of project site/study area under section 7)**:**

The key environmental assets and sensitivities with the Site and surrounds include:

- The historic and cultural heritage assets within and near the site.
- The patches of native vegetation on the Site and DELWP mapped wetland;
- Fauna habitats, including wetlands; remnant grasslands; grassy woodlands; and, adjacent areas of uncultivated land that could support fauna such as the Striped Legless Lizard (not recorded during previous targeted surveys – updated surveys are currently underway). The Golden Sun Moth is considered moderately likely to occur and is assumed to occur in any areas of Plains Grassland and Plains Grassy Woodland in the Site;
- Listed migratory waterbirds are likely to use the wetlands on the site in small numbers (surveys are planned this spring and summer);
- Although an extensive bat-detector survey found only two calls of the Southern Bent-wing Bat in Spring and Autumn, a validation survey is planned for Spring 2017 to ascertain if this situation has changed.
- The mapped wetland areas, many of which do not contain native vegetation due to current land use practices;
- The geology and geomorphology of the land.
- The undulating topography and visual sensitivity of the landscape.

9. Land availability and control

Is the proposal on, or partly on, Crown land?

☐ No ☒ Yes If yes, please provide details.

A number of the internal site access tracks cross seven of the Paper Roads that are within the Site.

Current land tenure (provide plan, if practicable):
Private land held under various ownerships.

Intended land tenure (tenure over or access to project land):
Willatook Wind Farm Pty Ltd has entered into legally binding agreements with the owners of land within the Site, which provide for access and long-term lease arrangements that will extend for the operational life of the wind farm.

Other interests in affected land (eg. Easements, native title claims):
Power easements run through the land for the existing 500kV transmission line and the existing 132kV transmission line from Macarthur Wind Farm to the Tarrone Terminal Station.

10. Required approvals

State and Commonwealth approvals required for project components (if known):

- The proposed wind farm and transmission line infrastructure require planning permits from the Minister for Planning pursuant to the Planning and Environment Act 1987.
- Approval of a Cultural Heritage Management Plan (CHMP) pursuant to the Aboriginal Heritage Act 2006.
- The proposal is being referred under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) for a decision as to whether it is a 'controlled action'.
- Victorian Flora and Fauna Guarantee Act 1988 (FFG Act) for removal of any protected flora on public land.
- A Work Authority and Work Plan is required for the quarry to carry out an extractive industry through the Earth Resources Division of the Department of Economic Development, Jobs, Transport and Resources (DEDJTR)

Have any applications for approval been lodged?

☒ No ☒ Yes If yes, please provide details.

An EPBC referral will be lodged with the Commonwealth Minister for the Environment.

Approval agency consultation (agencies with whom the proposal has been discussed):

DEJTR
DELWP
Moyne Shire Council
Aboriginal Affairs Victoria

Other agencies consulted:

VicRoads
Airservices Australia
Civil Aviation Safety Authority (CASA)

Other organisations consulted
Framlingham Aboriginal Trust
Gunditj Mirring Traditional Owners Aboriginal Corporation

PART 2 POTENTIAL ENVIRONMENTAL EFFECTS

11. Potentially significant environmental effects

Overview of potentially significant environmental effects (identify key potential effects and comment on their significance and likelihood, as well as key uncertainties):

The design of the development within the Site has been informed by an understanding of environmental values and risks. The proposed Wind Farm is not expected to have any significant environmental impacts.

Environmental assessments completed to date and included in this referral are:

- Biodiversity Assessment (Ecology and Heritage Partners 2018) (Attachment A)
- Brolga Movements and Spatial Requirements (Ecology and Heritage Partners 2013) (Attachment B)
- Brolga Flocking Surveys Letter (Brett Lane & Associates 2018) (Attachment C)
- Geoheritage Assessment (Environmental Geosurveys 2018) (Attachment D)
- Landscape and Visual Impact Assessment (Green Bean Design 2018) (Attachment E)
- Environmental Noise Assessment (Sonus 2018) (Attachment F)
- Traffic Impact Assessment (Ratio 2017) (Attachment G)
- Cultural Heritage Matters Letter (Ecology and Heritage Partners 2018) (Attachment H)

Flora assessments were carried out in 2009 and 2011. Further assessments were carried out in June and July 2017 based on the habitat hectare methodology, a methodology that is intended to be robust and able to be replicated and does not provide any seasonal limitations. In order to further inform the assessment, a targeted flora survey will be undertaken during October and December 2018.

Fauna assessments were undertaken between 2009 and 2013. To further inform the assessment, the following surveys will be undertaken during 2018:

- Bird Utilisation Survey;
- Bat Utilisation Survey;
- Targeted survey for Striped Legless Lizard;
- Brolga breeding season survey;

Native Vegetation

The biodiversity survey area on the Site is shown on **Figure 2 of Attachment A**. There are seven Ecological Vegetation Classes (EVC's), along with DELWP mapped wetlands. These are listed in **Table S1** of **Attachment A** and are summarised in Section 7.

The project footprint will impact 8.974 hectares of native vegetation. These areas are shown on **Figures 11a to 11f** and listed below:

EVC	Mapped Native Vegetation (hectares)
Aquatic Herbland	ha
Basalt Shrubby Woodland	0.307
Plains Grassland	0.007
Plains Grassy Wetland	3.414
Plains Grassy Woodland	0.010
Stony Knoll Shrubland	0.379

Tall Marsh	0.056
Current Wetlands	4.758
Freshwater Meadow	0.013
Shallow Freshwater Marsh	0.018
Stony Rises Woodland	0.012
Total	8.974

None of the identified listed community *Grassy Eucalypt Woodland of the Victorian Volcanic Plain* will be affected.

Trees
The extent of native vegetation includes 99 scattered trees (see **Appendix 2.4** of **Attachment A**). Of these, there are 66 Large Trees and 33 Small Trees. Where possible, these would be retained.

Threatened Flora
One hundred and fifty three (153) flora species (97 indigenous and 56 non-indigenous or introduced) were recorded within the survey area during the field assessment. Of these species, 10 species are protected under the FFG Act and one (Western Water Starwort *Callitriche cyclocarpa*) is listed under the FFG Act and one (Basalt Peppercress *Lepidium hyssopifolium*) is listed under both the FFG Act and the EPBC Act.
There is potential habitat for the Nationally significant (EPBC listed) Clover Glycine; Swamp Fireweed; Gorae Leek-orchid; Maroon Leek-orchid *Prasophyllum frenchii*; and, Dense Leek-orchid. There is also potential habitat for the State significant Swamp Flax-lily; Basalt Leek-orchid (FFG Act listed); and, Slender Bitter-cress. Targeted surveys have been scheduled to ascertain the status of the species in the proposed development footprint. If identified, they will be avoided, where possible.

Threatened Fauna
Six threatened fauna species were identified as occurring on the Site.

Southern Bent-wing Bat (*Miniopterus schreibersii bassani*) (EPBC Act and FFG Act Listed)
Dwarf Galaxias (*Galaxiella pusilla*) (EPBC Act and FFG Act Listed)
Yarra Pygmy Perch (*Nannoperca obscura*) (EPBC Act and FFG Act Listed)
Brolga (*Grus rubicunda*) (FFG Act Listed)
Yellow-bellied Sheathtail Bat (*Saccolaimus flaviventris*) (FFG Act Listed)
Swamp Skink (*Egernia coventryi*) (FFG Act Listed)

Eight threatened fauna species have potential to occur on the Site, with the Growling Grass Frog and Eastern Great Egret having been recorded adjacent to the survey area.

Growling Grass Frog (*Litoria raniformis*) (EPBC Act and FFG Act Listed)
Striped Legless Lizard (*Delma impar*) (EPBC Act and FFG Act Listed)
Glossy Grass Skink (*Pseudemoia rawlinsoni*) (DSE 2013)
Golden Sun Moth (*Synemon plana*) (EPBC Act and FFG Act Listed)
Hardhead (*Aythya australis*) (DSE 2013)
Eastern Great Egret (*Ardea modesta*) (also migratory) (FFG Act Listed)
White-throated Needletail (*Hirundapus caudacutus*) (FFG Act Listed)
Latham's Snipe (*Gallinago hardwickii*) (DSE 2013)

Southern Bent-wing Bat
Given the relatively low numbers of Southern Bent-wing Bat detected (1-2 calls at two locations on the Site), it seems unlikely that the Willatook Wind Farm would have a significant impact on this species, or, therefore, add to the cumulative impact of wind farms in the region on this species. Further surveys are planned to confirm the status of the species on the site.

Dwarf Galaxias, Yarra Pygmy Perch and Swamp Skink

To mitigate against any impact on these species, apart from the site access tracks, no project elements will be constructed within 30m of the Moyne River, Shaw River, Kangaroo Creek or well vegetated tributaries. However, access tracks and underground cable trenches would cross six watercourses, including the Shaw River. Impacts can be avoided through the development of a Construction Environmental Management Plan and a Significant Species Conservation Management Plan.

Yellow-bellied Sheathtail Bat
This species is widely dispersed across Australia and occurs in low densities across the landscape in Victoria. Given this, significant impacts affecting a significant number of individuals of this species are unlikely, resulting in a very limited additional cumulative impact from wind farms on this species.

Brolga
Brolga is significant at the State level and is FFG Act listed. The desktop review of historical records showed four records of Brolga within the Site, two of which were breeding records; and, two breeding records within two kilometres of the Site (**Figure 5** of **Attachment A**). The two records within the Site fall within the same low-lying area as Cockatoo Swamp.

During the aerial surveys, one nest was identified and confirmed as a Brolga nest in Cockatoo Swamp and another was in the same location as an historical Brolga nest from 1984.

The Brolga Guidelines state that in the case of breeding habitat, turbine siting would be used to exclude any significant reduction in breeding success caused by turbines. This will be achieved by establishing turbine-free areas around all potential Brolga nesting sites sufficient to have no significant impact on the likelihood of successful reproduction. As a general recommendation, the Guidelines recommend a 3.2km radius turbine-free buffer from breeding sites, however, a proponent may propose reduced buffers provided that they can be shown to meet the objectives set for breeding and non-breeding habitats. Willatook Wind Farm is in ongoing discussions with DELWP Barwon South West in order to determine a suitable turbine-free buffer from breeding sites.

Wetlands and Watercourses
The Shaw River runs through the western part of the Site; the Moyne River runs to the east of the Site; and, Kangaroo Creek runs to the north of Shaw River and is off the site, between Kangertong Road and Woolsthorpe-Heywood Road. These watercourses are highlighted in **Figure 7, DELWP Mapped Wetlands**. Yarra Pygmy Perch, Dwarf Galaxia and Swamp Skink were identified in these watercourses. A number of tributaries also run through the Site.

There are swamp and marsh areas that are highly modified and no significant species were identified in these areas during the surveys. However, under certain conditions, some of these areas, which are ephemeral wetlands, would fill after rainfall such that fauna species that rely on wetland may at times use them. These potentially include Brolga and Eastern Great Egret.

Positioning turbine infrastructure and access roads to avoid all the creeks and wetlands with remnant native vegetation, and industry standard sediment and erosion control during construction will ensure that significant species (e.g. Growling Grass Frog, Yarra Pygmy Perch and Dwarf Galaxia) that depend on these habitats will not be impacted by the proposed development.

Geoheritage
A report titled "***Geoheritage Assessment" by Environmental GeoSurveys Pty Ltd*** is included in **Attachment D**.

The terrain of the proposed Willatook Wind Farm is comprised of volcanic rocks of the Newer Volcanic Province of Victoria. There are two groups of volcanic rocks:

(a) lavas of Pliocene to early Pleistocene age (two to four million years ago) derived from multiple eruption points between Hamilton and Warrnambool. The initial volcanic landscape has been reshaped by deep weathering and stream incision and is now an undulating plain of low relief with features of moderate to low geoscience significance;

(b) lava derived from the eruption centre of Mount Rouse near Penshurst some 30 km to the north and dated around 300,000 years. The boundaries of the Mount Rouse flows are clearly defined in the landscape by a distinctive stony terrain that is very different from the older flows they cover. Although partly modified by ambient processes since the eruption, and by various types of rural land uses, these areas of younger volcanic activity preserve volcanic attributes including elongate mounds and ridges little modified by weathering and erosion and are of high geoscience significance for the study of long lava flows. These lava features are part of a broader complex (including Mount Hamilton and other nearby eruption centres). No lava caves are recorded in the Site.

All the activities with the proposed Willatook Wind Farm are confined to lava flow terrain of various ages and none will have a physical impact on the composition and form of the Mount Rouse eruption points. Therefore, the potential impact of the proposed Wind Farm on geoscience significance is confined to the specific sites on the lava flows and related landform features.

A place or feature recognised as of geoscience significance is assigned a significance rating on a comparative scale that ranges from Local to International. It is acknowledged that both the recognition and assigning of ratings is subjective.

For the purpose of the assessment, the clusters of wind turbines within the Site are divided into seven sectors (reference Chapter 7 of the Geoheritage Report in **Attachment D**).

Sector 6 (Shaw River) is the most sensitive to disturbance and degrading of significant individual geoscience features in the study area. The geomorphology of the area is one of the largest contiguous areas of the Mount Rouse – Port Fairy lavas; it includes a diverse range of landforms with greater relief than much of the southern lava flows; it defines the course of the Shaw River as a lateral stream on the west; and, there remain substantial areas of active wetland in enclosed or contained depressions that have been little modified (reference **Figures 42 and 43 in Attachment D**).

In order to minimize impacts, the following measures will be adhered to:

i) The number of towers and other structures built on narrow lava ridges should be kept to a minimum and where feasible be relocated to broader flat surfaces.
ii) minimise reshaping and fill of all young lava surfaces.
iii) Excess excavated rock should be removed from the site or used as fill for the immediate areas as needed.
iv) Underground cabling across high and narrow lava ridges should be avoided where possible. Where ridges are crossed, reshaping should be kept to a minimum and the geometry of the ridge should be maintained.
v) Prior to any construction work, a high-resolution topographic image (DTM) of the young lava surfaces should be prepared either from photogrammetry and/or LiDAR.

This will give an invaluable benchmark to assist in future geological and hydrological studies of these surfaces.
vi) Avoid/minimise alteration to stream channels.
vii) Implement a construction environment management plan that conforms to the above requirements.

With the above measures in place, the construction and operation of the proposed Willatook Wind Farm is consistent with maintaining the high level of geoscience significance of the Site and the broader aspects of Mount Rouse and associated flows.

Landscape and Visual

A report titled "**Landscape and Visual Impact Assessment**" by **Green Bean Design** is included in **Attachment E**.

The Landscape and Visual Impact Assessment (LVIA) has determined that the landscape within and immediately surrounding the wind farm site, as well as portions of the landscape in the broader viewshed are generally robust and defined by visually strong forms and patterns. In general, the landscape is considered to exhibit attributes which tend to result in a low to moderate sensitivity to change. Whilst the wider regional landscape displays characteristics which are highly valued and have a high degree of visual amenity, the localised wind farm landscape is represented by a largely modified landscape (predominantly agricultural in nature including dairy production and cropping) which is commonly found within the regional landscape.

The LVIA has determined that the visual impact of the Willatook Wind Farm is likely to be moderate low from the majority of publicly accessible locations surrounding the wind farm, and that the proposed Willatook Wind Farm:

- Would have low visual impact on surrounding townships and localities;
- Would result in low (albeit short term and transitory impacts) effects on views from highways;
- Would result in generally moderate impacts on views from the majority of local roads where fully or partially screened by roadside and/or field boundary tree planting; and,
- Would not have a significant visual effect from public reserves and recreational areas, including any available views from state significant landscape areas and features.

The Willatook Wind Farm would have potential to result in a range of visual impacts on individual residential dwellings surrounding the wind farm site. The impacts would be dependent on a number of physical and environmental characteristics (e.g landform and vegetation) surrounding residential dwelling which would determine overall visibility and prominence of wind turbines within specific views.

Noise

A **Noise Assessment** has been undertaken by **Sonus** and is included as **Attachment F.**

Construction Activity

The construction of a wind farm comprises activities such as road construction, civil works, excavation, foundation construction, electrical infrastructure works, wind turbine erection and quarry activity. These require processes such as heavy vehicle movements, crushing and screening, possible concrete batching, loaders, excavators, generators, cranes and rock breaking.

A detailed assessment of construction noise will be provided within a Construction Noise and Vibration Management Plan (CNVMP) prepared under the project's construction management framework. The CNVMP will be prepared during the design stage of the

project when details such as scheduling, the types of equipment to be used, processes, locations and duration of activities are known.

The CNVMP will be based on the Victorian EPA's Publication 1254 "Noise Control Guidelines "to ensure consistency with the purpose of Section 2 of the Noise Control Guidelines, titled "Construction and Demolition Site Noise", being 'to protect nearby residential premises from unreasonable noise'.

The Noise Control Guidelines require 'premises affected by noise
... (to) be considered and reasonable measures implemented to reduce (the) impact';
including community consultation, work scheduling and noise reduction measures.

Operational Activity

Figure 12A Willatook Wind Farm Noise Level (dB(A)) shows noise contours from the Wind Farm at a wind turbine hub height wind speed of 10m/s. To determine background noise levels at various wind speeds, background noise monitoring was conducted at 12 locations near the proposed wind farm between 30 September and 10 November 2010.
Figure 12B Willatook Wind Farm Noise Level (dB(A)) shows cumulative noise contours from the Wind Farm combined with the Macarthur Wind Farm at a wind turbine hub height wind speed of 10m/s. The results given in the noise report (**Attachment F**) show that the cumulative noise level from the proposed Willatook Wind Farm and the Macarthur Wind Farm complies with the *New Zealand Standard NZS6808:2010* at all dwellings of landowners without commercial agreements in the vicinity of the proposed Willatook Wind Farm.

Based on the predictions, the noise from the wind farm will satisfy the relevant criteria at all non-associated residences. Also, the highest predicted noise level from the substation is less than 30 dB (A) at the closest residence, an involved landowner dwelling 900m away, and therefore easily achieves the 36 dB(A) criterion.

Traffic and Transport
A **Traffic Impact Assessment** has been prepared by Ratio consultants and is included in **Attachment G**.
During construction the wind farm will have a centrally located construction compound. The construction of the wind farm will occur over a 24-month period and include:

- Site establishment – includes establishment of the temporary concrete batching plant, delivery of key plant and construction vehicles and the construction of initial internal access tracks required for the delivery of material and goods for further construction. Also includes the establishment of on-site quarrying (if applicable) and water sourcing (if pursued)
- Civil construction works – includes the construction of the balance of internal access roads, WTG site hardstand areas, WTG footings, terminal station construction and internal power infrastructure.
- WTG component delivery;
- And WTG erection

The report outlines estimated traffic movements during the construction period (See **Attachment G**), which are summarised in the tables below and distinguish between utilising an on-site quarry and no on-site quarry. It should be noted that the figures represented in the tables below are updated (and higher) than those presented in **Attachment G**, due to additional vehicles required to transport the hybrid wind turbine towers. Externally sourced materials required for the construction will primarily access the Site via Woolsthorpe – Heywood Road from Penhurst-Warrnambool Road and/or Hamilton – Port Fairy Road. The report concludes that the vehicle numbers could be catered for on the Woolsthorpe_Heywood road, apart from on a 2.4km section of single lane, which may need to be upgraded.

External Daily Vehicle Movements (On-site Materials Sourcing)

Phase	Staff	Oversize Vehicles	Heavy Vehicles	Total
Weeks 1-10	80		15	95
Weeks 11-48	130		23	153
Weeks 49-90	200	2-3	35	238
Weeks 91-94	170		23	193
Weeks 95-98	120		1	121
Weeks 99-104	80		1	81

External Daily Vehicle Movements (No On-site Materials Sourcing)

Phase	Staff	Oversize Vehicles	Heavy Vehicles	Total
Weeks 1-10	80		65	145
Weeks 11-48	130		64	194
Weeks 49-90	200	2-3	77	280
Weeks 91-94	170		64	234
Weeks 95-98	120		1	121
Weeks 99-104	80		1	81

With the exception of some road/hardstand construction material and some WTG components (which may be delivered directly to the relevant work-site) all external construction material deliveries will be to the main construction site compound in the first instance. Materials deliveries would then proceed to the various areas across the Site via the internal Wind Farm access track network within the Site.

Where practical construction materials not sourced on-site will be sourced within the local region. Four quarries have been identified as potential sources, being Tarrone Quarry (5km to site) to the south, as well as Mt Napier 30km to the north, Mt Shadwell 55km to the northeast near Mortlake and Gillear sand and limestone quarry at Allansford 42km to the south-east.

Recommended access routes to the Wind Farm from all quarry sites are via declared arterial roads. Local access between the Tarrone Quarry and Wind Farm site using Tarrone Lane and Tarrone North Road, (to the southern Wind Farm access only) may be considered subject to the volume of material sourced from Tarrone Quarry and subject to agreement with the Moyne Shire Council.
Cement and other key construction materials will likely be sourced from Warrnambool.

For the WTG substation components, the Port of Portland is the preferred entry. On that basis an over-dimensional (OD) vehicle haulage route has been identified between the Port of Portland and the Site based on the largest expected WTG component being a 78m turbine blade.

From the Port of Portland this route extends along approved or conditionally approved Over Size and Over Mass (OSOM) declared main roads via Henty Highway to Princes Highway, and then Tyrendarra-Ettrick Road to Woolsthorpe- Heywood Road, approaching the Site from the west. The suitability of the route has been confirmed by way of inspection and swept path analysis at key locations. The swept path analyses are shown in **Appendix B** of **Attachment G**.

During construction all other vehicle movements, including water cartage and the haulage of any material quarried on-site, will use the new internal Wind Farm access tracks and, where necessary sections of Woolsthorpe-Heywood Road adjacent to the Site.

Tarrone North Road will not be used by internal Wind Farm traffic. The use of Woolsthorpe-Heywood Road by internal construction traffic will be limited to the movement of stored construction materials between the central construction compound and Wind farm areas not accessible by internal access roads.

Subject to resolving the establishment of the on site quarry, unsealed internal access roads, hardstand areas and the upgrade/upkeep of local external roads used for Wind Farm construction traffic will be constructed from material sourced on-site.

All material required for construction of access roads and hardstand areas sourced on site, would be transported throughout the Site using internal access tracks in preference to external roads. Concrete for WTG footings will be produced internally within the on-site concrete batching plant/s from externally sourced aggregate, cement and reinforcement.

Cultural heritage
Figure 13 Cultural Heritage Areas shows the area of land identified as being of potential cultural heritage significance. **Attachment H** contains a letter from Ecology and Heritage Partners summarising the cultural heritage investigations.

Historical heritage and Aboriginal heritage investigations have been undertaken from 2009 to 2018 at different periods.

Historical Heritage
The background research indicated that there have been no historical sites previously recorded that are within the activity area. Field surveys were undertaken and no historical places suitable for listing on the Victorian Heritage Inventory or other lists (e.g. Heritage Overlay, Heritage Register or any National Lists) or areas of historical archaeological sensitivity were identified. Some sections of dry stone wall were noted in places, however they are in such poor conditions that they would not meet the significance criteria to be listed on the Victorian Heritage Inventory.

Aboriginal Heritage
An Aboriginal Cultural Heritage Management Plan (CHMP) commenced preparation in 2009 under the Aboriginal Heritage Act 2006.The CHMP will be evaluated by Aboriginal Victoria (AV) as there was no Registered Aboriginal Party (RAP) for the activity area (the Site) at the time the CHMP commenced.

There are currently no Native Title claims extending over the activity area. Small portions of the activity area are designated as Crown Land, therefore Native Title has not been extinguished.

Investigations commenced in 2009 and field surveys, followed by targeted archaeological testing of areas considered to have archaeological potential for Aboriginal heritage places, were undertaken in consultation with the relevant Traditional Owner groups. The key Traditional Owner groups consulted with are as follows:

- •Framlingham Aboriginal Trust
- •Gunditj Mirring Traditional Owners Aboriginal Corporation

Field representatives from the Framlingham Aboriginal Trust and the Gunditj Mirring Traditional Owners Aboriginal Corporation agreed with this assessment.
Stone artefact scatters and isolated artefacts were considered a very likely site type to be

- •Glen Stirling (7321-0031 [VAHR])
- •Willatook AS 1 (7321-0473 [VAHR]);
- •Willatook AS 2 (7321-0474 [VAHR]);

- •Willatook IA 1 (7321-0475 [VAHR]);
- •Willatook IA 2 (7321-0476 [VAHR]);
- •Willatook IA 3 (7321-0477 [VAHR]); and
- •Willatook LDAD (7321-#### [VAHR]) (awaiting reference number from AV)

Of the seven Aboriginal heritage places, Glen Stirling (7321-0031 [VAHR]), a mound site that was recorded decades previously, was unable to be located despite extensive efforts. Despite this, the location of the original site is still being treated as an Aboriginal heritage place and it was recommended to avoid the location in any case, which Wind Prospect agreed to do.

The other six site types listed above consist of three sub surface Isolated Artefacts (IA), a Low Density Artefact Distribution (LDAD) and two low density sub surface Artefact Scatters (AS).

The assessment undertaken for the CHMP determined that the proposed activity would have caused harm to the six new sites and one previously recorded site located within the activity area.

Wind Prospect has altered the design layout, adjusting the location of turbines, tracks, cabling and associated infrastructure in order to avoid all of the Aboriginal places identified within the activity area.

In addition to this, protective measures including the erection of temporary fencing/flagging tape will be used around each of the sites prior to, and throughout the construction process. To further reinforce the protection of sites within the area, all construction crews will undergo a cultural heritage induction to ensure they are aware of the boundaries of each site so that they can be correctly avoided as required.

12. Native vegetation, flora and fauna

Native vegetation

Is any native vegetation likely to be cleared or otherwise affected by the project?

☒ NYD ☒ No ☒ Yes If yes, answer the following questions and attach details.

What investigation of native vegetation in the project area has been done? (briefly describe)

An assessment of the native vegetation (**Attachment A)** has been undertaken for the Site including:

- Preliminary flora and fauna assessment in 2009 including:
  - Detailed desktop assessment;
  - Preliminary field survey;
- Flora surveys during November and December 2009;
- Flora surveys during February and March 2011;
- Updated (2017) native vegetation mapping and condition scoring of quality of vegetation according to the habitat hectare methodology. This work includes approximately 340 hectares of land not previously surveyed as part of the Willatook Wind Farm project;
- Native vegetation mapping of haulage route swept path areas in July 2018;

These field surveys used a variety of techniques to identify and map native vegetation. Vegetation mapping was undertaken during the field survey through aerial photograph interpretation and using a hand-held GPS.

As part of these assessments, the presence and condition of potential *habitat* for a number of significant flora species was also assessed. **Table 12** in the report (**Attachment A**) provides notes on the type and condition of potential habitats, as well suitable timeframes to conduct targeted surveys for these species.

Targeted surveys of the project footprint will be conducted in October and December 2018.

What is the maximum area of native vegetation that may need to be cleared?

☒ NYD Estimated area ……8.97……(hectares)

How much of this clearing would be authorised under a Forest Management Plan or Fire Protection Plan?

☒ N/A …… approx. percent (if applicable)

Which Ecological Vegetation Classes may be affected? (if not authorised as above)

☒ NYD ☒ Preliminary/detailed assessment completed. If assessed, please list.

Within the Site, remnant native vegetation in the study area affected by the project comprises seven EVC's: Aquatic Herbland (EVC 653); Basalt Shrubby Woodland (EVC 642); *Heavier-soils* Plains Grassland (EVC 132_61); Plains Grassy Wetland (EVC 125); *Higher-rainfall* Plains Grassy Woodland (EVC 55_63); Stony Knoll Shrubland (EVC 649); and, Tall Marsh (EVC 821).

Off site, remnant native vegetation affected by the project comprises one EVC: Stony Rises Woodland (EVC 203); and, two DELWP wetland types, Freshwater Meadow and Shallow Freshwater Marsh.

Plains Grassland and Plains Grassy Woodland are both potentially listed communities under the FFG Act. These areas will be assessed to determine if they meet the criteria for these communities.

The areas affected are listed above in Section 11 and shown on **Figures 11a to 11f**.

Have potential vegetation offsets been identified as yet?

☒ NYD ☒ Yes If yes, please briefly describe.

Potential offsets may be sourced using the following mechanisms:
Trust for Nature, a First Party offset site with the agreement of a participating landholder, or a Third Party offset through an accredited native vegetation offset broker.

Other information/comments? (eg. accuracy of information)

According to the Department of Environment, Land, Water and Planning (DELWP) Native Vegetation Information Management (NVIM) Tool (DELWP 2018a), the study area occurs within the Victorian Volcanic Plain bioregion.

The areas for removal of native vegetation have been significantly reduced to respond to the native vegetation framework and the objectives to avoid and minimise. Superseded proposals resulted in the need to remove approximately 20 ha of native vegetation, as shown in **Figure 14, Changes Made to Infrastructure Plan to Reduce Native Vegetation Clearing**. This has been reduced to 8.97 ha by re-routing on site tracks; re-routing underground cabling; repositioning three wind turbines and associated hardstands; and, repositioning a further four hardstands.

NYD = not yet determined

Flora and fauna

What investigations of flora and fauna in the project area have been done?
(provide overview here and attach details of method and results of any surveys for the project & describe their accuracy)

Flora
Flora surveys undertaken over the survey area (see **Figure 2** in **Attachment A**) include the following:

- Preliminary flora and fauna assessment in 2009 including:
  - Detailed desktop assessment;
  - Preliminary field survey;
- Flora surveys during November and December 2009
- Flora surveys during February and March 2011
- Habitat hectare assessment, in June / July 2017

Fauna
Fauna assessments were undertaken between 2009 and 2011. Detailed methods can be found in **Attachment A**. First a desktop review of significant species recorded within 10km of the Site was undertaken using the Atlas of Victorian Wildlife, the South-west Victorian Brolga Flocking Site Database and Birds Australia Atlas Data. Following this, the fauna surveys consisted of:

- Fixed point bird count surveys during November 2009;

- Bat surveys (using Anabats) in a range of habitats including open paddocks, adjacent to farm dams, near areas of remnant native vegetation (eg. along waterways) and planted windrows during October and November 2009;
- A number of targeted fauna surveys included the following:
    - Aquatic surveys using several techniques including fyke nets, dip netting and collapsible bait traps during December 2009;
    - Frog surveys (diurnal and nocturnal) in potential sites in the survey area. Growling Grass Frog *Litoria raniformis* surveys during November 2009 and Brown Toadlet *Pseudophryne bibronii* and Southern Toadlet *Pseudophryne semimarmorata* during March and May 2010;
    - Swamp Skink *Egernia coventryi* surveys during February 2010;
    - Striped Legless Lizard *Delma impar* surveys during November 2009 and February 2010;
    - Fat-tailed Dunnart surveys during November 2009 and February 2010;
    - Southern Bent-wing Bat *Miniopterus schreibersii bassani* and Yellow-bellied Sheathtail Bat *Saccolaimus flaviventris* during November 2009; January 2010; Spring (October, November) 2010; and, Autumn (February, March) 2011;

Figure 6 of **Attachment A** shows the specific survey locations, with **Figure 5** of **Attachment A** showing previously documented significant fauna within 5km of the Site.

Brolga
The following Brolga *Grus rubicunda* surveys have been undertaken (see **Attachments A, B and C**):

- Roaming surveys and database searches. Roaming surveys involved all roads within a 20km radius of the Site being driven and suitable habitat searched for Brolgas and other significant bird species. Where access could be arranged (both within the Site and beyond), all historical Brolga sites were visited and the habitat of the site assessed for its suitability for Brolga habitat.
- Consultation with local naturalists and landowners in 2010.
- Aerial surveys to a distance of 20km from the Site were conducted in October 2010.
- Consultation with relevant regulators and landowners was undertaken again in 2013.
- Inspection of wetland areas within the Site and surrounds (10km around Site). Based on the lack of Brolga nests, investigations were expanded into a broader 6000-square kilometre area.
- Determination of home ranges through extensive field observations and spatial statistical analysis (2012) (**Attachment B**).
- Flocking season surveys during May and June 2018 (**Attachment C**).

All targeted surveys were undertaken at various times between November 2009 and July 2011 timed to coincide with periods of highest detectability for the targeted species and in accordance with best practice at the time (and generally consistent with subsequent guidelines issued by DSEWPAC and DSE in 2011-12.

Have any threatened or migratory species or listed communities been recorded from the local area?

☐ NYD ☐ No ☒ Yes If yes, please:

- List species/communities recorded in recent surveys and/or past observations.
- Indicate which of these have been recorded from the project site or nearby.

Flora
Significant flora recorded within the Site or within 10km of the Site, along with flora that have potential to be recorded are listed in **Appendix 2.2** and **Figure 4** of **Attachment A**.

One hundred and fifty-three (153) flora species (97 indigenous and 56 non-indigenous or introduced) were recorded within the survey area during the field assessment.

One EPBC Act listed species, the Basalt Peppercress *Lepidium hyssopifolium*, has been recorded on the Site (see **Attachment A, Figure 4**) based on a record in the Victorian Biodiversity Atlas. Potential habitat occurs within 10km of the study area for the nationally significant Clover Glycine *Glycine latrobeana*, Swamp Fireweed *Senecio psilocarpus*, Gorae Leek-orchid *Prasophyllum diversiflorum*, Maroon Leek-orchid *Prasophyllum frenchii* and Dense Leek-orchid *Prasophyllum spicatum*. In addition, there is potential habitat within 10km for Swamp Flax-lily Dianella callicarpa, Basalt Leek-orchid *Prasophyllum viretrum*, Western Water Starwort *Callitriche cyclocarpa* and Slender Bittercress *Cardamine tenuifolia*. There is potential for these species to occur in remnant native vegetation on the Site and targeted flora surveys will be undertaken in October and December 2018.

Fauna

Significant fauna recorded within the Site or within 10km of the Site, along with fauna that have potential to be recorded are listed in **Appendix 3.2 of Attachment A**. **Figure 7** of **Attachment A** shows the significant fauna recorded on and adjacent to the Site.
One-hundred and three (103) terrestrial and avian fauna species were observed during the field surveys (**Appendix 3.1** of the report). This consisted of 19 mammals (including 11 species of bat identified to species level), 76 birds, three reptiles and five frogs. Five of the observations of mammals and five birds were of species introduced to the study area. Findings in relation to species listed on the EPBC Act and FFG Act are summarised below.

Two EPBC Act-listed fauna species were recorded during the field surveys; Southern Bent-wing Bat *Miniopterus schreibersii bassani* (EPBC Act and FFG Act listed)was recorded during the Anabat surveys, and a Growling Grass Frog *Litoria raniformis* (EPBC Act and FFG Act listed) was heard from a wetland located to the east of the study area. In addition, two FFG Act-listed species were recorded during bird surveys (excluding brolgas – see below); Royal Spoonbill *Platalea regia* was seen in wet depressions on several occasions and Eastern Great Egret *Ardea modesta* were seen on the wetlands adjacent to the study area. The FFG Act-listed Swamp Skink *Egernia coventryi (FFG Act listed) was also trapped in a wetland near the Moyne River.* The FFG Act-listed Yellow-bellied Sheathtail Bat *Saccolaimus flaviventris* (FFG Act listed) was recorded during Anabat surveys.

Although there were no Striped Legless Lizard *Delma impar* (EPBC Act and FFG Act listed) recorded during the surveys, the survey period (November and February) was sub optimal. Therefore, new surveys have commenced in July 2018 and will continue until December 2018.

Six fish species were collected along Moyne River within the study area and three species were collected in Kangaroo Creek. This included two nationally significant species Yarra Pygmy Perch *Nannoperca obscura* (EPBC Act and FFG Act listed) (collected within the Moyne River sites) and Dwarf Galaxias *Galaxiella pusilla* (EPBC Act and FFG Act listed) collected within the Kangaroo Creek. **The location of these records is shown in Attachment A – Figure 7**.

Brolga

The desktop review of historical records showed two breeding records with the study area and two within 2km of the study area (**Figure 5 of Attachment A**). The records close to the wind farm are within the low-lying area known as Cockatoo Swamp.
Six kilometres to the north-west of the proposed turbines, a second confirmed Brolga nest was found during the aerial survey. When this site was visited on the ground in July 2011, no nests were observed, however suitable habitat for Brolgas remains.

All other known Brolga breeding records are over five kilometres from the proposed wind farm.

Further surveys are planned in the 2018 breeding season. Early results found a pair nesting in Cockatoo Swamp but the water level in the swamp rose, flooding the nest and the pair deserted the area.

The nearest flocking site (from the South-west Victoria Flocking Site Database) is approximately 32km to the north-east, well beyond the potential impact of the proposed Wind Farm, therefore, is not considered further. Notwithstanding this, surveys were undertaken in the 2018 flocking season (see **Attachment C**) and are planned again in the 2019 flocking season.

Listed Communities
Remnant vegetation on the Site comprises seven Ecological Vegetation Classes (EVC's), each of which is listed as Endangered in the Victorian Volcanic Plain bioregion. The EVC's are listed above in Section 7. In addition to the mapped EVC's, the Site contains areas of DELWP mapped wetlands (**Figure 7**). See **Attachment A, Figures 3 and 3a to 3e**.

One habitat zone of Plains Grassy Woodland – PGW2 within the Site and comprising an area of 0.569 hectares - is considered to meet the condition thresholds that define the nationally significant Grassy Eucalypt Woodland of the Victoria Volcanic Plain ecological community (SEWPaC 2011). This community is EPBC Act listed as critically endangered. The habitat zone is located within the Site and is within the road reserve of Macknights Road and will not be impacted by the proposed wind farm development.

Further assessments of Plains Grassland and Plains Grassy Woodland will be undertaken this spring to ascertain if they meet the criteria for any state FFG Act listed threatened communities.

If known, what threatening processes affecting these species or communities may be exacerbated by the project? (eg. loss or fragmentation of habitats). Please describe briefly.

Fauna species that utilise habitat within the wind farm site may be impacted by the construction of the wind farm infrastructure, as well as the operation of the wind farm. By avoiding wetlands and waterways, many of these impacts can be avoided. Results from previous bird and bat surveys (see **Attachment A**) indicate that threatened bat species occur very infrequently on the wind farm site and that the bird fauna is dominated by common, widespread species adapted to cleared, agricultural landscapes. The impact of the wind turbines on aerial fauna is the subject of continued investigation in spring and late summer-autumn 2018-19.

Where potential habitat is proposed to be impacted by the development footprint, targeted surveys will be undertaken in October and December 2018 for threatened flora species as follows:

> Clover Glycine, Swamp Fireweed, Basalt Peppercress, Gore Leek-orchid, Maroon Leek-orchid, Dense Leek-orchid, Western Water-starwort, Swamp Flax-lily, Basalt Leek-orchid, Slender Bitter-cress.

Where possible, the development footprint will be adjusted to avoid any occurrences of these species.

Are any threatened or migratory species, other species of conservation significance or listed communities potentially affected by the project?

☒ NYD ☒ No ☒ Yes If yes, please:

- List these species/communities:
- Indicate which species or communities could be subject to a major or extensive impact (including the loss of a genetically important population of a species listed or nominated for listing) Comment on likelihood of effects and associated uncertainties, if practicable.

BATS

Both the nationally significant Southern Bent-wing Bat and state significant Yellow-belied Sheathtail Bat were recorded within the study area during both the Spring and Autumn survey periods. The Southern Bent-wing Bat was recorded at four locations during the Spring sampling period and three locations during the Autumn sampling period, with the locations shown on **Figures 10 and 11, Attachment A**. Two calls were within the Site, with the rest being on the perimeter of the Site. The Yellow-bellied Sheathtail Bat was recorded at three locations during both the Spring and Autumn survey periods, with the locations shown on **Figures 10 and 11, Attachment A**. The calls were on the perimeter of the Site and off the Site.

The detection of Southern Bent-wing Bats within and on the periphery of the Site during the known migration period for the sub-species (October to November and February to March), suggest that individuals of the sub-species are migrating through the wider region. It is not possible to determine what proportion of the population are migrating through this area, whether they are concentrated around certain migration routes or whether their migration paths are likely to vary from year to year. Southern Bent-wing Bats may have been foraging in and around the areas in which they may be moving through to more suitable feeding areas. The larger number of records near the Shaw River and a more-permanent swamp, suggest that the sub-species may forage around areas of higher quality habitat, little of which exists on the proposed wind farm site. The nearest Southern Bent-wing Bat roosting site is located at Yambuk (near Warrnambool), which is approximately 10-15 kilometres from the proposed wind farm site.

Further investigations will be undertaken to determine if there are any potential caves closer to the Site. In addition, updated bat detector surveys are planned for the Site during the spring Southern Bent-wing Bat migration period to validate the findings of the earlier surveys. If any differences are fond then further surveys in autumn wold be warranted. The scope of these surveys is being discussed with DELWP Barwon South West.

FROGS

Potential direct and indirect impacts to threatened frog species and wetland habitats, as a result of the proposed development include:

- Increase in sedimentation and deterioration in water quality as a result of water runoff during construction;
- Direct mortality of frog species and associated habitats at any proposed waterway and drainage line crossings; and,
- Removal of habitat (e.gl riparian zone vegetation).

Nocturnal and diurnal surveys were conducted within the Site and within 1km of the site, as shown on **Figure 6, Attachment A**. No Growling Grass Frogs were recorded within the Site, however, one call was heard from a wetland to the east of the Site. Therefore, Growling Grass Frog may use the study area on occasions and at different times of the year and in different seasons, dispersing frogs may move into the Site. However, given that habitat that would support this species (ie waterways within the study area) will be avoided; buffers of at least 30 metres will be provided to any project elements, with the exception of a small number of access track crossings. Mitigation measures will be implemented during construction to control sediment and erosion during and after construction. These measures will ensure that project impacts on such habitat are unlikely to be significant.

AQUATIC FAUNA
Potential direct and indirect impacts to aquatic fauna species and riparian habitats as a result of the proposed development include:

- Increase in sedimentation and deterioration in water quality as a result of water runoff during construction;
- Inhibition of species movement by crossings required for site access;
- Changes to surface/groundwater hydrology as a result of construction;
- Direct mortality of aquatic species and associated habitats at any proposed waterway and drainage line crossings; and
- Removal of habitat (eg riparian zone vegetation).

In particular, care must be taken in the proximity of the Moyne River where Yarra Pygmy Perch were recorded and Kangaroo Creek where Dwarf Galaxias were recorded. Dwarf Galaxias and Yarra Pygmy Perch are small bodied species that occur within areas with a high abundance of macrophytes and in areas where there is a high abundance of trailing bank vegetations. Impacts on this habitat may be caused by direct removal and by the discharge or release of poor water quality into the system.

FLORA

EVC's on the Site and along the route to the Site that will be impacted are listed above in Section 11.
The EPBC and FFG listed Basalt Peppercress is present on the Site. There is potential for the EPBC listed Clover Glycine; Swamp Fierweed; Gorae Leek-orchid; Maroon Leek-orchid; and, Dense Leek-orchid. In addition, there is potential habitat within 10km for Swamp Flax-lily Dianella callicarpa, Basalt Leek-orchid *Prasophyllum viretrum*, Western Water Starwort *Callitriche cyclocarpa* and Slender Bittercress *Cardamine tenuifolia*.
Potential impacts on flora include:

- Removal and/or disturbance to areas supporting patches of remnant native vegetation, or isolated trees and shrubs.
- Removal and/or disturbance to areas supporting potential habitat for threatened flora species.
- Decreases in population sizes of local flora and fauna as a consequence of habitat loss. However, there are opportunities to increase the total available habitat via revegetation using locally indigenous species.
- Potential for further spread of noxious and environmental weeds from on-site activities and subsequent degradation of remaining native vegetation.
- Loss of planted native and exotic trees and shrubs, which provide foraging, nesting and breeding habitat for native birds.

Although most areas supporting remnant native vegetation have been avoided through detailed site design including re-alignment of tracks, there is a maximum of 8.974 ha that is planned to be removed. Impacts to threatened flora will be minimised by avoiding any occurrences within the development footprint.

BIRDS (excluding Brolga – see below)
Studies show that potential impacts on birds is of fatalities as a result of collisions with wind turbines or power lines.

No significant species were identified during the bird counts, however, there is potential for the Ste significant Hardhead; Latham's Snipe; Eastern Great Egret (FFG listed); and, White-throated Needletail (FFG listed). Given the high level of avoidance of many species of birds and the predominantly low quality habitat that the proposed Wind Farm is situated in, it is not expected that there would be any significant impact on these species.

The ecology report, "Biodiversity Assessment: Willatook Wind Farm, Willatook, Victoria" by Ecology and Heritage Partners P/L dated July 2018 (**Attachment A**) states that "*Given the low proportion of bird flights within the RSA (fewer than a quarter of bird movements*

observed during the surveys), the abundance of those species of birds, buffers around the limited areas of high quality habitat and the predominantly low quality habitat that comprises the rest of the study area it is unlikely that the construction of the Willatook Wind Farm will have a significant impact on the avifauna of the region." (Page 62) Ongoing monitoring through the BAM is recommended.

BROLGA
Wind farms have the potential to impact on the Brolga in the following ways:

- Habitat loss by removal of wetlands and nearby pasture habitats as a result of the construction of wind farm infrastructure;
- Collision with wind turbines, power lines and monitoring equipment;
- Disturbance of birds leading to displacement and exclusion from areas of suitable habitat or changes in behaviours; and
- Creation of barriers to flying birds, interrupting migratory movements between important habitat areas or disrupting local flight paths.

Although no nests were located during the extensive surveys of potential habitat in the 2009 breeding season, further aerial surveys identified an active nest in the much wetter 2010 breeding season. This nest was located near Cockatoo Swamp and close to two historical breeding records for the species. Another nest has been identified just beyond the boundary of the Site north-west of the main study area.

On ground assessment in 2009-2011 of other historical nest records and potential Brolga nests, identified during the aerial surveys, failed to positively identify other breeding Brolga sites. Despite this, a potential nest has been identified in suitable habitat to the west of the study area and because of the amount of rainfall in 2011, most of the historical nest-sites retain potentially suitable habitat for nesting.

Brett Lane and Associates undertook further Brolga flocking surveys in 2018 (See **Attachment C**). The monitoring included visiting the five potential flocking sites and recording any Brolga present and making notes on the condition of the wetland.

No Brolga were observed within the proposed wind farm boundary during the 2018 flocking season surveys and none were observed in the surrounding 10-kilometre radius of investigation.

Brolga were at their traditional flocking sites away from the proposed Willatook Wind Farm.

Further investigations are planned, including roaming surveys and landholder surveys of all wetlands out to 10 km from the edge of the wind farm in both the 2018 breeding season and 2019 flocking season. Targeted behavioural studies will be initiated of any Brolgas found breeding. Additional investigations are currently being discussed with DELWP Barwon South West and will be implemented over the same period.

Is mitigation of potential effects on indigenous flora and fauna proposed?

☐ NYD ☐ No ☒ Yes If yes, please briefly describe.

Mitigation measures are recommended in the Ecology and Heritage Partners, July 2018 report (**Attachment A**) and will be implemented by the developer. These include:

1. Adopt the impact minimisation measures as outlined in their report (**Attachment A**) (outlined below)
2. Prior to construction, develop a Construction Environmental Management Plan (CEMP) with specific management actions to mitigate against potential impacts to areas of ecological value;
3. Develop a Weed Management Plan, which should be incorporated into the CEMP;

4. Where required, microsite wind turbines to provide a 3.2 kilometre buffer around known and historical brolga nest-sites, or undertake further work in accordance with the Brolga guidelines to DEWLPs satisfaction to determine appropriate buffer distances for historical and current Brolga breeding sites – see further information below.
5. Before commencement of construction, the preparation of a Bat and Avifauna Management Plan to the satisfaction of the responsible authority.
6. Once the final layout is prepared, conduct targeted surveys for Basalt Peppercress, Clover Glycine, Gorae Leek-orchid, Maroon Leek-orchid and Dense Leek-orchid within potential habitat if these areas cannot be avoided.

The Brolga Guidelines (DSE 2012) recommend that a 3.2 km and 5 km radius turbine-free buffer from breeding sites and flock roost sites respectively, will adequately meet the objectives set for these habitats. The Brolga guidelines also consider that smaller buffer distances could be acceptable if it can be demonstrated that they meet the objectives set for breeding and nesting habitats provided they meet with the satisfaction of DELWP.

Willatook Wind Farm is continuing discussions with DELWP Barwon South West to ascertain the appropriate turbine free buffer to apply to the Brolga breeding site in Cockatoo Swamp. All other known breeding sites are beyond the 3.2 kilometre default breeding site buffer requirement in the Brolga Guidelines. It is possible that during the future, planned survey work, additional sites may be found and mitigation measures for these will be discussed and finalised with DELWP.

Recommended measures to mitigate impacts upon terrestrial and aquatic values present within the study area may include:

- Minimise impacts to native vegetation and habitats through construction and micro-siting techniques, including fencing retained areas of native vegetation. If indeed necessary, trees should be lopped or trimmed rather than removed. Similarly, soil disturbance and sedimentation within wetlands should be avoided or kept to a minimum, to avoid, or minimise impacts to fauna habitats;
- All contractors should be aware of ecologically sensitive areas to minimise the likelihood of inadvertent disturbance to areas marked for retention. Habitat Zones (areas of sensitivity) should be included as a mapping overlay on any construction plans;
- Tree Retention Zones (TRZs) should be implemented to prevent indirect losses of native vegetation during construction activities (DSE 2011). A TRZ applies to a tree and is a specific area above and below the ground, with a radius 12 x the Diameter at Breast Height (DBH). At a minimum standard a TRZ should consider the following:
    - A TRZ of trees should be a radius no less than two metres or greater than 15 metres;
    - Construction, related activities and encroachment (i.e. earthworks such as trenching that disturb the root zone) should be excluded from the TRZ;
    - Where encroachment exceeds 10% of the total area of the TRZ, the tree should be considered as lost and offset accordingly;
    - Directional drilling may be used for works within the TRZ without being considered encroachment. The directional bore should be at least 600 millimetres deep;
    - The above guidelines may be varied if a qualified arborist confirms the works will not significantly damage the tree (including stags / dead trees). In this case the tree would be retained and no offset would be required; and,
    - Where the minimum standard for a TRZ has not been met an offset may be required.
    - Removal of any habitat trees or shrubs (particularly hollow-bearing trees) should be undertaken under the supervision of an appropriately qualified zoologist to salvage and translocate any displaced fauna.

A Fauna Management Plan may be required to guide the salvage and translocation process;

- Where possible, construction stockpiles, machinery, roads, and other infrastructure should be placed away from areas supporting native vegetation, Large Old Trees (LOTs) and/or wetlands;
- Wind turbines should be constructed no less than 30 metres (as per standard construction practice) from Moyne River, Kangaroo Creek and Shaw River and infrastructure that crosses these waterways should be designed to minimise impact across the waterways and tributaries that support native aquatic vegetation;
- Construction should have an environmental audit process in place for the construction works to be audited on a regular basis;

All chemicals on site should be correctly bunded and stored following EPA Bunding Guidelines (EPA 1992).

- Ensure that best practice sedimentation and pollution control measures are undertaken at all times, in accordance with Environment Protection Authority guidelines (EPA 1991; EPA 1996; Victorian Stormwater Committee 1999) to prevent offsite impacts to waterways and wetlands; and,
- As indigenous flora provides valuable habitat for indigenous fauna, it is recommended that any landscape plantings that are undertaken as part of the proposed works are conducted using indigenous species sourced from a local provenance, rather than exotic deciduous trees and shrubs.

In addition to these measures, the following documents should be prepared and implemented prior to any construction activities:

- Construction Environmental Management Plan (CEMP). The CEMP should include specific species/vegetation conservation strategies, daily monitoring, sedimentation management, site specific rehabilitation plans, weed and pathogen management measures, etc.;
- Weed Management Plan. This plan should follow the guidelines set out in the CaLP Act, and clearly outline any obligations of the project team in relation to minimising the spread of weeds as a result of this project. This may include a pre-clearance weed survey undertaken prior to any construction activities to record and map the locations of all noxious and environmental weeds;
- Significant Species Conservation Management Plan (CMP). A CMP will be required if significant species or their habitats are proposed to be impacted, and may include a salvage and translocation plan; and,
- Fauna Management Plan. This may be required if habitat for common fauna species is likely to be impacted and salvage and translocation must be undertaken to minimise the risk of injury or death to those species.

Other information/comments? (eg. accurac**y** of information)

As stated above, Targeted surveys of the project footprint will be conducted in October and December 2018.

Other surveys to be completed are discussed in Section 20 below.

13. Water environments

Will the project require significant volumes of fresh water (eg. > 1 Gl/yr)?

☐ NYD ☒ No ☐ Yes If yes, indicate approximate volume and likely source.

Will the project discharge waste water or runoff to water environments?

☐ NYD ☒ No ☐ Yes If yes, specify types of discharges and which environments.

Construction of the internal access track network and hardstands has the potential to increase the run off rate from the affected areas relative to those areas in their current state. However, the track network will be formed by crushed rock so will not be impervious and in the context of the 6,750 hectare site area the additional run off will be negligible.

Notwithstanding, in order to prevent any localised issues on the site a detailed Drainage Management Plan would be implemented prior to construction starting on site. It is expected that such a plan would be a requirement of planning permit approval and drafted after that date in consultation with the Catchment Management Authority. The plan would utilise standard mitigation measures like rock chutes, straw bale barriers, sediment basins and establishing/re-establishing ground cover.

A Construction Environmental Management Plan (CEMP) would be prepared in accordance with the EPA publications 480 “Environmental Guidelines for Major Construction Sites’ and 275 “Construction Techniques for Sediment Pollution Control”.

Are any waterways, wetlands, estuaries or marine environments likely to be affected?

☐ NYD ☒ No ☐ Yes If yes, specify which water environments, answer the following questions and attach any relevant details.

The main waterways across the Site are Shaw River to the west, Moyne River to the East and Kangaroo Creek adjacent to the Site and to the north of Shaw River.

Buffers of at least 30m are proposed between waterways and infrastructure, apart from where site tracks cross the waterways. The CEMP described above would be implemented to ensure that construction is implemented in such a way as to ensure that the waterways and wetlands are not affected.

Are any of these water environments likely to support threatened or migratory species?

☐ NYD ☐ No ☒ Yes If yes, specify which water environments.

Species that could be present in the water environments are described above in Section 12 and also in the Biodiversity report in **Attachment A**. Potential impacts and associated mitigation to avoid and significant impacts are also described.

Are any potentially affected wetlands listed under the Ramsar Convention or in 'A Directory of Important Wetlands in Australia'?

☐ NYD ☒ No ☐ Yes If yes, please specify.

Could the project affect streamflows?

☐ NYD ☒ No ☐ Yes If yes, briefly describe implications for streamflows.

Could regional groundwater resources be affected by the project?

☐ NYD ☒ No ☐ Yes If yes, describe in what way.

Could environmental values (beneficial uses) of water environments be affected?

☐ NYD ☒ No ☐ Yes If yes, identify waterways/water bodies and beneficial uses (as recognised by State Environment Protection Policies)

The CEMP would be in place, which will aim to manage runoff and ensure that there will not be an impact on the water environments.

Could aquatic, estuarine or marine ecosystems be affected by the project?

☐ NYD ☐ No ☒ Yes If yes, describe in what way.

The Biodiversity Report in **Attachment A** refers to Aquatic Herbland being recorded in one waterbody within the Study area, with this EVC being dominated by Tall Spike-sedge *Eleocharis sphacelate* with scattered occurrences of Pacific Azolla *Azolla filiculoides* and Duckweed *Lemna disperma*. However, none of this EVC is proposed to be removed.

There is potential for waterways to be impacted by sediment run-off from construction activities on the Site. Species recorded in waterways on or adjacent to the Site are discussed above in Section 12.

Is there a potential for extensive or major effects on the health or biodiversity of aquatic, estuarine or marine ecosystems over the long-term?

☒ No ☐ Yes If yes, please describe. Comment on likelihood of effects and associated uncertainties, if practicable.

Is mitigation of potential effects on water environments proposed?

☐ NYD ☐ No ☒ Yes If yes, please briefly describe.

No part of any wind turbine foundation would be constructed within at least 30m of waterways. Site tracks and underground cable trenches would also be buffered from waterways, apart from at crossing points. Where site tracks cross waterways, culverts would be utilised to ensure that the flow is not interrupted.

Underground cables would be located adjacent to site tracks, in order to minimise the construction footprint.

A Drainage Management Plan would be implemented, which may require underground drainage to minimise impacts from the site tracks. This would be determined during the detailed pre-construction stage of the project.

The CEMP referred to above would be designed and implemented in accordance with the most up to date and relevant EPA guidelines.

Other information/comments? (eg. accuracy of information)

14. Landscape and soils

Landscape

Has a preliminary landscape assessment been prepared?

☐ No ☒ Yes If yes, please attach.

Is the project to be located either within or near an area that is:

- **Subject to a Landscape Significance Overlay or Environmental Significance Overlay?**

  ☐ NYD ☐ No ☒ Yes If yes, provide plan showing footprint relative to overlay.

The land is affected by two ESOs, shown on **Figure 10**, which are specifically related to the Tarrone Power Station and the now abandoned Shaw River Power Station. The purpose of the ESO's is to ensure that the use and development of the power stations is not constrained by the establishment of potentially conflicting accommodation uses and developments nearby. The proposed Wind Farm would not conflict with these ESOs.

- **Identified as of regional or State significance in a reputable study of landscape values?**
  ☐ NYD ☒ No ☐ Yes If yes, please specify.

- **Within or adjoining land reserved under the *National Parks Act 1975*?**
  ☐ NYD ☒ No ☐ Yes If yes, please specify.

- **Within or adjoining other public land used for conservation or recreational purposes?**
  ☐ NYD ☒ No ☐ Yes If yes, please specify.

Is any clearing vegetation or alteration of landforms likely to affect landscape values?
☐ NYD ☒ No ☐ Yes If yes, please briefly describe.

Is there a potential for effects on landscape values of regional or State importance?
☐ NYD ☒ No ☐ Yes There are no 'iconic' landscape elements (including constructed or natural features) that occur within the local or regional landscape that are recognised at a national level, there are largely remnant volcanic features which have a broader public value attached to them. Key views from Mount Eccles (approximately 15km to the proposed Wind Farm), Mount Napier (approximately 25km to the proposed Wind Farm), Mount Rouse (approximately 26km to the proposed Wind Farm), and Tower Hill (approximately 20km to the proposed Wind Farm) have been assessed in the Landscape Assessment (sections 8 and 10 of **Attachment E**). The assessment concludes that the proposed Wind Farm would not significantly detract from the existing views either on its own or cumulatively with other wind farm. The majority of land within and surrounding the wind farm development is privately owned and, at a local and regional scale, opportunities for the broader public to access and explore the landscape and obtain distant and panoramic views are largely limited to existing rights of way such as road corridors. The proposed wind farm development has been assessed by a qualified Landscape Architect and is not considered to have the potential to have a significant impact on existing landscape values.

The Moyne Planning Scheme identifies Tower Hill as State significance. The closest proposed turbine of the Willatook Wind Farm will be approximately 20km from the Tower Hill lookouts, and at this distance would not dominate the views available from this key viewing location. There would be no overlap between the proposed Willatook Wind Farm project and other wind farms located at a similar offset distance and a significant degree of visual separation would allow the proposed Willatook Wind Farm to be identified as a singular development, albeit at a distant view.

Is mitigation of potential landscape effects proposed?
☐ NYD ☐ No ☒ Yes If yes, please briefly describe.

Although some mitigation measures may be considered appropriate to minimise the visual impact for a number of the elements associated with the wind farm, it is acknowledged that the degree to which the wind turbines may be visually mitigated is limited by their scale and position within the landscape relative to surrounding view locations. Despite this, the Proponent has engaged in ongoing consultation with local residents and made a number of adjustments to the location of individual turbines to minimise visual impacts where possible.

Mitigation measures during the operational period will consider:

- ongoing maintenance and repair of constructed elements;

- replacement of damaged or missing constructed elements; and
- long term maintenance (and replacement as necessary) of tree planting within the Site to maintain visual filtering and screening of external views where appropriate.

Other information/comments? (eg. accuracy of information)
A Landscape Visual Impact Assessment (LVIA) has been prepared and is included in **Attachment E**. The Willatook Wind Farm ZVI for the proposed 220m Tip Height is shown in **Figure 17** of **Attachment E**.

The overall visibility of the proposed wind farm was determined within a 20km radius of the wind farm. The location of the local road network and nearby dwellings is shown in **Figure 9**. The LVIA has determined that the landscape within and immediately surrounding the Site, as well as portions of the landscape in the broader viewshed are generally robust and defined by visually strong forms and patterns. In general, the landscape is considered to exhibit attributes which tend to result in a low to moderate sensitivity to change. Whilst the wider regional landscape displays characteristics which are highly valued and have a high degree of visual amenity, the localised wind farm landscape is represented by a largely modified landscape (predominantly agricultural in nature including dairy production and cropping) which is commonly found within the regional landscape.
It is unlikely that works involved with the construction of the wind farm, including removal of existing vegetation, would have any significant impact on existing landscape values within, or beyond the Site. The removal of vegetation would be relatively minor and largely restricted to the construction of access tracks across existing farmland. There would be no significant change to the extent or context of existing views from around the Site.

This LVIA has determined that the visual impact of the Willatook Wind Farm is likely to be moderate to low from the majority of publicly accessible locations surrounding the wind farm, and that the proposed Willatook Wind Farm:

- would have a low visual impact on surrounding townships and localities
- would result in moderate to low (albeit short term and transitory impacts) effects on views from highways
- would result in generally moderate impacts on views from the majority of local roads where fully or partially screened by roadside and/or field boundary tree planting and
- would not have a significant visual effect from public reserves and recreational areas (Tower Hill Reserve approximately 20km to the nearest proposed wind turbine), including any available views from state significant landscape areas and features.

The Willatook Wind Farm would have potential to result in a range of visual impacts on individual residential dwellings surrounding the Site. The impacts would be dependent on a number of physical and environmental characteristics (e.g. landform and vegetation) surrounding residential dwellings which would determine overall visibility and prominence of wind turbines within specific views. See **Figure 23** of **Attachment E** Photomontage Viewpoint Locations to the photomontages (**Figures 24** to **61** of **Attachment E**).

Dwellings within approximately 3km of and not associated with the proposed wind farm have been assessed in the LVIA report in **Attachment E**. Assessments have been based on the impact of the proposed Willatook Wind Farm alone and cumulatively with the operational Macarthur Wind Farm. Seven dwellings have been assessed as having a Moderate High visual effect and six have been assessed as having a Moderate visual effect. The rest have been assessed as having a Moderate Low or Low visual effect due to the availability of screening and filtering of views. The full list of assessed dwellings and associated visual effects can be found in **Table 19** of **Attachment E**.

Perceptions of Change

Whilst the degree to which a development the scale of the proposed Willatook Wind Farm is visible from certain vantage points can be quantified, the degree to which the viewers will be impacted is influenced by an individual's perceptions of what change will bring.

As indicated by the research of other case studies of community perception, acceptance to the wind farm will vary widely depending on the viewer's preferences and biases. Therefore, the residents and users of the landscape surrounding the Site will reflect a range of sensitivities and the degree to which the changes to the landscape are perceived negatively will in the end depend on the perceptions of individual users / residents.

Based on the results of the reviewed perception studies, the resident population within close proximity to the Project, up to 5km distance, is likely to have a higher proportion of negative than positive perceptions. Positive perceptual responses from residences could be expected to progressively increase with distance, thereby reducing the level of viewer sensitivity.

Note: A preliminary landscape assessment is a specific requirement for a referral of a wind energy facility. This should provide a description of:

- The landscape character of the site and surrounding areas including landform, vegetation types and coverage, water features, any other notable features and current land use;
- The location of nearby dwellings, townships, recreation areas, major roads, above-ground utilities, tourist routes and walking tracks;
- Views to the site and to the proposed location of wind turbines from key vantage points (including views showing existing nearby dwellings and views from major roads, walking tracks and tourist routes) sufficient to give a sense of the overall site in its setting.

Soils

Is there a potential for effects on land stability, acid sulphate soils or highly erodible soils?

☐ NYD ☒ No ☐ Yes If yes, please briefly describe.

Are there geotechnical hazards that may either affect the project or be affected by it?

☐ NYD ☒ No ☐ Yes If yes, please briefly describe.

Other information/comments? (eg. accuracy of information)

Geoheritage

A geoheritage assessment (**Attachment D**) has been undertaken for the project due to the proximity of the subject site to the Mount Rouse Volcanic Complex and is outlined in Section 11 of this referral.

The report acknowledges that some construction of the wind farm infrastructure may impact the site's geomorphology. It then examines the impact of excavation for turbine foundations, levelling for adjacent hardstand, trenching for in-ground cables and cut and fill and surfacing and grading for vehicle tracks and is considered for (A) the overall significance of the Mount Rouse lava flows and B) individual landforms or associated groups of landforms.

In order to minimize impacts, the following measures will be adhered to:

i) The number of towers and other structures built on narrow lava ridges should be kept to a minimum and where feasible be relocated to broader flat surfaces.
ii) minimise reshaping and fill of all young lava surfaces.
iii) Excess excavated rock should be removed from the site or used as fill for the immediate areas as needed.

iv) Underground cabling across high and narrow lava ridges should be avoided where possible. Where ridges are crossed, reshaping should be kept to a minimum and the geometry of the ridge should be maintained.
v) Prior to any construction work, a high-resolution topographic image (DTM) of the young lava surfaces should be prepared either from photogrammetry and/or LiDAR. This will give an invaluable benchmark to assist in future geological and hydrological studies of these surfaces.
vi) Avoid/minimise alteration to stream channels.
vii) Implement a construction environment management plan that conforms to the above requirements.

15. Social environments

Is the project likely to generate significant volumes of road traffic, during construction or operation?

☐ NYD ☐ No ☒ Yes If yes, provide estimate of traffic volume(s) if practicable.

The project would be expected to generate noticeably increased volumes of traffic during the expected 2-year construction phase although negligible increased traffic volumes during the subsequent operational phase. The extent of traffic generated during the construction phase would be influenced by whether there is an on-site quarry or alternatively if quarry material will be sourced off site from nearby quarries. Investigations into the feasibility of development of an on-site quarry are well progressed and indicate that suitable volumes and quality of material is likely to be available within the project site and it is therefore expected that consent for the temporary operation of an on-site quarry will be sought.

Strategies for the management and minimisation of increased traffic volumes during the construction phase would be developed as part of a Traffic Management Plan developed in consultation with the Moyne Shire and VicRoads prior to commencement of construction to the satisfaction of the Responsible Authority. As an important part of the Traffic Management Plan, road dilapidation surveys will be undertaken prior to construction commencing, and road maintenance will be undertaken to repair roads during and after construction.

Is there a potential for significant effects on the amenity of residents, due to emissions of dust or odours or changes in visual, noise or traffic conditions?

☐ NYD ☐ No ☒ Yes If yes, briefly describe the nature of the changes in amenity conditions and the possible areas affected.

Potential impacts on residents during the construction phase would be managed and minimised through the preparation of a Construction Environmental Management Plan (CEMP) to the satisfaction of the Responsible Authority prior to the commencement of construction.

During the operational phase, there is the potential for some impacts on the amenity of some local residents and these impacts are the subject of specialist impact assessments and in particular an assessment of potential noise and visual impacts are relevant.

Potential visual impacts have been assessed as part of a Landscape and Visual Impact Assessment (LVIA) provided in **Attachment E** and is discussed in section 11 of this document.

Potential noise impacts have been assessed and the assessment report is provided in **Attachment F** and discussed in section 11 of this document.

Compliance with New Zealand Standard NZS6808:2010, Acoustics – Wind Farm Noise is designed to manage potential impacts to local residents and compliance is compulsory. Compliance with this standard will minimise and manage potential noise impacts on local residents.

Potential impacts of shadow flicker on local residents will be managed through compliance with the applicable limit of a maximum of 30 hours per year. An assessment report will accompany a planning permit application.

Is there a potential for exposure of a human community to health or safety hazards, due to emissions to air or water or noise or chemical hazards or associated transport?

☐ NYD ☒ No ☐ Yes If yes, briefly describe the hazards and possible implications.

Is there a potential for displacement of residences or severance of residential access to community resources due to the proposed development?

☐ NYD ☒ No ☐ Yes If yes, briefly describe potential effects.

Are non-residential land use activities likely to be displaced as a result of the project?

☐ NYD ☐ No ☒ Yes If yes, briefly describe the likely effects.

The proposed wind farm is to be located on land used for farming/agricultural activities. Those existing farming/agricultural activities that occur on the relatively small amount of land taken up by the wind farm footprint will be displaced. However, post construction of the wind farm existing activities will recommence on land outside of the wind farm footprint, which constitutes the vast majority of the site area. Even during construction most existing farming/agricultural activities may continue subject to the safety of stock, landowners and those personnel involved in project construction, and to prevent interference with construction of the wind farm.

Do any expected changes in non-residential land use activities have a potential to cause adverse effects on local residents/communities, social groups or industries?

☐ NYD ☒ No ☐ Yes If yes, briefly describe the potential effects.

Is mitigation of potential social effects proposed?

☐ NYD ☐ No ☒ Yes If yes, please briefly describe.

Mitigation of social impacts due to increased traffic would be addressed as part of a Traffic Management Plan developed in consultation with the Moyne Shire and VicRoads prior to commencement of construction to the satisfaction of the Responsible Authority.

Compliance with noise standards is compulsory and therefore no mitigation is required.

The proponent remains committed to ongoing stakeholder engagement and in particular ongoing engagement with local residents and is actively seeking to address any issues raised. Refer to section 20 of this document for details of previous and proposed stakeholder engagement activities.

A community engagement plan specific to the construction and operational phases of the project would be developed in consultation with appropriate stakeholders prior to the commencement of construction. This would include the transparency and complaint handling measures recommended by the Office of the National Wind Farm Commissioner in the Bulletin of 20 June 2016.

Other information/comments? (eg. accuracy of information)

The proponent is committed to establishing a Community Benefits Fund for the duration of the wind farm's operational life. Details of the fund would be established prior to the project commencing operation.

Cultural heritage

Have relevant Indigenous organisations been consulted on the occurrence of Aboriginal cultural heritage within the project area?

☐ No If no, list any organisations that it is proposed to consult.

☒ Yes If yes, list the organisations so far consulted.

The following organisations have been consulted to date and were applicant Registered Aboriginal Parties (RAPs) at the time the Notice of Intent to prepare a Cultural Heritage Management Plan (CHMP) was acknowledged by Aboriginal Victoria (AV). Both applicant RAPS have been consulted in relation to the project and been involved all survey work undertaken by the consultants in preparation of a CHMP.

- Framlingham Aboriginal Trust
- Gunditj Mirring Traditional Owners Aboriginal Corporation

As there was no Registered Aboriginal Party (RAP) for the area where the project is located at the time preparation of the Cultural Heritage Management Plan (CHMP) was commenced, the CHMP will be assessed by Aboriginal Victoria (AV). AV is also expected to consult with and consider the views of applicant RAPS in their evaluation of the CHMP.

What investigations of cultural heritage in the project area have been done?
(attach details of method and results of any surveys for the project & describe their accuracy)

Ecology Heritage and Partners have undertaken significant work assessing Cultural Heritage over a lengthy period. A letter summarising the work undertaken to date has been prepared by Ecology and Heritage Partners and is included in **Attachment H Letter by Ecology & Heritage Partners regarding Cultural Heritage matters dated 3 August 2018.** A CHMP is nearing completion.

Is any Aboriginal cultural heritage known from the project area?

☒ NYD ☒ No ☒ Yes If yes, briefly describe:

- Any sites listed on the AAV Site Register
- Sites or areas of sensitivity recorded in recent surveys from the project site or nearby
- Sites or areas of sensitivity identified by representatives of Indigenous organisations

- Glen Stirling (7321-0031 [VAHR])
- Willatook AS 1 (7321-0473 [VAHR]);
- Willatook AS 2 (7321-0474 [VAHR]);
- Willatook IA 1 (7321-0475 [VAHR]);
- Willatook IA 2 (7321-0476 [VAHR]);
- Willatook IA 3 (7321-0477 [VAHR]); and
- Willatook LDAD (7321-#### [VAHR]) [registration pending].

Are there any cultural heritage places listed on the Heritage Register or the Archaeological Inventory under the *Heritage Act 1995* within the project area?

☐ NYD ☐ No ☒ Yes If yes, please list.

- Glen Stirling (7321-0031 [VAHR])
- Willatook AS 1 (7321-0473 [VAHR]);
- Willatook AS 2 (7321-0474 [VAHR]);
- Willatook IA 1 (7321-0475 [VAHR]);
- Willatook IA 2 (7321-0476 [VAHR]);
- Willatook IA 3 (7321-0477 [VAHR]); and
- Willatook LDAD (7321-#### [VAHR]) [registration pending]

Is mitigation of potential cultural heritage effects proposed?

☒ NYD ☐ No ☐ Yes If yes, please briefly describe.

All identified cultural heritage places or sites have been buffered as recommended by the cultural heritage advisor to avoid any impacts to Cultural Heritage. Areas identified by the cultural heritage advisor as having sensitivity have also been buffered and designated to exclude proposed infrastructure where possible.

Other information/comments? (eg. accuracy of information)

A Full CHMP is being finalised and will be submitted to Aboriginal Victoria for assessment.

16. Energy, wastes & greenhouse gas emissions

What are the main sources of energy that the project facility would consume/generate?

- ☒ Electricity network. If possible, estimate power requirement/output

The rated capacity if the proposed Willatook Wind Farm would be approximately 400MW……

- ☒ Natural gas network. If possible, estimate gas requirement/output

……..

- ☒ Generated on-site. If possible, estimate power capacity/output

……

- ☒ Other. Please describe.

Please add any relevant additional information.

What are the main forms of waste that would be generated by the project facility?

- ☒ Wastewater. Describe briefly.
- ☒ Solid chemical wastes. Describe briefly.
- ☒ Excavated material. Describe briefly.
- ☒ Other. Describe briefly.

The proposed Willatook Wind Farm will not generate any significant volume of waste. During construction there may be spoil from excavated wind turbine foundations which would be temporarily stored on site with implementation of dust minimisation measures. The majority of spoil is likely to be used on the site for fill and in the construction of access tracks within the project. If any material needs to be removed from the site it would be transported to a licensed landfill facility. The potential for creation of sediment and impacts to significant species is addressed in section 13 of this document.

A Construction Environmental Management Plan would be prepared to the satisfaction of the Responsible Authority prior to the commencement of construction to address the specifics of how any wastes will be managed.

What level of greenhouse gas emissions is expected to result directly from operation of the project facility?

- ☒ Less than 50,000 tonnes of CO_2 equivalent per annum
- ☒ Between 50,000 and 100,000 tonnes of CO_2 equivalent per annum
- ☒ Between 100,000 and 200,000 tonnes of CO_2 equivalent per annum
- ☒ More than 200,000 tonnes of CO_2 equivalent per annum

Please add any relevant additional information, including any identified mitigation options.

The Willatook Wind Farm will not generate any greenhouse gas emissions and in fact will offset such emissions from fossil fuel generation sources. Non-material levels of CO_2 emissions will occur during the construction and operation of the project through the use of vehicles, plant and equipment.

Over a 25-year operating life, the proposed Willatook Wind Farm could generate, on average, more than 1,400 GWh per year. This generation would result in a net avoidance of CO_2 by offsetting generation from fossil fuel sources.

17. Other environmental issues

Are there any other environmental issues arising from the proposed project?

☒ No ☒ Yes If yes, briefly describe.

The potential for the proposed Willatook Wind Farm to impact aviation is being assessed and an Aeronautical Impact and Obstacle Marking and Lighting Assessment will be included as part of a planning permit application. Based on the assessment completed to date, it is

expected that the overall risk to aviation operations in the vicinity of the proposed Willatook Wind Farm is low. The assessment report will make recommendations in relation to maintaining aviation safety, principally requiring the notification of aviation stakeholders and identifying the wind farm on aeronautical maps. These recommendations will be followed at the appropriate time, and subject to planning permit approval.

Potential electro-magnetic interference from the proposed wind turbines is also being assessed and an Electromagnetic and Communication Assessment will be included as part of a planning permit application. Based on the assessment complete to date, the proposed wind turbine layout would have no adverse impacts on point to point or omnidirectional radio systems in the area are expected.

While TV and radio broadcasting transmitting sites are sufficiently distant from proposed wind turbine locations to not cause any general service area coverage degradation, it is possible that some individual dwellings proximate to proposed wind turbines and in the forward scatter areas of TV transmissions may experience some reception impairment. Preconstruction assessment of television reception would occur to provide for implementation of mitigation measures that would return reception to preconstruction conditions.

18. Environmental management

What measures are currently proposed to avoid, minimise or manage the main potential adverse environmental effects? (if not already described above)

☒ Siting: Please describe briefly

The site of the project was selected in part due to its proximity to the adjoining Tarrone Terminal Station providing a point of connection to the electricity network. This minimises the requirement for lengthy transmission lines to connect the project to the electricity network.

☒ Design: Please describe briefly

Potential impacts of the project have been assessed by specialist experts and their findings fed into the project design process to minimise impacts. Examples of how the project design has been influenced by the results of these assessments is provided below:

- Waterways are buffered to minimise impacts on aquatic species and in response to their identification as areas of potential cultural heritage sensitivity;
- All communications masts and communications links between mast are buffered in consultation with the owners and operators of these assets.
- The mapping of native vegetation and subsequent design amendments have provided for the reduction in proposed clearing of native vegetation from over 20 hectares to 8.9 hectares.
- Micrositing by up to 100m would allow for minimising any potential impacts on threatened species.

☒ Environmental management: Please describe briefly.

A CEMP will be prepared for the project which will detail measures to manage environmental impacts during the construction of the project. There will be ongoing environmental monitoring and management once the wind farm is completed in accordance with any planning permit conditions.

Post construction noise monitoring will be undertaken as required.

☒ Other: Please describe briefly

Add any relevant additional information.

19. Other activities

Are there any other activities in the vicinity of the proposed project that have a potential for cumulative effects?

☒ NYD ☒ No ☒ Yes If yes, briefly describe.

There are three existing and a number of other proposed projects within 20km of the project, as summarised in the table below. These may be relevant for assessment of potential cumulative impacts, depending on the particular assessment.

Noise

The noise assessment assesses cumulative noise from both the wind turbines and substations associated with the existing operational Macarthur Wind Farm and has found the Willatook Wind Farm complies with the regulated noise limits in New Zealand Standard NZS6808:2010 using both CONCAWE and ISO 9613 methods at all dwellings of landowners without commercial agreements in the vicinity of the Willatook Wind Farm. Other wind farm projects listed in the table above are too distant from the proposed Willatook Wind Farm to create cumulative noise emissions above regulated noise limits. Further detail is provided in

the noise assessment in **Attachment F.** The noise assessment will be peer reviewed prior to lodgement of a planning permit application.

Flora and fauna

The potential cumulative impacts on flora and fauna of the operating, approved and proposed wind farms in south-western Victoria is considered in the flora and fauna assessment report provided in **Attachment A** (Page 74-75). At the time of the assessment the proposed Willatook Wind Farm was one of eight wind farms proposed or operating in the broader region of South Western Victoria.

Wind Farm	Status	No. turbines	Distance/direction from closest Willatook WF turbine (km)	Area within wind farm boundary (Hectares)
Willatook Wind Farm	Proposed	83	N/A	6,839
Yambuk Wind Farm	Operating	20	16.8km SW	786
Codrington Wind Farm	Operating	14	16.9km SW	494
Macarthur wind Farm	Operating	140	2.8km N	6,034
Hawkesdale Wind Farm	Approved	26	6.2km E	2,779
Ryan Corner Wind Farm	Approved	56	6.6km S	3,487
Woolsthorpe Wind Farm	Approved	20	9.3km E	777
TOTAL		**359**		**21,206**

If some or all of the wind farms are developed to the operational phase, cumulative impacts could occur by increasing the number of wind turbines in the region thereby potentially increasing the likelihood of collisions between birds and wind turbines or displacing species from habitat that is no longer suitable because of the noise and visual interference of the wind farms. While potential impacts on flora and fauna specific to the proposed Willatook Wind Farm have been assessed (and are discussed elsewhere), a thorough assessment of potential cumulative impacts associated with other projects in the region would require a coordinated and strategic approach incorporating long term monitoring.

Landscape Visual Impact

The landscape and visual impact assessment (LVIA) has assessed potential cumulative impacts associated with other operational or approved wind farms within the locality of the proposed Willatook Wind Farm and found that there would be some intervisibility between the proposed Willatook Wind Farm and other wind turbines associated with other existing or proposed wind farms within the 20 km viewshed of the proposed Willatook Wind Farm. The assessment found that whilst there are opportunities for 'direct' and 'indirect' views from residential dwellings, and 'sequential' views from some surrounding road corridors between the proposed Willatook Wind Farm and other wind farms, there is unlikely to be a significant increase in visual impact arising from the development of the proposed Willatook Wind Farm. This is largely due to the screening influence of existing windbreak planting surrounding a number of the local residential dwellings as well as existing tree planting alongside surrounding roads. The assessment also found that there is unlikely to be a significant cumulative impact from key viewing locations due to the distance between the viewing locations and the proposed Willatook Wind Farm wind turbines.

Although some mitigation measures are considered appropriate to minimise the visual effects for a number of the elements associated with the proposed Willatook Wind Farm, it is acknowledged that the degree to which the wind turbines may be visually mitigated is limited by their scale and position within the landscape relative to surrounding view locations.

20. Investigation program

Study program

Have any environmental studies not referred to above been conducted for the project?

☒ No ☐ Yes If yes, please list here and attach if relevant.

Has a program for future environmental studies been developed?

☐ No ☒ Yes If yes, briefly describe.

Further seasonal surveys as detailed below have commenced and are ongoing with the timing, scope and survey effort developed as part of ongoing consultation with DELWP (Barwon South-west). These further surveys and studies are scheduled to build on pre-existing surveys and data to provide up to date multi season data.

- Threatened flora and native vegetation survey including targeted surveys of the Grassy Eucalypt Woodland of the Victorian Volcanic Plain and surveys for the six EPBC listed species being: Clover Glycine, Swamp Fireweed, Basalt Peppercress, Gorae Leek-orchid, Maroon Leek-orchid, Dense Leek-orchid.

- Further breeding and flocking brolga surveys in accordance with the Interim Guidelines for the Assessment, Avoidance, Mitigation and Offsetting of Potential Wind farm Impacts on the Victorian Brolga Population (2012).

- Further Striped Legless Lizard surveys are ongoing (July to December 2018).

- Further bat surveys (both general and targeted Southern Bent-wing Bat) which, depending on results, may also extend to Autumn 2019.

- Bird Utilisation Surveys.

A Cultural Heritage Management Plan is also nearing completion.

A shadow flicker report to show that impacts of shadow flicker on local residents will be managed through compliance with the applicable limit of a maximum of 30 hours per year.

The Noise Assessment (**Attachment F**) will be peer reviewed.

Consultation program

Has a consultation program conducted to date for the project?

☐ No ☒ Yes If yes, outline the consultation activities and the stakeholder groups or organisations consulted.

A stakeholder consultation plan for the project was established and commenced implementation in 2010. An important component of the stakeholder management plan is the stakeholder consultation database which is a live document that continues to evolve to the current time.

The consultation activities undertaken to date are summarised below:

- **Website**: Establish a project website to provide easy access to information about a project including the ability to provide anonymous feedback ('Have Your Say') and to contact WP for further engagement. The website for the project can be found at www.willatookwindfarm.com.au. Four responses were received in 2010, one in 2013

and four in 2017. Of the four responses in 2017, two are not supportive and two undecided.

- **Stakeholder database**: Establish a stakeholder consultation database which is a live document that evolves over time. The database is intended to include all relevant stakeholders. This database defines recipients of project information. Staff at the Moyne Shire Council have previously reviewed the database for omissions.
- **Project launch**: Publicly launch the project through a newsletter distributed to the owners of land and residents within 10km of the project. This is facilitated through the Moyne Shire Council and provides that absentee owners of land are sent the newsletters as well as local residents including those that may be renting properties. A copy of the newsletter distributed in August 2017 relaunching the progression of the project is provided at http://willatookwindfarm.com/cms/actpdf_1353.pdf.
- **Door knock**: Staff of the proponent knock on the doors of all dwellings located within approximately 3km of a proposed wind turbine location. If residents are not home, a 'sorry we missed you' pack is left behind which includes a newsletter and contact details. Door knocks were conducted in September 2010 and August 2017. The door knocks were followed up by further face to face meetings and phone calls as required over the weeks following the initial door knock process.
- **Meetings, phone calls, letters and email communication**: Respond to all feedback in an appropriate form, arranging face to face meetings as deemed appropriate or requested. The proponent's staff are available at short notice to mobilise for meetings while on site and at short notice from their Melbourne office. An estimate of the proponent's engagement activities since the beginning of 2017 is provided in the table below. All communications with stakeholders are recorded with emails filed and summary records of phone calls and meetings created.

Face to face meetings with neighbouring landowners (not including door knock)	30
Emails to neighbouring landowners	>100
Phone calls to neighbouring landowners (doesn't include voicemails)	74

- **Photomontages**: If local residents raise visual impacts as a concern, the proponent may suggest, or the resident may request, the preparation of one or more photomontages to inform further discussion. Photomontages were requested and prepared in relation to six neighbouring dwellings in 2010 and 2011. A further up to nine photomontages have been prepared or are under preparation following requests received since the beginning of 2017.
- **Newsletters**: Newsletters are prepared and distributed to provide project updates as the project progresses. These newsletters are distributed to the owners of land and residents within 10km of the Project facilitated by the Moyne Shire Council as well as other stakeholders in the stakeholder database. Copies of all newsletters distributed to date are provided at http://willatookwindfarm.com/community#act1353. It is expected that a further newsletter will be issued in October 2018. All newsletters include contact details for further information as well as the project website details.
- **Community Engagement Committee**: The Moyne Shire established a Community Engagement Committee (CEC) for the Project in October 2010. The CEC comprises three Moyne Shire Councillors, three members of the community and Wind Prospect. The meetings are conducted formally with a Chair, an agenda and with meeting minutes recorded. Sixteen meetings have been held including six meetings since the beginning of 2017 and a further meeting scheduled for November 2018.

- **Other engagement activities**: Other engagement with local residents have included the following:
    - *Neighbour group meeting*: WP sought to arrange face to face meetings with local residents in February 2018 to seek to address concerns that had been raised. Many meetings were refused and the proponent was instead invited to an open meeting at the Willatook Hall attended by approximately 60 people most of whom wanted to communicate their objection to the project.
    - *HADDAC meeting*: WP attended a Hawkesdale and District Development Action Committee meeting in Hawkesdale in March 2018 to discuss the Project. The discussion focussed on current progress, the issues that have been raised, and was then broadened to discuss potential community benefits that could be associated with the Project.

The stakeholder consultation database includes over 200 stakeholders. A summary of key stakeholder groups and organisations are summarised below.

- **Business** entities including businesses with interests in the local area around the project;
- **Communication** entities including the owners of communications masts and operators of communications links in the local area around the project;
- **Government** agencies including the Moyne Shire, adjoining Shires, DELWP, VicRoads, Country Fire Authorities, Department of Economic Development, Jobs, Transport and Resources, Heritage Victoria, Aboriginal Victoria, Environment Protection Authority, Sustainability Victoria, Royal Australian Air Force, Southern Rural Water, Wannon Water, Civil Aviation Authority, Glenelg Hopkins Management Authority, Air Services Australia, State Emergency Services, Parks Victoria, Department of Environment and Energy (Commonwealth), Australian Energy Market Operator as well as local State and federal members;
- **Heritage** groups including the applicant Registered Aboriginal Parties and other groups related to non-Aboriginal heritage;
- **Local businesses** including local aviation operators;
- **Local organisations** including recreational aviation clubs;
- **Local residents** including all landowners involved in the project, neighbouring landowners and all landowners and local residents within 10km of the project;
- **Special Interest Groups** such as Rotary Clubs, Lions Clubs, local schools, Landcare groups, committees, associations, environment and friendships groups.

The implementation of the stakeholder consultation plan has provided the proponent with a very good understanding of potential issues associated with the project all which have been or will be fed into the final proposal that will be subject of a planning permit application. In particular, the proponent has a very good understanding which local residents have concerns about the project and what those concerns are. Residents that have expressed concerns regarding the Project are mostly focused in the north-east area of the project although some residents to the south of the project have also expressed concerns. A summary of the key concerns of the relevant local residents and how they have been or will eb addressed is provided below.

- **Cumulative impacts**: Cumulative noise and visual impacts associated with other existing operational or proposed wind farms in the local area is potentially the issue

of greatest concern as well the potential impact of increased wind turbine numbers on aerial fire-fighting capabilities.
Potential cumulative impacts are important components of all impact assessments and in particular of the noise assessment, the landscape and visual impact assessment and the aviation assessment. The proponent has also increased separation distances between some dwellings and proposed wind turbine locations in response to this issue beyond that required, for example for noise compliance. including a reduction in the total number of turbines and a redesign of the layout to achieve a 2km buffer from all non-involved dwellings in the northern area of the Project closest to the existing operational Macarthur Wind Farm.

- **Noise**: Some local residents are concerned that with the existing operational Macarthur Wind Farm, the project will lead to wind turbines being located in a larger arc around their homes leading to more frequent noise impacts with winds from different directions.
  The noise assessment assesses cumulative noise emissions of the project with the existing Macarthur Wind Farm and has determined that the project would be compliant with the applicable standard. A map of the project showing noise contours has been provided to some local residents to inform further discussion.
- **Visual and landscape impacts**: Some local residents particularly around the north east area of the project have raised the concern that with the existing Macarthur Wind Farm and other proposed wind farm projects in the local area, there will be too many wind turbines visible in the local area that could change the character of the area making it more of an industrial landscape.

  The Landscape and Visual Impact Assessment specifically assesses potential cumulative impacts associated with other existing operational and proposed wind farms in the local area. The proponent has also removed four wind turbines from the south-west section of the project to provide a larger buffer of the Orford locality as a proactive measure (not in response to feedback from local residents). The proponent has also prepared photomontages for eight local residents in 2010 and 2011 and for two residents in 2017 that engaged on this topic from locations of their choosing. The proponent is also currently preparing up to nine further photomontages for local residents. The intent is that the photomontages will aid residents' consideration of visual impacts and inform further discussion.

- **Property values**: Some local residents are concerned that the project will devalue their properties and that their properties 'are their super', that is, the sale of their property will fund their retirement.
  The relevant local residents have not been receptive to the proponent's offer to provide the available research assessing the potential impact of wind farms on property value nor to discussing options for benefit sharing that could directly address this concern.
- Aviation: Some local residents are concerned about the potential impact of the project on their ability to apply fertiliser and weed and pest control via aerial application. The proponent has ongoing engagement with aviation experts and local aerial application operators in an effort to ensure any potential impacts are clearly addressed in the planning permit application. None of the residents that have raised this concern have been willing to engage meaningfully to provide for specific assessment of potential impacts and if impacts exist, to discuss the options available to address them. Of the three local residents that have raised this concern, two have not and do not use aerial application and the third property has recently changed ownership.
- **Other issues raised**: Other concerns raised include noise and disruption during construction, damage to roads, impact on TV reception, impacts on avifauna, impacts on health, increased fire risk and that the project is divisive in the local community.

The proponent has sought to engage meaningfully with the relevant local residents on all these issues with limited success. To the extent possible with this limitation, experts have been engaged to ensure these issues will be addressed in a planning permit application where possible.

Has a program for future consultation been developed?

☒ NYD ☒ No ☒ Yes If yes, briefly describe.

The stakeholder consultation plan will continue to be implemented and in particular the following stakeholder consultation activities are planned.

- **Newsletters**: Newsletter will continue to be distributed periodically including a newsletter that will be distributed to all residents and owners of land within 10km of the project around the time of lodgement of this Referral. Further newsletters will be similarly distributed as the development of the project continues.
- **Information Sessions**: Information Sessions will be held at venues local to the project prior to the lodgement of a planning permit application. Detailed information would be displayed regarding the project and feedback sought. Relevant technical experts may also attend depending on the content of feedback received ahead of the Information Days.
- **Meetings, phone calls, letters and email communication**: Responding to all feedback in an appropriate form, arranging face to face meetings as deemed appropriate or requested in ongoing. The proponent's staff are available at short notice to mobilise for meetings while on site and at short notice from their Melbourne office. Further engagement and updates with corporate and government stakeholders will occur via letters, email and phone calls.
- **Community Engagement Committee**: Community Engagement Committee meetings are currently approximately bi-monthly with the next meeting scheduled for November 2018.
- **Website**: The existing project website will continue to be updated as the project develops providing a portal for current information on the project. where appropriate, responses will be provided to all feedback provided via the website ('Have Your Say') and to contact WP for further engagement.

Authorised person for proponent:

I, ... Richard Barker.....(full name),

.....Senior Development Manager, Wind Prospect.....(position), confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature _____

Date 27 SEPTEMBER 2018

Person who prepared this referral:

I, ..., Fiona Cotter .....(full name),

.....Director, Energy Forms.....(position), confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature _____

Date 27/9/18