

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:	WestWind Energy Pty Ltd
Authorised person for proponent: Position: Postal address: Email address: Phone number: Facsimile number:	Tobias Geiger Managing Director Office 5, Level 1, Nexus Centre, 12-14 Prince Street, Gisborne, Victoria, 3437 Geiger@w-wind.com.au +61 (0)419 338 112 +61 (0)3 5428 3100
Person who prepared Referral: Position: Organisation: Postal address: Email address: Phone number: Facsimile number:	Phillip Burn Principal (Environment and Planning) Jacobs Group (Australia) Pty Ltd Level 11, 452 Flinders Street, Melbourne, Victoria, 3000 Phillip.Burn@jacobs.com + 61 (0) 3 8668 3142 N/A
Available industry & environmental expertise: (areas of 'in-house' expertise & consultancy firms engaged for project)	<p>WestWind Energy Pty Ltd (WestWind) has experience in power infrastructure planning, project development and implementation, environmental management and consultation. WestWind has engaged suitably qualified consultants to undertake a range of investigations. WestWind has prepared the following documents:</p> <ul style="list-style-type: none"> • WestWind 2017 <i>Golden Plains Wind Farm Stakeholder Engagement Plan</i> <p>Jacobs Group (Australia) Pty Ltd (Jacobs) has been engaged to project manage environmental and land use planning assessments and approvals and has undertaken the following specialist studies:</p> <ul style="list-style-type: none"> • Jacobs (2017) <i>Golden Plains Wind Farm Preliminary Planning Report.</i> • Jacobs (2017) <i>Golden Plains Wind Farm Surface Water Desktop Assessment</i> • Jacobs (2017) <i>Golden Plains Wind Farm Preliminary Geomorphology Report</i> • Jacobs (2017) <i>Golden Plains Wind Farm Hydrogeological Assessment</i> • Jacobs (2017) <i>Golden Plains Wind Farm Traffic Assessment.</i> <p>Brett Lane and Associates (BL&A) has been responsible for preparing the following documentation to support this referral:</p> <ul style="list-style-type: none"> • BL&A (2017 1.3) <i>Golden Plains Wind Farm Flora and Fauna Assessment Report</i>

	<ul style="list-style-type: none"> • BL&A (2017 2.3) <i>Golden Plains Wind Farm Brolga Impact Assessment Report</i> <p>Heritage Insight has been responsible for preparing the following documentation to support this referral:</p> <ul style="list-style-type: none"> • Heritage Insight (2016) <i>Golden Plains Wind Energy Facility Preliminary Cultural Heritage Assessment</i> <p>XURBAN has prepared the following documentation to support this referral:</p> <ul style="list-style-type: none"> • XURBAN (2017) <i>Golden Plains Wind Farm EES Referral Preliminary Landscape and Visual Assessment</i> <p>Marshall Day Acoustics has prepared the following documentation to support this referral:</p> <ul style="list-style-type: none"> • Marshall Day Acoustics (2017) <i>Golden Plains Wind Farm Noise Assessment</i> <p>Biodiversity Offsets Victoria (2017) has prepared the following documentation to support this referral:</p> <ul style="list-style-type: none"> • BOV (2017) <i>Golden Plains Wind Farm Preliminary Offset Strategy</i>.
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2. Project – brief outline

<p>Project title: Golden Plains Wind Farm</p>
<p>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)</p> <p>The project site is 17,345 hectares in area and is located to the south, south east and west of Rokewood, within the localities of Werneth, Rokewood and Barunah Park.</p> <p>It is situated approximately 60km north-west of Geelong, and approximately 60km to the south of Ballarat. The project site is located within a rural area on land that has been substantially modified over time due to grazing and cropping within its boundaries.</p> <p>The wind farm site is within the Golden Plains Shire. Cressy-Shelford Road is adjacent to the southern boundary of the site and is the boundary between Golden Plains and Colac Otway Shires.</p> <p>Refer to Appendix 1 – Site Location Map and the AMG Coordinates.</p>
<p>Short project description (few sentences):</p> <p>The proposed Golden Plains Wind Farm (wind farm) will consist of a wind energy facility comprising up to 235 wind turbines and associated infrastructure including:</p> <ul style="list-style-type: none"> • Internal site access tracks including upgrades to access • Upgrades to intersections • Hardstand and lay down areas • Underground electricity cabling • Overhead powerlines (up to 220kV) • Four electricity collector stations • One terminal sub-station, connection to the 500kV transmission line

- Six permanent meteorological masts
- An operations and maintenance building, and
- Temporary infrastructure including four co-located construction compounds and concrete batching plants, car parking, site buildings and amenities.

3. Project description

Aim/objectives of the project (what is its purpose / intended to achieve?):

The proposed wind farm is required to supply electricity to the National Electricity Market (NEM).

The wind farm will be a major support to Victoria's electricity supply as the generation mix transitions towards renewable energy.

The wind farm will:

- Support Victoria's Renewable Energy Target which establishes renewable energy generation targets of 25 per cent by 2020 and 40 per cent by 2025 (up to 1500 megawatts (MW) of new large-scale renewable energy capacity by 2020 and up to 5400MW by 2025)
- Support initiatives within the *Victorian Climate Change Act 2017* to help achieve a long-term greenhouse gas emissions reduction target of net zero emissions by 2050, and
- Assist the Commonwealth Government's commitment to achieve its 2030 Climate Change Target, to reduce greenhouse gas emissions by 26% to 28% on 2005 levels by 2030.

A preliminary energy assessment indicates that the wind farm:

- Will generate >2500 gigawatt hours (GWH) per annum
- Power >450,000 households, and
- Save >2.5 million tonnes of carbon dioxide emissions annually.

Background/rationale of project (describe the context / basis for the proposal, eg. for siting):

The proponent has identified and secured a number of sites within Australia for the development of wind energy facilities. Strategically, these projects are all located within 50 km of the project site and include Mount Mercer, Lal Lal and Moorabool Wind Farms. Geographically, this area contains sites which have a favourable wind resource, are located close to a skilled workforce, existing electricity infrastructure, and on land with manageable environmental constraints.

One of the key advantages for siting this project is the Moorabool-Heywood double circuit 500kV electricity transmission line which allows for the layout and design of the wind farm to incorporate a direct, on-site connection into the national electricity grid. Built to supply the Portland Aluminium Smelter, this electricity transmission line has significant available capacity to take the electricity generated from the proposed Golden Plains Wind Farm. Connecting to the 500kV line is costly, and the generation capacity of the proposed wind farm needs to be of a size which makes the connection into this line feasible.

The wind farm site is well suited for a wind energy facility. Key factors which determine its suitability are:

- Strong consistent winds combined with a strong grid connection option
- All generation and transmission infrastructure is located within the project site boundary, avoiding impacts extending beyond the project boundary into the wider community
- Supportive host landowners, with the proponent building on relationships with these landowners during the development of the Mount Mercer Wind Farm

- The site is used for farming and the wind energy facility is compatible with this use.
- The surrounding area has a very low population density
- Access to suitable local and regional road network including port access for direct transport of infrastructure from suppliers to site
- Regional advantages with respect to employment, and
- Environmental constraints can be managed within the site.

Main components of the project (nature, siting & approx. dimensions; attach A4/A3 plan(s) of site layout if available):

A map showing the proposed indicative wind farm layout is provided within Appendix 2. Jacobs has been commissioned to design the electricity connection network for the site which is included on the latest indicative layout map. Minor refinement of the siting and design of components of the project may be required following completion of further environmental investigations including targeted surveys and complex cultural heritage assessment. These refinements may involve micro siting these components, where necessary. In the event that a potential significant impact cannot be resolved through siting or design, it may be necessary to remove the component (e.g. wind turbine).

The wind farm has been designed for up to 235 wind turbines. Specific turbine dimensions will be determined following a commercial tendering process after planning approval is granted.

Wind turbine specifications are:

- Three to five MW wind turbine class
- Maximum tip height of 230 metres above ground level
- Wind turbine rotor will be in order of 150m in diameter, and
- Lower rotor sweep will be a minimum of 40 metres from natural ground level.

The wind farm will have a total capacity of approximately 800 MWs and produce approximately 2500 GWH of electricity each year while saving 2.5 million tonnes of carbon dioxide annually.

Turbine foundations will consist of concrete gravity or rock anchor foundations (dependent on geotechnical assessment). Foundations will have a depth of approximately 3.5 to 4 metres and a diameter at 20-25 metres.

Other permanent infrastructure will include:

- Public road intersection and site access upgrades
- Six permanent meteorological masts (anemometers)
- Hardstand and laydown areas (approximately 40 by 40 metres)
- Internal access tracks (5 metres wide increasing to 7 metres on corners)
- Underground electricity cables (depth of one metre)
- Four internal collector stations (approximately 80 metres by 80 metres)
- Overhead powerlines
- One terminal sub-station (approximately 400 meters by 400 meters) with connection to the 500 kV high voltage transmission line, including operations building
- Car parking, and
- Other ancillary works.

Temporary infrastructure includes:

- Four co-located concrete batching plants and construction compounds. The main compound would host site parking, storage, office and amenities, and

- Other temporary ancillary buildings and works.

See Appendix 2 – Indicative Wind Farm Layout.

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

Constructing the wind farm will require a number of road intersection upgrades to facilitate the delivery of wind turbine and other components.

See Appendix 3 for the site access and intersection upgrades map that shows access points and intersections that will likely require upgrade.

Raw materials required for construction will be sourced via the following options:

- Mobile crushing of rock already stockpiled throughout the site and from the excavation of wind turbine foundations, and
- Sequencing of the supply of construction materials through the construction period, in consultation with Golden Plains and Colac Otway Shire Councils.

All construction traffic impacts will be appropriately managed through the development of a traffic management plan (TMP) which will be prepared in consultation with VicRoads, Golden Plains and Colac Otway Shire Councils.

Key construction activities:

It is anticipated that the construction of the proposed wind energy facility is likely to be developed in four stages. Each stage will generally involve the following key construction activities:

- Preparation of the site including clearance of land, removal and storage of topsoil for future use
- Public road and intersection upgrades
- Construction of internal access tracks and alteration to gateways
- Establishment of concrete batching plants and construction of site buildings and construction compounds
- Construction of hard stands and lay down areas
- Excavation of turbine foundations and form work
- Construction of cable trenches and power pole foundations, laying bedding materials, cables and engineered backfill, replacement of topsoil
- Construction of terminal sub-station, collector stations and operation and maintenance buildings involving excavation and pouring of building foundations and concrete pads at switchyard and transformer locations
- Installation of towers, turbines, collector stations, terminal sub-station, cabling and overhead powerlines and other ancillary electricity infrastructure, and
- Progressive rehabilitation of the site and landscaping.

It is anticipated that construction activities will be undertaken over a four to six year period with a workforce of approximately 200 employees.

Key operational activities:

Operation, maintenance and monitoring of the wind farm is likely to include the following activities:

- Environmental monitoring in accordance with planning permit conditions (i.e. pest control and avifauna monitoring)
- Service and repair of wind turbines

- Maintenance of internal access tracks, and
- Maintenance of the electrical reticulation system and buildings and plant, including control systems.

The operational life of the wind farm is anticipated to be 25 years and it is anticipated to provide approximately 30 on-going operational jobs and 10 off-site jobs.

Key decommissioning activities (if applicable):

At the end of the operational life of the wind farm the wind farm operator will have the option to either decommission the project or to re-power with new turbines (subject to planning approval being obtained).

The key decommissioning activities will comprise the:

- Removal of all above ground non- operational equipment
- Removal and clean up any residual contamination, and
- Rehabilitation of all storage areas, construction areas, access tracks and other areas affected by the decommissioning of the turbines (if those areas are not otherwise useful to the on-going use or decommissioning of the wind farm).

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.

4. Project alternatives

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

Preliminary environmental investigations have informed the current design response. As a result of these early and on-going environmental investigations, iterative changes have been made to the original number and layout of the proposed wind turbines and the location of access tracks and underground cables. A series of maps showing the changes to the wind farm layout in response to key environmental investigations is provided within Appendix 2A.

Significant changes have involved:

- the original project site boundary was expanded from 100 km² to 174 km² to assist with the management of environmental sensitivities within the site including avoidance of high quality native vegetation
- The overall site coverage has been reduced to 1% of the site
- Removal of 17 proposed wind turbines, in response to the findings of the Victorian Brolga collision risk modelling, (to provide for a turbine exclusion buffer to reduce risks on the Victorian Brolga to a 'zero net' impact level), to avoid high quality native vegetation and cultural heritage places The original wind turbines that have been removed are shown as orange triangles on the map within Appendix 2A
- Access tracks and underground cables have been re-routed to avoid high quality native vegetation as shown in Appendix 2A and to minimise waterway and wetland crossings
- Avoiding almost all areas of high quality native vegetation and habitat identified during the habitat hectare assessment of the project site. Maps showing the areas that were avoided are

provided within the Flora and Fauna Assessment Report provided in Appendix 8.

- Ensuring that wind farm infrastructure is sited a minimum of 100 metres from confirmed Growling Grass Frog wetland sites. Further information is provided within the Flora and Fauna Assessment Report in Appendix 8.
- Creating a turbine exclusion buffer to reduce collision risks on the Victorian Brolga. Further detail is provided within the Brolga Impact Assessment Report provided within Appendix 9
- Maximising the number of wind turbines (227 wind turbines) sited a minimum of 100 metres from a waterways and wetlands (including groundwater dependent ecosystems)
- Where significant populations of threatened flora have been recorded within the investigation area an assessment of adjacent areas has been undertaken to allow for micro-siting of proposed wind farm infrastructure to avoid impacts to these species. Currently all identified species can be retained and avoided within the site.
- The siting of the wind turbines responds to the need to comply with the *Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria 2016* in terms of noise, blade glint, shadow flicker, electromagnetic interference impacts on local residents
- Siting of the terminal station adjacent to the existing 500kV electricity transmission line and avoiding an area of high quality native vegetation
- The project has been designed with a minimum lower rotor sweep of 40 metres above natural ground level to avoid the majority of bird flight paths. This has been confirmed by the two bird utilisation surveys which observed that 97% of birds counted fly below this height, and
- Where possible, internal access tracks will utilise existing tracks within the project site. Where new tracks will result in removal of native vegetation, the width of the tracks has been reduced to five (5) metres (increasing to 7 metres at corners) to minimise impact footprint while still maintaining functionality and safety.

Additionally:

- Potential native vegetation and fauna offset sites have been identified in wind farm host and neighbouring properties, and are likely to meet all offset requirements. Further desktop and field assessments will be undertaken on these sites to confirm offset availability. If these sites do not meet all requirements, suitable sites are also available at Warramben and Bannockburn.
- Jacobs has been engaged to further develop an Environmental Management Plan (EMP) to address residual environmental risk. The EMP will be submitted with the planning permit application in July 2017.
- Further targeted flora surveys are being undertaken and where significant numbers (i.e. greater than five (5) individuals of threatened flora species) are found in any part of the proposed development footprint the survey area will be steadily expanded to enable an alternative adjacent location for the affected infrastructure that avoids removal of that population of that species.

The siting and design of the project has been through an iterative process and is continuing to be informed by early and on-going environmental investigations. This approach will continue during the detailed design phase to ensure that environmental impacts can be appropriately managed.

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

Not Applicable

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:

Not Applicable

6. Project implementation

Implementing organisation (ultimately responsible for project, ie. not contractor):

WestWind Energy Pty Ltd (WestWind) was invited by the Victorian Government to establish in Victoria in 2004. WestWind is located in Gisborne, Victoria and is part of the WestWind Group of companies. The WestWind Group headquarters is based in Kirchdorf in North-Western Germany.

The WestWind Group was launched with the establishment of the Wind Park Lemke project in the community of Marklohe in Germany in 1999. By the end of 2005, more than 100 wind turbines had been commissioned in Germany by the WestWind Group. Today well over 300MW of wind energy projects have been delivered by WestWind in Germany and most of them are operated under the company's management. WestWind regularly works with environmental agencies overseas at different levels of government to properly develop and implement environmental management plans.

WestWind has adopted the same principle strategies to deal with environmental management. These principles involve establishing a close working relationship with leading independent environmental experts in the planning, construction and operation phase of wind energy projects and an open and constructive communication process with the community and government agencies.

A significant amount of environmental investigation and management has gone into other WestWind projects, namely, Mt Mercer Wind Farm (operating), Moorabool Wind Farm (approved and now owned by Goldwind) and Lal Lal Wind Farm (recently amended to increase wind turbine heights in response to technological advances). Lal Lal Wind Farm has recently been acquired by Macquarie Capital and construction is expected to commence shortly. These three projects will contribute a total installed capacity of 602 MW of renewable electricity to Victoria.

Implementation timeframe:

An indicative timeline for delivery of the project includes:

- Secure all planning and environmental approvals by July 2018
- Construction commencement in March 2019 and undertaken over a period of four to six years, and
- Commence first stage operation of the Golden Plains Wind Farm by 2020.

Proposed staging (if applicable):

The construction of the project is anticipated to take 4 to 6 years. This referral relates to all stages. Subject to obtaining a planning permit in mid-2018 and continued policy and regulatory support to reduce carbon emissions it can be expected that the project could secure funding for the first section by mid to late 2019. A project of this size is likely to be financed in multiple stages and all construction activities would follow on from those financing stages. It is likely that the outcome of, for instance the Victorian Renewable Energy Target (VRET) reverse auctions, will dictate the timing of the financing and ultimately construction and operations phases.

In a project of this size it is common that the various phases and stages overlap, meaning that turbines may operate regularly at one end of the project whereas at another end of the project civil works may still be in their early phase.

Pre-construction Phase 2018 – 2022 (post permit, pre-construction)

- Detailed design including geo-tech studies and secondary consents
- Grid connection application
- Tender processes for works
- Off-take agreements

- Finance

Construction Phase 2019 - 2023 - Stage 1. Grid connection and Electrical Works

- Site establishment
- Temporary workers compounds, construction compounds, temporary batching plants
- Electricity collector stations and above ground powerlines
- The terminal sub-station adjacent to the 500kV line

2020 – 2024 Stage 2. Civil Works

- Establish access tracks
- Undertake intersection upgrades
- Excavate turbine foundations
- Prepare hardstands
- Establish concrete foundations
- Establish underground power collector network to the collector stations
- Maintain local road network according to TMP in consultation with Golden Plains and Colac Otway Shire Councils and VicRoads
- Civil works associated with grid connection (hardstands, building structures, car parking etc.)

This assumes that the civil works will follow the funding stages and there be up to 4 funding stages, i.e. 200MW + 200MW + 200MW + 200MW in accordance with VRET reverse auctions

2020 – 2025 Stage 3. Turbine Installation and Commissioning:

- Erect wind turbines
- Commission and test wind turbines
- Begin to export electricity

Operations Phase 2021 - 2025 + Stage four to 2050.

- Remove all temporary construction infrastructure from the site
- Operate and maintain wind farm
- Restore / Rehabilitate local road network to the satisfaction of Golden Plains Shire
- Comply with planning permit conditions, and
- Generate clean electricity

Decommissioning Phase 2050 + Stage five. Decommissioning

- Remove all above ground non-operational equipment
- Remove and clean up any site materials
- Rehabilitate all storage areas, construction areas, access tracks and other areas affected by the decommissioning of the turbines (unless proposed to be used by the landholder)
- Decommissioning traffic management plan to manage decommissioning.

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):

The project site is irregular in shape and covers an area of 17,345 hectares. It is bounded by road frontages to Pitfield-Cressy Road and Boyles Road to the west; Rokewood-Skipton Road, Clear-Rokewood Road and Rokewood-Shelford Road to the north; Wingeel Road to the east; and Cressy-Shelford Road and Ledwells Road to the south. Cressy-Shelford Road forms the boundary between Colac Otway and Golden Plains Shires.

The project site can be characterised as an open agricultural landscape which is largely cleared of trees and screening vegetation except along creeks, roadsides, fences or around dwellings. It is currently used for cropping and grazing and contains scattered farm houses, access tracks and other agricultural infrastructure such as sheds. There are no existing non-agricultural land uses within the project area.

The north-western corner of the site, south of Littlehales Road is located at an elevation of approximately 210 m AHD (the high point of the site). The site is relatively flat and slopes from north to south with levels around the most southern section of the site (along Cressy-Shelford Road) at around 140 m AHD. The site contains small stony rises within the landscape and harvested rock has been used to form rock walls or stored in rock piles.

The main waterways that traverse the site are Ferrers Creek, Mia Mia Creek, Kuruc A Ruc Creek (Meadows Creek) and Mount Misery Creek (also known as Little Woody Yallock Creek) which flow north to south. There are also a number of other minor smaller unnamed channels and drainage lines and wetland areas. The Index of Stream Condition, based on 2010 data, is 'moderate' for Ferrers Creek and Kuruc-A-Ruc Creek, and 'poor' for Mia Mia Creek. Preliminary investigations indicate that groundwater is expected to be shallow at some locations across the project site.

The site is bisected north-south by Geggies, Bells, Eastern Access, Gumley South, Meadows, Two Bridges, Colac-Ballarat, Mill and Boyles Roads. It is also bisected in an east west direction by Littlehales, Jacka's, Gilletts, and Kennersleys Roads and by a 500kV Transmission Line and its easement towards the southern end of the site. Apart from the public roads, there is also a small triangular portion of Crown land located at the intersection of Eastern Access Road and Cressy Shelford Road at the south of the project land and also to the east side of Geggies Road.

There are 39 participant landowners within the site

Refer to Appendix 1 – Site Location, Appendix 1A – Land Use, Appendix 4 – Photo Book and Appendix 6 – Landholders.

Site area (if known): 17, 345 hectares

Route length (for linear infrastructure)

All development, including transmission connection, can be contained within the wind farm site, avoiding the need for powerlines which extend beyond the project boundary. The site coverage of the proposed development is 1% of the total site area. Linear infrastructure includes:

- approximately 152 km of internal access track which would be constructed to a minimum clearing width of 5 metres increasing to 7 metres on corners, where it intersects with native vegetation
- Approximately 207 km of underground electricity cables with the depth of cable trench to 1 metre, and

- Approximately 26km of overhead powerlines.

Current land use and development:

The current land use is farming. The project site has been cleared for cultivation and grazing and contains dwellings, stone fences, stone piles, access tracks and other agricultural infrastructure such as sheds and fencing. There are 39 landholdings within the project site boundary.

Refer to Appendix 1A – Land Use¹ and Appendix 6 – Landholder Map

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

The pre-European settlement landscape that existed within this region has been greatly modified through human settlement, agricultural practices and the clearance of native vegetation. There is a uniform spread of farmland across this landscape, interspersed with many man-made elements that include farm houses and outbuildings, sparsely scattered townships with residential, commercial and public buildings, large transmission line towers, public roads and other man-made infrastructure.

The project site sits within this rural landscape approximately one kilometre to the south, south east and west of Rokewood. While Rokewood is the nearest town, the site is relatively isolated from other urban centres as it is located more than 10km from Cressy, Shelford, Inverleigh, Dereel and Teesdale and over 60km north-west of Geelong and approximately 60km to the south of Ballarat.

A small portion of the northern boundary abuts Rokewood Common Nature Conservation Reserve (an open grassland reserve) and the Rokewood Golf Course. The location of the site is shown in Appendix 1.

The area is sparsely populated with only 86 dwellings located within 2 km of the site as shown in Appendix 1B – Sensitive Receptors.

Planning context (eg. strategic planning, zoning & overlays, management plans):

The Jacobs (2017) *Golden Plains Wind Farm Preliminary Planning Assessment* (Appendix 5) provides a review of the project against the relevant provisions of the Golden Plains Planning Scheme (GPPS) and relevant provisions of the Colac Otway Planning Scheme (COPS).

Golden Plains and Colac Otway Planning Schemes

The project site is located wholly within the municipal boundary of the Golden Plains Shire and is subject to the provisions of the Golden Plains Planning Scheme (GPPS). Cressy-Shelford Road abuts the southern boundary of the site and forms the boundary between Colac Otway and Golden Plains Shires. Portion of this road is subject to the provisions of the Colac Otway Planning Scheme (COPS).

State Planning Policy Framework

The purpose of the State Planning Policy Framework (SPPF) within planning schemes is to inform planning authorities and responsible authorities of those aspects of State planning policy which need to be considered when responsible authorities are considering a planning permit application.

The relevant clauses of the SPPF include:

- Clause 11.08 (Central Highlands)
- Clause 12.01 (Biodiversity)

¹ There appeared to be some inconsistencies in the VicMap Land Use Data for the land uses identified outside of the project boundary. Where this data could not be verified using information from site investigations, it was presented as an unidentified land use.

- Clause 12.01-2 (Native Vegetation Management)
- Clause 12.04-2 (Landscapes)
- Clause 13.02 (Floodplains)
- Clause 13.03-2 (Salinity)
- Clause 13.04-1 (Noise)
- Clause 14.01 (Agriculture)
- Clause 14.02-1 (Catchment Planning and Management)
- Clause 14.02-2 (Water Quality)
- Clause 15.02 (Sustainable Development)
- Clause 15.03-2 (Aboriginal Cultural Heritage)
- Clause 17 (Economic Development)
- Clause 19.01 (Renewable Energy).

Local Planning Policy Framework

The Local Planning Policy Framework (LPPF) sets out the Municipal Strategic Statement (MSS) and Local Planning Policies (LPP) that apply to the Shire. A key focus of the Golden Plains MSS is to establish a sustainable future, diversify and encourage economic development, provide efficient and environmentally sensitive essential infrastructure and to protect natural resources and ecosystems.

The LPPs are tools used to implement the objectives and strategies of the MSS. A LPP is a policy statement of intent or expectation and states what the responsible authority will do in specified circumstances or the responsible authority's expectation of what should happen. There are three local planning policies which apply to the site including:

- Clause 22.10 (Salinity)
- Clause 22.11 (Floodplain Management)
- Clause 22.12 (Heritage)

Zones and Overlays

The wind farm project site is affected by the following zones and overlays under the Golden Plains Planning Scheme and the Colac Otway Planning Scheme (refer to Appendix 5):

- Farming Zone and the schedule to the Farming Zone (FZ) of the GPPS and COPS
- Road Zone Category 1 Road (RDZ1) of the GPPS
 - Rokewood-Shelford Road
 - Rokewood-Skipton Road
 - Ballarat-Colac Road
- Environmental Significance Overlay – Watercourse Protection (ESO2) of the GPPS
- Vegetation Protection Overlay – Western Plains Grassland (VPO1) of the GPPS
- Vegetation Protection Overlay – Bushland Reserves and Roadside Vegetation Areas (VPO2) of the GPPS
- Vegetation Protection Overlay – Roadside Vegetation (VPO2) of the COPS
- Heritage Overlay (HO30) of the GPPS
- Salinity Management Overlay (SMO) of the GPPS, and

- Land Subject to Inundation Overlay (LSIO) of the GPPS.

There are no significant landscape overlays within the project boundary.

Particular Provisions

The following particular provisions are relevant to the proposal:

Clause 52.17 (Native Vegetation)

A planning permit is required to remove, destroy or lop native vegetation under Clause 52.17 (Native Vegetation) of the Golden Plains Planning Scheme (GPPS) and Colac Otway Planning Schemes (COPS).

The purpose of Clause 52.17 is:

- *To ensure permitted clearing of native vegetation results in no net loss in the contribution made by native vegetation to Victoria's biodiversity.*

The removal of native vegetation is primarily regulated by the Clause 52.17 using a risk based approach.

This is achieved through the following:

- *Avoid the removal of native vegetation that makes a significant contribution to Victoria's biodiversity.*
- *Minimise impacts on Victoria's biodiversity from the removal of native vegetation.*
- *Where native vegetation is permitted to be removed, ensure that an offset is provided in a manner that makes a contribution to Victoria's biodiversity that is equivalent to the contribution made by the native vegetation to be removed.*

The *Permitted clearing of native vegetation – Biodiversity assessment Guidelines (Biodiversity Guidelines)* (DEPI, 2013) are designed to manage the risk to biodiversity associated with clearing native vegetation.

A high risk based pathway assessment process will be applied to this project. The flora and fauna assessment provided with the planning permit application will include information required to support a high risk-based pathway application in accordance with clause 52.17-3 of the GPPS, COPS and the Biodiversity Guidelines.

Pursuant to Clause 52.17-6 (Offset Requirement), the biodiversity impacts of the removal of native vegetation are required to be offset, in accordance with Biodiversity Guidelines. Offset requirements must take account of:

- *The location of the native vegetation to be removed.*
- *The condition and extent of native vegetation to be removed.*
- *The strategic biodiversity score of the native vegetation to be removed.*
- *Whether the native vegetation to be removed is important habitat for rare or threatened species, and the proportional impact of the removal on those species' habitat.*

Clause 52.32 Wind Energy Facility

The purpose of clause 52.32 (Wind Energy Facility) is:

- *To facilitate the establishment and expansion of wind energy facilities, in appropriate locations, with minimal impact on the amenity of the area.*

Clause 52.32-2 requires a planning permit for a wind energy facility and specifies area where wind energy facilities are prohibited.

Clause 52.32-3 prohibits wind turbines within 1km of dwellings unless the dwelling owner has provided written consent to the particular wind turbine(s).

Clause 52.32-4 outlines the information that must be contained within a planning permit application for a wind energy facility including a site and context analysis and a design response. Amongst other matters Clause 52.32-4 requires:

- An assessment of:
 - *the visual impact of the proposal on the surrounding landscape.*
 - *an assessment of the visual impact on abutting land that is described in a schedule to the National Parks Act 1975 and Ramsar wetlands and coastal areas.*
 - *an assessment of the impact of the proposal on any species (including birds and bats) listed under the Flora and Fauna Guarantee Act 1988 or the Environment Protection and Biodiversity Conservation Act 1999 (Cwth).*
 - *an assessment of the noise impacts of the proposal prepared in accordance with the New Zealand Standard NZS6808:2010, Acoustics - Wind Farm Noise, including an assessment of whether a high amenity noise limit is applicable, as assessed under Section 5.3 of the Standard.*
 - *an assessment of the impacts upon Aboriginal or non-Aboriginal cultural heritage.*
- *A statement of why the site is suitable for the wind energy facility.*
- *An environmental management plan including any rehabilitation and monitoring requirements.*

Clause 52.32-5 sets out the decision guidelines that a responsible authority must consider including:

- *The State Planning Policy Framework and the Local Planning Policy Framework including the Municipal Strategic Statement and local planning policies.*
- *The effect of the proposal on the surrounding area in terms of noise, blade glint, shadow flicker and electromagnetic interference.*
- *The impact of the development on significant views, including visual corridors and sightlines.*
- *The impact of the facility on the natural environment and natural systems.*
- *The impact of the facility on cultural heritage.*
- *The impact of the facility on aircraft safety.*
- *Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria (Department of Environment, Land, Water and Planning, January 2016).*
- *The New Zealand Standard NZS6808:2010, Acoustics - Wind Farm Noise*

These matters will all be assessed in detail and documentation provided with the planning permit application to enable the responsible authority to appropriately consider all potential significant environmental and social impacts.

Clause 52.37 Post Boxes and Dry Stone Walls

A number of dry stone walls exist within and near the project site. Clause 52.37 (post boxes and dry stone walls) may be applicable should the construction of the project impact on any dry stone walls constructed prior to 1940. This clause requires a planning permit to demolish, remove or alter a dry stone wall constructed before 1940 unless the development is:

- *The demolition or removal of a section of a dry stone wall to install a gate.*
- *The reconstruction of damaged or collapsing walls which are undertaken to the same specifications and using the same materials as the existing walls.*

Clause 52.29 Land Adjacent to a Road Zone (Category 1)

The purpose of Clause 52.29 is to *ensure appropriate access to identified roads*. A permit is required to create or alter access to a road in a Road Zone, Category 1. Even if no physical modifications are required to the access, a permit may be required, as during the construction period there are likely to be changes in the volume, frequency and type of traffic.

General Provisions

The following particular provisions are relevant to the proposal:

Clause 61.01-1 (Minister is Responsible Authority)

This clause requires planning permit applications for wind energy facilities and associated powerline infrastructure to be assessed by the Minister for Planning.

Clause 65 – Decision guidelines

The responsible authority must decide whether the use and development will produce acceptable outcomes in accordance with the decision guidelines of Clause 65 of the GPPS and COPS any other decision guidelines outlined within the relevant provisions of the planning scheme.

Reference Documents

Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria (Department of Environment, Land, Water and Planning, January 2016) (Policy and Planning Guidelines).

The Policy and Planning Guidelines is a reference document listed under clauses 19.01 (Renewable Energy) and 52.32 (Wind Energy Facility) of the GPPS.

These guidelines recognise Victoria's abundant wind resources that will support a large scale grid of connected wind energy facilities which can contribute to the sustainable delivery of Victoria's future energy needs. The purpose of these guidelines is to provide:

- A framework for a consistent and balanced approach to the assessment of wind energy projects.
- A set of consistent operational performance standards to inform the assessment and operation of a wind energy facility project.
- Guidance how planning permit applications might be met.

Section 2.2 of the guidelines provides matters that need to be taken into consideration when identifying suitable sites for wind energy facilities. Relevant considerations include:

- Siting and design of the facility to examine risk to flora and fauna species and apply design measures and adopt adaptive management measures where required. This includes impacts on flora and fauna species and habitat protected at the national and state levels. Consideration must be given to the Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999*, the Victorian *Flora and Fauna Guarantee Act 1988*, Clauses 12.01 (Biodiversity) and 52.17 (Native Vegetation) of the Victoria Planning Provisions
- Significant Landscape Values including Clause 12.04 (Significant Environments and Landscapes) of the SPPF, the Environmental Significance Overlay, Vegetation Protection Overlay or the Significant Landscape Overlay
- Aboriginal Cultural Heritage Values which are protected under the *Aboriginal Heritage Act 2006* and Aboriginal Heritage Regulations 2007, and
- Draft National Wind Farm Development Guidelines (July 2010) and Best Practice Guidelines for Implementation of Wind Energy Projects in Australia (2006).

For this wind farm proposal the Minister for Planning, as the responsible authority, must assess the impact of a wind energy facility taking into consideration the following:

- Contribution to Government Policy Objectives including the SPPF, LPPF and Best practice standards including the draft *National Wind Farm Development Guidelines* (July 2010) and *Best Practice Guidelines for Implementation of Wind Energy Projects in Australia* (2006)
- Compliance with New Zealand Standard NZS 6808:200 Acoustics – Wind Farm Noise (the Standard)
- Amenity impacts such as noise, blade glint, shadow flicker, overshadowing and electromagnetic interferences. The guidelines encourage impact reduction measures such as

surface treatment of low reflectivity; modelling shadow flicker in advance of siting and design; avoiding the siting of wind turbines in the line of sight between transmitters and receivers

- Landscape and visual amenity. The guidelines suggest the following measures for reducing visual impact including minimising views from areas used for recreation and dwellings; spacing turbines to respond to the landscape characteristics; minimising earthworks and protecting drainage lines and waterways; minimising removal of vegetation; consistency in height, appearance and rotation of turbines; colour; limiting night lighting
- Flora and fauna and removal of native vegetation. The responsible authority will consider whether appropriate survey work has been provided within the planning permit application and whether further monitoring or survey work is required,
- Aircraft safety. The responsible authority will assess whether appropriate consultation has been undertaken with the Civil Aviation Safety Authority (CASA) and with any other private airstrip operators that may not be identified by CASA. The proponent will need to demonstrate compliance with any of CASA's or private operators' requirements. This may include reducing the number of turbines, mitigating light glare with the use of baffling; matching light intensity to meteorological visibility or minimising light intensity at ground level, and
- Construction impacts and decommissioning must be addressed in detail within an environmental management plan that is in compliance with the draft National Wind Farm Development Guidelines 2010.

The guidelines highlight the issues associated with impacts relating to wind energy facilities and provide a suggested approach and method for assessing these impacts. The focus is on the proponent to demonstrate that appropriate scientific methods have been used to assess the impacts of the wind energy facility. Where relevant, the guidelines also establish the compliance standards to be achieved.

In addition, the proponent will be required to develop environmental management, rehabilitation and monitoring plan(s) in liaison with government and referral agencies to provide confidence that appropriate management and mitigation measures are in place during construction and operation to manage potential impacts.

All of the above points will be addressed in the planning permit application.

Interim guidelines for the assessment, avoidance, mitigation and offsetting of potential wind farm impacts on the Victorian Brolga population 2011 DSE (2012)

This policy document provides a framework and approach for addressing the impacts of wind energy facilities on the state-threatened Brolga. It sets an over-arching policy of 'zero net impact' for the Victorian Brolga population that avoids cumulative impacts of wind energy development on the species. This objective is achieved through a combination of mitigating and offsetting impacts. This is informed by three levels of investigation of increasing detail depending on the findings of the previous level. For the Golden Plains Wind Farm, all three levels have been triggered. The investigations and findings to date and the steps taken to avoid and minimise impacts on the Brolga are described in detail in BL&A (2017 (2.3)).

Notice to Colac Otway and Golden Plains Shire Councils

Under Section 52(1)(b) of the *Planning and Environment Act 1987* the Responsible Authority, in this case the Minister for Planning (ref Clause 61.01-1) must give notice to Golden Plains and Colac Otway Shire Councils of the planning permit application. The proponent will continue to consult with both Councils throughout the preparation of the planning permit application and during the approval process.

The proponent submits that the potential environmental and social impacts can be adequately assessed under Part 4 of the *Planning and Environment Act 1987*. Victoria now has a well-established process for assessing the impacts and appropriate mitigation responses for wind energy facilities. It is a mature process with the Minister for Planning as responsible authority, supported by an experienced wind farm assessment team who are guided by Clause 52.32 (Wind Energy Facility) of the Planning Scheme, the *Planning and Policy Guidelines for Wind Energy*

Facilities and precedent from planning panels and the Victorian Civil and Administrative Tribunal.

Local government area(s):

Golden Plains Shire Council

Cressy-Shelford Road forms the southern boundary of the project site and is the boundary between the Colac Otway and Golden Plains Shires as shown on the Site Location Map within Appendix 1.

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 project site is relatively flat and irregular in shape. It comprises agricultural land used for cropping and grazing and contains scattered farm houses, access tracks, shelterbelt plantings and other agricultural infrastructure such as sheds. The land has been substantially modified as a result of historical and current land practices. The paddocks are generally devoid of trees except for planted shelter belts along fence lines and some scattered trees along roadsides. Parts of the site contain small stony rises. Much of the land has been subject to extensive rock removal which has been used to established dry stone walls and large rock piles.

The project site is positioned on what is broadly referred to as the Western Volcanic Plains. These plains were built up by sporadic volcanic eruptions over a period of 5 million years. Much of the plains were formed from lobes of lava which flowed from the eruption points, overlapping to form a veneer of basalt larval flows. The geology and landforms of the Golden Plains Wind Farm project site are dominated by Tertiary to Quaternary flows of basalt lava. A shallow drainage network has developed around these larval flows.

Streams draining the volcanic plains generally have a limited catchment area and the relatively low elevation and moderate rainfall reduces available runoff. Streams are generally weakly incised across the volcanic plains, and this is this case at the project site. Successive lava flows have disrupted surface drainage, with closed and semi-enclosed depressions containing wetlands. Alluvial floodplain deposits are also associated with the stream network.

A geological and geomorphological assessment will be attached to the referral document (see Appendix 14).

The agricultural land practices have largely resulted in removal of most habitat elements within the site. Grazed paddocks support a mixture of indigenous and non-indigenous flora species including weed species. Dominant weeds include Cocksfoot, Phalaris, Wild Oat, Yorkshire Frog and thistles. This habitat type generally lacks structural diversity and provides few opportunities for fauna. Moderate to high quality habitat for fauna species are found within the stony rises, planted trees, remnant grassland (mainly along road reserves) as well as wetlands and creek lines.

EPBC and FFG listed fauna species, including seven birds, one mammal, one reptile, one frog and one invertebrate, were considered to have potential to occur within the wind farm site due to the presence of suitable habitat or the species being recorded during the overview assessment or targeted surveys. The listed waterbird species have the potential to occur in aquatic habitats in and near the wind farm site, but are unlikely to occur in significant numbers on a regular basis on the wind farm site as individual habitats are limited in extent, many are ephemeral and they vary in quality.

The vegetation within the project site varies in quality between areas that have been heavily grazed and may only support one or two indigenous species, and large areas of high-quality native vegetation with excellent species diversity. Of the total amount of native vegetation within the site, only 12% of the mapped vegetation falls into the high quality category.

Evidence on site, including floristic composition and soil characteristics, indicated that Swamp Scrub (EVC 53), Plains Grassy Woodland (EVC 55_61), Creekline Grassy Woodland (EVC 68), Plains Grassy Wetland (EVC 125), *Heavier-soils* Plains Grassland (EVC 132_61), Non-eucalypt Grassy Woodland (EVC 175), Riparian Woodland (EVC 641)

and Stony Knoll Shrubland (EVC 649) were present within the site.

This analysis indicates that 17 EPBC and FFG listed flora species are likely to occur or have the potential to occur within the site. The Natural Temperate Grassland of the Victorian Volcanic Plain, the Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains, Grassy Eucalypt Woodland of the Victorian Volcanic Plains and the Western (Basalt) Plains Grassland are the listed ecological vegetation communities within project site.

The project site contains wetlands, farm dams and creeks including Ferrers Creek, Mia Mia Creek, Kuruc A Ruc Creek (Meadows Creek) and Mount Misery Creek (also known as Little Woody Yallock Creek) which flow north to south. These creeks are identified as being of moderate to high quality fauna habitat. However, the drainage lines and farm dams are highly modified (from the historic draining of wetlands) ephemeral waterbodies and may only support suitable habitat for short periods.

The project area is currently located within the Registered Aboriginal Party (RAP) boundary of the Wadawurrung (Wathaurung Aboriginal Corporation (WWAC)) and partly in an area not currently administered by a RAP. The Eastern Maar Aboriginal Corporation (EMAC) and the Guligad Aboriginal Corporation (GAC) both have an interest in the area. To date, a total of 19 surface Aboriginal Places have been located during the standard assessment on the WWAC side of the activity area. These were primarily low density or isolated artefact occurrences and two culturally modified trees were recorded. A total of 68 surface Aboriginal Places were located on the EMAC/GAC side during the standard assessment in this area. These comprise low, moderate and high density artefact scatters, and also two locations that appear to have a number of relatively intact stone arrangements.

Although a large number of surface Aboriginal Places were located during the standard assessment only 12 sub-surface excavations from a total of 56 yielded cultural material during the stage 1 complex assessment on the EMAC/GAC side. The majority of these had only very shallow soil profiles and a limited number of artefacts. The extents of these Places have not yet been established. This will occur either by radial extent testing or on the basis of landform, to be decided following consultation with Aboriginal Victoria and Victorian Aboriginal Heritage Registry staff.

The proposed wind farm site sits within a highly modified flat agricultural landscape and as such there are limited protected sites within the immediate vicinity. The Rokewood Common Nature Conservation Reserve and Rokewood Golf Course are located adjacent to a small section of the northern boundary of the project site.

A map of the existing environment is provided within Appendix 5A.

9. Land availability and control

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

No Yes If yes, please provide details.

The majority of the site is on freehold land. Some parts of the project (access and electricity infrastructure) will be located on, over or under Crown land (open / public road reserves and unused Government (paper) roads).

The relevant lease and licence arrangements (where applicable) will be finalised with DELWP following the granting of a planning permit for the wind farm.

Wind turbines will not be constructed on Crown land.

Current land tenure (provide plan, if practicable):

The land required for the proposed wind energy facility is private freehold land held under various ownerships.

Refer to Attachment 6 – Landholder map.

Intended land tenure (tenure over or access to project land):

The private freehold land required for the project will be leased from the landholders through commercial land leases and agreements with individual landowners.

Following the granting of a planning permit, the substation site may be purchased by the network services provider.

Other interests in affected land (eg. easements, native title claims):

Ausnet Services has an easement over the private landholdings in favour of the 500kV high voltage transmission line.

10. Required approvals**State and Commonwealth approvals required for project components** (if known):**Commonwealth***Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) protects Matters of National Environmental Significance (MNES), including species and ecological communities, and internationally recognised wetlands. The Commonwealth Minister for the Environment and Energy is responsible for administering the EPBC Act.

A referral under the EPBC Act will be lodged concurrently with this referral and will be referred as a 'controlled action'. Therefore, approval under the *Environment Protection and Biodiversity Conservation Act 1999* will be required.

Should the assessment be undertaken in accordance with a relevant bilateral agreement between the Commonwealth and Victoria, the following Victorian processes can be accredited:

- Should an Environment Effects Statement be required under the Victorian *Environmental Effects Act 1978* (EE Act) - the bilateral agreement allows the Commonwealth Minister for the Environment and Energy to make a decision whether to approve the Project based on an assessment under the EEA. The approvals process under this pathway would require the preparation of an Environmental Effects Statement (EES)
- Advisory Committee Process under Section 151 of the *Planning and Environment Act 1987* (P&E Act)
- Planning permit process under the *Planning and Environment Act 1987*.

The benefits of the planning permit process are discussed below.

State*Planning and Environment Act 1987*

The *Planning and Environment Act 1987* (the Act) gives effect to the planning scheme which provides a framework within which decisions about the use and development of land can be made. In relation to wind energy facilities the framework under the Act has been established (through the particular provisions and the guidelines) to enable the coordinated and detailed assessment of environmental risk, as outlined in section 7 Planning Context.

The project will require:

- a planning permit for a wind energy facility, utility installation, native vegetation removal and associated buildings and works, which will be assessed by the Minister for Planning against the provisions of the Golden Plains Planning Scheme, and
- a planning permit in accordance with clause 52.17 (Native Vegetation) (and the Vegetation Protection Overlay) of the Colac Otway Planning Scheme, should the removal of native vegetation be required within Colac Otway Shire

The *Policy and Planning Guidelines for development of Wind Energy Facilities in Victoria* and clause 52.32 of the GPPS establishes the information to be contained within a planning permit application. The planning permit process under Part 4 of the *Planning and Environment Act 1987* is a mature and well established process for assessing wind energy facilities in Victoria. The Minister for Planning would be the responsible authority for determining the planning permit and the process allows for fair and reasonable consideration of any objections against the project.

Aboriginal Heritage Act 2006

A Cultural Heritage Management Plan is currently being prepared for the site and will be evaluated by the Wadawurrung Wathaurung Aboriginal Corporation (WWAC) and Aboriginal Victoria. Consultation will also be undertaken with the Eastern Marr and Guligad Aboriginal Corporations.

Flora and Fauna Guarantee Act 1988

The *Flora and Fauna Guarantee Act 1988* (FFG Act) deals with biodiversity, conservation and sustainable use of native flora and fauna in Victoria and applies to public land. There is a potential for threatened species and threatened ecological communities to be present along the road reserves and within the area of Crown land included within the site. A permit to take listed species may be required under this Act for roadside vegetation.

Water Act 1989

The Corangamite Catchment Management Authority (CMA) is responsible for the control, management and authorisation of works and activities in or over designated waterways in the CMA's waterway management district. The CMA authorises works on designated waterways via an authority permit in accordance with the CMA's by-law number four, Waterways Protection 2014. The CMA must be notified and works undertaken in accordance with the Corangamite CMA guidelines. Work must not commence until the CMA has provided written approval. The works on waterways permit is not dependent on the planning permit process. However, the timing of an application for these permits is dependent on finalisation and approval of the detailed design of the project.

A licence is required under Section 51 of the *Water Act 1989* to take and use groundwater and under Section 67 a licence is required to construct and operate a bore or to undertake works on waterways. Southern Rural Water can impose conditions on the licence under Section 71 of the Act including the maximum amount of water that may be taken in particular period and circumstances.

Road Management Act 2004

Under section 63 of this Act, written consent is required from the road manager (VicRoads – in the case of Rokewood-Shelford Road, Rokewood-Skipton Road and Colac-Ballarat Road and Golden Plains and Colac Otway Shire Councils for the remainder) for the occupation and / or construction works within public (open) roads.

Environment Protection Act 1970

The *Environment Protection Act 1970* (EP Act) establishes the Environment Protection Authority and creates the legislative framework for the protection of the environment in Victoria. State Environment Protection Policies (SEPP) are subordinate legislation made under the provisions of the EP Act to provide more detailed requirements and guidance for the application of the EP Act in Victoria. SEPPs aim to safeguard the environmental values and human activities (beneficial uses) that need protection in the State of Victoria from the effect of pollution and waste. For wind energy proposals the SEPPs are given force and effect through planning permit conditions.

Detailed management plans associated with the future planning permit will need to consider and comply with relevant SEPPs and guidelines including:

- State Environment Protection Policy (Waters of Victoria)
- State Environment Protection Policy (Groundwaters of Victoria)
- Noise from industry in regional Victoria: Recommended maximum noise levels from commerce, industry and trade premises in regional Victoria (NIRV; EPA publication 1411).
- The design and operation of the temporary concrete batching plant will be in accordance with EPA Publication 628 Environmental Guidelines for the Concrete Batching Industry.
- EPA Publication 480 Environmental Guidelines for Major Construction Sites.
- EPA Publication 891.2 Code of Practice – Onsite wastewater management (December 2008).
- EPA Publication 275 Construction Techniques for Sediment Pollution Control

Other Acts

Other permits and provisions may be required by the following acts:

- *Catchment and Land Protection Act 1994*
- *Wildlife Act 1975*

Have any applications for approval been lodged?

No Yes If yes, please provide details.

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

A full, up-to-date consultation record is located in Appendix 7.

Significant consultation has occurred with a number of key agencies including:

- Golden Plains Shire Council
- Department of Environment Land Water and Planning
- Corangamite Catchment Management Authority
- Aboriginal Victoria
- Civil Aviation Safety Authority
- VicRoads, and
- A meeting is being scheduled with Colac Otway Shire Council for mid-June 2017.

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):

Flora and Fauna

A flora and fauna assessment of the Golden Plains Wind Farm has been prepared by Brett Lane and Associates Pty Ltd (BLA). This report is located in Appendix 8.

The information presented within the report has been informed by desktop and site investigations undertaken during the period July 2016 and May 2017 and represents a significant proportion of the investigations necessary to support the planning permit application. The assessments have identified the key ecological values within the site which have been used by the proponent to modify the siting and design of the proposed development and to identify potential environmental impacts and mitigation responses.

The impacts of this project on remnant ecosystems have been exhaustively investigated through field mapping and surveys of native vegetation and listed communities over the last ten months. The assessment includes habitat hectare assessment; targeted surveys for key species identified as likely to occur within the site; bird and bat utilisation surveys; levels 1,2 and 3 assessment for Victorian Brolga and a schedule for additional targeted surveys to be carried out during the remainder of 2017.

The surveys have provided an accurate picture of the extent of impact from the project on native vegetation and associated biodiversity values, as well as a perspective on the proportional loss (less than two percent) of the total extent of native vegetation in the project area. The project has been subject to a detailed assessment of its impacts on the state-threatened Brolga through the process detailed in the Brolga Guidelines (DSE 2012).

The comprehensive information gathered and the work done by the proponent to avoid and minimise impacts on native vegetation means that the impacts on biodiversity from the project are not considered to be significant. Key findings are summarised below.

Native Vegetation

A total of 412.22 hectares of remnant native vegetation within 736 remnant patches comprising the following ecological vegetation communities were mapped within the project area:

- Heavier-soils Plains Grassland (EVC 132_61)
- Plains Grassy Wetland (EVC 125)
- Stony Knoll Shrubland (EVC 649)
- Non-eucalypt Grassy Woodland (EVC 175-61)
- Plains Grassy Woodland (EVC55-61)
- Creekline Grassy Woodland (EVC 68)
- Swamp Scrub (EVC 53)
- Riparian Woodland (EVC 641)

Almost 50% of the mapped vegetation was assessed as low quality and only 12% was assessed as high quality vegetation. Four large scattered River Red Gum trees were considered to provide important habitat for fauna due to their size, age and availability of hollows. A key design principle adopted by the proponent is to ensure that areas of high quality mapped vegetation are avoided wherever practicable, in line with the requirements of the Biodiversity Assessment Guidelines and Cl. 52.17 of the Golden Plains Planning Scheme.

The maximum area of native vegetation which may be impacted is 81.290 hectares. Of this:

- 81.009 hectares of native vegetation represents remnant patches comprising Plains Grassland (EVC 132_61), Plains Grassy Woodland (EVC 55_61), Non-eucalypt Grassy Woodland (EVC 175_61), Stony Knoll Shrubland (EVC 649), Plains Grassy Wetland (EVC 125) and Riparian Woodland (EVC 641).
- Of the remnant vegetation, 50.4% were of low quality, 41.3% of moderate and 7.5% of high quality, and
- 0.281 hectares represents four scattered trees (converted to extent in the BIOR report).

This removal represents less than two percent of the native vegetation on the site (of which there are several thousand hectares).

The project will be assessed using the high risk based assessment pathway under the *Permitted Clearing of Native Vegetation – Biodiversity Assessment Guidelines (Department of Environment and Primary Industries, September 2013)*. The proponent is currently investigating on-site offset opportunities and has identified two potential sites within the project area. These are outlined within the preliminary offset strategy within Appendix 10. Environmental management plans will detail appropriate mitigation measures to manage potential construction impacts on retained

native vegetation and include native vegetation protection zones and pest (plant and animal) control and rehabilitation of disturbed areas.

Listed Flora Species

The proposed wind farm will impact on the potential habitat for 17 EPBC Act and FFG Act listed flora species. Targeted surveys in areas of suitable habitat for these listed flora species will be undertaken in winter and spring. The winter surveys have been completed and reports are currently being prepared. Should significant numbers (e.g. greater than five individuals) of threatened flora species be found in any part of the proposed development footprint during forthcoming targeted surveys, the survey area will be expanded to encompass an alternative adjacent location for the affected infrastructure (e.g. turbine site, hard stand area, access track or underground power cabling route) that avoids the removal of the population of that species.

To date, all identified individual species are able to be retained and avoided by relocating the infrastructure or by further design refinement to avoid/go-around scattered individual plants. The location and extent of the threatened flora species population will be mapped adjacent to the new works area to ensure it is adequately accounted for in the Construction and Operational EMP. Site-specific measures will be developed for this location to ensure no impact occurs on the population, such as inductions for personnel; permanent fencing to exclude vehicle and personnel access; and appropriate signage to ensure the purpose of fencing is understood and met.

Threatened Fauna Species

Five *FFG Act*-listed fauna species were confirmed as occurring in the study area during fauna assessments: Brolga, Yellow-bellied Sheathtail Bat, Striped Legless Lizard, Growling Grass Frog and Golden Sun Moth. Three *EPBC Act* listed fauna species were detected during the fauna surveys, the Striped Legless Lizard, Growling Grass Frog and Golden Sun Moth. The following provides a summary of the findings and recommendations of the flora and fauna assessment required to avoid and minimise impacts on these threatened species.

Bird and Bats

The assessment concluded that the proposed wind farm is unlikely to have a significant impact on the common bird species, raptors and waterbirds utilising the wind farm site as almost all birds (97%) flew below the proposed rotor swept area (RSA) which is a minimum of 40 metres above natural ground level.

The site is not considered to be a significant habitat for the Yellow-bellied Sheathtail Bat, which occurs sporadically and in very small numbers on the site. Impacts are not expected to be of significance for the national population of this predominantly sub-tropical and tropical Australian species. A future Bat and Avifauna Management Plan, endorsed under and forming part of a future planning permit, is considered sufficient in mitigating potential impacts to birds and bats.

Striped Legless Lizard and Fat-tailed Dunnart

Ten tiled grid surveys were conducted and a total of 45 observations of Striped Legless Lizard were recorded within native grassland habitats within the project site. The Fat-tailed Dunnart was also observed in the same areas of habitat as the SLL. Areas of high quality native vegetation have largely been avoided during the siting and design of the project. It is submitted that the loss of 1% of site coverage will not have a significant impact as there is a significant large area of habitat available within the site for this listed species, including areas containing high quality habitat. The flora and fauna assessment report identifies additional mitigation measures including salvage and translocation protocols to minimise impacts on the species.

Growling Grass Frog

The Growling Grass Frog was recorded from some of the higher quality wetlands in the study area. These wetlands are not to be impacted by the wind farm construction and operation since most of the habitat also lies within a turbine exclusion buffer to minimise impacts on Victorian Brolga. Turbines have been removed from the original wind farm layout to ensure that there is no infrastructure to be sited within 100 metres of these identified sites.

Golden Sun Moth

The Golden Sun Moth was recorded in the study area and has the potential to occur throughout in suitable native grassland habitats. These habitats will be avoided where possible. In the case that these habitats are not able to be avoided the amount of habitat to be removed will be minimised and offset.

Victorian Brolga Population

Brett Lane and Associates has undertaken an assessment of the impacts on the State threatened Brolga (*Grus rubicunda*) within the attached BL&A (2017 (2.3)) Brolga Impact Assessment Report. This report is located in Appendix 9. DELWP (Grampians Region) has confirmed acceptance of the methodology in writing (dated 6 June 2017) stating:

'I can advise that the methodology for assessing the impacts of the proposed Golden Plains Wind Farm has been prepared in accordance with the agreed approach outlined in the *Approaches to Targeted Brolga Studies - Golden Plains Wind Farm - 6 December 2016* document.'

Eight pairs of Brolga occur in the southern and eastern parts of the BLA investigation area. These pairs represent less than two percent of the Victorian Brolga population. Impacts to Brolga have been assessed through the use of a collision risk model. Collision risk modelling of the impacts of the project on the Brolga (taking into consideration the application of turbine-free buffers to the nine of the 21 known breeding sites less than 3.2 kilometres from the wind farm) indicates that less than one bird per year will be affected by the turbines and powerlines associated with the project. This equates to between 2 and 21 birds over the life of the project. This level of impact is slightly less than that of the recently approved Dundonnell Wind Farm, which is half the size of the proposed wind farm.

A Brolga compensation plan, to be developed for the planning application will ensure that the government policy objective for wind farms and Brolgas in Victoria of 'zero net impact' on the Victorian Brolga population is met. The feasibility of this is considered high, a matter explored in detail in the BL&A (2017(2.3)) Brolga report, through the pro-active restoration and management of up to three currently drained wetlands within the Brolga's Victorian range. The level of uncertainty associated with the impact and compensation is described in detail in BL&A (2017 (2.3)). As the Brolga impact assessment has followed the methods and approach of the Victorian Brolga Guidelines (DSE 2012), it is considered that 'zero net impact' can be achieved with a high degree of confidence.

Landscape

A Landscape Impact Assessment has been prepared by XURBAN (2017). This report is located in Appendix 13 and the findings and recommendations of this assessment are summarised within this referral form.

The project site is not recognised within the Golden Plains Planning Scheme as having significant landscape values. The South-West Victorian Landscape Assessment Study 2012 (SWVLAS) applies to the project site and has been reviewed within the XURBAN (2017) report. The report concludes that the SWVLAS recognises the geological formations that occur within the landscape which contribute to the landscape sensitivity. However, the SWVLAS also acknowledges that significant changes have occurred within the landscape as a result of human settlement and agricultural practices; suggesting lower landscape sensitivity.

The XURBAN (2017) report identifies that the project site is located within the 'Western Volcanic Plain' (Character Type 1). The report highlights that the majority of the viewshed (24km) is within this character type except for an area to the north; designated as 'The Uplands' (Character Type 2) (refer Appendix 13). The landscapes which are set aside as parks are typically within the Uplands Landscape Unit. This unit has greater topographical variation and contains areas that were not cleared for farming. In particular, these forested areas have a higher sensitivity, however the increase in vegetation also screens views to the volcanic plain and to the wind farm.

Within the XURBAN report the subject site and the Volcanic Plains Landscape Unit (the Plains) is assessed as having a low sensitivity to change. It is a rural landscape that has been significantly altered to create expansive areas for farming. The XURBAN 2017 report concludes that the flat topography and the extensive clearing results in an expansive landscape that can accommodate the 230m high wind turbines that are proposed.

Accordingly, the report concludes that the overall visual impact from within the landscape character units and from publically accessible locations (such as roads and reserves) is assessed as **low**. The report states that areas of greater sensitivity and particularly urban areas, are all situated at some distance from the nearest wind turbines. Apart from Rokewood, the urban areas within the viewshed are at the edge of the viewshed. The landscape assessment identifies that existing planting would also screen or filter views to the Golden Plains Wind Farm. Even from Rokewood, the report states that intervening vegetation will screen views, and in this landscape urban areas are typically well vegetated. Foreground vegetation and buildings will screen the wind farm from view. Therefore, the XURBAN (2017) report concludes that the overall visual impact from urban areas is assessed as **nil – negligible**.

Noise

A preliminary noise assessment has been undertaken (refer Appendix 16).

The noise assessment has concluded that compliance with the NZS 6808:2010 base noise limit of 40 dB L_{A90} is achieved at all wind speeds at all identified neighbour properties (including the school and child care) identified in the vicinity of the proposed Golden Plains Wind Farm for two candidate wind turbine models (Servion 3.6M140 and Vestas V136-3.6).

Predicted noise levels at host properties comply with the recommended base noise limit of 45 dB L_{A90} at all wind speeds for both candidate wind turbine models.

Social

No significant social effects have been identified at this stage of the project development.

The design and siting of the wind farm will not affect residential access to the community facilities and services provided in the vicinity of the project. The proponent has commenced early consultation and engagement with the community. Through this process, the proponent has developed a community benefits programme which will be implemented by a Community Reference Group which will be established later this year.

The future Traffic Management Plan (TMP) (conditional on all wind farm permits) will outline the measures required to ensure that residential access in the vicinity of the project be maintained during the construction period. For example, the TMP will ensure that traffic generated by the project will be coordinated so as not to interact with school bus times and routes and will incorporate measures to ensure resident safety.

The project site is within commuting distance of a skilled workforce residing in Ballarat and Geelong and is likely to draw much of the future labour force from these regional centres. The project will generate demand for labour in stages and is unlikely to result in displacement of residences or increased demand for rental accommodation within Rokewood.

Amenity impacts associated with wind farms, including noise, shadow flicker, electromagnetic interference, visual effects, can all be appropriately managed within the site in accordance with the *Policy and Planning Guidelines for Wind Energy Facilities in Victoria 2016* through appropriate conditions on the planning permit.

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)

BL&A have undertaken a significant amount of native vegetation mapping and assessment which have been used to inform the layout of the proposed wind farm. The flora and fauna assessment is provided within Appendix 8.

BL&A have assessed native vegetation in a manner which meets requirements of both the current *Permitted clearing of native vegetation: Biodiversity Assessment Guidelines* (DEPI 2013) and the *Native Vegetation Clearing: Draft Assessment Guidelines* (DELWP 2016).

Existing information

The wind farm site and the area out to ten kilometres from the wind farm was reviewed against the:

- Pre-1750 (pre-European settlement) and recent mapping of Ecological Vegetation Classes (EVCs) obtained from Biodiversity Interactive Maps (DELWP 2016b)
- EVC benchmarks for the Victorian Volcanic Plains bioregion (DELWP 2015c)
- Victorian Biodiversity Atlas (VBA), a database administered by DELWP (2016c)
- Vegetation/Modelled FFG Act Communities layer in DELWP's Biodiversity Interactive Map (DELWP 2016a), and
- Protected Matters Search Tool (Department of the Environment 2016), consulted to determine whether nationally listed species or communities potentially occurred.

Field Survey

The wind farm area was surveyed for native vegetation at various times between August 2016 and April 2017, as follows:

- **9th -18th August 2016** - Overview vegetation assessment for initial area of the wind farm
- **24th November 2016 – 7th December 2016** - Detailed vegetation assessment within proposed layout for the northern section
- **20th February 2017 – 10th March 2017** - Detailed vegetation assessment within the proposed layout (across the entire site) and
- **4th – 5th April 2017** - Detailed vegetation assessment (additional areas) within the current layout (across the entire site).
- **15th – 19th and 24th and 26th May 2017** – Targeted Spiny-Rice Flower surveys have been completed.

The investigation area was surveyed initially by vehicle and areas supporting remnant native vegetation were inspected in more detail on foot. Sites in the investigation area found to support native vegetation or with potential to support ecological communities listed as threatened under the EPBC Act or FFG Act were mapped. Mapping was undertaken through a combination of aerial photograph interpretation and ground-truthing using a hand held GPS.

The results of this assessment are located in Section 5.3.1 of the (BLA 2017) *Golden Plains Wind Farm – EES Referral Flora and Fauna Assessment Report No. 16064 (1.3)*. Appendix 11 of this report is the DELWP generated Biodiversity Impacts and Offset Requirements (BIOR) report.

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

NYD Estimated area 81.290 (hectares)

The maximum area of native vegetation which may be impacted on to facilitate the wind farm is 81.290 hectares. Of this, 81.009 hectares of native vegetation represents remnant patches and 0.281 represents four scattered trees (converted to extent in the BIOR report).

This removal represents less than two percent of the native vegetation on the site (of which there are several thousand hectares).

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

N/A approx. percent (if applicable)

Not applicable

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

NYD Detailed assessment completed. If assessed, please list.

The following Ecological Vegetation Classes may be affected.

- Heavier-soils Plains Grassland (EVC 132_61)
- Plains Grassy Wetland (EVC 125)
- Stony Knoll Shrubland (EVC 649)
- Non-eucalypt Grassy Woodland (EVC 175-61)
- Plains Grassy Woodland (EVC55-61)
- Creekline Grassy Woodland (EVC 68)
- Swamp Scrub (EVC 53)
- Riparian Woodland (EVC 641)

Have potential vegetation offsets been identified as yet?

NYD Yes If yes, please briefly describe.

A Preliminary Offset Strategy has been prepared by Biodiversity Offsets Australia (2017) in accordance with Victoria's *Planning and Environment Act 1987* (P&E Act) and *Permitted clearing and native vegetation – Biodiversity Assessment Guidelines* ('Biodiversity Assessment Guidelines') (DEPI 2013), and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The preliminary offset strategy outlines the proposed method to source suitable offsets to meet requirements under the Victorian P&E Act and Biodiversity Assessment Guidelines, and to provide opportunities to meet potential requirements under the EPBC Act once they have been determined.

The preliminary offset strategy provided in Appendix 10 outlines the currently identified general and specific biodiversity equivalence units (BEUs) offsets. The total General and Specific BEUs for Small Scurf-pea *Cullen parvum* habitat are available for purchase on Victoria's Native Vegetation Credit Register (NVCR). However, the remaining specific BEUs are not available.

As current market availability cannot meet the proposed Golden Plains Wind Farm offset requirements, the proponent will seek suitable offset sites within or close to the wind farm site that can generate the offsets required, including the likely federal offset requirements. Sites on properties within the proposed wind farm area will be prioritised to locate offsets close to the clearance sites and protect the retained ecological values on site.

Desktop site assessments have been undertaken and potential offset sites have been identified in the wind farm host properties as well as in neighbouring properties which support significant offset values, including high numbers of modelled threatened flora or fauna habitats, and assessed or modelled areas of NTGVVP, SHWTLP, GEWVVP and Spiny Rice-flower habitat.

These landowners have also expressed interest in registering an offset site on their property. The number of potential host and neighbour offset sites identified illustrate that the proponent has multiple on site options to meet their offset requirements. Desktop assessments will be undertaken on all the host and neighbour offset sites identified to determine their potential to meet the Victorian and Federal offset requirements.

Desktop assessments have already been undertaken on two potential offset sites within the wind farm (Potential Offset Sites 1 and 2 respectively). Site 1 has the potential to generate sufficient General and Specific BEUs to meet the Victorian offset requirements, with the exception of the Specific BEUs required for habitat for Southern Swainson-pea *Swainsona recta*. However, if Site 1 is used in combination with Site 2 and NVCR credits, or with another potential offset area

identified, it will likely to meet all the Golden Plains Wind Farm Victorian offset requirements.

It is anticipated that sufficient areas of NTGVVP and SHWTLP will be available in the potential host and neighbour offset sites to meet the likely Commonwealth offset requirements. Potential Offset Sites 1 and 2 are estimated to comprise up to 531.27 hectares of NTGVVP and up to 326.7 hectares of SHWTLP collectively. If host or neighbour properties do not contain sufficient areas of an appropriate quality of these ecological communities, potential offset sites beyond the proposed wind farm area will be identified. One potential site is Warrambeen, which is located immediately north-east of the proposed wind farm.

Offset requirements for the permitted relocation of Striped Legless Lizard, Golden Sun Moth and Spiny Rice-flower habitats will be determined as part of the EPBC Act Referral process. It is anticipated that sufficient areas of suitable habitat are available within the potential host and neighbour offset sites to meet the likely offset requirements for these EPBC listed species. Potential Offset Sites 1 and 2 are estimated to comprise up to 531.27 hectares of suitable habitat for Spiny Rice-flower and up to 523.15 hectares of suitable habitat for Golden Sun Moth and Striped Legless Lizard. If this is not sufficient there are offsets available at Warrambeen and the GEVVVP site in Bannockburn.

Suitable offsets sites will be secured in perpetuity through an appropriate on-title agreement in negotiation with the relevant landowners and referral authority.

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

Avoidance and Minimisation

The native vegetation assessment was used to inform the wind farm layout. The avoidance and minimisation of impacts on high quality vegetation has been prioritised throughout the development of the wind farm layout (see Appendix 2 of BL&A 2017(1.3)). This has been achieved by:

- Re-location of access tracks to avoid and minimise areas where high quality native vegetation is located
- Strategically positioning collector stations, batching plants and temporary construction compounds to avoid impacting native vegetation
- Removal of wind turbines from all areas of high quality native vegetation located on private property
- Implemented buffers around wetlands to avoid impacting high quality native vegetation
- A total of 227 wind turbines have been sited greater than 100 metres from a waterway or wetland and four wind turbines have been sited greater than 85 metres from a waterway or wetland (including groundwater dependent ecosystems)
- A total of 227 wind turbines have been sited out of the Land Subject to Inundation Overlay
- Minimising native vegetation impact by upgrading existing farm access tracks and access ways for use for the project
- Co-location of underground cables and access tracks to minimise native vegetation impact and removal
- Designing cable routes to avoid impacting native vegetation along waterways by utilising singular points of crossing and overhead transmission lines where required
- Minimising the need for new access points off the public road network by using existing farm access points
- Truck turning radii factored into track design to accurately understand and minimise native vegetation impacts, where practical, and
- Refining the position of turbine hardstands to avoid or reduce the area of native vegetation affected.

Additional detail on how native vegetation has been avoided and minimised is located in Appendix 2 of (BLA 2017(1.3)) *Golden Plains Wind Farm – EES Referral Flora and Fauna Assessment Report No. 16064 (1.3)*. The BLA report is located in Appendix 8.

Conservative Assumptions

A conservative approach has been taken during the native vegetation assessments. For example:

- The overview assessment was undertaken in winter, grass species identification was difficult in some areas that had been heavily grazed. In these areas, a conservative approach was taken, and any vegetation that could not be confirmed as meeting the DELWP criteria for a remnant patch was nonetheless mapped as such.
- During the detailed native vegetation assessment in February-March 2017 and April 2017, some areas of roadside vegetation had recently been burnt for the purposes of managing fuel loads and fire risk. These areas have been treated as native vegetation and the DELWP modelled score applied. For these areas, the determination of whether a listed community may be present was based on the surrounding vegetation.

In relation to the Brolga collision risk model, the following conservative assumptions have been made:

- Wind turbines will operate for 24 hours a day and at their maximum rotation speed
- The maximum number of eight breeding pairs occurs in the study area every year as it was the above average rainfall year of 2016, and
- There is an equal likelihood of all 23 breeding wetlands being used by the eight pairs each year.

Accuracy of information

The native vegetation assessment has been undertaken by qualified botanists and ecologists. The native vegetation field work has been carried out in winter, spring, late summer and early autumn. The short duration and seasonal timing of field assessments can result in some species not being detected when they may occur at other times with some being undetectable at the time of the survey or unidentifiable due to a lack of flowers or fruit. The survey covered a number of seasons, including an average to above average rainfall period in winter and spring 2016.

For these reasons, the state of vegetation during surveys was considered suitable to ascertain the extent and condition of native vegetation for assessment under the Guidelines and for identification of threatened ecological communities.

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

Native vegetation mapping and assessment (described earlier) has also identified that the proposed wind farm footprint will result in the loss of 10.08 hectares of the FFG Act listed community Western (Basalt) Plains Grassland (WBPG).

The proposed wind farm footprint will remove the following EPBC Act listed communities:

- 49.52 hectares of NTGVVP
- 2.538 hectares of SHWTLP
- 0.56 hectares of GEVVVP.

The proposed wind farm will impact potential habitat for the following EPBC Act and FFG Act listed flora species:

- Small Milkwort
- Small Scurf-pea
- Tough Scurf-pea
- Small Golden Moths
- Clumping Golden Moths
- Trailing Hop-bush
- Clover Glycine
- White Sunray
- Spiny Rice-flower
- Shelford Leek-orchid
- Fragrant Leek-orchid
- Hairy Tails
- Button Wrinklewort
- Large-headed Fireweed
- Swamp Fireweed
- Basalt Sun-orchid, and
- Swamp Everlasting.

Further targeted flora surveys are proposed to ascertain the status and numbers of these threatened species within the proposed windfarm footprint (i.e. turbine sites, access tracks and underground power cabling routes) as follows:

- May 2017 - Targeted Winter Survey for EPBC and FFG listed Spiny Rice Flower has been completed and reports are being prepared. The project can be modified to avoid significant areas containing Spiny Rice Flower within road reserves.
- October 2017 - Targeted Spring Survey for FFG listed Small Scurf Pea, Tough Scurf Pea, Clumping Golden Moths, Shelford Leek Orchid, Basalt Sun Orchid will be undertaken
- October 2017 - Spring Survey for the EPBC and FFG listed Clover Glycine, Spiny Peppergrass, Fragrant Leek Orchid, Button Wrinklewort, Large headed Fireweed
- December 2017 - Targeted Summer Survey for the FFG listed Small Milkwort during November to January and the Hairy Tails
- December 2017 - Targeted Summer Survey for the EPBC listed Trailing Hop-bush and Swamp Fireweed, and
- December 2017 - Targeted Summer Survey for the EPBC and FFG listed Trailing Hop-bush and Swamp Everlasting.

Should significant numbers (e.g. greater than five individuals) of threatened flora species be found in any part of the proposed development footprint during forthcoming targeted surveys, the survey area will be expanded to encompass an alternative adjacent location for the affected infrastructure (e.g. turbine site, hard stand area, access track or underground power cabling route) that avoids the removal of the population of that species.

The location and extent of the threatened flora species population will be mapped adjacent to the new works area to ensure it is adequately accounted for in the Construction and Operational EMP. Site-specific measures will be developed for this location to ensure no impact occurs on the population, such as inductions for personnel; permanent fencing to exclude vehicle and personnel access and appropriate signage to ensure the purpose of fencing is understood and met.

Fauna Assessment

Fauna assessments commenced on site in July 2016 and are continuing.

Habitats on the site have been assessed for their potential to support fauna species listed as threatened under the EPBC Act and the FFG Act as required under the DELWP policy and planning guidelines for wind farms in Victoria (DELWP 2016b).

The wind farm site was surveyed by vehicle. Where indigenous fauna habitat was recorded, more detailed observations were undertaken on foot. When being inspected on foot, the following methods were used:

- Incidental searches for mammal scats, tracks and signs (e.g. diggings, signs of feeding and nests/burrows)
- Turning over rocks and other ground debris for reptiles, frogs and mammals
- Bird observation during the day, and
- General searches for reptiles and frogs; including listening for frog calls in seasonally wet areas.

Key results of the fauna assessment are listed below:

- The majority of the wind farm site comprises land which is of low quality for fauna due to its extensive modification and the removal of most indigenous habitat. Some planted trees, remnant grassland (mainly along road reserves) and rocky outcrops, as well as wetlands and creek lines on the wind farm site provide moderate to high quality habitat for fauna species.
- Based on existing information and an overview assessment in 2016, 56 listed fauna species were identified as having the potential to occur in the radius of investigation.
- Following further investigations, 11 of these species, including seven birds, one mammal, one reptile, one frog and one invertebrate, were confirmed as occurring or had the potential to occur within the wind farm site due to the presence of suitable habitat or the species being recorded during the overview assessment or targeted surveys
- The majority of threatened birds recorded or considered likely to occur at the wind farm site are waterbirds. In addition, the Swift Parrot and migratory (non-threatened) White-throated Needletail also have the potential to occur there
- One species of migratory shorebird (Latham's Snipe) has the potential to occur in the wind farm site based on this initial investigation due to the presence of suitable habitat. No other migratory shorebirds are expected to regularly occur in the study area.
- A small number of the calls of the Yellow-bellied Sheathtail Bat was recorded in the study area during targeted bat detector surveys.
- Targeted Striped Legless Lizard and Fat-tailed Dunnart surveys were undertaken in 2016. These two species were recorded in a number of native grassland habitats in the study area
- The Growling Grass Frog was recorded from some of the higher-quality wetlands in the radius of investigation. Two of these were within the proposed wind farm site. These wetlands are not to be impacted by wind farm construction and operation and buffers of at least 100 metres have been provided between these confirmed sites and any wind farm infrastructure.
- The Golden Sun Moth was recorded in the study area and has the potential to occur throughout in suitable native grassland habitats. These habitats have been avoided where possible, through the adoption of the 'minimisation' principle in the Biodiversity Assessment Guidelines. Unavoidable removal of habitat (i.e. grassland) will be offset, with the offset strategy to be provided in the planning application (see discussion under native vegetation above)
- Three EPBC Act listed fauna species were detected during the fauna surveys, the Striped Legless Lizard, Growling Grass Frog and Golden Sun Moth
- No species listed under the EPBC Act Migratory Species list have been recorded at the wind farm site. Two such species, the White-throated Needletail and Latham's Snipe, are likely to occur, the former more generally as an aerial, overfly species and the latter in densely vegetated wetlands and waterways, and
- Five FFG Act-listed fauna species were confirmed as occurring in the study area during incidental or targeted fauna surveys on the site: Brolga, Yellow-bellied Sheathtail Bat, Striped Legless Lizard, Growling Grass Frog and Golden Sun Moth.

Bird Utilisation Survey

Two bird utilisation surveys were undertaken in Summer and Autumn 2017. These surveys were carried out in accordance with the requirements for a "Level One" bird risk assessment in accordance with '*Wind Farms and Birds - Interim Standards for Risk Assessment*' issued by the *Australian Wind Energy Association* (AusWEA 2005). This approach has been endorsed in the latest Best Practice Guidelines (Clean Energy Council 2013). The first survey was carried out between 30th January – 4th February 2017 and the second survey was carried out between the 9th to the 13th April 2017.

The surveys were carried out using a fixed-point bird count method and involved an observer stationed at a survey point for 15 minutes. Eight impact sites (impact points were located near proposed turbine) and four reference points were surveyed.

During this period, all bird species and numbers of individual birds observed within 200 metres of the survey point were recorded. The species, the number of birds and the height of the bird when first observed were documented. For species of concern (threatened species, waterbirds and raptors), the minimum and maximum heights were recorded.

The survey found:

- The most abundant species frequenting the proposed wind farm were common farmland birds as follows.
 - House Sparrow
 - Common Starling
 - Australian Magpie
 - Little Raven and
 - White-plumed Honeyeater.
- Almost all birds counted (97.5%) flew below Rotor Swept Area (RSA) height (RSA height = 40 to 190 metres above natural ground level).
- The number of Wedge-tailed Eagle recorded over the proposed wind farm site is comparable with utilisation rates for this species in similar agricultural landscapes in south eastern Australia. This level of activity is not exceptional and risks to this species are therefore considered to be low.
- Raptors made up 1 percent of all individual birds observed during the survey, with Brown Falcon the most abundant species.
- Waterbirds were not common during the survey, reflecting the limited availability of wetland habitat on the site. They comprised 1.1 percent of all birds recorded.
- The proposed wind farm is unlikely to have a significant impact on the common farmland bird species that dominate the site, or on the raptors and waterbirds that utilise the wind farm site in small numbers.

Bat Assessment

Ultrasonic bat detection took place from late January to early February 2017 (16 nights) and during April 2017 (17 nights) using seven SongMeter detectors distributed across all habitat types on the proposed wind farm site. For each survey, bat recordings were undertaken at six locations, including one site (the wind monitoring mast) using a detector at both ground level and at 45 metres above the ground.

The assessment found:

- A total of 82 nights of bat recordings were made in summer 2017 and 112 in autumn 2017 from seven sampling points across the proposed Golden Plains Wind Farm, totalling 2328 recording-hours.
- Nine species of bats were recorded: seven were common, secure and widespread, and two were threatened bats (Eastern Bent-wing Bat; Yellow-bellied Sheathtail Bat); additionally a further three multi-species complexes were recorded.

- The vast majority of bat activity was attributable to common and widespread species.
- The two threatened species (Yellow-bellied Sheath-tail Bat; Eastern Bent-wing Bat) were recorded on very few nights with very low numbers of calls compared with most other species, overall 13 calls of the Yellow-bellied Sheath-tail Bat were recorded from both surveys and one call of the Eastern Bent-wing Bat was recorded in summer 2017.
- Species recorded from a height of 45 metres included, the Gould's Wattle Bat, Chocolate Wattle Bat and Long-eared Bat sp. (*Nyctophilus* sp.).
- The vast majority of bat species calls (including threatened species) were recorded from close to the ground, indicating that most of the time, most of these species would avoid collision with operating turbines.
- Furthermore, threatened species were recorded infrequently and not at turbine RSA height. At this low level of activity, collision risk is considered very low for these species and no significant impact is expected on their populations.

Striped Legless Lizard Assessment

The Striped Legless Lizard assessment involved reviewing records within the radius of investigation from the Victorian Biodiversity Atlas (VBA). The online *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool (DoEE 2016a) was consulted and it indicated potential for the species to occur, based on existing records and habitat modelling.

The targeted field survey was undertaken in sites identified as being potentially suitable Striped Legless Lizard habitat by an experienced zoologist, with a good cover of basaltic surface rock, cracking soils and/or dense tussock-forming grasses.

The assessment was carried out using ten tile survey grids. Each grid consists of 50 grooved terracotta or concrete roof tiles placed in a 20 x 45 metre grid configuration, with tiles spaced five metres apart. Tiles were monitored in spring-summer at fortnightly intervals. The first monitoring took place on 5th September, with the last check on 12th December 2016. Each grid was checked a total of six times. The grids were checked between approximately 9am and 1pm. The time of grid checking was randomised, to eliminate time-of-day differences between grids in detection. The weather conditions during the checks ranged from cool to warm and varied from overcast to clear skies.

The assessment found:

- An established population of Striped Legless Lizard was detected in suitable habitats on the proposed wind farm. A total of 45 observations of Striped Legless Lizard was recorded during the tile grid survey with at least one observation occurring at every tile grid location. The species was observed at each tile grid, along with additional vertebrate species, such as Tussock Skink and Fat-tailed Dunnart (both listed as Lower Risk - Near Threatened on DELWP's threatened species advisory list)
- Impacts of the proposed wind farm on the population of this species in the study area are not expected to be significant as the development footprint is to be confined to a small percentage of the thousands of hectares of habitat in the area. Mitigation measures to avoid any significant impacts upon the species are provided. The application of the 'avoid' and 'minimise' principles in relation to native vegetation removal for the project have greatly assisted in reducing the area and proportion of suitable habitat on the wind farm site affected by the project, and
- A salvage protocol to translocate individuals to adjacent, retained areas of grassland habitat in the limited area of higher quality habitat unavoidably removed during construction of the proposed wind farm should be implemented.

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.

The species listed below have been recorded from the project area.

Threatened Species (listed on the EPBC Act and/or FFG Act)

- Spiny Rice-flower
- Yellow-bellied Sheathtail Bat
- Brolga
- Striped Legless Lizard
- Growling Grass Frog, and
- Golden Sun Moth.

Migratory Species (Listed on the EPBC Act)

- None to date

Listed Communities (Listed on the EPBC Act and/or FFG Act)

EPBC Act

- Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP)
- Seasonal Herbaceous (Freshwater) Wetland of the Temperate Lowland Plains (SHWTLP), and
- Grassy Eucalypt Woodland of the Victorian Volcanic Plain (GEWVVP)

FFG Act

- Western (Basalt) Plains Grassland.

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.

The proposed project will result in the removal of a small proportion of the area of habitat for the foregoing threatened species and of the listed threatened communities, as follows:

- The site is not considered to be a significant habitat for the Yellow-bellied Sheathtail Bat, which occurs sporadically and in very small numbers on the site. Impacts are not expected to be of significance for the national population of this predominantly sub-tropical and tropical Australian species
- No significant impacts are anticipated on the Brolgas as the 'zero net impact' policy objective for wind farms on this species; range will be met, as described in the BL&A (2017 (2.3)) Brolga report
- 81.009 hectares of grassland habitat for the Striped Legless Lizard and Golden Sun Moth will be removed. Most of this is in the southern section of the wind farm site, where an estimated 4,000+ hectares of grassland occurs. This impact is not expected to be significant for the populations of these species in the region and the offset requirements under the Biodiversity Assessment Guidelines will provide a no net loss outcome for these habitats, and
- No habitat known to support the Growling Grass Frog will be removed. Turbines have been removed from the original wind farm layout to ensure that there is no infrastructure to be sited within 100 metres of these confirmed sites.

EPBC Act

- Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP) (49.524 hectares to be removed of at least 250 hectares confirmed on the wind farm site (within the 'investigation area'). It is likely that the area of this community across all properties involved in the project would be more extensive than this as this was not included in the initial overview mapping of vegetation in the southern section of the wind farm
- Seasonal Herbaceous (Freshwater) Wetland of the Temperate Lowland Plains (SHWTLP) (2.538 hectares to be removed), and
- Grassy Eucalypt Woodland of the Victorian Volcanic Plain (GEWVVP) (0.56 hectare to be removed).

FFG Act

- Western (Basalt) Plains Grassland (10.08 hectares to be removed of what is likely a much more extensive area of this community).

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.

The impacts of this project on remnant ecosystems have been exhaustively investigated through field mapping and surveys of native vegetation and listed communities over the last ten months, as described earlier in this Referral. The surveys have provided an accurate picture of the extent of impact from the project on native vegetation and associated biodiversity values, as well as a perspective on the proportional loss (less than two percent) of the total extent of native vegetation in the area. The comprehensive information gathered and the work done by the proponent to avoid and minimise impacts on native vegetation means that the impacts on biodiversity from the project are not considered to be significant.

Collision risk modelling of the impacts of the project on the Brolga (taking into consideration the application of turbine-free buffers to the nine of 21 known breeding sites less than 3.2 kilometres from the wind farm) indicates that less than one bird per year will be affected by the turbines and powerlines associated with the project. This equates to between 2 and 21 birds over the life of the project. This level of impact is slightly less than that of the recently approved Dundonnell Wind Farm, which is half the size of the proposed wind farm. A Brolga compensation plan, to be developed for the planning application, will ensure that the government policy objective for wind farms and Brolgas in Victoria of 'zero net impact' on the Victorian Brolga population is met. The feasibility of this is considered high, a matter explored in detail in the BL&A (2017 (2.3)) Brolga report, through the pro-active restoration and management of up to three currently drained wetlands within the Brolga's Victorian range.

The level of uncertainty associated with the impact and compensation is described in detail in BL&A (2017 (2.3)). As the Brolga impact assessment has followed the methods and approach of the Victorian Brolga Guidelines (DSE 2012), it is considered that 'zero net impact' can be achieved with a high degree of confidence. DELWP (Grampians Region) has also confirmed acceptance of the methods and approach.

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

NYD No Yes If yes, please briefly describe.

The avoidance and minimisation of impacts on native vegetation, and in particular higher quality grassland, has been prioritised throughout the development of the wind farm layout (see Appendix 2 of BL&A 2017(1.3)). Where this has not been possible, offsets will be identified and a strategy for achieving them presented in the planning application, pursuant to Clause 52.17-6 (Offset Requirement), in accordance with Biodiversity Guidelines. The proponent is currently investigating on-site offset opportunities and two potential sites have been identified. The preliminary offset strategy is provided in Appendix 10.

Ecologically sensitive construction management measures will be employed during construction in order to minimise biodiversity impacts. These will be detailed within an Environmental Management Plan. With the implementation of standard mitigation measures, the threatening processes identified above can be managed:

- Protection of areas of native vegetation and scattered trees and areas of environmental sensitivity. These areas would be fenced and marked as no go zones and construction personnel would be appropriately educated about managing these areas
- Implement best practice hygiene protocols for control of weeds and pathogens, to reduce the risk of the introduction and spread of weeds and pathogens, under the Arrive Clean, Leave Clean guidelines from Department of the Environment and Energy (DoEE)
- Any sand, soil or gravel imported to the site should be certified to be weed and pathogen free.
- Ensure all on-site personnel are inducted by a suitably qualified ecologist to communicate the sensitivities of threatened species and their habitats. This is to minimise the likelihood of inadvertent disturbance and to communicate stop-work procedures if any fauna species are found to be present and at risk of impact (eg. stress/injury/death) within the works area
- Reiterate communication of ecologically sensitive areas to contractors during induction and toolbox meetings to minimise likelihood of unintentional disturbance
- Salvage and translocation protocols for Striped Legless Lizard
- A qualified and licensed fauna spotter/catcher will be present at the time of permitted habitat clearing to assess for fauna presence prior to vegetation removal. Fauna detected will be encouraged to disperse of natural accord or transferred to suitable habitat using methods in accordance with a DELWP-approved management authority under the *Wildlife Act 1975*, and
- Where native animals are found to be present during works, works should cease and the animal be given the opportunity to naturally disperse outside the works area.

The Bat and Avifauna assessment undertaken to date has identified that the minimum height of 40 metres above natural ground level applied to the lower height of the rotor swept area will avoid impacts on most birds on the site. Standard conditions imposed on wind energy facility planning permits include the requirement to prepare a Bat and Avifauna Management Plan in consultation with DELWP. This plan must include a statement of objectives, a monitoring program and procedures for reporting, as well as clear triggers for adaptive management and discussion of the range of possible mitigation/management responses that might apply should an unacceptable impact be detected.

A population viability assessment (PVA) will be undertaken for the planning permit application to understand the risks associated with the modelled impact of the project on the Victorian Brolga population. The PVA determines the extent to which the Victorian Brolga population may potentially decline as a result of the project. Utilising the findings of the PVA it is then possible to define the number of birds that need to be recruited to the population to achieve zero net impact.

Based on the outcomes of the PVA the following work will be undertaken to develop the GPWF Brolga Compensation Plan:

- Development of a set of objectives for the number of young and adult recruits required to offset the impacts of the optimum wind farm layout
- Identify historic breeding sites, if possible, where wetlands that have been drained can be restored to breeding sites again
- Identify private landowners in areas 3.2km beyond the nearest wind turbine of the wind farm or other likely wind farm proposals where breeding sites can be restored with their cooperation (discussions are underway with the Corangamite CMA to identify potential restorable Brolga breeding sites)
- Screen these sites for their suitability by developing with relevant expert input, specifications for suitable Brolga compensation sites, including catchment yield and inundation frequency (i.e. water security)
- Agree with DELWP the type of on-title security arrangement that ensures longevity of the restored breeding site
- Work with landowners to seek their written commitment to be part of the compensation plan if the project is built, and
- Apply the offset strategy principles of the *Permitted Clearing of Native Vegetation Biodiversity Assessment Guidelines 2013*.

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

13. Water environments

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

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

Water is commonly used for dust suppression and the construction of wind turbine foundations. The quantity of water for dust depression is dependent upon a number of factors including recent precipitation, road material, humidity and vehicle intensity. During the dry months, dust generation may increase and as a result a typical unsealed road may require 1 to 2 litres of water per square meter per hour (Global Road Technologies, n.d.). It is estimated that in a particularly dry season an access track of 5m in width would require the upper limit of water (2L/m²). This would equate to approximately 2500L per hour per km of track. Not all tracks will be constructed or accessed by construction vehicles at the same time.

Each wind turbine foundation would require approximately 1,100m³ of concrete including 183 m³ of water. The final volumes of water will be dependent on the design of the wind turbine foundations and not all turbines will be constructed in the first year.

Based on these estimates it is expected that the volume of required water will be less than 1GI/yr.

The primary source of water for use on the site is not currently known at this stage. Groundwater is a potential source of water for the site or components of the site. Other potential sources include existing on site dams, rainwater tanks and water carting.

The site is not located within a groundwater management area. Further assessment will be required to determine the suitability of groundwater to meet construction water requirements.

A licence is required under Section 51 of the *Water Act 1989* to take and use groundwater and under Section 67 of the *Water Act 1989* a licence is required to construct and operate a bore or to undertake works on waterways. Southern Rural Water can impose conditions on the licence under Section 71 of the *Water Act 1989* including the maximum amount of water that may be taken in particular periods and circumstances. Therefore these issues will be considered during the licensing and approvals process under the *Water Act 1989*.

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

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

The wind farm and associated infrastructure will make up approximately 1% of the total site. On balance, the proportional area change of impervious surfaces will not be substantial due to the large area of the total site.

Environmentally sensitive construction measures will be employed including sediment and erosion controls and management of wastewater to protect water environments. In accordance with the Victorian Policy and Planning guidelines a sediment, erosion and water quality management plan will be prepared in consultation with Corangamite Catchment Management Authority. The major mitigation measures recommended to be included within this management plan to control wastewater and runoff relate to:

- sediment and erosion control;
- management of wastewater within the site. It is proposed to remove wastewater from the site (eg- from workers amenities) via truck to a licenced facility rather than manage this wastewater within the site.
- disposal of wastewater from the concrete batching plant would need to be undertaken in accordance with the *EPA 1998 Environmental Guidelines for the Concrete Batching Industry*.
- spill and pollution control; and
- minimising direct impacts on waterways.

Should any works on designated waterways be required, an application would be made to the Corangamite Catchment Management Authority for a works on waterways permit under Section 67 of the *Water Act 1989* which will include standard conditions and guidelines to avoid damage and ensure permit compliance. Management of discharge to surface waters is controlled by the Environmental Protection Authority under the *Environment Protection Act 1970*.

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.

Jacobs has undertaken the *Golden Plains Wind Farm Surface Water Desktop Assessment*. This assessment is located in Appendix 11.

The proponent has measured the distances of the wind farm infrastructure from both the VicMap Waterways GIS layer and also the 2013 aerial imagery (Refer Appendix 11a). This approach has been adopted as waterways have shifted as a result of historic farm draining works to increase the cropping and grazing capacity of farms within the site. Field investigations conducted by Brett Lane and Associates in December 2016 (after periods of above average rainfall meaning that the wetlands were at maximum capacity) were used to develop updated wetland maps. These have been used as a reference for infrastructure distances from wetlands. These methods were chosen as it has been identified that the VicMap wetland spatial layer has some inaccuracies, when ground truthed, in terms of depicting the physical location of waterways.

The Proponent's analysis has shown that:

- There are four (4) wind turbines located on the land affected by the Land Subject to Inundation Overlay (LSIO);
- There are three (3) wind turbines (as measured from the centre of the wind turbine) located less than 100 metres from the waterways. Of those three the wind turbines are located a minimum of 95 metres from the waterway
- There is one (1) wind turbine located less than 100 metres from a wetland (89 metres from the centreline of the wind turbine)
- Underground cables will intersect Ferres Creek in five places and Mia Mia Creek in four places
- Internal tracks will cross Ferres Creek in one place and Mia Mia Creek in four places
- Underground cables and internal access tracks will intersect wetlands in four places, and
- No infrastructure is proposed within 100 metres from confirmed Growling Grass Frog wetland sites.

These significant distances provide an effective setback to reduce the potential for environmental impacts on waterways and wetlands. Jacobs has been commissioned to prepare an Environmental Management Plan which will be submitted with the planning permit application and will document mitigation responses to environmental risk. Development of the following management plans in consultation with Corangamite Catchment Management Authority will help control risk associated with impacts to flood flow pathways, surface water and water quality. These management plans will comply with industry standard guidelines.

- Construction and site works management plan;
- Sediment, erosion and water quality management plan
- Wastewater management strategy including details on removal of wastewater from the site (i.e. workers amenities) via truck to a licensed facility rather than management within the site).
- Hydrocarbon and hazardous substances plan

Where required, permits such as 'works on waterways' permits will be obtained and the project will be designed to comply with conditions and guidelines to avoid damage and ensure permit compliance.

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

NYD No Yes If yes, specify which water environments.

The flora and fauna assessment has identified that the water environments are unlikely to support threatened or migratory species as the individual habitats are limited within the site in extent; many are ephemeral and vary in quality. A total of three fish species listed under the EPBC Act and/or FFG Act were considered likely to occur within the 10-kilometre radius of investigation due to existing records and/or presence of suitable habitat (refer to BLA 2017). All three species, Australian Grayling, Dwarf Galaxias and Yarra Pygmy Perch, are listed under the EPBC Act and FFG Act. None of these species was considered likely to occur on the wind farm site due to a lack of suitable permanent waterway habitat.

The Growling Grass Frog was recorded from some of the higher quality wetlands in the study area. These wetlands are not to be impacted by the wind farm construction and operation since most of the habitat lies within a turbine exclusion buffer to minimise impacts on Victorian Brolga. No infrastructure will be sited within 100 metres of confirmed Growling Grass Frog wetland sites.

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.

There are no wetlands under the Ramsar Convention or listed in 'A directory of important wetlands in Australia' wetlands that could be affected by the proposed wind farm.

The Western District Lakes Ramsar Wetlands Site comprises nine lakes. The nearest is Lake Corangamite which is located 20km (line of sight) from the site. Significant impact to the Ramsar Wetland is unlikely due to the localised nature of the proposed works and the significant distance between the Ramsar Wetland and the project site.

Could the project affect stream flows?

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

The project has potential to impact on stream flows, however the impact has been reduced as 227 wind turbines have been sited over 100 metres from the centre line of the waterway or wetland. Four wind turbines are to be sited within the Land Subject to Inundation Overlay (LSIO). Potential changes to hydrology resulting from the project can be managed through the planning permit application process. The LSIO triggers the requirement for the proponent to demonstrate that the project will not impact on surface water flows including:

- the susceptibility of the project to flooding and flood damage
- the potential flood risk to life, health and safety
- the effect of the development on reducing flood storage and increasing flood levels and flow velocities
- the effect of the development on redirecting or obstructing floodwater, stormwater or drainage water
- the effect of the development on reducing flood storage and increasing flood levels and flow velocities, and
- the effect of the development on river health values including wetlands, natural habitat, stream stability, erosion, environmental flows, water quality and sites of scientific significance.

This assessment would be informed through consultation with Corangamite Catchment Management Authority, DELWP, Golden Plains and Colac Otway Shire Councils.

Mitigation responses to potential impacts to stream flows will be incorporated into a sediment, erosion and water quality management plan which will be submitted with the planning permit application.

Where it is not possible to avoid crossings of a waterway or waterbody the design of the project will have to comply with the Corangamite Catchment Management Authority guidelines and the conditions of a 'works on waterway' permit.

Could regional groundwater resources be affected by the project?

NYD No Yes If yes, describe in what way.

Jacobs has prepared the *Golden Plains Preliminary Ground Water Assessment* which is located in Appendix 12.

On both a regional and local scale groundwater is present predominately within the Newer Volcanics basalt, which forms the water table aquifer across most of the area. Groundwater is expected to be flowing in a southerly direction towards Lake Corangamite and Lake Colac. Available hydrogeological information has indicated the potential for shallow (<5mBNS) groundwater occurrence across much of the site.

Available construction information has indicated that local and short term dewatering may be required should groundwater be intercepted during construction of footings. Given the relatively small scale of the turbine footprint (foundation diameter 20 m to 25 m and depth of 3.5m to 4m), likely duration of any dewatering and the generally shallow nature of any drawdown, the impacts are expected to be localised and minor. Therefore, the project is unlikely to have a regional scale impact to groundwater. The trenches for electricity transmission will be shallow (approximately 1m deep) and will avoid groundwater interception.

The primary source of water for use on the site is not currently known at this stage. Further assessment will be required to determine the suitability of the water for construction including water quality sampling and slug testing to determine the rate of recharge of the aquifer. The impact of groundwater extraction on beneficial uses and the regional groundwater resource will be discussed in detail with the Corangamite Catchment Management Authority and Southern Rural Water Authority. Appropriate licenses and approvals would need to be obtained from the Southern Rural Water Authority under the *Water Act 1989* to use existing bores, to construct new bores and to take and use groundwater. Risks to water quality associated with sedimentation will be addressed through the development of the Sediment, erosion and water quality management plan which will be submitted as part of the planning permit application documentation.

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 beneficial uses of the water environments include local bore users within 2km of the site and potential groundwater dependent ecosystems (GDEs). It is unlikely that environmental values (beneficial uses) of water environments will be significantly impacted. At a very local scale (<100m) construction of the wind turbine footings may cause temporary local alteration to the groundwater flow system if the footings intersect the water table. However, these impacts will be localised, minor and short term. It is noted that 227 wind turbines are located >100 metres from potential groundwater dependent ecosystems in accordance with the recommendations provided within the Jacobs (2017) Groundwater Report.

The salinity management overlay applies to portion of the site and statewide mapping (FUA, 2016) indicates that watertable salinity of the site ranges between 3,500-13,000 mg/L TDS. Saline groundwater can have corrosive or aggressive properties that could affect concrete and steel structures. The impact of groundwater quality on concrete and steel structures will be assessed.

Management of water runoff from construction and dewatering activities will be outlined within the following Management Plans for the Site:

- Sediment, erosion and water quality management plan
- Construction and Work Site Management Plan

These will be prepared in accordance with EPA 1996 *Environmental Guidelines for Major Construction Sites*. A risk assessment would be required to determine the extent of impact on beneficial uses and values requiring protection. Mitigation responses to address the risk (including increased saline levels within the discharged groundwater) would be required to be detailed within an environmental management plan for the site. Where necessary, water would be treated and licences obtained from the Corangamite CMA to discharge to surface water.

The majority of wind turbines (227 wind turbines) will maintain a distance of 100 metres from local bores and GDEs. In all other instances turbine sites within 100 metres (4 wind turbines) will be evaluated for potential to impact groundwater flow patterns pre, during and post construction. This evaluation may involve the installation of shallow monitoring wells across the site to confirm hydraulic conductivity and inform inflow volumes during construction. Water quality samples may also be collected to determine groundwater corrosion effects. If required, a dewatering impact assessment could be prepared to assess the impacts of dewatering/construction on local GDEs and bore users. This would be undertaken in consultation with Corangamite Catchment Management Authority.

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

NYD No Yes If yes, describe in what way.

Potential impacts to aquatic, estuarine or marine ecosystems will be managed through the development of a sediment, erosion and water quality management plan. Management of these measures are discussed in more detail within the flora and fauna section of this referral.

Any potential works which may impact on aquatic ecosystems would require the approval of the Corangamite Catchment Management Authority and need to be compliant with the permit and relevant guidelines.

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.

The changes to the layout and number of wind turbines results in increased distances between wind farm infrastructure and the water environments including waterways, wetlands and groundwater dependent ecosystems. As stated above, 227 wind turbines are sited over 100 metres from these water environments. The project will also be constructed in a manner which minimises impacts to water environments. Standard conditions for wind energy planning permits require the development of an Environmental Management Plan in consultation with relevant agencies such as the CMA, DELWP, Golden Plains Shire and Colac Otway Shire. The EMP will be endorsed and will form part of the planning permit.

Environmentally sensitive construction and operation methods will be employed to ensure that the project does not significantly impact on water environments. These include:

- Sediment and erosion controls to ensure that the project does not discharge waste water and runoff to water environments
- Trucking of wastewater from the site (i.e. construction workforce amenities)
- Diversion of stormwater away from parts of the site where soil will be disturbed
- Appropriate spill control and bunding measures to control and contain potential spills from the use of chemicals such as oils, fuels and sprays associated with construction activities
- Appropriate dust suppressions methods will be employed to avoid increase in dust and soils entering the waterways
- Incorporation of appropriate pollution control measures outlined in EPA Publication 480 Environmental Guidelines for Major Construction Sites
- Siting of concrete batching plant and any on-site water disposal treatment at least 100 metres from any watercourse, and
- Preparing a dewatering impact assessment, if required.

Development of the following environmental management plans in consultation with Corangamite Catchment Management Authority and Golden Plains Shire Council will help control risk

associated with impacts to flood flow pathways, surface water and water quality. These management plans will comply with industry standard guidelines.

- Construction and work site management plan
- Sediment, erosion and water quality management plan, and
- Hydrocarbon and hazardous substances plan

The SEPP water quality objectives that apply to the site are those for the *Cleared Hills and Coastal Plains – lowlands of Barwon, Moorabool, Werribee, Maribyrnong, Curdies & Gellibrand catchments* as set out in this policy. Water quality data from sites downstream of the windfarm (representative of project site conditions) can be used as baseline data against which to monitor potential impacts such as increased turbidity and suspended soils during construction phase, nutrient concentrations and alterations to flow. This data will inform the development of the monitoring programs incorporated into these environmental management plans.

Disposal of wastewater from the concrete batching plant would need to be undertaken in accordance with the *EPA 1998 Environmental Guidelines for the Concrete Batching Industry*.

Where required, permits such as 'works on waterways' permits will be obtained and the project will be designed to comply with conditions and guidelines to avoid damage and ensure permit compliance.

If required, appropriate approvals will be obtained from the Southern Rural Water Authority for extraction of groundwater or discharge to surface waters, where relevant.

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

Discussions have commenced with the Corangamite Catchment Management Authority. Refer to the summary of consultation provided in Appendix 7.

14. Landscape and soils

Landscape

Has a preliminary landscape assessment been prepared?

No Yes If yes, please attach.

A Preliminary Landscape Assessment has been prepared by XURBAN 2017. Refer to Appendix 13. The assessment findings and recommendations are summarised within this referral form.

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 project site is not subject to a Significant Landscape Overlay and is not recognised within the Golden Plains Planning Scheme as having any landscape significance. The roadside vegetation, waterways within the subject site, and the Rokewood Common Nature Conservation Reserve adjacent to the site are affected by the following overlays under the Golden Plains Planning Scheme:

- Environmental Significance Overlay – Water Course Protection (ESO2).
- Vegetation Protection Overlay – Western Plains Grasslands (VPO1)
- Vegetation Protection Overlay – Bushland Reserves and Roadside Vegetation Areas (VPO2).

The roadside vegetation along Cressy-Shelford Road is affected by the following overlay under the Colac Otway Planning Scheme:

- Vegetation Protection Overlay - Roadside Vegetation (VPO2)

The location of the ESO and VPOs is provided in Appendix 5.

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

Within the XURBAN 2017 report a review of the South-West Victorian Landscape Assessment Study 2012 (SWVLAS) has been undertaken as it applies to the project site. This study does not form a reference or incorporated document under the Golden Plains Planning Scheme. The *Policy and Planning Guidelines for development of wind energy facilities in Victoria 2016* (Victorian Guidelines) require proponents to consider Clause 12.04 Significant Environment and Landscapes of the State Planning Policy Framework. In addition, the Victorian Guidelines state that strategic landscape studies have been completed for a number of regions across Victoria. While other landscape studies are mentioned in the updated version of the Victorian Guidelines 2016 there is no reference to the SWVLAS (2012).

The XURBAN (2017) Report states that the SWVLAS recognises and values the geological formations that occur within the landscape which contribute to the landscape sensitivity. However, the SWVLAS also acknowledges that significant changes have occurred within the landscape as a result of human settlement and agricultural practices; suggesting lower landscape sensitivity.

The XURBAN (2017) report states that the project site is located within the 'Western Volcanic Plain' (Character Type 1). It highlights that the majority of the view shed (24km from the project site) is within this character type except for an area to the north designated as 'The Uplands' (Character Type 2). The SWVLAS highlights a number of landscape changes that are anticipated for the Western Volcanic Plain character unit including:

This area is subject to a number of wind farm developments and proposals. The State Governments planning zones review may lead to an increase in tourism, retail and accommodation uses in rural areas, a potential increase in rural living density and a potential increase in smaller lots and dwellings in the farming zone (SWLAS, The Western Volcanic Plain, p8).

The natural landscape within the project site has been highly modified through changes in land surface from cropping and pastoral activities; construction of dwellings and other farm infrastructure; and development of the 500kV power line. Therefore, it is concluded within the XURBAN (2017) report that these changes do suggest a lower landscape sensitivity within this area.

The findings of the preliminary assessment of the landscape and visual impacts of the proposed wind farm on these landscape units and designated character areas are discussed within the appended report (XURBAN 2017).

- **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.

The project site abuts Rokewood Common Nature Conservation Reserve (Rokewood Common NCR) and Rokewood Golf Club (RCC). The nearest wind turbine is located 270 metres from the shared boundary with the Rokewood Common NCR. This reserve is an open grassland reserve.

Further assessment of the potential visual impacts of the wind farm from these sites will be undertaken as part of the planning permit application documentation. Any potential impacts can be mitigated through the planning permit process.

- **Is any clearing vegetation or alteration of landforms likely to affect landscape values?**

NYD No Yes If yes, please briefly describe.

The project site is not recognised by Golden Plains Shire Planning Scheme as having significant landscape values. The XURBAN (2017) report assesses the subject site and the Volcanic Plains Landscape Unit (The Plains) as low landscape sensitivity and low to medium within the stony rises. The watercourses within the site are subject to an environmental significance overlay and vegetation clearing within land affected by these overlays will be avoided, to the extent

practicable.

The vegetation to be removed from the site will be predominately grassland, as the project site has already been significantly modified and cleared of vegetation (refer to Appendix 4). Therefore removal of this vegetation is unlikely to significantly impact on landscape values. Where practicable, stony rises will be avoided.

Is there a potential for effects on landscape values of regional or State importance?

NYD No Yes Please briefly explain response.

The XURBAN (2017) report identifies that landscapes which have regional or State importance are typically located within the Uplands Landscape Unit (within the 12-24km viewshed), except for Lake Corangamite located 20km to the south- west.

Overall the visual impact from these areas has been assessed by XURBAN (2017) as **low**.

Is mitigation of potential landscape effects proposed?

NYD No Yes If yes, please briefly describe.

The XURBAN (2017) report concludes that the level of sensitivity is high for residential properties and the conservation and recreation areas adjacent to the project site. The preliminary landscape and visual impact assessment provided in Appendix 13 has not examined the potential impact from individual residential properties or homesteads of non-participant landowners as this is not required at this stage. This will be undertaken to support the planning permit application.

Clause 3.3.1 of the *Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria* states that the Minister for Planning will require a preliminary landscape assessment to accompany a referral of a proposed wind energy facility. This has been provided in Appendix 13.

Clause 52.32 of the Golden Plains and Colac Otway Planning Schemes and Section 4.3 of the *Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria* outlines the information required to accompany a planning permit application. This includes the development of a more detailed landscape and visual impact assessment which includes:

- How the proposal responds to any significant landscape features for the area identified in the planning scheme
- An assessment of the visual impact of the proposal on the landscape including land that is described in a schedule to the National Parks Act 1975, Ramsar wetlands and coastal areas, and
- How the proposal responds to likely amenity effects on the surrounding area, existing dwellings and nearby settlements due to visual impacts.

Where a significant visual impact from individual residential dwelling or recreation area is identified, an assessment will be undertaken to identify appropriate mitigation measures. This may include:

- Use of non-reflective materials within the site
- Avoid, where possible, aviation lighting
- On site landscaping plan to soften the impact of ancillary on-site infrastructure, or
- Off-site landscaping program and plan which involves a program of voluntary off-site landscape mitigation works in part of the view shed (likely to be in the order of 5km of the site).

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

Within the XURBAN (2017) report the subject site and the Volcanic Plains Landscape Unit (the Plains) is assessed as having a low sensitivity to change. It is a rural landscape that has been significantly altered to create expansive areas for farming. The XURBAN (2017) report concludes that the flat topography and the extensive clearing has created a large landscape which can accommodate the 230m high wind turbines that are proposed.

Accordingly the report concludes that the overall visual impact from within the landscape

character units and from publically accessible locations (such as roads and reserves) has been assessed as **low**. Areas of greater sensitivity and particularly urban areas, are all situated at some distance from the nearest wind turbines. The report states that apart from Rokewood, the urban areas within the viewshed are at the edge of the viewshed and existing planting would also screen or filter views to the Golden Plains Wind Farm. The assessment concludes that even from Rokewood, intervening vegetation will screen views, and in this landscape urban areas are typically well vegetated. Foreground vegetation and buildings will screen the wind farm from view. Therefore, the overall visual impact from urban areas has been assessed by XURBAN (2017) as **nil – negligible**.

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.

There are no significant potential effects on land stability, acid sulphate soils or highly erodible soils.

The natural surface topography and landforms across the project site have been altered as a result of grazing and cropping. Previous work by Dahlaus (2006) and Robinson et al. (2013) show that erosion susceptibility of landforms and soils within the project site are generally low (Jacobs 2017). Areas of potential for sheet and rill erosion were assessed as very low, except for along drainage lines which had moderate susceptibility. Gully erosion susceptibility was classed as very low across the project site.

The preliminary geomorphology report (Jacobs 2017) provided in Appendix 14 concludes that localised impacts can be mitigated by careful site management, through the implementation of an Erosion and Sediment Management Plan. Such a plan would be incorporated in the Environmental Management Plan (which would be endorsed and form part of the planning permit for the site).

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

NYD No Yes If yes, please briefly describe.

The preliminary geomorphology assessment (Jacobs 2017) concludes that there are unlikely to be geotechnical hazards or sites of geological and geomorphological significance within the project site.

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

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 will result in a significant temporary increase in construction traffic during the construction period. Following construction, operational traffic to and from the site will be negligible.

Jacobs has prepared a Preliminary Traffic Impact Assessment, which is located in Appendix 15. This assessment identifies the:

- Existing conditions of the site, including the proposed freight routes from Portland, Geelong and from local quarries
- Estimated traffic generated during the construction and operation of the proposed Golden Plains Wind Farm; and
- Potential impact of this generated traffic on the surrounding key road network.

A conservative estimate of traffic generated by the construction of the 235 turbine Golden Plains Wind Farm is estimated as:

- 266,064 one-way trips are expected to occur during the four year construction period (2019 to 2022). Peak construction is expected to occur on from Jan – Dec 2020.
- 2,923 one-way Over Dimensional vehicle trips are expected to occur during the four years.

To ensure this assessment is robust as well as conservative is it estimated that the maximum trips generated during the construction phase will occur during the peak construction year (2020).

A maximum of 442 one-way daily trips is estimated to be generated externally during the peak construction stage.

During peak construction (2020) year there will be a significant temporary increase in traffic during the peak hours particularly on the roads carrying traffic for multiple key routes to site. However, the Level of Service² levels for these roads has remained unchanged (LoS A). Therefore, the existing road network has sufficient capacity to accommodate the estimated traffic demand for the peak construction phase (2020). Based on this assessment, is it also assumed that the existing road network would have sufficient capacity to absorb the 30 one-way daily trips generated during operation phase.

A detailed future Traffic Management Plan will be prepared in accordance with the guidelines, and will respond to specific matters arising from the assessment process. This plan will mitigate any adverse transport related issues. Broadly, the future TMP will consider in addition to the conditions previously described:

- Delivery Times for the movements of oversized and over-mass vehicles
- Details regarding the escort requirements for oversized and over-mass loads
- A program of delivery in accordance with the construction program
- The consideration of Emergency Service notifications and appropriate Emergency Service requirements
- Further analysis of traffic impacts at the intersection level
- The consideration of impacts on local residents, business and services which will include but not limited to considering:
 - Local buses – regional and school services;
 - Local trains;
 - Refuse collection;
 - Livestock and agriculture product transportation;
 - Local community events

² A qualitative measure describing operational conditions within a traffic stream and the perception of these by motorists and/or passengers.

- Farm machinery transportation; and
- Regular goods deliveries.
- The requirement for the proponent to cover the costs of the reinstatement of any damage to local roads and pavements caused by project construction and related activities. This is to be determined in consultation with the Golden Plains Shire and Colac Otway Shire Councils.

This plan will be prepared in consultation with Golden Plains Shire Council, VicRoads and Colac Otway Shire Council.

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.

Compliance the requirements of the Golden Plains Planning Scheme and the *Policy and Planning Guidelines for Wind Energy Facilities* will ensure that the wind farm will have a negligible impact on the amenity enjoyed by residents.

Potential Construction Impacts

During construction of the wind energy facility and associated infrastructure there is the potential for temporary impacts to arise. These temporary impacts may include increased dust from exposure of soil; visual impact of construction works; increased noise from the concrete batching plants or construction of wind turbine foundations; and increased traffic generation.

These impacts can be appropriately managed through the development of a construction and work site management plan. The construction and work site management plan will contain:

- Procedures to suppress dust emissions from construction-related activities, and
- Procedures for managing noise emissions from construction-related activities

Temporary visual impact arising from construction would be addressed during the planning permit application process through the development of a detailed landscape and visual impact assessment including assessment from sensitive receptors within the vicinity of the site. Visual impact can be managed through appropriate development of on-site landscaping plans which provide appropriate screening of construction activities within the site.

Traffic impacts

The Jacobs (2017) Preliminary Traffic Assessment has identified potential construction traffic routes and site access locations. The assessment has identified the intersection improvements and the design requirements for site access on the nominated routes for pre-construction, construction and operation traffic (including the requirements to accommodate large heavy vehicles transporting the wind turbines to the site). Site access will be designed to ensure safe sight distances, turning movements and potential through traffic conflicts.

Preliminary consultation has commenced with the Golden Plains Shire traffic engineers who have asked the proponent to consider the following matters during the development of the traffic management plan (TMP). These include:

- Incorporating the Council's road maintenance plan into the TMP to ensure that works are not undertaken to roads prior to utilisation by construction traffic.
- Sequencing of sourcing materials for construction of the wind farm to ensure that the project does not create rock shortages and subsequent price increases that may affect Council works.

A meeting is currently being organised with Colac Shire Council Traffic Engineers.

To limit the transportation of construction materials to the site the following steps are proposed:

- Mobile crushing of rock already stockpiled throughout the site and from the excavation of wind turbine foundations ;

- Sequencing of the supply of construction materials through the construction period, in consultation with Golden Plains and Colac Otway Shire Councils.

All construction traffic impacts will be appropriately managed through the development of a traffic management plan (TMP) which will be prepared in consultation with VicRoads, Golden Plains Shire Council and Colac Otway Shire Council. The content of this plan is outlined above.

Shadow Flicker

Clause 5.1.2 of the *Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria* establishes the acceptable standards for shadow flicker. The shadow flicker experienced immediately surrounding the area of a dwelling (garden fenced area) must not exceed 30 hours per year as a result of the operation of a wind energy facility. A preliminary shadow flicker assessment by GHD on the preliminary layout indicates that only 1 habitable (non-host) dwelling, will be subject to more than 30hrs of shadow flicker per year. Further investigation is required; however this impact can be addressed by re-locating the wind turbine or establishing an agreement with the landowner. A Shadow Flicker Assessment will be prepared to accompany the planning permit application.

Operational Impacts

Noise from the proposed turbines will be subject to a full impact assessment which demonstrates compliance with the New Zealand Standard NZS6808:2010, Acoustics Wind Farm Noise. A preliminary noise assessment has been undertaken which includes the noise predication contour for the highest predicted noise level in relation to participant and non-participant dwellings (refer Appendix 16).

The noise assessment has concluded that compliance with the NZS 6808:2010 base noise limit of 40 dB L_{A90} is achieved at all wind speeds at all identified neighbour properties (including the school and child care facility) identified in the vicinity of the proposed Golden Plains Wind Farm for both candidate wind turbine models (Servion 3.6M140 and Vestas V136-3.6).

Predicted noise levels at host properties comply with the recommended base noise limit of 45 dB L_{A90} at all wind speeds for both candidate wind turbine models.

Visual impact can be managed through appropriate development of on-site landscaping plans which provide appropriate screening of permanent infrastructure such as collector stations and the terminal station. Conditions requiring off-site landscaping programs are included within the *Policy and Planning Guidelines for Wind Energy Facilities in Victoria 2016* (Guidelines 2016) and can be implemented to minimise the visual impact of wind turbines on sensitive receptors within close proximity to the project site.

Site access and intersection improvements undertaken during the construction phase will improve the operating efficiency of the existing road network. Traffic generated during operation will be low and will have a negligible impact on the operating efficiency of this improved network. Details are provided within Appendix 15.

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.

The design and siting of the wind farm will not affect residential access to the community facilities and services provided in the vicinity of the project.

The future TMP (conditional on all wind farm permits) will outline the measures required to ensure that residential access in the vicinity of the project be maintained during the construction period. For example, the TMP will ensure that traffic generated by the project will be coordinated so as not to interact with school bus times and routes and will incorporate measures to ensure resident safety.

The project site is within commuting distance of a skilled workforce residing in Ballarat and Geelong and is likely to draw the future labour force from these regional centres. The project will generate demand for primarily labour in stages and is unlikely to result in displacement of residences or increased demand for rental accommodation within Rokewood.

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 wind farm and all associated infrastructure will occupy approximately 1% of the site. This represents a negligible loss of agricultural land. Once constructed, agricultural activities can continue underneath and around the wind turbines.

The wind farm operator will lease this land on an annual basis providing an alternative non drought dependent source of income for the farmers. This will greatly assist 39 agricultural business who are directly involved in the project.

Upon decommissioning of the project, the land will be reinstated to enable agricultural land uses to continue within the site.

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.

No significant social effects have been identified at this stage of the project development. The project will provide a net beneficial social and economic benefit to the area, which is discussed below.

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

Snapshot of the Area

The Australian Bureau of Statistics (ABS) State Suburbs (SS) covering the project site includes Rokewood SS and Mannibadar SS. The population of these combined state suburbs is 635 people and the median age is 45. These population figures illustrate the relative isolation of this area compared with other state suburbs located closer to Ballarat and Geelong.

The median weekly household income for Mannibadar SS is \$942 and for Rokewood is \$991 which is below the Victorian State average of \$1216 but in the same range as the regional Victoria weekly household income of \$945. Unemployment in Mannibadar SS is 2.5% and within Rokewood SS is 3.2,% which is below the state average of 5.4%. Of the employed people within Mannibadar SS and Rokewood SS approximately 63% and 31% respectively are employed in sheep, beef cattle and grain farming. This represents the top response in both state suburbs with a much smaller proportion of the population employed within other agricultural industry, school education, hospitals, local government administration and road freight transport (2011 Census Quick Stats).

The 2011 Index of Relative Social Disadvantage (IRSD) summarises a range of information about the economic and social conditions of people and households within an area. At a Local Government Area (LGA) level, Golden Plains is in the eighth decile of IRSD scores for Victorian LGAs which indicates a low level of relative socio-economic disadvantage. However, at the state suburb level Rokewood SS is in the 4th decile and Mannibadar is in the 5th decile which indicates relatively high levels of relative socio-economic disadvantage (Golden Plains Region Profile 2014:p18).

Economic and Community Benefits

There are significant economic and community benefits associated with the proposed wind farm. The wind power value chain incorporates five main stages: materials; components; manufacture; logistics; development and operations (which includes project development, geotechnical services, transportation, construction, and operations and maintenance). Further development of

the domestic wind power market will create extensive Victoria based job opportunities in materials production, component manufacturing, wind farm construction, transportation and research and development.

Using the data from the CEC 2012, *Wind Farm Investment, Employment and Carbon Abatement in Australia* report the proponent has estimated the direct, flow on and total employment from regional spending and the state as a whole from construction of the Golden Plains 800MW installed capacity wind farm. The development of the Golden Plains Wind Farm will create new direct and indirect employment opportunities within the area, including permanent operations and maintenance jobs, and supporting jobs during the construction and installation phases. These estimates are provided within the Table below.

Golden Plains Wind Farm Construction Employment 800MW Installed Capacity			
	Local/Regional	State	Total
Direct Employment	768	2352	3120
Production Induced Impact	824	2604	3428
Consumption Induced Impact	972	3104	4076
Total Employment Including Direct Jobs	2564	8060	10624

In addition to construction jobs, the annual employment opportunities during the 25 year operational life of the wind farm are outlined in the table below.

Golden Plains Wind Farm Annual Operations Employment 800MW Installed Capacity			
	Local/Regional	State	Total
Direct Employment	72	116	188
Production Induced Impact	52	84	136
Consumption Induced Impact	72	108	180
Total Employment Including Direct Jobs	196	308	504

The Golden Plains Shire Council will also receive rates in the order of \$800,000 per year (indexed) and host farmers will receive an annual non-drought dependent income for the lease of the land over the life of the wind farm.

These estimations have been developed based on ABS Census 2011, SIEFA 2011 and CEC 2012 reports.

Neighbourhood Benefit Scheme

The proponent is committed to sharing the financial benefits of the wind farm with neighbouring property owners. In consultation with the local community the proponent has identified four potential benefit schemes. Further details are provided in Appendix 17.

1) Electricity Offset and Energy Audit Benefit Scheme

The objective of this scheme is to offset current electricity costs through the provision of renewable electricity. This scheme will be offered to all non-host habitable and registered dwellings within 3km of a constructed turbine to an amount equal to the average Victorian home.

2) Financial Incentive Program

All neighbours (excluding host dwellings and dwellings located within the Rokewood township boundary) will be provided with an annual incentive based on level of impact. The financial incentive will be provided on the following basis. Each neighbour will receive \$1,000 per annum for each of the first three turbines and \$750 for each additional turbine constructed within 2km of their dwelling.

3) Community Investment Program

All community living within 10km of the wind farm will be provided with the opportunity to invest financially in the project.

4) Community Benefits Fund

The proponent proposes to establish a community fund program once the wind farm is operational. This program will provide annual financial support of approximately \$240,000 (on average about \$1,000 annually per turbine) for a range of community based initiatives, projects and events that benefit local communities.

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 project area is currently located within the Registered Aboriginal Party (RAP) boundary of the Wadawurrung (Wathaurung Aboriginal Corporation (WWAC)) and partly in an area not currently administered by a RAP. The Eastern Maar Aboriginal Corporation (EMAC) and the Guligad Aboriginal Corporation (GAC) both have an interest in the area. GAC currently have a RAP application under review by the Aboriginal Heritage Council that encompasses the entire project area.

All organisations have been consulted and involved in developing the approved methodology for the standard and complex assessment. A table outlining Aboriginal Heritage Stakeholder Consultation undertaken to date is provided within Appendix 7.

It was agreed during this consultation that a Cultural Heritage Management Plan (CHMP) would be prepared for the site and evaluated by WWAC and Aboriginal Victoria (Ballarat Regional Office) in consultation with EMAC and GAC. Both EMAC and GAC have agreed that formal post-standard assessment consultation should be undertaken via email as this will ensure that both the managers of these organisations and their field staff have access to the same information. The methodology for the stage 1 complex assessment was discussed and approved by both organisations verbally, and a document containing this information was issued for sign off on March 20, 2017.

The Heritage Insight team has developed a highly positive working relationship with all the Traditional Owner groups involved in the GPWF. The lines of communication are always open and methodology and results are discussed with field representatives, as well as preliminary management recommendations for each Aboriginal place (including options for avoidance, harm mitigation and potential salvage) in order to ensure that all heritage stakeholders are involved and have their voices heard throughout the process. This approach provides a framework for the development of the required future management conditions for the Cultural Heritage Management Plan (CHMP), and Heritage Insight has received extremely positive feedback from this approach from all Traditional Owner organisations involved in the project.

All formal Traditional Owner and Aboriginal Victoria consultation for the project has been positive and all methodological approaches proposed by Heritage Insight have all been met favourably thus far. It is considered highly unlikely that any issues will arise during the preparation of the CHMP that cannot be resolved within the CHMP process itself.

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)

The following investigations have been carried out within the site to date:

- Heritage Insight 2016, *Golden Plains Wind Energy Facility Preliminary Cultural Heritage Assessment* (November 2016) - The report provides an overview of the heritage assessment works undertaken in the area prior to the current project, as well as some background information in relation to the geology and pre-1750 ecology that are likely to have some bearing on the location, type and significance of Aboriginal Places in the activity area.
- Heritage Insight, *Preparation of the desktop component of the CHMP* – (December 2016 – ongoing). This report will expand on the findings of the preliminary heritage report and include all additional information required by Aboriginal Victoria and the RAP.

- *Standard Assessment* undertaken by Heritage Insight (February 15-22, 2017) - this standard assessment was undertaken on the WWAC side of the activity area. A total of 19 surface Aboriginal Places were located during the standard assessment in this area, primarily low density or isolated artefact occurrences, however two culturally modified trees were also recorded.
- *Standard Assessment* undertaken by Heritage Insight (February 27 to March 10, 2017) - this standard assessment was undertaken on the EMAC/GAC side of the activity area. This area east of Ferrers Creek is demonstrably more archaeologically significant due to the increased presence in the landscape of rocky rises and ridgelines, as well as a greater number of soaks, ephemeral watercourses and incidents of sandy soils. A total of 68 surface aboriginal places were located during the standard assessment in this area. These comprise low, moderate and high density artefact scatters, and also include two locations that appear to have a number of relatively intact stone arrangements. Stone arrangement sites are rare and these Aboriginal Places are likely to require more investigation and protection. Anecdotal evidence from landowners suggests there may be possible burial sites within the general area.
- *Stage 1 Complex Assessment* undertaken on the EMAC/GAC side of the activity area (March 27 to April 13 2017).
This phase of investigation involved the excavation of 25 x 2m² machine trenches at a sample location of proposed turbine locations and 31 linear machine trenches excavated on a sample of track/cable route linkages between them. The excavations were undertaken on a sample of the different landforms observed within the activity area in order to test the site prediction model developed during the desktop and standard assessments and to guide the methodology for stage 2 investigations.
- *Finalisation of the desktop and standard assessment sections of report* (April 18 to ongoing); data compilation and analysis of stage 1 complex assessment results; preparation of site cards for sites located to date; meeting with WWAC to discuss EMAC/GAC complex assessment results and finalise methodology for stage 1 complex assessment on WAC side of the activity area.
- *Stage 1 complex assessment WWAC side of the activity area* (May 15 to 26, 2017). This phase of investigation involved the excavation of a number of 2m² machine trenches at proposed turbine locations. These trenches were excavated on a sample of the different landforms observed within the activity area in order to test the site prediction model developed during the desktop and standard assessment and to guide the methodology for stage 2 investigations.

Further work will involve:

- June 5 to September 8, 2017
Stage 2 complex assessments on both sides of the activity area, to be undertaken with four concurrent field teams.

On completion of all fieldwork the remaining complex assessment works will be incorporated into the full plan and all analysis will be undertaken. Recommendations will be developed for the future management, protection, salvage and/or avoidance of all heritage Places and these will be discussed with the proponent prior to undertaking recommended meetings with all Aboriginal heritage stakeholders.

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

The current investigations undertaken within the site (as detailed above) have identified the existence of the following :

Preliminary Heritage Report

- A review of the Victorian Aboriginal Heritage Register (VAHR) identified two registered Aboriginal Places within the study area:
- VAHR 7622-0002 is a stone arrangement located west of Ferrers Creek (Morieson 1994).
- VAHR 7621-0005 is a surface artefact scatter located in close proximity to Mia Mia Creek and is unlikely to contain *in situ* material (Presland 1981). Both these sites have been disturbed by cultivation.

Initial Site Inspection – 22 September 2016

- Heritage Insight staff observed a scatter of lithic artefacts on the volcanic rocky rises within the site.

Standard Assessment (WWAC) - (February 15-22, 2017)

- A total of 19 surface Aboriginal Places were located during the standard assessment in this area, primarily low density or isolated artefact occurrences and two culturally modified trees were recorded.

Standard Assessment (EMAC/GAC) – February 27 to March 10, 2017

- This area east of Ferrers Creek is demonstrably more archaeologically significant due to the increased presence in the landscape of rocky rises and ridgelines, as well as a greater number of soaks, ephemeral watercourses and incidents of sandy soils. A total of 68 surface aboriginal places were located during the standard assessment in this area. These comprise low, moderate and high density artefact scatters, and also include two locations that appear to have a number of relatively intact stone arrangements. Stone arrangement sites are rare and these Aboriginal Places are likely to require more investigation and protection. Anecdotal evidence from landowners suggests there may be possible burial sites within the general area.
- Although a large number of surface Aboriginal Places were located during the standard assessment only 12 sub-surface excavations yielded cultural material. The majority of these had only very shallow soil profiles and a limited number of artefacts. When viewed in conjunction with the more extensive surface Aboriginal Places located during the standard assessment, it indicates that there may be a pattern developing showing greater surface amounts of cultural material and much less significant sub-surface deposits. If this pattern is confirmed the management of these Places will present fewer issues going forward.

Stage 1 Complex Assessment – March 27 to March 10, 2017

- *Stage 1 Complex Assessment* undertaken on the EMAC/GAC side of the activity area. This phase of investigation involved the excavation of 25 x 2m² machine trenches at a sample location of proposed turbine locations and 31 linear machine trenches excavated on a sample of track/cable route linkages between them. The excavations were undertaken on a sample of the different landforms observed within the activity area in order to test the site prediction model developed during the desktop and standard assessments and to guide the methodology for stage 2 investigations.
- A total of 12 Aboriginal Places were located as a result of the first stage of complex assessment. The extents of these Places have not yet been established. This will occur either by radial extent testing or on the basis of landform, to be decided following consultation with Matthew Phelan of AV and Victorian Aboriginal Heritage Registry staff. Data compilation for the first stage of complex assessment is currently being undertaken.

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.

A search of the Victorian Heritage Database was undertaken and one registered historical site was identified within the project area.

The registered site is the historic mining site, Queen of Plains Co. (H7622-0172) located at 429 Pitfield-Cressy Road, Golden Plains. It is listed on the Victorian Heritage Inventory but the heritage overlay under the Golden Plains Planning Scheme does not apply to the site.

The design of the proposed development will be sited to ensure that the project will not impact on the registered heritage site listed on the Victorian Heritage Inventory.

Is mitigation of potential cultural heritage effects proposed?

NYD No Yes If yes, please briefly describe.

A mandatory cultural heritage management plan (CHMP) is required under sections 43 (1) (a) and (b)(xxvi) of the *Aboriginal Heritage Regulations 2007*. Heritage Insight has recommended that a cultural heritage management plan be prepared to cover the RAP boundaries. The CHMP will be evaluated by WWAC and Aboriginal Victoria (Ballarat Regional Office) in consultation with EMAC and GAC.

In the event that larger and more complex sub-surface Aboriginal Places are revealed during the next stages of sub-surface investigation Heritage Insight is confident that the negotiations in relation to management of these Aboriginal Places will be streamlined and simplified as a result of the open consultative approach with all stakeholders during the life of the project.

In the event that wind farm infrastructure cannot be moved to avoid aboriginal sites. The disturbance to aboriginal sites will be minimised and material will be salvaged, logged and re-buried at suitable locations within the site.

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

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
- 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.

The proposed Wind Energy Facility will generate approximately >2500GWh of electricity per year (which will power approximately >450,000 average households).

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.

Please provide relevant further information, including proposed management of wastes.

The majority of material excavated during construction of the wind energy facility will be re-used on the site. The remaining material will be used for rehabilitation. General refuse will be removed from site and wastewater generated at the site will be managed within the Construction and Work Site Management Plan.

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

- Less than 50,000 tonnes of CO₂ equivalent per annum
 Between 50,000 and 100,000 tonnes of CO₂ equivalent per annum
 Between 100,000 and 200,000 tonnes of CO₂ equivalent per annum
 More than 200,000 tonnes of CO₂ equivalent per annum

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

The CO₂ generated during construction and operation of the wind farm is negligible and will be substantially offset by the savings generated by this renewable energy source.

It is anticipated that the project will result in >2.5 million tonnes of CO₂ savings per year. Therefore it will take less than six months to payback the small amount of CO₂ that may be generated associated with the operation of machinery and vehicles.

The exact quantities of greenhouse gas emissions can be determined once the final wind turbine has been selected.

17. Other environmental issues

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

- No Yes If yes, briefly describe.

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

As outlined in Section 8, the wind farm is located on land which has been highly modified by settlement and agricultural practices. Such historical practices have included the removal of native vegetation, stone removal, draining of wetlands, cropping and the introduction of farm and pest animal and plant species. Most of the wind farm is sited on parts of the site which are significantly degraded.

The wind farm is of a scale which supports connection into the existing high voltage 500kV electricity transmission line. Additionally, many years of wind monitoring have led to an optimal wind farm layout which will deliver electricity efficiently and ultimately at the lowest possible cost.

- Design: Please describe briefly

A number of preliminary and detailed site investigations have been carried out to identify environmental constraints and inform wind farm layout. Additionally, early and on-going consultation with the community, host landholders, government and agencies has also helped with the early identification of key issues and to inform project layout.

As a result of these early and on-going environmental investigations, the initial layout of the proposed wind turbines has been substantially modified including:

- Removal of 17 proposed wind turbines to provide for a turbine exclusion buffer to reduce risks on the Victorian Brolga to a 'zero net impact' level; and to avoid native vegetation and cultural heritage places (Refer Appendix 2A)
- Avoiding almost all areas of high quality native vegetation and habitat identified during the habitat hectare assessment of the project site
- Avoiding identified cultural heritage places known to date,
- Siting wind farm infrastructure a minimum of 100 metres from confirmed Growling Grass

Frog wetland sites

- Siting of 227 wind turbines a minimum of 100 metres from a waterway or wetland (including groundwater dependent ecosystems)
- Reducing the number of creek crossings or wetland crossings by internal access tracks or underground electricity cables
- Relocation of an access track to avoid an extensive section of roadside vegetation which contains Spiny Rice Flower; recently identified during targeted surveys, and
- Siting of the terminal station adjacent to the existing 500kV electricity transmission line and avoiding an area of high quality native vegetation.

The development has been designed to minimise the impact footprint. The overall site coverage is low at 1% of the total site. The design has been substantially modified to reduce the impact footprint including:

- Turbines have been re-located outside, or removed from large areas of high quality vegetation where possible
- Where possible, existing habitat corridors of a minimum of 30 metres width will be maintained.
- The project has been designed with a rotor swept area of a minimum of 40 metres above natural ground level to avoid the majority of bird flight paths. This has been confirmed by bird utilisations surveys have observed that all birds counted fly below this height
- To minimise the temporary impacts of construction infrastructure the project will be designed to co-locate construction infrastructure, such as concrete batching plants and construction compounds, with permanent infrastructure such as collector stations to reduce the area to be disturbed within the site
- Within the 100-metre radius area surveyed for each turbine site, the foundation and hardstand areas have been located to avoid and minimise the removal of native vegetation as much as possible
- Where possible, internal access tracks will utilise existing tracks within the project site. Where new tracks will result in removal of native vegetation widths have been reduced to 5 metres (increasing to 7 metres at corners) to minimise the impact footprint, while still maintaining functionality and safety
- The underground cable layout has been designed to avoid native vegetation removal, where possible
- Offset sites have been identified within the project site and in the area surrounding the project, and
- Salvage and translocation protocols approved by DELWP will be incorporated into EMPs for the site.

✘ Environmental management: Please describe briefly.

Clause 52.32 (Wind Energy Facility) of the Golden Plains Planning Scheme requires planning permit applications to be submitted accompanied by an Environmental Management Plan (EMP). As such, it is routine for wind farm planning permits to be issued with conditions requiring EMPs to be prepared in consultation with various agencies. Once endorsed the EMPs form part of the planning permit. This enables sufficient detail to be prepared as to how the environment is to be protected and managed during the construction and operation of the wind farm.

The *Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria* (DELWP 2016) (Victorian Guidelines) and the draft *National Wind Farm Development Guidelines* (July 2010) (National Guidelines) provide a standard expected framework for an EMP covering construction, operation and decommissioning phases of a wind energy facility.

Investigations which have occurred to date include initial recommendations for inclusion within the

EMP to be submitted as part of the planning permit application. This will be further informed and developed for inclusion with the planning permit application documentation.

The EMP will be prepared in compliance with the guidelines and informed by further consultation with government and referral agencies. The EMP will include as a minimum:

- Construction and work site management plan
- Sediment, erosion and water quality management plan
- Wastewater management plan
- Hydrocarbon and hazardous substances plan
- Wildfire prevention and emergency response plan
- Vegetation management plan
- Biosecurity management plan
- Environmental management plan training program
- Environmental management plan reporting program, and
- Implementation, review and monitoring timetable

The policy and planning guidelines also require that additional plans are prepared including:

- Traffic Management Plans
- Bats and Avifauna Management Plans, and
- On and Off Site Landscape Management Plans.

Further detailed assessment will be undertaken as part of the planning permit application to inform the development of these plans.

Other: Please describe briefly

To support a future planning permit application, the proponent will undertake detailed assessments of all potential amenity impacts including:

- Noise
- Blade glint
- Shadow flicker, and
- Visual impact.

These assessments will be prepared in compliance with the Victorian and relevant standards such as New Zealand Standard NZS 6808:2010 Acoustics – Wind Farm Noise (the Standard). The standard will limit noise emissions to no more than 40dBA (or the background noise level plus 5dBA) at dwellings. Shadow flicker cannot exceed 30 hours a year and mitigation (such as off-site landscaping) is available to dwellings to address visual amenity.

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 existing and proposed wind energy facilities within South west Victoria. There may be potential cumulative impacts relating to visual impact and impact to Victorian Brolga that will need

to be considered as the planning permit application is being prepared.

Visual Impact

The Golden Plains Planning Scheme does not identify the project site as having high landscape significance. The XURBAN (2017) report provided in Appendix 13 identifies the project site and the majority of the view shed as being located within the Volcanic Plain Landscape Character Unit with a small portion located within the Uplands Landscape Character Unit of the SWVLAS. XURBAN (2017) submits that the flat topography and extensive clearing has created a large landscape that can accommodate the 230 metre high wind turbines. Those areas affected by Clause 42.03 Significant Landscape Overlay of the Golden Plains and the Corangamite Planning Schemes are located at the edge of the view shed. The extent of vegetation within and around these areas screens views to the volcanic plain and the wind farm. The XURBAN (2017) report concludes that the overall visual impact from areas within the volcanic plains and from the uplands has been assessed as **low**. The visual impact from publically accessible locations has been assessed as **low** and from urban areas has been assessed as **nil-negligible**.

A further assessment will be undertaken in accordance with Section 5.1.3 of the *Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria* which will consider the cumulative impacts in more detail.

Victorian Brolga

The overall objective of the *Interim guidelines for assessment, avoidance, mitigation and offsetting of potential wind farm impacts on the Victorian Brolga Population 2011* is to manage the cumulative impact of multiple wind farms planned, assessed and operating independently within the Brolga's range in Victoria, so that there is 'no net effect' or ideally, a positive effect can be achieved for the population. The specific objective of these guidelines is that individual wind farms have, at a minimum, a zero net impact on population.

The proponent is working closely with DELWP and Brett Lane and Associates to ensure that the proposed wind farm will have a zero net impact. This has been achieved through the removal of 12 wind turbines to develop appropriate setbacks from Victorian Brolga breeding sites. The methodology and approach have been agreed with DELWP. The proponent has identified a potential compensation site for Victorian Brolga to ensure that there will be no cumulative impact on the Brolga population and that a zero net impact can be achieved. This will ensure that there will be no cumulative impacts to Victorian Brolga.

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.

In addition to the reports provided in support of this referral the following additional studies will be undertaken and provided as part of the planning permit application documentation:

- A detailed landscape and visual impact assessment including assessment from sensitive receptors within the vicinity of the site. This will also address cumulative impacts.
- A detailed noise assessment.
- Shadow Flicker and Blade Glint Assessment.
- Electromagnetic Interference Assessment.
- Targeted Surveys as outlined within BLA (2017 1.3).
- Standard and complex assessments to support the development of the Cultural Heritage

Management Plan.

- Aviation Impact Assessment.
- Electricity Design.
- Surface Water impact assessment
- Environmental Management Plan.

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.

The proponent has commenced consultation activities with the community and key government or referral agencies. Refer to the Appendix 7.

Has a program for future consultation been developed?

NYD No Yes If yes, briefly describe.

A stakeholder engagement plan has been development and peer reviewed.

A copy of this engagement plan is located in Appendix 19.

Authorised person for proponent:

I, Tobias Geiger (full name), Managing Director, WestWind Energy (position), confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature T. Geiger

Date – 9 June 2017

Person who prepared this referral:

I, Phillip Burn (full name), Principal, Environment and Planning, Jacobs (position), confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature PB

Date – 9 June 2017