RE Future

Brewster Wind Farm

Application for Planning Permit

Appendix D – Ecological Assessment

August 2024

ecology & heritage partners

Final Report

Ecological Assessment for the Proposed Brewster Wind Farm, Trawalla, Victoria

Prepared for

Brewster Wind Farm Pty Ltd

August 2024

Ecology and Heritage Partners Pty Ltd

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Ecology and Heritage Partners acknowledge the Traditional Owners of the country we live and work on, and we pay our respect to Elders past, present and emerging.

EXECUTIVE SUMMARY

Introduction

Ecology and Heritage Partners Pty Ltd was commissioned by Brewster Wind Farm Pty Ltd to undertake an ecological assessment for Brewster Wind Farm at Trawalla, Victoria.

Brewster Wind Farm Pty Ltd is proposing to develop a six-turbine windfarm approximately 14 kilometres east of the township of Beaufort. The wind farm development boundary is located directly south of the Western Highway on private property situated between Trawalla Road and Kayleys Lane, Trawalla.

The assessment was undertaken to identify and characterise the vegetation on-site, determine the presence (or likelihood thereof) of any significant flora and fauna species and/or ecological communities, and address any implications under Commonwealth and State environmental legislation and policy.

Implications specific to Brolga *Antigone rubicunda* are addressed in a separate report.

Methods

Flora

Flora assessments within the wind farm development boundary and swept paths were undertaken between 1 October 2020 and 1 October 2021, and 27 August 2023 to obtain information on terrestrial flora and fauna values within the wind farm development boundary. A habitat hectare assessment was undertaken in conjunction with the flora survey. Vegetation within the wind farm development boundary was assessed according to the habitat hectare methodology, which is described in the Vegetation Quality Assessment Manual.

Fauna

Initial general fauna surveys were undertaken concurrently with the vegetation assessment undertaken in October 2020, as well as during the bird utilisation surveys.

Additional Fauna surveys included:

- Bird Utilisation Surveys;
- Microbat surveys using Anabat detector units; and,
- Detailed Brolga assessments.

Results

Flora

A total of 37 flora species were recorded within the wind farm development boundary during the field assessments.

Native vegetation in the wind farm development boundary is representative of the Plains Grassy Wetland (EVC 125). The remainder of the site was actively grazed and/or cropped and comprised typically of improved pastures, with some areas showing outbreaks of noxious weed species.

No significant flora species were recorded within the wind farm development boundary, and due to the modified condition of habitat due to ongoing and historic land use, are considered unlikely to be present.

Fauna

A total of 64 fauna species were recorded within the wind farm development boundary during the field assessment. Two State significant fauna – Brolga *Antigone rubicunda* and Eastern Bent-wing Bat *Miniopterus orianae oceanensis,* and two nationally significant fauna - Growling Grass Frog *Litoria raniformis* and Blue-winged Parrot *Neophema chrysostoma*, were recorded within, or in close proximity to the wind farm development during the field assessments or through the Landowner consultation process.

Based on the absence or low quality of potential habitats within the wind farm development boundary (including roadsides), landscape context and the proximity of previous records, additional national or State significant fauna species are considered highly unlikely to occur within the wind farm development boundary or be impacted by the wind farm development.

Growling Grass Frog

Based on the development footprint, aside from the creation a single access track through a discrete area of terrestrial habitat within a 200 metre radius surrounding the central wetland, all impacts will be avoided, and the development will not result in a significant impact to the species.

A Construction Environmental Management Plan (CEMP) must be prepared to ensure the relevant avoidance measures are implemented during the construction and operation phases of the project.

Blue-winged Parrot

Based on the absence of an important population, absence of any impact to habitat critical to the survival of the species, and low likelihood of collision, the development will not result in a significant impact to the species.

Brolga

Implications specific to Brolga are addressed in a separate report.

Eastern Bent-wing Bat

Eastern Bent-wing Bat was recorded at least once from each of the four Anabat detectors deployed in the study area. The species has previously been shown to fly consistently below turbine height, with no collision mortalities published in Victoria. Due to the low number of turbines (6), agriculturally modified condition of habitats that has resulted in a cleared landscape, and siting of five of the six turbines away from foraging habitat in the form of windrows and waterbodies, the potential for collision to Eastern Bent-wing Bat is considered to be low.

Communities

No significant ecological communities occur within the wind farm development boundary.

Legislative and Policy Implications

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act - Federal)

The proposed action is highly unlikely to have a significant impact on any matter of NES. As such, a referral to the Commonwealth Environment Minister is not required regarding matters listed under the EPBC Act.

Flora and Fauna Guarantee Act 1988 (FFG Act - Victoria)

One flora 'protected' under the FFG Act (Golden Wattle *Acacia pycnantha*), and four significant fauna (Growling Grass Frog, Blue-winged Parrot, Brolga and Eastern Bent-wing Bat) were recorded during the ecological assessments.

Based on the requirements under the FFG Act, a permit is not required. However, the Responsible Authority must consider potential impacts to FFG Act matters to ensure decisions and policies are made with proper consideration of the potential impacts on biodiversity.

Planning and Environment Act 1987

The development footprint has been designed to avoid all identified patches of native vegetation.

However, it should be noted that Brewster Wind Farm Pty Ltd are proposing to formalise access to one of the turbines along an existing farm track that passes through a Modelled Wetland at 7 Pin Oak Court. Although no native vegetation was present along the access track at the time of the assessments, as per the requirements under the Guidelines, the impact to the Modelled Wetland has been included as native vegetation, with the modelled condition score assigned to this area.

The study area is within Location 1, with 0.082 hectares of native vegetation proposed to be removed. As such, the permit application falls under the Basic assessment pathway.

The offset requirement for native vegetation removal is 0.015 General Habitat Units.

A permit to remove native vegetation under Clause 52.17 of the Pyrenees Planning Scheme is required.

A permit is required under Clause 52.32 of the Pyrenees Shire Planning Scheme to use and develop a wind energy facility.

Other Legislation and Policy

Implications relating to other local and State policy (*Wildlife Act 1975*, *Catchment and Land Protection Act 1994*, local government authorities) as well as additional studies or reporting that may be required are provided in Section 5.

Table S1. Application requirements for a permit to remove native vegetation under the Basic Assessment Pathway (*Victoria Planning Provisions* Clause 52.17 -3; DELWP 2017a).

No.	Application Requirement	Response within this report
1	Information about the native vegetation to be removed, including: • The assessment pathway and reason for the assessment pathway. • A description of the native vegetation to be removed. • Maps showing the native vegetation and property in context.	Details provided in Section 3.5; Figure 2a and 2b

No.	Application Requirement	Response within this report
	• The offset requirements that will apply if the native vegetation is approved to be removed.	
2	Topographic and land information relating to the native vegetation to be removed.	Refer to Section 1.3 and Figure 2a of this report.
3	Recent dated photographs of the native vegetation to be removed.	Refer to Section 3 of this report.
4	Details of any other native vegetation that was permitted to be removed on the same property with the same ownership as the native vegetation to be removed, where the removal occurred in the five-year period before the application to remove native vegetation is lodged.	Not applicable
5	An avoidance and minimise statement.	Refer to Section 3.5.1
6	A copy of any property vegetation plan that applies to the site.	Not applicable.
7	Where the removal of native vegetation is to create defendable space, a written statement explaining why the removal of native vegetation is necessary. This is not required when the creation of defendable space is in conjunction with an application under the Bushfire Management Overlay	Not applicable
8	If the application is under Clause 52.16, a statement that explains how the proposal responds to the Native Vegetation Precinct Plan	Not applicable
9	An offset statement explaining that an offset that meets the offset requirements for the native vegetation to be removed has been identified and how it will be secured	Refer to Section 3.5.4 and Appendix 4

CONTENTS

1 INTRODUCTION

1.1 Background

Ecology and Heritage Partners Pty Ltd was commissioned by Brewster Wind Farm Pty Ltd (herein referred to as BWF Pty Ltd) to undertake an Ecological Assessment for the Proposed Brewster Wind Farm, at Trawalla, Victoria.

It is understood BWF Pty Ltd is proposing to develop a six-turbine windfarm approximately 14 kilometres east of the township of Beaufort. The project is basing the application on four turbine model configurations, namely the V162 HH150 and HH166, and V172 HH150 and HH160. For the purpose of this report and potential impact investigations; the shortest and tallest Rotor Swept Area (RSA) heights are V172 HH150 (bottom RSA of 64 metres) and V172 HH166 (upper RSA of 252 metres).

The wind farm parcel boundary is located directly south of the Western Highway on three private properties situated between Trawalla Road and Kayleys Lane, Trawalla (Figure 1).

The purpose of this assessment was to identify the extent and type of native vegetation present within the wind farm development boundary, determine the likely presence of significant flora and fauna species and/or ecological communities, and determine potential impacts to ecological values based on the number, location and Rotor Swept Area (RSA) of the turbines and other associated project infrastructure.

This report presents the results of the assessment and discusses the potential ecological and legislative implications associated with the proposed action.

This report addresses implications relating to ecological values that are, or have the potential to be present, with the exception of Brolga *Antigone rubicunda.* Implications specific to Brolga *Antigone rubicunda* are addressed in a separate report (Ecology and Heritage Partners 2024).

1.2 Objectives

The objectives of the ecological assessments were to:

- Identify flora and fauna values within the wind farm development boundary;
- Review the relevant flora and fauna databases, and available literature;
- Conduct field assessments to identify the extent and quality of native vegetation within the wind farm development boundary;
- Provide maps showing any areas of native vegetation and locations of any significant flora and fauna species, and/or fauna habitat (if present);
- Classify any flora and fauna species, and vegetation communities identified or considered likely to occur within the wind farm development boundary in accordance with Commonwealth and State legislation;
- Document relevant environmental legislation and policy; and,
- Document any opportunities and constraints associated with the proposed works.

Where areas of native vegetation were present, the following tasks were completed to address requirements under the 'Guidelines for the removal, destruction or lopping of native vegetation' (Guidelines) (DELWP 2017a):

- A habitat hectare assessment of any areas of remnant native vegetation within the wind farm development boundary;
- Recommendations to address requirements under the Guidelines to minimise impacts to remnant vegetation; and,
- Provision of offset targets for any native vegetation, scattered trees and habitat for rare or threatened species proposed to be lost because of the proposed works.

1.3 Wind Farm Development Boundary

The wind farm development boundary is located at Trawalla and is approximately 156 kilometres north-west of Melbourne's CBD (Figure 1). The wind farm development boundary covers approximately 396 hectares and is bound by the Western Highway to the north, private property to the south, Kayleys Lane to the east and Spring Hill Creek to the west. It comprises three parcels of land; 295 Trawalla Road, Trawalla (6-A\PP2224); 7 Pin Oak Court, Trawalla (1\PS712949) and 54 Kayleys Lane, Brewster (2\PS712949).

Land within the wind farm development boundary is currently used for agriculture, with the entire site subject to agricultural disturbance via active stock grazing, cropping and improved pastures.

Surrounding land use is consistent with the wind farm development boundary, being predominately agricultural, with scattered dams, sheds and rural dwellings present. The wind farm development boundary is relatively flat, with several minor drainage lines (that were dry at the time of the field assessments) intersecting the wind farm development boundary (Figure 2a).

Significant waterbodies within the broader region include:

- Lake Burrumbeet - located approximately 9.1 kilometres east;
- Spring Hill Creek – along the western boundary; and,
- Lake Goldsmith - located approximately 16 kilometres south-west.

There are no conservation reserves, significant wetlands (Ramsar or nationally-listed) located within, or in close proximity to the wind farm development boundary. Four DEECA-modelled wetlands are located within the wind farm development boundary (Figure 2a).

According to the Victorian Department of Energy, Environment and Climate Action (DEECA) NatureKit Map (DEECA 2024a), the wind farm development boundary is located within the Victorian Volcanic Plain bioregion, Glenelg Hopkins Catchment Management Authority (CMA) and Pyrenees Shire Council.

2 METHODS

2.1 Relevant Commonwealth and State Legislation

Throughout the assessment process, consideration has been given to the following Commonwealth and Victorian environmental policy and legislation.

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act);
- *Environmental Effects Act 1978* (EE Act);
- *Flora and Fauna Guarantee Act 1988* (FFG Act);
- *Planning and Environment Act 1987* (P&E Act);
    - The Guidelines for the removal, destruction and lopping of native vegetation (DELWP 2017a);
- Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria (DELWP 2017b);
- Pyrenees Shire Planning Scheme; including,
    - Clause 52.17 Native Vegetation; and,
    - Clause 52.32 Wind Energy Facility.
- *Wildlife Act 1975* (Wildlife Act); and,
- *Catchment and Land Protection Act 1994* (CaLP Act).

2.2 Desktop Assessment

Relevant literature, online-resources and databases were reviewed to provide an assessment of flora and fauna values associated with the wind farm development boundary. The following information sources were reviewed:

- The DEECA NatureKit Map (DEECA 2024a) and Native Vegetation Information Management (NVIM) Tool (DEECA 2024b) for:
    - Modelled data for location risk, native vegetation patches, scattered trees and habitat for rare or threatened species; and,
    - The extent of historic and current Ecological Vegetation Classes (EVCs).
- EVC benchmarks (DEECA 2024c) for descriptions of EVCs within the relevant bioregion;
- The Victorian Biodiversity Atlas (VBA) for previously documented flora and fauna records within the project locality (DEECA 2024d);
- The Atlas of Living Australia (ALA) (ALA 2024) for assistance with the distribution and identification of flora species;
- AusWEA (2005) Wind Farms and Birds: Interim Standards For Risk Assessment;

- Guidelines for bat surveys in relation to wind farm developments (Lumsden 2007);
- The Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool (PMST) for matters of National Environmental Significance (NES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (DCCEEW 2023);
- The online VicPlan Map (DTP 2024) to ascertain current zoning and environmental overlays in the wind farm development boundary;
- Relevant listings under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act), including the latest Threatened (DEECA 2024e) and Protected (DELWP 2019) Lists; and,
- Aerial photography of the wind farm development boundary.

Database searches covered a minimum search radius of 10 kilometers from the project area boundaries.

2.3 Flora Assessment

A flora assessment within the wind farm development boundary was undertaken on 1 October 2020, 10 June, 30 August and 1 October 2021, and 27 August 2023 by ecologists accredited in the VQA Assessment methodology (DSE 2004) to obtain information on flora values. The entire properties at 7 Pin Oak Court, and 54 Kayleys Lane were walked and/or driven. Within the property at 295 Trawalla Road, the development footprint, plus a buffer of 20 metres either side of the footprint was assessed.

Commonly observed vascular flora species were recorded, significant records mapped, and the overall condition of vegetation and habitats noted. Ecological Vegetation Classes (EVCs) were determined with reference to DEECA pre-1750 and extant EVC mapping (DEECA 2024a) and their published descriptions (DEECA 2024c).

Where native vegetation was identified a habitat hectare assessment was undertaken following methodology described in the Vegetation Quality Assessment Manual (Department of Sustainability and Environment (DSE) 2004).

2.4 Fauna Assessment

Fauna assessments were undertaken to obtain information on terrestrial fauna values within the wind farm development boundary. Initial fauna surveys were conducted concurrently with flora assessments and were expanded across multiple survey efforts and seasons.

The wind farm development boundary was visually assessed and active searching under and around ground debris for small mammals, reptiles and frogs was undertaken. Binoculars were also used to scan the area for birds, and observers listened for calls and searched for other signs of fauna such as nests, remains of dead animals, droppings and footprints. Potential habitat for fauna was assessed, with a particular emphasis on habitats that may provide shelter, food or other resources for significant species.

The surveys sought primarily to assess the extent and condition of native vegetation communities and potential flora and fauna habitat, with particular consideration given to significant ecological communities and species of conservation concern, such as threatened and migratory species.

All fieldwork was carried out under the appropriate licences, including a Research Permit (10008283) and Scientific Procedures Fieldwork Licence (SPFL 20005) issued by DEECA under the *Wildlife Act 1975,* and an Animal Research permit issued by the Wildlife and Small Institutions Animal Ethics Committee (05.17).

2.4.1 Operational Impacts to Birds and Bats

The Clean Energy Association has developed *Best Practice Guidelines for Implementation of Wind Energy Projects in Australia* (Clean Energy Association 2013). The guidelines suggest a structured approach for ecological assessments that includes potential operational impacts on birds and bats. This approach was followed for the assessment and includes:

- Desktop review;
- Field surveys;
- Species-specific studies, if required;
- Development of avoidance, mitigation and offset strategies to minimise impacts on species, if required; and;
- Development and implementation of monitoring programs for the construction and operational phases of the wind farm development.

AusWEA Wind Farms and Birds: Interim Standards for Risk Assessment

The Australian Wind Energy Association (AusWEA 2005) has developed interim standards for risk assessment of birds for wind farm developments in Australia. This document outlines the type of investigations required, the order in which they should be undertaken and a systematic approach for assessing risk of bird impact at wind farms. This process allows for more detailed studies should a potentially significant risk be identified during preliminary studies.

The AusWEA (2005) interim standards recommend three levels of investigations, with each level involving increasing levels of detail. These levels include:

- Level 1 investigations provide an initial assessment of the risk of significant bird impacts from the operation of the proposed wind farm; Level One investigations involve a regional overview, review of existing data, and indicative bird utilisation surveys and roaming surveys.
- Level 2 investigations refine the risk assessment from the Level One investigation, using more intensive methods. Level Two investigations involve roaming surveys and risk modelling.
- Level 3 investigations are initiated if the results of the Level Two investigations indicate a greater than low level of residual risk of significant bird impacts from the operation of the proposed wind farm. Level Three investigations involve population assessment and population viability analysis.

The interim standards also recommend consultation with the wind farm developer and key representatives of agencies that assess and approve development to:

- Agree on the issues, questions and objectives of bird impact risk assessment studies;
- Agree on the consequence and, where relevant, likelihood criteria that apply to the results of the studies; and,

- Where required, agree on the nature and effectiveness of mitigation measures.

2.4.2 *Bird Assessments*

Bird Utilisation Surveys

Bird utilisation surveys are the most commonly used method for generating quantitative data on bird use of a potential wind farm site. The methods employed for the proposed Brewster Wind Farm bird utilisation surveys have been designed to comply with the guidelines described in *AusWEA – Wind Farms and Birds: Interim Standards for Risk Assessment (2005)*. According to these guidelines, bird utilisation surveys are undertaken to ascertain:

- The species composition of birds that use the study area;
- The frequency with which each of those species use the study area;
- The height at which each of these species fly in the study area; and,
- The distribution of these species across the landscape.

Bird utilisation surveys are a minimum requirement for all wind farm sites and are used to inform the design of higher-level investigations, if required.

Fixed Point Bird Counts

Field zoologists, experienced in bird identification, undertook the fixed-point count surveys to the specifications outlined below. 10 × 42 binoculars were used to identify the bird to species, or for some species, generic level (e.g. non-calling Raven species).

The following was undertaken as part of the fixed-point bird counts:

- Four locations were established at which to undertake fixed point counts, with two of these located outside of the windfarm development footprint. The locations chosen were to ensure that the entire range of habitats within close proximity to the windfarm development boundary were sampled and that a range of habitat types represented in that sample (Figure 3a);
- The search radius from the point was at least 100 metres for small birds and up to 800 metres for large birds (e.g. birds of prey, waterbirds), or further, if accurate identification to species level was achievable, using prominent landmarks;
- The duration of each fixed-point count was 20 minutes;
- The height at which each bird flew through the survey area was estimated to the nearest 10 metres;
- The direction of flight of each bird was recorded to the nearest 45 degrees of the compass;
- Each point was surveyed at different times of day (e.g. early morning, late morning, early afternoon and late afternoon) to account for diurnal differences in bird activity; and,
- Each point was surveyed five times over the course of each survey period (Table 1).

A total of three Bird Utilisation surveys were conducted at Brewster Wind Farm (Table 1).

Table 1. Bird utilisation survey dates

Survey #	Survey dates
Survey #1 (Winter)	4-6 August 2021
Survey #2 (early Spring)	20-22 October 2021
Survey #3 (late Spring)	29 November – 1 December 2021

Incidental observations and roaming surveys

In addition to bird species recorded during the fixed-point count surveys, incidental observations of bird species were recorded while travelling between point counts and during other field based activities (including during assessments in 2022 and 2023 relating to Brolga). Birds seen adjacent to the study area were also recorded.

Statistical Analyses

Species accumulation curves were generated from the point count data and are presented as graphs. This, along with a measure of completeness provides an overall account of the survey efficacy in predicting the species likely to occur within the study area.

Completeness follows the methods of Watson (2003) which is widely used in the manufacturing industry and ecology-based projects (Watson 2003) and is calculated as the actual richness (A) divided by the predicted richness *(P)* expressed as a percentage. The predicted species richness was calculated with the EstimateS 9.1.0 program, using the Michaelis–Menten richness estimator (MMMeans) using 1000 runs and estimates of 85, which uses the ratio of species seen once (singletons) to the species seen more than once (doubletons) to predict species richness (Raaijmakers 1987; Colwell 2004; Colwell 2013).

The analysis was based on 60 bird point counts and 46 bird species.

Observations of birds were classified, according to their height, into four categories:

- Ground;
- Below RSA (1 - 64 metres);
- Within RSA (between 64 - 252 metres); and,
- Above RSA (> 252 metres).

Results of the bird utilisation statistical analysis is provided in Section 3.7.

2.4.3 Microbat Surveys

Bat surveys were undertaken in accordance with the *Survey guidelines for Australia's threatened bats* (DEWHA 2010) and the Guidelines for bat surveys in relation to wind farm developments (Lumsden 2007).

Anabat bat detectors linked to CF Storage Zcaims (Titley Electronics, Ballina NSW) were used to survey microbat species. These instruments record the high frequency echolocation calls produced by microbats when they are in flight, and save these calls directly to a memory card. Different bat species produce distinguishable calls; therefore, detectors can be used to identify the species present in a given area. However, there is considerable variation within and between species, and all call identification needs to be undertaken

by qualified personnel who have access to reference calls for that region and experience in identifying call characteristics.

Four Anabat bat detectors were deployed throughout the windfarm development between 1 and 21 October 2021 (Figure 3a).

Units were placed in areas likely to be utilised by foraging bats, for example adjacent to farm dams, near native vegetation (e.g. along waterways) and planted windrows. Weller and Zabel (2002) found detectors placed at a height of 1.4 metres recorded 30% more calls than those placed on the ground. This method was adopted at all locations within the study area, with all units placed within the forks of trees or branches at a height of at least 1.8 metres to allow call detectability over a greater height.

A total of 40 survey nights recorded bat calls.

Call Analysis

Identification of bat calls collected throughout the Brewster Wind Farm site were analysed by Greg Wood of Balance! Environmental, a recognised expert in bat call analysis. All nights of data were assessed for the calls of all bats, with a particular focus on the potential detection of significant bat species.

Call analysis involved the allocation of every data file to a species, and then counting the number of call records for each species. Results of the Anabat call analysis is provided in Section 3.7 and Appendix 5.

2.5 Removal, Destruction or Lopping of Native Vegetation (the Guidelines)

Under the *Planning and Environment Act 1987,* Clause 52.17 of the Pyrenees Planning Scheme requires a planning permit from the Responsible Authority to remove, destroy or lop native vegetation. The assessment process for the clearing of vegetation follows the '*Guidelines for the removal, destruction or lopping of native vegetation*' (the Guidelines) (DELWP 2017a). The '*Assessor's handbook: Applications to remove, destroy or lop native vegetation*' (Assessor's handbook) (DELWP 2018a) provides clarification regarding the application of the Guidelines (DELWP 2017a).

2.5.1 Assessment Pathway

The Guidelines manage the impacts on biodiversity from native vegetation removal using an assessment-based approach. Two factors – extent risk and location category – are used to determine the risk associated with an application for a permit to remove native vegetation. The location category (1, 2 or 3) has been determined for all areas in Victoria and is available on DEECA's NVIM Tool (DEECA 2024b). Determination of assessment pathway is summarised in Table 2.

Table 2. Assessment pathways for applications to remove, destroy or lop native vegetation (DELWP 2017a).

Extent		Location		
		1	2	3
Native Vegetation	Less than 0.5 hectares and not including any large trees	Basic	Intermediate	Detailed
	Less than 0.5 hectares and including one or more large trees	Intermediate	Intermediate	Detailed
	0.5 hectares or more	Detailed	Detailed	Detailed

Notes: For the purpose of determining the assessment pathway of an application to remove native vegetation the extent includes any other native vegetation that was permitted to be removed on the same contiguous parcel of land with the same ownership as the native vegetation to be removed, where the removal occurred in the five year period before an application to remove native vegetation is lodged.

2.5.2 *Vegetation Assessment*

Native vegetation (as defined in Table 3) is assessed using two key parameters: extent (in hectares) and condition. For the purposes of this assessment, both condition and extent were determined as part of the habitat hectare assessment.

Table 3. Determination of a patch of native vegetation (DELWP 2017a).

Category	Definition	Extent	Condition
Patch of native vegetation	An area of vegetation where at least 25 per cent of the total perennial understorey plant cover is native; OR An area with three or more native canopy trees where the drip line of each tree touches the drip line of at least one other tree, forming a continuous canopy; OR any mapped wetland included in the *Current Wetlands map*, available in DEECA systems and tools.	Measured in hectares. Based on hectare area of the native patch.	Vegetation Quality Assessment Manual (DSE 2004). Modelled condition for *Current Wetlands*.
Scattered tree	A native canopy tree that does not form part of a native patch.	Measured in hectares. Each Large scattered tree is assigned an extent of 0.071 hectares (30m diameter). Each Small scattered tree is assigned a default extent of 0.31 hectares (10 metre diameter)	Scattered trees are assigned a default condition score of 0.2 (outside a patch).

Notes: Native vegetation is defined in the Victoria Planning Provisions as 'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses'.

2.5.3 *Mapped Wetlands*

Wetlands can be difficult to map and assess accurately as they respond quite quickly to changes in environmental condition, especially rainfall. After a period of no or low rainfall they can disappear or appear very degraded. They do, however, recover rapidly after periods of increased rainfall. As a result, under the Guidelines (DELWP 2017a) all mapped wetlands (based on 'Current Wetlands' layer in the DEECA NatureKit Map) that are to be impacted must be included as native vegetation, with the modelled condition score assigned to them (DELWP 2018a).

Note that mapped wetlands do not apply if they are covered by an artificial surface, for example, a roadway, or if the wetland is artificially constructed (i.e. farm dam).

2.5.4 *Impact Avoidance and Minimisation*

All applications to remove native vegetation must demonstrate the three-step approach of avoid, minimise and offset. This is a precautionary approach that aims to ensure that the removal of native vegetation is restricted to what is reasonably necessary, and that biodiversity is appropriately compensated for any native vegetation removal that is approved.

2.5.5 *Offsets*

Biodiversity offsets are required to compensate for the permitted removal of native vegetation.

The offset requirements for native vegetation removal are calculated by DEECA and presented in a Native Vegetation Removal (NVR) Report, which are based on the vegetation condition scores determined during the biodiversity assessment.

2.6 Consultation

DEECA was consulted throughout the pre-application process to inform the development of the project and discuss the survey design to ensure that a full understanding of potential impacts can be ascertained.

Table 4 summarises the stakeholder liaison activities that occurred during the pre-application process in relation to ecology, and a summary of the outcomes of each meeting.

Table 4. Stakeholder engagement activities undertaken in relation to ecological investigations.

Activity	Date	Matters Discussed	Outcomes
Virtual Meeting with DELWP (Michael Juttner, Mitch Connolly, Mark Dold, Nathan McDonald, Nihal Altuntas, Monique Claasz).	08/12/2020	• Proposed development footprint; • Broad planning framework; • Ecological survey program; • Ecological survey findings to date;	• DELWP generally happy with proposed survey timing and schedule; • Proposed retention of all native vegetation within the wind farm development boundary;
Virtual Meeting with DELWP (Lisa Macauley, Nathan Macdonald, Bec Falk, Kirsty Miller, Michelle Butler, Maddi Marks)	10/11/2022	• Presence of additional Brolga breeding habitat.	• Further investigation into potential breeding habitat.
Virtual Meeting with DELWP (Lisa Macauley, Nathan Macdonald, Bec Falk, Kirsty Miller, Michelle Butler, Maddi Marks)	01/12/2022	• Summary of further field investigations; • Requirement for additional stakeholder consultation and Level 2 and 3 assessments.	• Stakeholder consultation to commence; • Level 2 and Level 3 assessments required.

Activity	Date	Matters Discussed	Outcomes
Virtual Meeting with DEECA (Ezaz Sheikh, Lisa Macauley, Nathan Macdonald, Danielle Foster, Kirsty Miller, Michelle Butler,)	02/03/2023	• Summary of outcomes from the stakeholder consultation; • Confirmation of the presence and location of brolga breeding wetlands;	• Continuation of Level 2 and 3 Brolga assessment as per criteria in Interim Guidelines (DSE 2012);
Landowner Consultation Questionnaire Letterbox drop	06/12/2022 – 08/03/2023	• Landowner Consultation Questionnaire; • Presence of additional Brolga breeding habitat.	• Further investigation into potential breeding and flocking habitat.

2.7 Likelihood of Occurrence Assessment

Relevant biological databases, literature (listed in Section 2.1) and expert advice were used to identify all species records of national, State and regional conservation significance within 10 kilometres of the project area. The proximity, number, dispersion and date of known locality records (assuming over-dispersed and random patterns of locality records being more likely to occur in the project area) were considered to determine a species' likelihood of occurrence within the project area.

Additional factors also taken into consideration include: the known biogeographical distribution of the species; underlying geology of existing locality records; and, vegetation and habitat associations. The decision guidelines for determining the likelihood of occurrence of flora and fauna species are presented in Table 5 and Table 6 respectively.

The results of the likelihood of occurrence assessment for listed flora and fauna species are provided in Appendices 1.3 and 2.1, respectively.

Table 5. Decision guidelines for determining a flora species likelihood of occurrence within the wind farm development boundary.

Likelihood of occurrence	Decision guidelines
1 – Known occurrence	Recorded within the project area recently (i.e. within 10 years).
2 - High	Previous records of the species in the local vicinity; and/or, the project area contains areas of high-quality habitat.
3 – Moderate	Limited previous records of the species in the local vicinity; and/or, the project area contains some characteristics of the species' preferred habitat.
4 – Low	Poor or limited habitat for the species however other evidence (such as a lack of records or environmental factors) indicates there is a low likelihood of presence.
5 – Unlikely	No potential habitat and/or outside the species range.

Table 6. Decision guidelines for determining a fauna species likelihood of occurrence within the wind farm development boundary.

Likely presence or use of the project area	Decision guidelines
1 – Known occurrence	Recorded within the project area recently (i.e. within 10 years).
2 - High	Likely resident in the project area based on database records, or expert advice; and/or, recent records (i.e. within 10 years) of the species in the local area; and/or, the project area contains the species' preferred habitat.
3 - Moderate	The species is likely to visit the project area regularly (i.e. at least seasonally); and/or, previous records of the species in the local area; and/or, the project area contains some characteristics of the species' preferred habitat.
4 - Low	The species may visit the project area occasionally or opportunistically whilst en route to more suitable sites; and/or, there are only limited or historical records of the species in the local area (i.e. more than 20 years old); and/or, the project area contains few or no characteristics of the species' preferred habitat.
5 - Unlikely	No previous records of the species in the local area; and/or, the species may fly over the project area when moving between areas of more suitable habitat; and/or, out of the species' range; and/or, no suitable habitat present.

2.8 Assessment Qualifications and Limitations

2.8.1 Site Assessment

This report has been written based on the quality and extent of the ecological values and habitat considered to be present or absent at the time of the desktop and/or field assessments being undertaken.

Data and information held within the ecological databases and mapping programs reviewed in the desktop assessment (e.g. VBA, PMST, Nature Kit Maps etc.) are unlikely to represent all flora and fauna observations within, and surrounding, the wind farm development boundary. It is therefore important to acknowledge that a lack of documented records does not necessarily indicate that a species or community is absent.

The 'snapshot' nature of a standard biodiversity assessment meant that migratory, transitory or uncommon fauna species may have been absent from typically occupied habitats at the time of the field assessment. In addition, annual or cryptic flora species such as those that persist via underground tubers may also be absent. Only the land identified as 'Wind farm development boundary' as shown in Figure 2a, and the swept path envelopes as shown in Figure 2b was assessed as part of the flora assessment.

A comprehensive list of all terrestrial flora and fauna present within the wind farm development boundary was not undertaken as this was not the objective of the assessment. Rather a list of commonly observed species was recorded to inform the habitat hectare assessment and assist in determining the broader biodiversity values present within the wind farm development boundary.

Ecological values identified within the wind farm development boundary were recorded using a hand-held GPS or tablet with an accuracy of +/-3 metres. This level of accuracy is considered to provide an accurate assessment of the ecological values present within the wind farm development boundary; however, this data should not be used for detailed surveying purposes.

Only the Assessment Area was assessed as part of the habitat hectare assessments and flora surveys.

2.8.2 Microbat Assessment

Where possible, Anabat detectors were placed in trees at least 1.8 metres above ground. Weller and Zabel (2002) found detectors placed at a height of 1.4 metres recorded 30% more calls than those placed on the ground.

Depending on the bat species and how far it projects its call, Anabat detectors can typically detect bat echolocation calls at between five and 20 metres. It is important to note that although detectors may give an index of overall bat activity levels, they cannot be used to determine bat abundance, as the number of individuals emitting the calls is not known.

It is noted that the canopy height throughout most of the study area is less than 25 metres in height meaning that the detection of some species of bats may not be possible using Anabat technology. However, given that no known populations of significant bat species are known to occur within the broader locality, it is likely that only common bat species that fly at a height outside the detectability range were not captured, rather than any significant species.

Despite the above limitations it is considered that the methodologies applied during the current surveys, and the duration and intensity of the surveys were sufficient to provide an accurate assessment of the microbat species utilising the wind farm area.

2.8.3 Bird Utilisation Surveys

The fixed-point bird counts may have suffered from some biases because of the use of estimation in determining the distance of birds from the observer. Horizontal distances became increasingly difficult to judge as the distance between the observer and the bird increased.

Vertical distances were also difficult to judge, depending on structures and other landmarks that could be used as a reference. However, the higher the bird the greater the likelihood of error. In addition, this difficulty was not consistent across species, with small and large species biasing the results in unknown directions.

To attempt to overcome these potential errors, and to calibrate the estimations of the observers, at each point count 200 metres was measured to use as a reference for the estimations that followed. To calibrate height, a landmark of known height (such as wind anemometer tower, power-line poles etc.) was used as a reference point. Whilst these precautions alleviated some of the bias in this process, the height and distance data need to be interpreted in a cautious manner, given the probability of a high degree of error in the data-set.

A further bias in the data-set is the over-representation of large birds. As the distance between the observer and the bird increases, smaller species are increasingly likely to be overlooked. This effect is also likely to be exacerbated by weather conditions with overcast, windy or wet conditions having a negative impact on the detectability of some birds.

3 RESULTS

3.1 Overview

A total of 37 flora species were recorded within the wind farm development boundary during the field assessment. Of these, 16 were native, and 21 were either introduced or planted (noting that planted species that were not naturally recruiting were not recorded). A consolidated list of flora species recorded is provided in Appendix 1.1.

No significant flora species were recorded within the wind farm development boundary and no species of national or State significance are considered likely to be present due to the ongoing and historical agricultural land uses within the wind farm development boundary.

A total of 64 fauna species were recorded within the wind farm development boundary during the field assessment, including: 10 mammals, one amphibian and 53 birds (four introduced).

Two State significant fauna – Brolga and Eastern Bent-wing Bat, and one nationally significant fauna – Growling Grass Frog, were recorded within, or in close proximity to the proposed wind farm development during the field assessments or through the Landowner consultation process.

A list of fauna species recorded is provided in Appendix 2.2, Table 12 and Table 14.

Native vegetation in the wind farm development boundary is representative of one EVC; Plains Grassy Wetland (EVC 125). The remainder of the site was actively grazed and/or cropped and comprised typically of improved pastures, with some areas showing outbreaks of noxious weed species. Roadside vegetation adjacent to the windfarm development footprint was comprised of introduced and planted native vegetation, present as pasture grass and ornamental gardens/screens.

In addition, four Current Wetlands are modelled to occur within the wind farm development boundary (Figure 2a).

3.2 Vegetation Condition

3.2.1 Patches of Native Vegetation

Native vegetation in the wind farm development boundary is representative of one EVC: Plains Grassy Wetland (EVC 125), which is widespread across the local geographic area, but is listed as Endangered within the Victorian Volcanic Plain bioregion. Specific details relating to the observed EVC are provided below.

The results of the habitat hectare assessment are provided in Appendix 1.2.

Plains Grassy Wetland

Plains Grassy Wetland (PGWe) is present near the centre of the wind farm development boundary within a slight depression that was at the time of assessment excluded from grazing. During the 2021 assessments, the broader central sections of the patch were extensively covered by sedges; Common Spike-sedge *Eleocharis acuta* and Small Spike-sedge *Eleocharis pusilla,* and grasses such as Reed Bent-grass *Deyeuxia quadriseta* and Common Swamp Wallaby-grass *Amphibromus nervosus*. A diversity of herbs was also present such as River Buttercup *Ranunculus inundatus*, and Floating Pondweed *Potamogeton tricarinatus* (Plate 1; Plate 2). Towards

the drier, outer edge of the patch, the PGWe patch was dominated by Common Swamp Wallaby-grass and Reed Bent-grass only, with no sedges present.

Plate 1. Plains Grassy Wetland recorded within the wind farm development boundary (Ecology and Heritage Partners Pty Ltd 01/10/2020).

Plate 2. Plains Grassy Wetland recorded within the wind farm development boundary (Ecology and Heritage Partners Pty Ltd 01/10/2020).

During the August 2023 assessment, the patch of Plains Grassy Wetland was present in a degraded state due to extensive cattle grazing that had resulting in pugging within eh wetland areas and banks of the dams.

3.2.2 Large Trees in Patches and Scattered Trees

No large trees or scattered trees were present within the windfarm development boundary.

3.2.3 Introduced and Planted Vegetation

Areas not supporting native vegetation had a high cover (>95%) of exotic grass species, many of which were direct-seeded for use as pasture. Scattered native grasses were occasionally present in these areas, however they did not have the required 25% relative cover to be considered a patch.

Planted native screens persist along the northern boundary of the wind farm development boundary adjacent to the Western Highway (Plate 3) typically represented by common native species such as Black Wattle *Acacia mearnsii*, Yellow Gum *Eucalyptus leucoxylon*, Common Correa *Correa reflexa*, and Spiny-headed Mat-rush *Lomandra longifolia.* Further plantings were observed as windbreaks (Pine *Pinus radiata*) and garden beds adjacent to an old homestead (Plate 4).

The southern boundary of the windfarm development boundary contains a plantation (as identified in an historical Trawalla parish map that comprises planted Sugar Gum *Eucalyptus cladocalyx* and River Red-gum *Eucalyptus camaldulensis* (Appendix 6).

Non-native areas were dominated by environmental weeds such as Toowoomba Canary-grass *Phalaris aquatica*, Rye-grass *Lolium* spp., Ribwort *Plantago lanceolata*, Couch *Cynodon dactylon* var. *dactylon* and Wild Oat *Avena fatua* (Plate 5).

Noxious weeds were present, with Spear Thistle *Cirsium vulgare* present in localised concentrations to the north west of the site (Plate 6).

Plate 3. A row of planted trees along the northern boundary (Ecology and Heritage Partners Pty Ltd 01/10/2020).

Plate 4. Planted Pine trees (Ecology and Heritage Partners Pty Ltd 01/10/2020).

Plate 5. Exotic improved pastures forming the majority of the wind farm development boundary (Ecology and Heritage Partners Pty Ltd 01/10/2020).

Plate 6. Established Spear Thistle within paddocks (Ecology and Heritage Partners Pty Ltd 01/10/2020).

3.3 Fauna Habitat

Plains Grassy Wetland within the wind farm development boundary provides low to moderate quality habitat to native fauna. The vegetation in these patches has been disturbed and is present predominantly as recent regrowth. Nevertheless, the sedgy vegetation provides suitable foraging and nesting habitat for a variety of waterbirds (i.e. ducks) and frogs.

The scattered trees, patches of PGW1, and windrows are of low to moderate habitat value for fauna. While the majority of the remnants within the study area are structurally deficient, lacking key mid-storey and understorey components, they are likely to act as 'stepping stones' of habitat for more mobile species (principally birds). Trees (native and non-native) are also likely to facilitate fauna movement throughout the otherwise cleared landscape, and provides habitat for diurnal raptors (e.g., Nankeen Kestrel *Falco cenchroides*, Black-shouldered Kite *Elanus axillaris*), which use trees for perching, roosting and foraging activities.

The remainder of the site is comprised of exotic grassland, dominated by a range of introduced pasture grasses and herbaceous weeds, likely to be used as a foraging resource by common generalist bird species that are tolerant of modified open areas.

Fauna observed using this habitat included Australian Magpie *Cracticus tibicen*, Little Raven *Corvus mellori*, Galah *Eolophus roseicapilla* and European Rabbit *Oryctolagus cuniculus*. The European Rabbit is listed as a pest animal under the CaLP Act.

3.4 Removal, Destruction or Lopping of Native Vegetation (the Guidelines)

3.4.1 Avoid and Minimise Statement

The windfarm development boundary has not been subject to a strategic level planning process.

Following receipt of the ecological assessment, design measures were put in place to avoid impacts on native flora and fauna. Brewster Wind Farm Pty Ltd Pty Ltd have designed the construction footprint to avoid all impacts to areas of on-site native vegetation by strategically locating cabling, hardstands, laydown areas and the switch yard in areas of degraded, agricultural land. In particular, the route of the access track was realigned in order to avoid areas of Plains Grassy Wetland.

It should be noted that Brewster Wind Farm Pty Ltd are proposing to formalise access to one of the turbines along an existing farm track that passes through a Modelled Wetland at 7 Pin Oak Court. Although no native vegetation was present along the access track at the time of the assessments, as per the requirements under the Guidelines (2017a), the impact to the Modelled Wetland has been included as native vegetation, with the modelled condition score assigned to this area.

The wind farm development footprint is not expected to impact the hydrological aspects of the modelled wetland or adjacent waterbodies (i.e. Plains Grassy Wetland or Spring Hill Creek). As a result of these measures the proposed wind farm will have no on-site impact to areas of mapped native flora, vegetation, or fauna habitat located on the site (Section 3.5.2).

The location of native vegetation, and the development footprint within the wind farm parcel boundary is shown in Figure 2a.

In the context of the development and the retention of all patches of on-site mapped native vegetation in the wind farm development boundary, a small impact to an area of Modelled Wetland is considered an appropriate outcome in this instance. There are no feasible opportunities to further avoid or minimise impacts without undermining the key objectives of the proposal and result in a potential increase in impacts to the Modelled Wetland.

3.4.2 Vegetation proposed to be removed

The below scenario is based on the development footprint provided to Ecology and Heritage Partners by BWF Pty Ltd on 15 July 2024 shown in Figure 2a and Figure 3b.

The development footprint has been designed to avoid all identified patches of native vegetation. However, the impact to the Modelled Wetland has been included as native vegetation, with the modelled condition score assigned to this area.

The study area is within Location 1, with 0.082 hectares of native vegetation proposed to be removed. As such, the permit application falls under the Basic assessment pathway (Table 7).

Condition scores for vegetation proposed to be removed (i.e. Modelled Wetland) are based on modelled scores available in the NVIM system (DEECA 2024b).

Table 7. Removal of Native Vegetation (the Guidelines) (DELWP 2017).

Assessment pathway	Basic
Location Category	1
Total Extent (past and proposed) (ha)	0.082
Extent of past removal (ha)	0.00
Extent of proposed removal (ha)	0.082
Large Trees (scattered and in patches) to be removed (no.)	0
Small scattered trees to be removed (no.)	0
EVC Conservation Status of vegetation to be removed	Not Applicable (Modelled Wetland)

3.4.3 Offset Targets

The offset requirement for native vegetation removal is 0.015 General Habitat Units.

A summary of proposed vegetation losses and associated offset requirements is presented in Table 8 and the Native Vegetation Removal (NVR) is presented in Appendix 3.

Table 8. Offset Targets.

General Offsets Required	0.015 General Habitat Units
Large Trees	0
Vicinity (catchment/council)	Glenelg Hopkins CMA /Pyrenees Shire Council
Minimum Strategic Biodiversity Value*	0.168

***The minimum Strategic Biodiversity Value is 80% of the weighted average score across habitat zones where a General offset is required.**

3.4.4 Offset Statement

According to DEECAs Native Vegetation Offset Register (DEECA 2024f), there are 18 offset sites within the Glenelg Hopkins CMA and/or Pyrenees Shire that can be used to satisfy the General Habitat Unit offset requirements generated by the proposal.

An offset register search statement identifying the relevant offsite sites is provided in Appendix 4.

3.5 Significance Assessment

3.5.1 Flora

The VBA contains records of four nationally significant and six State significant flora species previously recorded within 10 kilometres of the site (DEECA 2024d) (Figure 4). The PMST nominated an additional 25 nationally significant species which have not been previously recorded but have the potential to occur in the locality (DCCEEW 2024) (Figure 4; Appendix 1.3).

No national or State significant species listed under the EPBC Act or FFG Act were recorded within the windfarm development boundary.

The wind farm development boundary is highly modified, with the majority of the land subject to historical and ongoing agricultural use, including ground disturbance (ploughing) to facilitate cropping. As such, almost all potential habitat for national and State significant flora has been removed.

The Plains Grassy Wetland habitat supports low quality potential habitat for wetland flora, although is regularly disturbed by agricultural activity (cropping) and cattle grazing, resulting in pugging. However, this area will not be impacted by the proposed development, and therefore, if present, no significant flora will be impacted by the proposed development.

One flora 'protected' under the FFG Act (Golden Wattle *Acacia pycnantha*) was recorded within the parcel at 295 Trawalla Road, Trawalla (Figure 2a).

Based on absence of suitable habitats within the development footprint (including roadsides), landscape context and the proximity of previous records, nationally significant flora species are considered highly unlikely to occur within, or immediately adjacent to the development footprint (Appendix 1.3).

3.5.2 Fauna

The VBA contains records of 12 nationally significant and 19 State significant fauna species previously recorded within 10 kilometres of the wind farm development boundary (DEECA 2024d) (Figure 5). The PMST nominated an additional 18 nationally significant species which have not been previously recorded but have the potential to occur in the locality (DCCEEW 2024) (Figure 5; Appendix 2.1).

The State significant Brolga and Eastern Bent-wing Bat, and nationally significant Growling Grass Frog and Blue-winged Parrot are known to utilise habitat within the locality. Specific implications associated with these species is summarised below.

There are two records of Striped Legless Lizard within the project locality (Figure 5), most recently from 2012 (DEECA 2024d). However, due to modification of the project area through historic agricultural activity (ploughing) to facilitate agricultural use (i.e. planting of crops), preferred habitat characteristics for the species, such as cracking soils and surface rock are no longer present. Owing to a lack of suitable habitat, Striped Legless Lizard is considered highly unlikely to inhabit or make significant use of the wind farm development boundary or its immediate surrounds.

Based on the absence or low quality of potential habitats within the wind farm development boundary (including roadsides), landscape context and the proximity of previous records, other nationally significant fauna species are considered highly unlikely to occur within the wind farm development boundary, or be impacted by the wind farm development (Appendix 2.1).

It is possible that significant birds may fly over the wind farm development boundary occasionally or opportunistically whilst en route to more suitable sites within the broader landscape. These species include Hardhead *Aythya australis*, Blue-billed Duck *Oxyura australis,* Caspian Tern *Hydroprogne caspia* and Latham's Snipe *Gallinago hardwickii*. Low quality habitat for these species is present in the wind farm development boundary as the dams are small and open, although they provide limited aquatic vegetation. Based on the low numbers of records for each species in the locality and lack of high quality habitat, these species are

considered unlikely to visit the wind farm development boundary regularly, and considering the small scale of the proposed wind farm the potential operational impact on these species is considered to be low.

Potential impacts relating to avifauna are further detailed in Section 5.2.

Brolga

Implications specific to Brolga are addressed in a separate report (Ecology and Heritage Partners 2024).

Eastern Bent-wing Bat

The State significant Eastern Bent-wing Bat listed as Critically Endangered on the FFG Act Threatened List (DEECA 2024e) was recorded during the microbat surveys.

Eastern Bent-wing Bat is defined as 'species of interest' as outlined in Lumsden *et al.* (2019) and is generally found along the eastern coastline of Australia. The species is a cave dwelling bat that forages at and around canopy height in treed areas, and close to the ground in grassy areas. The species has previously been shown to fly consistently below turbine height, with no known collision mortalities published in Victoria (Moloney *et. al.,* 2019).

The distribution of the Eastern Bent-wing Bat has some overlap with the Southern Bent-wing Bat *Miniopterus orianae bassanii*, with these two subspecies recorded in four caves from the Otways/Camperdown/Lorne region of western Victoria (Cardinal and Christidis 2000). The Eastern Bent-wing Bat can be found further east, recorded in disused mines of central Victoria (Lumsden *et al.,* 2012; DELWP 2020b). While all roost sites are important habitat for the subspecies, roosts used for cold-weather hibernation and breeding (i.e. maternity sites) are the most significant for conservation of this subspecies. There is a single recognised maternity cave in Victoria for the Eastern Bent-wing Bat, located in East Gippsland, near Bairnsdale. However, it is likely that additional maternity sites exist in Victoria.

Due to the low number of turbines (6), agriculturally modified condition of habitats that has resulted in a cleared landscape, and siting of five of the six turbines away from foraging habitat in the form of windrows and waterbodies, the potential for collision to Eastern Bent-wing Bat is considered to be low.

Growling Grass Frog

The presence of the nationally significant Growling Grass Frog was confirmed as part of the landowner consultation process within Site 121, approximately one kilometre south of the wind farm development boundary.

Given the presence of the species, the Spring Hill Creek riparian corridor, as well as other drainage lines and waterbodies may be utilised as dispersal habitat, or breeding habitat under suitable conditions.

The Plains Grassy Wetland habitat (Figure 3b) contains low quality habitat for the Growling Grass Frog. This habitat is located over 900 metres from Spring Hill Creek, and other waterbodies within the site (farm dams) are devoid of the species' preferred habitat features (i.e. fringing and emergent vegetation) (DEWHA 2009a).

As per the significant impact guidelines for the species (DEWHA 2009), to avoid a significant impact to Growling Grass Frog, the following measures must be implemented (Table 9):

Table 9. Measures to avoid impacts to Growling Grass From (DEWHA 2009)

Avoidance Measure	Comment
Retain habitat known to, or likely to contain the Growling Grass Frog	No aquatic habitat is proposed to be impacted as part of the development. All aquatic habitat will be retained.
Retain terrestrial habitat and dispersal corridors via: • **Incorporate buffers of at least 200 metres around waterbodies;** • **Maintain dedicated terrestrial habitat corridors of a minimum 100 metres width;** • **Maintain existing hydrological regimes.**	• A buffer of 200 metres along Spring Hill Creek, the two waterbodies along the southern boundary, and the wetland in the centre of the development boundary has been applied. Aside from the proposed construction of a single access track through the buffer surrounding the central wetland (Figure 3b), all terrestrial habitats will be retained, and no barriers will be created to dispersal; • Dedicated terrestrial habitat corridors will be maintained through the site. A 100 metre buffer has been applied to both sides of drainage lines in the eastern half of the site. There will not be any impacts to this terrestrial habitat as a result of the wind farm. • There will not be any impact or proposed changes to the existing hydrological regime of wetlands, creeks or waterbodies as a result of the project.

Based on the development footprint, aside from the creation a single access track through a discrete area of the 200 metre buffer surrounding the central wetland, all impacts will be avoided, and the development will not result in a significant impact to the species.

A Construction Environmental Management Plan (CEMP) must be prepared to ensure the relevant avoidance measures are implemented during the construction and operation phases of the project.

Blue-winged Parrot

A partial migrant, Blue-winged Parrot was recently listed as Vulnerable under the EPBC Act (effective date 31 March 2023), due in part to significant decline in reporting rates across their core range in Tasmania and Victoria (DCCEEW 2023).

Blue-winged Parrot occupy a range of coastal, sub-coastal and inland environments, through to semi-arid zones. They favour grasslands and grassy woodlands and are often found near wetlands, but may occupy modified landscapes such as paddocks and golf-courses (Higgins 1999; Holdsworth *et al.* 2021). Blue-winged Parrot use tree hollows or stumps to nest and lay eggs. This species primarily forage on/near the ground for seeds from a range of native and introduced grasses, herbs, and shrubs (Higgins 1999, DCCEEW 2023).

Such foraging behaviour is evident by way of 100% of Blue-winged Parrot observations (i.e. four out of four) recorded below the rotor swept area (i.e., 20 metre maximum height for the species [RSA is 64-252 metres]).

Significant Impact Assessment

A significant impact assessment for Vulnerable Blue-winged Parrot is provided below in Table 10, which summarises that a significant impact is highly unlikely as a result of the proposed wind farm.

An important concept for determining the potential significance of an impact under the EPBC Act is that of 'habitat critical to the survival' of a species. The EPBC Act Significant impact guidelines 1.1 (DoE 2013) provides the following guidance for determining whether an action may affect habitat critical to the survival of a species:

- Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:
    - for activities such as foraging, breeding, roosting, or dispersal;

- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators);
- to maintain genetic diversity and long term evolutionary development; or,
- for the reintroduction of populations or recovery of the species or ecological community.

Table 10. Significant impact assessment – Blue-winged Parrot

Significant Impact Criteria - will the activity:	Feature and Conservation Status
	Blue-winged Parrot (Vulnerable)
Lead to a long-term decrease in the size of an important population of a species	The Project Site is not considered to support an 'important population' as it is not a key source for breeding or dispersal, is not necessary for maintaining genetic diversity and is not at the limit of these species known range *. The project is unlikely to result in a significant disturbance to areas of suitable habitat for the species, as all native grasslands, woodlands and wetlands have been avoided. Four Blue-winged Parrot were observed during Bird Utilisation surveys. There will not be any removal of any trees or other native vegetation. It is considered unlikely that the proposed activity will result in a long-term decrease to any important populations within, and immediate surrounds of the Project Area, as there will not be an impact to suitable habitat within and adjoining the development boundary, and the risk of direct impact to turbines is minimal for this species due to their known foraging behaviour.
Reduce the area of occupancy of an important population	The Project Site is not considered to support an important population *. Any individuals occurring in the project footprint would not be classified as an important population.
Fragment an existing important population into two or more populations	Given the highly mobile nature of these species it is considered unlikely that the project would result in the fragmentation of any populations present within the Project Site.
Adversely affect habitat critical to the survival of a species	No critical habitat for these species is listed under the EPBC Act, nor is the project footprint critical to the survival of these species.
Disrupt the breeding cycle of an important population	Not applicable. Any individuals potentially occurring in the project footprint would not be classified as an important population.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The project will not result in the removal of any potential habitat for the species, including potential foraging, roosting and breeding resources.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	Assuming the implementation of appropriate mitigation measures, it is not likely that harmful invasive species would become further established as a result of the project.
Introduce disease that may cause the species to decline	It is not likely that disease would be introduced by the project causing the species to decline.

Note: * An important population is a population that is necessary for a species' long-term survival and recovery. This may include species identified in recovery plans and/or that are:

- Key source populations either for breeding or dispersal;
- Populations that are necessary for maintaining genetic diversity; and/or;
- Populations that are near the limit of the species range.

3.5.3 Ecological Communities

Five nationally listed ecological communities are predicted to occur within 10 kilometres of the study area (DCCEEW 2023):

- Grassy Eucalypt Woodland of the Victorian Volcanic Plain;
- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia;
- Natural Temperate Grassland of the Victorian Volcanic Plain;
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains; and
- White Box - Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

However, vegetation within the wind farm development boundary did not meet the condition thresholds that define any national or State-significant communities due to the absence of key indicator species, presence of contra-indicative species (i.e. sedges) and the low diversity of native flora and high cover of exotic vegetation.

3.6 Bird Utilisation Surveys

3.6.1 Overview

Forty-six (46) bird species were recorded, consisting of 1,570 individuals, during the fixed-point bird counts. Five other species was identified to generic level (i.e. Raven species, either Little Raven *Corvus mellori* or Australian Raven *Corvus coronoides*). Four introduced species were recorded: Common Starling *Sturnus vulgaris*, Common Blackbird *Turdus merula*, Eurasian Skylark *Alauda arvensis*, and European Goldfinch *Carduelis carduelis*. One additional species was recorded as an 'opportunistic observation' between sites: Nankeen Kestrel *Falco cenchroides*. The nationally significant Blue-winged Parrot and the State significant Brolga were recorded during the surveys.

The most frequently recorded species were Australian Magpie *Gymnorhina tibicen* (recorded during 77% of surveys), Common Starling (28%), Little Raven (20%), Eurasian Skylark (43%), and Straw-necked Ibis *Threskiornis spinicollis* (43%).

A total of 99% of bird observations made during the point counts were of individuals that were either on the ground or flying below the Rotor Swept Area. The remaining 1% did not have their height recorded as they were obscured from vision, while no birds were recorded flying in or above the Rotor Swept Area.

One species – Brolga – recorded during the bird utilisation surveys is defined as 'species of interest' as outlined in Lumsden *et al.* (2019). A detailed impact assessment for Brolga is provided in a separate report (Ecology and Heritage Partners 2024).

A variety of other bird species were also recorded (see Appendix 2.2 and Table 12 for full species list), including:

- Generalist bird species common in modified landscapes, such as open paddocks, including Magpie Lark *Grallina cyanoleuca*, Willie Wagtail *Rhipidura leucophrys* and Little Raven;
- Woodland bird species using linear patches of native and non-native vegetation along roadsides and other bushland in the study area, such as Rufous Whistler *Pachycephala rufiventris*, Red Wattlebird *Anthochaera carunculata*, New Holland Honeyeater *Phylidonyris novaehollandiae*, Striated Pardalote *Pardalotus striatus* and Golden Whistler *Pachycephala pectoralis*;
- Water bird species using dams and streams in the study area including Australian Woodduck *Chenonetta jubata*, Australian Shelduck *Tadorna tadornoides*, Straw-necked Ibis and White-faced Heron *Egretta novaehollandiae*;
- Raptors foraging over paddocks, roadsides and waterbodies, including Whistling Kite *Haliastur sphenurus*, Brown Falcon *Haliastur sphenurus*, and Nankeen Kestrel; and,
- Parrot species feeding on sowed crops and using large hollow-bearing gums, including Crimson Rosella *Platycercus elegans,* Eastern Rosella *Platycercus eximius*, Blue-winged Parrot and Galah *Eolophus roseicapilla*.

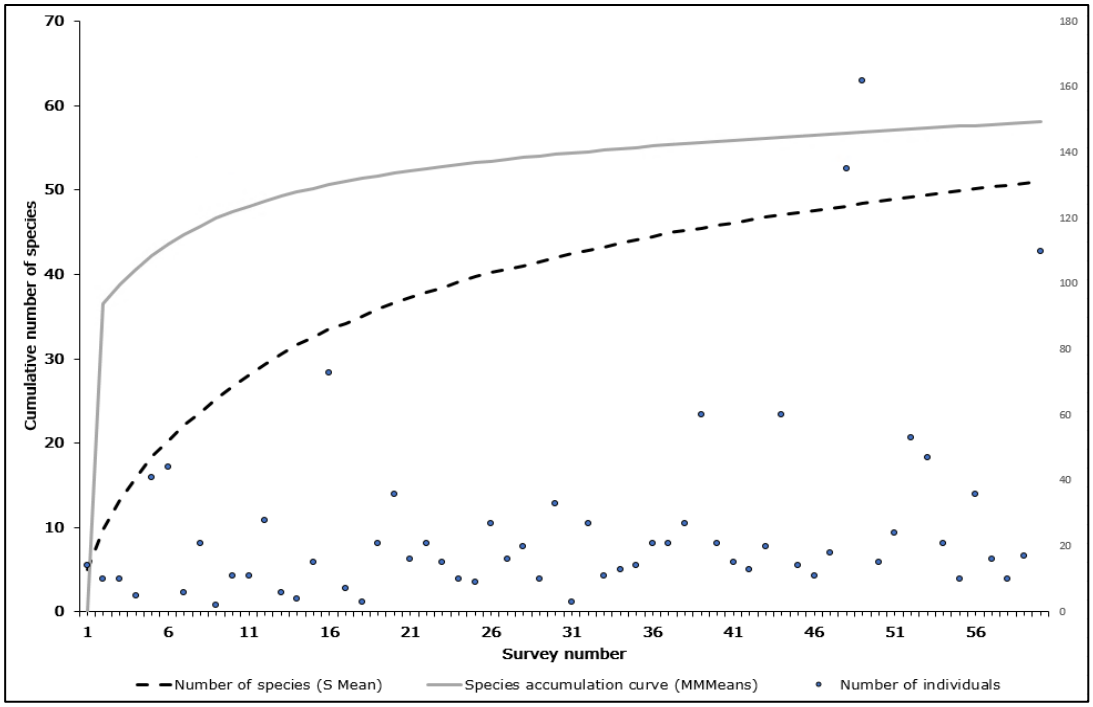
3.6.2 Species Richness

The predicted species richness estimate for the point count surveys was 58 species, which converts to a completeness of over 88% and means that an additional 6-7 species are predicted to occupy the study area but were not recorded. A greater number of predicted species relative to actual species is an indication that while survey effort was high and covered a range of conditions and seasons, several possibly more cryptic species are likely to be present but were not recorded. The study appears to reach asymptote (or plateau) after four months of survey. The results show a clear relationship between effort and the number of species detected (Graph 1).

3.6.3 Flight Heights

Nearly all birds observed (99%) during the point counts were either recorded on the ground or flying below the Rotor Swept Area (Table 11; Graph 2). No species were recorded flying in or above the Rotor Swept Area. The species observed flying closest to the Rotor Swept Area – at 50 metres or greater – was Straw-necked Ibis, while Brown Falcon *Falco berigora* and Eastern Rosella *Platycercus eximius* were recorded flying at 40 metres in height.

Bird point count survey locations were assigned to capture a representative sample of vegetation and habitat type. Given much of the study area comprises open paddocks, most bird point count survey locations are situated in these areas. However, where possible, fixed count locations were sited near plantations/windrows/waterbodies to capture any woodland and waterbird habitats in the study area.



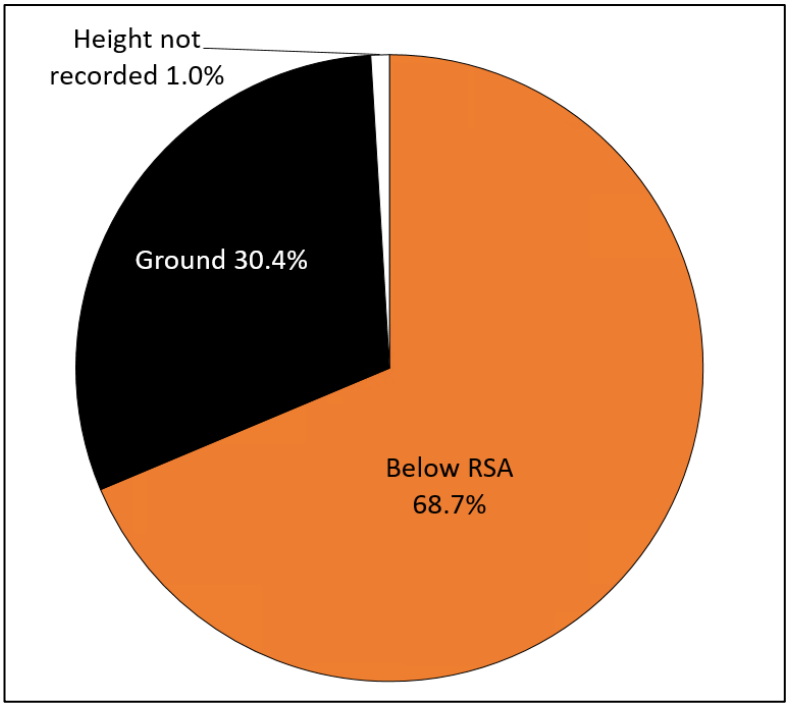
Graph 1. Species accumulation curve across the entire survey period. **Source:** Species accumulation curve produced using EstimateS (Colwell 2013)

Table 11. Summary of birds recorded at the varying flight heights

Flight Height	# of birds	% of birds
Height not recorded	15	1.0%
Ground (0 metres)	477	30.4%
Below RSA (1-63m)	1078	68.7%
RSA (64-252m)	0	0.0%
Above RSA (>252m)	0	0.0%

While no species were recorded flying in or above the Rotor Swept Area, several parrot and raptor species are likely to utilise heights within and above RSA on occasion. Large parrots, including several recorded below the Rotor Swept Area during surveys such as Galah, Sulphur-crested Cockatoo and Long-billed Corella, tend to fly in the Rotor Swept Area as they move daily between roosts and feeding areas.

No significant wetlands are present in or near the study area, however several waterbird species recorded during point count surveys – Brolga, Straw-necked Ibis, White-necked Heron *Ardea pacifica*, and White-faced Heron – may fly in the Rotor Swept Area when moving between habitat areas. The study area was driven extensively and, except for Straw-necked Ibis, very few water birds likely to fly in the Rotor Swept Area were identified flying overhead.



Graph 2. Percentage of birds recorded below (RSA), at rotor swept area (RSA) height (64 – 252 metres), during the survey period. Note no species were recorded within or above RSA, although several parrot and raptor species are likely to utilise heights within and above RSA.

Generally, non-passerine birds such as raptors, wetland/waterbirds and parrots have flight characteristics that make them prone to collisions with wind turbines. These species are usually larger, less mobile, occur in flocks (particularly parrots) and forage in more open areas. Some minor changes in local distribution and abundance of these species may be expected as a consequence of ongoing operation of the turbines, and although these impacts are not expected to be significant and minimal in line with the stated AusWEA (2005), collision potential and post construction monitoring should be established to further assess the impact of the project on bird species and populations.

A summary of species recorded during point count surveys and associated flying heights against Rotor Swept Area is provided in Table 12.

Table 12. Number of instances of bird species recorded in Point Count Surveys classified according to the RSA at which they were detected (excluding incidental records).

Species (Common Name)	Height not observed	Ground	Below RSA	RSA	Total
Australasian Pipit	1	10	1	0	**12**
Australian Magpie	0	100	60	0	**160**
Australian Raven	1	12	52	0	**65**
Australian Shelduck	0	2	0	0	**2**
Australian White Ibis	0	2	0	0	**2**
Australian Wooduck	0	5	5	0	**10**

Species (Common Name)	Height not observed	Ground	Below RSA	RSA	Total
Blue-winged Parrot	0	4	0	0	4
Brolga	0	0	12	0	12
Brown Falcon	0	5	0	0	5
Brown Songlark	0	14	4	0	18
Common Blackbird	0	1	1	0	2
Common Bronzewing	0	1	0	0	1
Common Starling	0	143	0	0	143
Corella sp.	0	12	3	0	15
Crested Pigeon	0	6	0	0	6
Crimson Rosella	0	11	0	0	11
Eastern Rosella	0	22	0	0	22
Eurasian Skylark	1	19	29	0	49
European Goldfinch	0	6	0	0	6
Galah	0	17	12	0	29
Golden Whistler	0	1	1	0	2
Golden-headed Cisticola	0	0	1	0	1
Little Corella	0	6	7	0	13
Little Raven	11	245	178	0	434
Little Wattlebird	0	2	0	0	2
Long Billed Corella	0	53	11	0	64
Magpie lark	0	7	10	0	17
Masked Lapwing	0	0	3	0	3
New Holland Honeyeater	0	3	0	0	3
Pacific Black Duck	0	9	0	0	9
Parrot sp.	0	1	0	0	1
Raven sp.	0	132	51	0	183
Red Wattlebird	0	23	0	0	23
Red-rumped Parrot	0	15	0	0	15
Rufous Whistler	0	2	0	0	2
Songlark sp.	0	1	0	0	1
Straw-necked Ibis	0	76	4	0	80
Striated Pardalote	0	11	0	0	11
Stubble Quail	0	0	1	0	1
Sulphur-crested Cockatoo	0	5	30	0	35
Superb Fairywren	0	19	1	0	20
Tree Martin	0	4	0	0	4

Species (Common Name)	Height not observed	Ground	Below RSA	RSA	Total
Wattlebird sp.	0	1	0	0	**1**
Welcome Swallow	0	26	0	0	**26**
Whistling Kite	0	1	0	0	**1**
White-faced Heron	0	3	0	0	**3**
White-necked Heron	0	1	0	0	**1**
Willie Wagtail	0	1	0	0	**1**
Yellow-faced Honeyeater	0	9	0	0	**9**
Yellow-rumped Thornbill	0	19	0	0	**19**
Yellow-tailed Black Cockatoo	1	10	0	0	**11**

Note. Ground – 0 metres; Below RSA – 1-63 metres; RSA 64-252 metres; Above RSA > 252 metres.

3.6.4 Raptors

Three raptor species were observed flying in the study area, however no individuals were recorded within the Rotor Swept Area (Table 12).

Raptors in general accounted for a low percentage (<1%) of birds recorded within and adjacent to the wind farm during the bird surveys.

3.7 Microbat Assessment

3.7.1 Desktop Assessment

The database search of the VBA (DEECA 2024d) contained records for two microbat species; Gould's Wattled Bat *Chalinolobus gouldii* and Long-eared Bat *Nyctophilus* spp. within a 10 kilometre radius of the study area No significant bat species have previously been recorded within 10 kilometres of the site (DEECA 2024d).

A total of nine bat species were recorded as part of the background ecological assessments for the Stockyard Hill Wind Farm (BL&A 2009), which is located approximately 18 kilometres to the south-west of the wind farm development boundary. One unidentified Long-eared Bat *Nyctophilus* spp. was identified during pre-construction bat surveys; however, this is likely to be Lesser Long-eared Bat *Nyctophilus geoffroyi* or Goulds Long-eared Bat *Nyctophilus gouldii* given these species are likely to occur within the study area (Table 13).

The nearest roosting cave for the nationally significant Southern Bent-Wing Bat is Pomborneit cave approximately 95 kilometres to the south-west. Maternity and roosting caves are also present further to the west at Warrnambool. The species is highly unlikely to fly this distance from its roosting cave each night, given that foraging range of the species is known to be up to 70 kilometres from the roosting cave on any given night (van Haarten *et. al.,* 2022). Given that the wind farm development boundary is 95 kilometres from the nearest roosting cave, and no calls from the species have been recorded as part of the microbat surveys, it is highly unlikely that the development will result in an impact to Southern Bent-wing Bat.

Table 13. Microbat species previously recorded during pre-construction surveys at Stockyard Hill Wind Farm (BL&A 2009)

Common Name	Species Name	Conservation Status
White-striped Freetail Bat	*Tadarida australis*	Not listed
Chocolate Wattled Bat	*Chalinolobus morio*	Not listed
Gould's Wattled Bat	*Chalinolobus gouldi*	Not listed
Inland Broad-nosed Bat	*Scotorepens balstoni*	Not listed
Large Forest Bat	*Vespadelus darlingtoni*	Not listed
Little Forest Bat	*Vespadelus vulturnus*	Not listed
Southern Freetail Bat	*Mormopterus sp4*	Not listed
Southern Forest Bat	*Vespadelus regulus*	Not listed
Unidentified Long-eared Bats Lesser Long-eared Bat Gould's Long-eared Bat	*Nyctophilus spp.*	Not listed

3.7.2 Bat Survey Results

A total of nine native bat species positively identified to species level during the bat surveys, including Southern Free-tailed Bat, White-striped Freetail Bat, Gould's Wattled Bat, Chocolate Wattled Bat and Little Forest Bat.

The State significant Eastern Bent-wing Bat (listed as Critically Endangered on the FFG Act Threatened List (DEECA 2024e) was also recorded at least once from each of the four Anabat detectors (Table 14). Eastern Bent-wing Bat is defined as 'species of interest' as outlined in Lumsden *et al.* (2019).

A total of 13 native bat species were recorded when calls that could not be identified to species level were assigned to one of four call complexes (Table 14).

Table 14. Microbat species recorded during microbat surveys at Brewster Wind Farm

	Detector #	1	2	3	4	Species Total
Common Name	**Species Name**	**Positively identified calls**				
Gould's Wattled bat	*Chalinolobus gouldii*	6	3	43	6	58
Chocolate Wattled Bat	*Chalinolobus morio*	43	6	26		75
Eastern False Pipistrelle	*Falsistrellus tasmaniensis*	35	5	4		44
Large Forest Bat	*Vespadelus darlingtoni*	48	3	93		144
Southern Forest Bat	*Vespadelus regulus*			7	1	8
Little Forest Bat	*Vespadelus vulturnus*	3	2	22	3	30
Eastern Bent-winged Bat	*Miniopterus orianae oceanensis*	57	1	4	1	63
White-striped Free-tailed Bat	*Austronomus australis*	6		1		7
South-Eastern Free-Tailed Bat	*Ozimops planiceps*	3			1	4

	Detector #	1	2	3	4	Species Total
Common Name	**Species Name**	**Unresolved calls**				
Southern Myotis/Long Eared Bat	*Myotis macropus / Nyctophilus* sp.		1	30		31
Eastern False Pipistrelle/Large Forest Bat	*F. tasmaniensis / V. darlingtoni*	69	4	54		127
Large Forest Bat/Southern Forest Bat	*V. darlingtoni / V. regulus*	3		6		9
Southern Forest Bat/Little Forest Bat	*V. regulus / V. vulturnus*			8		8
Little Forest Bat/Chocolate Wattled Bat	*V. vulturnus / C. morio*	1		3		4
	Detector Total	**274**	**25**	**301**	**12**	**612**
	Total nights with calls	**17**	**6**	**15**	**2**	**40**

Eleven of the thirteen possible microbat species recorded within the study area are considered to have a moderate to high risk of collision due to their flight behaviour. White-striped Freetail Bat and Gould's Wattled Bat are particularly at risk, having recorded the highest and second highest number of collision incidents respectively from a sub-sample of turbines across 15 Victorian Wind Energy Facilities between 2003 and 2018 (Moloney *et. al.,* 2019).

All bat species recorded in the study area (including call complex level) that have a moderate to high risk of collision are not state or federally listed species, with stable populations and widespread distribution. In this context, turbines are likely to result in a low impact to bat populations recorded in the study area.

3.7.3 Direct and Indirect Loss

Direct Loss

Given Eastern Bent-wing Bat is likely to disperse into the study area only on occasion and not rely on habitat within the wind farm development boundary, it is highly unlikely the species would be significantly affected by the proposed wind farm.

Given the species preference to occupy forested areas to forage for insects, there is unlikely to be a reduction of current and potential foraging resources in the landscape due to the proposed wind farm. With no collision mortalities published in Victoria (Moloney *et. al.*, 2019), the proposed wind farm is unlikely to result in a direct impact to the species.

Indirect Impact

The proposed wind farm will not result in an indirect impact to the species.

Unknown, unpredictable, or irreversible impacts

Impacts are not considered to be unknown or unpredictable. Impacts will be mitigated through the retention and protection of retained areas of habitat. Monitoring of any potential impacts will be undertaken as part of the post-construction BAM Plan monitoring (Section 8).

Local, Regional and National Scale Analysis of Impacts

Eastern Bent-wing Bat was recorded within the study area. There are no known roosting caves at the local or regional level, while the nearest known roosting cave is in East Gippsland (SWIFFT 2024). Due to the presence

of a likely small number of individuals and the likely low risk for turbine collision, there are not considered to be any likely impacts at a local, regional or national scale.

3.8 Migratory or Marine Species

Migratory species are protected under the EPBC Act if they are listed under the following agreements:

- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention);
- China Australia Migratory Bird Agreement (CAMBA);
- Japan Australia Migratory Bird Agreement (JAMBA); or the
- Republic of Korea Australia Migratory Bird Agreement (ROKAMBA).

The VBA (DEECA 2024d) indicates that 10 migratory and/or marine bird species have been recorded within 10 kilometres of the wind farm development boundary (Caspian Tern *Hydroprogne caspia*, Common Greenshank *Tringa nebularia*, Eastern Cattle Egret *Bubulcus coromandus*, Glossy Ibis *Plegadis falcinellus*, Great Egret *Ardea alba*, Latham's Snipe *Gallinago hardwickii*, Pectoral Sandpiper *Calidris melanotos*, Rainbow Bee-eater *Merops ornatus*, Red-necked Stint *Calidris ruficollis*, and Sharp-tailed Sandpiper *Calidris acuminata*).

However, the wind farm development boundary would not be classed as 'important habitat' for Migratory species as defined under the EPBC Act Policy Statement 1.1 *Principal Significant Impact Guidelines* (DoE 2013). The proposed wind farm is not located between, or in close proximity to, either migratory bird feeding areas, or important, regularly used, feeding and roosting sites, hence the likelihood of migratory birds moving through the wind farm development boundary when moving between wetlands in the local area is low.

While it is possible that small numbers of migratory birds could fly over the site during migration, it has been well documented that shorebirds typically fly between 0.5 and six kilometres in elevation during migration, well above the tip of the proposed turbines (Williams *et al.* 1981; Piersma *et al.* 1990; Tulp *et al.* 1994). Owing to these factors, it is considered that the likelihood of migratory bird mortality through turbine collisions is low and that the proposed wind farm is unlikely to have a significant impact on any migratory species.

4 LEGISLATIVE AND POLICY IMPLICATIONS

4.1 *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) establishes a Commonwealth process for the assessment of proposed actions likely to have a significant impact on any matters of National Environment Significance (NES), described in Table 15.

Table 15. Potential impacts to matters of National Environmental Significance (NES)

Matter of NES	Potential Impacts
World Heritage properties	The proposed action will not impact any properties listed for World Heritage.
National heritage places	The proposed action will not impact any places listed for national heritage.
Ramsar wetlands of international significance	The nearest Ramsar wetland is the Western District Lakes – approximately 65 kilometres south (downstream). The proposed action is highly unlikely to impact the ecological character of any Ramsar wetland, or other downstream waterbodies.
Threatened species and ecological communities	The nationally significant Blue-winged Parrot and Growling Grass Frog were recorded during ecological investigations. No other nationally significant flora, fauna or ecological communities are present.
Migratory and marine species	Ten Migratory and/or Marine species have been recorded within 10 kilometres of the windfarm development boundary (DEECA 2024d), however the windfarm development boundary would not be classed as an 'important habitat' as defined under the EPBC Act Policy Statement 1.1 Principal Significant Impact Guidelines (DoE 2013).
Commonwealth marine area	The proposed action will not impact any Commonwealth marine areas.
Nuclear actions (including uranium mining)	The proposed action is not a nuclear action.
Great Barrier Reef Marine Park	The proposed action will not impact the Great Barrier Reef Marine Park.
Water resources impacted by coal seam gas or mining development	The proposed action is not a coal seam gas or mining development.

4.1.1 Implications

Growling Grass Frog

Based on the development footprint, aside from the creation a single access track through a discrete area of the 200 metre buffer surrounding the central wetland, all impacts to terrestrial and aquatic habitat will be avoided, and the development will not result in a significant impact to the species.

Blue-winged Parrot

Based on the absence of an important population, absence of any impact to habitat critical to the survival of the species, and low likelihood of collision, the development will not result in a significant impact to the species.

Conclusion

The windfarm development footprint has been designed to avoid significant impacts to all areas of native vegetation and matters of NES.

The proposed action is highly unlikely to have a significant impact on any matter of NES. As such, a referral to the Commonwealth Environment Minister is not required regarding matters listed under the EPBC Act.

4.2 *Environment Effects Act 1978*

The *Environment Effects Act 1978* (EE Act) provides for assessment of proposed actions that can have a significant effect on the environment via the preparation of an Environment Effects Statement (EES). A project with potential adverse environmental effects that, individually or in combination, could be significant in a regional or State context should be referred.

4.2.1 Implications

The relevant ecological criteria are only considered when the impact footprint is 10 hectares or more, or when the proposed impact has the potential to result in the long-term loss of a significant proportion (1-5 percent depending on the conservation status of the species) of known remaining habitat or population of a threatened species within Victoria.

Brolga

An assessment against potential impacts to the FFG Act listed Brolga (Ecology and Heritage Partners 2024) has determined that under a conservative 90% avoidance scenario, assuming 5.3 breeding pairs present every year, and 10.6 birds present during the non-breeding season, it is expected that there would be 0.3 Brolga collisions over the life of the wind farm (30 years), equivalent to one Brolga collision every 100 years, which would equate to a reduction in the expected minimum population (EMP) of the Brolga of no more than 0.2 birds over the 30-year period of the wind farm.

Eastern Bent-wing Bat

Eastern Bent-wing Bat is a cave dwelling bat that forages at and around canopy height in treed areas, and close to the ground in grassy areas. The species has previously been shown to fly consistently below turbine height, with no collision mortalities published in Victoria (Moloney *et. al.,* 2019).

Conclusion

Based on the referral criteria that consider ecological matters, a referral to the Minister for Planning will not be triggered based on proposed impacts to ecological values as a result of the current development proposal.

4.3 *Flora and Fauna Guarantee Act 1988* (Victoria)

The FFG Act is the primary Victorian legislation providing for the conservation of threatened species and ecological communities, and for the management of processes that are threatening to Victoria's native flora and fauna. The FFG Act contains protection procedures such as the listing of threatened species and/or communities, and the preparation of action statements to protect the long-term viability of these values.

Proponents are required to apply for an FFG Act Permit to 'take' listed and/or protected[1] flora species, listed vegetation communities and listed fish species in areas of public land (i.e. within road reserves, drainage lines and public reserves). An FFG Act permit is generally not required for removal of species or communities on private land, or for the removal of habitat for a listed terrestrial fauna species.

4.3.1 *Flora and Fauna Guarantee Amendment Act 2019*

The *Flora and Fauna Guarantee Amendment Act 2019* (the Amendment Act) came into effect on 1 June 2020 and now applies the FFG Act to Crown land and private/freehold land that is managed by a public authority. The Amendment Act requires consideration of biodiversity across government to ensure decisions and policies are made with proper consideration of the potential impacts on biodiversity.

4.3.2 *Implications*

One flora 'protected' under the FFG Act (Golden Wattle *Acacia pycnantha*), and four fauna listed as threatened (Brolga, Growling Grass Frog, Blue-winged Parrot and Eastern Bent-wing Bat) were recorded during the ecological assessments.

Based on the requirements under the FFG Act, a permit is not required. However, the Responsible Authority must consider potential impacts to FFG Act matters to ensure decisions and policies are made with proper consideration of the potential impacts on biodiversity.

4.4 *Planning and Environment Act 1987* (Victoria)

The *Planning and Environment Act 1987* outlines the legislative framework for planning in Victoria and for the development and administration of planning schemes. All planning schemes contain native vegetation provisions at Clause 52.17, which require a planning permit from the relevant local Council to remove, destroy or lop native vegetation, unless an exemption at Clause 52.17-7 on the Victoria Planning Provisions applies.

4.4.1 *Local Planning Scheme*

The study area is located within the Pyrenees Shire Council. The following zoning and overlays apply (DTP 2024):

- Farming Zone (FZ) – entire study area; and,
- Public Acquisition Overlay – Schedule 1 (PAO1) – over a small portion in the far north-east of the study area.

[1] In addition to 'listed' flora species, the FFG Act identifies 'protected' flora species. This includes any of the Asteraceae (Daisies), all orchids, ferns (excluding *Pteridium esculentum*) and Acacia species (excluding *Acacia dealbata*, *Acacia decurrens*, *Acacia implexa*, *Acacia melanoxylon* and *Acacia paradoxa*), as well as any taxa that may be a component of a listed ecological community. A species may be both listed and protected.

4.4.2 *The Guidelines*

The State Planning Policy Framework and the decision guidelines at Clause 12.01 Biodiversity and Clause 52.17 Native Vegetation require Planning and Responsible Authorities to have regard for the Guidelines (DELWP 2017a).

4.4.3 *Implications*

In accordance with Clause 61.01 of the Pyrenees Shire Planning Scheme, the Minister for Planning is the Responsible Authority for the use and development of land for a Wind Energy facility or Solar facility.

The wind farm footprint, including swept paths has been designed to avoid all identified patches of native vegetation.

However, it should be noted that Brewster Wind Farm Pty Ltd are proposing to formalise access to one of the turbines along an existing farm track that passes through a Modelled Wetland at 7 Pin Oak Court. Although no native vegetation was present along the access track at the time of the assessments, as per the requirements under the Guidelines, the impact to the Modelled Wetland has been included as native vegetation, with the modelled condition score assigned to this area.

The study area is within Location 1, with 0.082 hectares of native vegetation proposed to be removed. As such, the permit application falls under the Basic assessment pathway.

The offset requirement for native vegetation removal is 0.015 General Habitat Units.

A permit to remove native vegetation under Clause 52.17 of the Pyrenees Planning Scheme is required. This report satisfies the application requirements of the Basic Assessment pathway listed in Clause 52.17 of the Pyrenees Planning Scheme.

A permit is required under Clause 52.32 of the Pyrenees Shire Planning Scheme to use and develop a wind energy facility. This report satisfies the relevant ecological application requirements listed in Clause 52.32-4.

4.5 *Catchment and Land Protection Act 1994* (Victoria)

The *Catchment and Land Protection Act 1994* (CaLP Act) contains provisions relating to catchment planning, land management, noxious weeds and pest animals. The Act also provides a legislative framework for the management of private and public land and sets out the responsibilities of land managers, stating that they must take all reasonable steps to:

- Avoid causing or contributing to land degradation which causes or may cause damage to land of another landowner;
- Protect water resources;
- Conserve soil;
- Eradicate regionally prohibited weeds;
- Prevent the growth and spread of regionally controlled weeds; and,
- Prevent the spread of, and as far as possible eradicate, established pest animals.

4.5.1 Implications

Two weeds listed as noxious under the *Catchment and Land Protection Act 1994* were recorded during the assessment (Gorse *Ulex europaeus*, and Spear Thistle *Cirsium vulgare*). Similarly, there is evidence that the study area is currently occupied by pest fauna species (e.g. European Rabbit *Oryctolagus cuniculus*) listed under the CaLP Act. Landowners are responsible for the control of any infestation of noxious weeds and pest fauna species. Listed noxious weeds/pests should be appropriately controlled throughout the study area.

4.6 *Wildlife Act 1975* and Wildlife Regulations 2013 (Victoria)

The *Wildlife Act 1975* (and associated Wildlife Regulations 2013) is the primary legislation in Victoria providing for protection and management of wildlife. Authorisation for habitat removal may be obtained under the *Wildlife Act 1975* through a licence granted under the *Forests Act 1958*, or under any other Act such as the *Planning and Environment Act 1987*. Any persons engaged to remove, salvage, hold or relocate native fauna during construction must hold a current Management Authorisation under the *Wildlife Act 1975*, issued by DEECA.

4.6.1 Implications

Authorisation for habitat removal may be obtained under the *Wildlife Act 1975* through a licence granted under the *Forests Act 1958*, or under any other Act such as the *Planning and Environment Act 1987*. Any persons engaged to remove, salvage, hold or relocate native fauna during construction must hold a current Management Authorisation under the *Wildlife Act 1975*.

4.7 Policy and Planning Guidelines – Development of Wind Energy Facilities in Victoria

Wind energy facilities should not lead to unacceptable impacts on critical environmental, cultural or landscape values. These values include those protected under Commonwealth and State legislation, those recognised through planning schemes such as the State Planning Policy Framework.

The Responsible Authority and applicants must consider a range of environmental values (for example: flora, vegetation and fauna) and risks when identifying suitable sites for wind energy facility development.

4.7.1 Implications

Impacts on flora and fauna species and habitats from wind energy facilities and associated infrastructure can be minimised through facility placement and design measures at the project planning stage. Avoidance of all native vegetation patches, scattered trees, and significant impacts to environmental values at the site has been achieved by focusing construction and other project activity in areas currently cropped.

An Environmental Management Plan (EMP) will be required to detail how the site will be managed throughout the life of the Project, and across all environmental components. The EMP should include a bat and avifauna management plan (DELWP 2017b). The project must consider impacts on birds and bats, which are known to collide with wind turbines.

5 POTENTIAL IMPACTS

The project footprint has been finalised with reference to the findings of this assessment to avoid and minimise impacts on ecological values where possible. Impacts associated with the project footprint and operation of the proposed wind farm are discussed in the following sections.

5.1 Construction Related Impacts

In the absence of suitable mitigation measures, construction-related impacts are likely to include:

- The introduction and spread of weeds and soil pathogens due to on-site activities;
- Disturbance to wildlife from increased human activity and noise during construction; and,
- Indirect impacts on adjacent areas if construction activities, erosion and drainage are not appropriately managed.

The study area is located within a relatively flat farmland landscape with interspersing ephemeral drainage lines which are unlikely to hold water for any substantial length of time. Due to the absence of a permanent natural water source and sparse vegetation, the study area is unlikely to support the significant species identified as occurring within the locality that would be affected by construction activities. Therefore, the potential construction related impacts are considered to be low to negligible.

A range of mitigation measures will be implemented by the construction contractor to manage direct and potential indirect impacts to Growling Grass Frog. Measures to mitigate impacts upon terrestrial and aquatic values present within the study area include:

- Soil disturbance and sedimentation within wetlands will be kept to a minimum, to avoid, or minimise impacts to fauna habitats;
- All contractors will be made aware of ecologically sensitive areas in order to minimise the likelihood of inadvertent disturbance to areas marked for retention;
- Construction stockpiles, machinery, roads, and other infrastructure will be placed away from areas of sensitivity or wetlands. As such, there will be no direct or indirect disturbance to surrounding terrestrial dispersal habitat for Growling Grass Frog;
- Best practice sedimentation and pollution control measures will be undertaken at all times, in accordance with Environment Protection Authority guidelines (EPA 1991; EPA 2020; Victorian Stormwater Committee 1999) to prevent offsite impacts into surrounding areas;
- Implementation of disease control measures (e.g., PhytoClean) in accordance with Hygiene Protocols for the Control of Diseases in Australian Frogs (Murray *et.al.* 2011) to reduce risk of Chytrid fungus; and,
- Trees and/or large shrubs must not be planted within 20 metres of the banks of Growling Grass Frog wetlands as this may shade out wetlands, thus potentially rendering them unsuitable for the species.

5.2 Operational Impacts

There are likely to be bird and bat mortalities as a result of turbine collision and barotrauma associated with the operation of the wind farm.

5.2.1 Birds

The impact of bird mortality as a result of turbine collisions on a population level will affect certain species in different ways. Species that are short-lived and with high annual reproduction rates are likely to be able to absorb additional mortality with insignificant impacts to their overall population size at a regional or national level (Chamberlain *et al*. 2006). By contrast, long-lived, slowly reproducing species are more vulnerable to this type of additive mortality and may be less able to maintain their population size when faced by such stresses (Sæther and Bakke 2000).

Given that raptors are long-lived and are a slowly reproducing species, they are distributed in low densities compared to other birds and are therefore exposed to increased risk of local population declines. The loss of a single breeding individual could potentially adversely impact the local population. However, it is well known based on published literature that certain raptors adapt their behaviour in the presence of wind turbines (Farfán *et al.* 2009), although detailed avoidance rates for most species worldwide is not known (Chamberlain *et al.* 2006). Particular raptor species have been identified as being 'of concern' due to their proneness to collision with operational wind turbines, although these species do appear to become conditioned to the presence of wind turbines after an extended period of time, and adjust their foraging behaviour to avoid wind turbines (i.e. up to 99% avoidance rates for most species).

Overall, the quality of habitat in the study area, the small size of the wind farm and the ability of birds to actively avoid collisions, means that the impact of the proposed wind farm on local avifauna is expected to be low.

5.2.2 Bats

Bats are susceptible to collision with wind turbines (Arnett 2005; Kunz *et al.* 2007). In some habitats high numbers are struck by wind turbines, especially those bat species that undertake large scale annual migrations (Kunz *et al.* 2007; Kuvlesky *et al*. 2007; Cryan and Barclay 2009). Furthermore, bats may be attracted to wind turbines following vortices created by the blade tips and have been observed investigating all parts of the turbine (Horn *et al.* 2008; Cryan and Barclay 2009). Bat mortality as a result of barotrauma, which is caused by changes in pressure produced by the rotating turbines, has also been documented (Cryan and Barclay 2009).

Collisions with turbine blades are understood to be the most frequent interaction causing mortality or injury, although the cause of these collisions is poorly known. General observations to date indicate that bats do not typically collide with turbine towers, transmission structures, guy wires, or meteorological towers (i.e. stationary structures); however current understanding of how and why bats come into contact with turbines is lacking. This is due to the limited ability to observe how bats behave at night around these structures as they move across the landscape between patches of vegetation and during foraging activities (MNR 2007, Horn *et al.* 2008a).

A recent assessment of bird and bat mortality (Moloney *et. al.,* 2019) found that bats account for 44% of wind farm mortalities (445 total bat carcasses found from data available to February 2018). The majority of these

mortalities were from White-striped Freetail Bat (67%). Carcass surveys undertaken as part of the Studland Bay and Bluff Point Wind Farms in Tasmania revealed that the majority of the carcasses were Gould's Wattled Bat (a high-flying, open-air foraging species) with the remaining being *Vespadelus* spp. (Hull and Cawthen 2012).

There are four main factors that contribute to bat mortality at wind farm sites:

- Bat species and abundance in the area;
- Season (i.e. time of year) and weather conditions (e.g. clear, warm nights with low wind). Such factors are likely to influence the level of bat activity and thus mortality at wind power sites (MNR 2007);
- Habitat/landscape features in the area (e.g. migration routes, forested ridges, and hibernacula/swarming sites may be important features). High levels of bat activity have been documented in forested ridge habitats, and areas where the woodland patches have been cleared for wind turbine placement also offer attractive foraging habitat for some species of bats. Edges of remnant woodlands and scattered remnant trees in paddocks provide favourable foraging areas where bats can easily capture airborne insect prey, creating areas of concentrated bat activity (Lumsden and Bennett 2000, 2005; Kunz *et al*. 2007, Horn *et al*. 2008); and,
- The number of turbines contained within the wind farm.

Bat Species in the Locality

Eleven of the thirteen possible microbat species recorded within the study area are considered to have a moderate to high risk of collision due to their flight behaviour. White-striped Freetail Bat and Gould's Wattled Bat are particularly at risk, having recorded the highest and second highest number of collision incidents respectively from a sub-sample of turbines across 15 Victorian Wind Energy Facilities between 2003 and 2018 (Moloney *et. al.,* 2019).

The State significant Eastern Bent-wing Bat is a cave dwelling bat that forages at and around canopy height in treed areas, and close to the ground in grassy areas. The species has previously been shown to fly consistently below turbine height, with no collision mortalities published in Victoria (Moloney *et. al.,* 2019).

However, the potential impacts to bats during operation of the wind farm are expected to be low due to the small number of turbines (six) and their location in highly cleared landscapes away from woodland habitats that would generally be favoured for foraging by most bat species.

5.2.3 Indirect Impacts: Displacement, Habitat Loss and Disturbance

The main focus of the impacts of wind farms on birds and bats is related to the risk of collision with wind turbines (Kuvlesky *et al.* 2007). However, wind farms have the potential to affect birds, among other taxa, in indirect, yet potentially significant ways. In Europe, displacement through habitat loss is considered the primary detrimental effect of wind farms on avian abundance (Kuvlesky *et al.* 2007).

This effect has been shown to manifest itself on both grassland birds that use habitat under the wind turbines (Leddy *et al.* 1999), as well as raptors that are frequently encountered at RSA height (Farfán *et al.* 2009), and is likely to occur because of the noise, movement and frequent human disturbance associated with wind turbines (Leddy *et al.* 1999).

Given that no native vegetation patches or scattered trees will be removed to construct the wind farm, and only six turbines are proposed, operational impacts to bird populations due to displacement and habitat removal or disturbance are likely to be temporary and minimal.

5.3 Cumulative Biodiversity Impacts

The largest impact to biodiversity in the locality and encompassing bioregion is likely to have stemmed from increased European settlement around the 1840s and the subsequent land clearance for agriculture. Future disturbance associated with human activities in the broader locality is likely to be associated with ongoing agricultural activities and development.

The impacts from the project must be considered together with the biodiversity impacts that have resulted from historic and predicted future human disturbances.

In addition to cumulative impacts associated with construction of the wind farm, operational activities have the potential to lead to incremental and cumulative impacts (e.g. barrier effects, changes to bird/bat behaviour etc.). Nearby operating and proposed wind farms within the vicinity of the project area include:

- Waubra Wind Farm (operating) - 128 turbines located approximately eight kilometres north of the wind farm development boundary;
- Chepstowe Wind Farm (operating) - Three turbines located approximately 16 kilometres south of the wind farm development boundary; and,
- Stockyard Hill Wind Farm (operating) – 157 turbines located approximately 19 kilometres south-west of the wind farm development boundary.

Operation of the proposed Brewster Wind Farm is considered unlikely to significantly increase cumulative impacts on ecological values within the broader landscape due to:

- The sites distance from other operating and proposed wind energy facilities; and,
- The development footprint being located within a cleared and uniform landscape, outside the likely common distribution range and/or flight paths of key species potentially impacted by wind farm developments (e.g. Brolga, Southern Bent-wing Bat, migratory shorebirds).

Despite this, ongoing monitoring of bird populations, following commissioning of the wind farm, will enable the proponent to identify and mitigate cumulative impacts as other wind farms are brought on-line.

5.4 The Impact of Climate Change

Climate change is likely to have an impact on both the flora and fauna of the broader locality. There has been recent speculation about the movement of wetlands south as the interior of Australia becomes increasingly arid. This conjecture is not supported by empirical data and it is likely that changes in Australia's climate will have unpredictable impacts on Australia's biodiversity, including birds (Pittock 2003). Changes that have already occurred as a result of the effect of climate change on birds include changes to distribution, phenology, morphology and physiology, behaviour, and abundance and population dynamics (Chambers *et al.* 2005).

As climate change is better understood it may be that developments such as wind farms need to be mindful of the impacts of this phenomenon, however at present, this is not possible. It should also be noted that wind farms are a 'clean' energy source with relatively very low carbon emissions.

6 MITIGATION MEASURES

For the removal of vegetation that falls under all assessment pathways, the Guidelines (DELWP 2017a) require the Responsible Authority to consider whether the applicant has demonstrated avoidance and minimisation of impacts to native vegetation.

6.1 Best Practice Mitigation Measures

Recommended measures to mitigate impacts upon terrestrial values present within the wind farm development boundary may include:

- Minimise impacts to native vegetation and habitats through construction and micro-siting techniques, including fencing retained areas of native vegetation. If indeed necessary, trees should be lopped or trimmed rather than removed. Similarly, soil disturbance and sedimentation within wetlands should be avoided or kept to a minimum, to avoid, or minimise impacts to fauna habitats;
- All contractors should be aware of ecologically sensitive areas to minimise the likelihood of inadvertent disturbance to areas marked for retention. Native vegetation (areas of sensitivity) should be included as a mapping overlay on any construction plans;
- Construction stockpiles, machinery, roads, and other infrastructure should be placed away from areas supporting native vegetation and wetlands;
- Ensure that best practice sedimentation and pollution control measures are undertaken at all times, in accordance with Environment Protection Authority guidelines (EPA 1991; EPA 2020; Victorian Stormwater Committee 1999) to prevent offsite impacts to waterways and wetlands; and,
- As indigenous flora provides valuable habitat for indigenous fauna, it is recommended that any landscape plantings that are undertaken as part of the proposed works are conducted using indigenous species sourced from a local provenance, rather than exotic deciduous trees and shrubs.

7 RECOMMENDATIONS

Based on the quality and extent of ecological values known to, or considered likely to occur, it is recommended that Brewster Wind Farm Pty Ltd:

1. Prior to construction, develop a Construction Environmental Management Plan (CEMP) with specific management actions to mitigate against potential impacts to areas of ecological value (i.e. wetlands supporting habitat for Growling Grass Frog);
2. Develop a Weed Management Plan, which should be incorporated into the CEMP;
3. Before commencement of wind farm operation, the preparation of a Bat and Avifauna Management (BAM) Plan to the satisfaction of the Responsible Authority, in consultation with DEECA. When approved, the BAM Plan must be endorsed by the Responsible Authority. The BAM Plan must include:
    a) A strategy for managing and mitigating bird and bat strike arising from the wind energy facility operation. The strategy must include procedures for the regular removal of carcasses likely to attract raptors to areas near wind turbines;
    b) A procedure for addressing significant impacts of birds and bat populations caused by the wind farm. This procedure must provide that the operator of the wind energy facility immediately investigates the possible causes of any significant impacts on bird and bat populations, and thereafter designs and implement measures to mitigate those impacts in consultation with the Responsible Authority and DEECA;
    c) A monitoring period of not less than one year to record, by species, any bird and bat strikes; and,
    d) A strategy to manage and/or monitor the wind farm beyond the designated period depending upon the results of the monitoring period referred to above. The strategy must include provisions to take account of any changes to weather patterns during the initial one-year monitoring period.
4. Prepare a Compensation Plan to the satisfaction of the Responsible Authority, in consultation with DEECA to ensure 'zero net impact' to the Victorian Brolga population;
5. If there are changes to the layout through the process of preparing the final development plans, confirmation of any potential impacts (or lack thereof) to native vegetation must be undertaken.

8 FURTHER REQUIREMENTS

Further requirements associated with development of the project, as well as additional studies or reporting that may be required, are provided in Table 16.

Table 16. Further requirements associated with development of the Project.

Relevant Legislation	Implications	Further Action
Environment Protection and Biodiversity Conservation Act 1999	Growling Grass Frog Based on the development footprint, aside from the creation a single access track through a discrete area of the 200 metre buffer surrounding the central wetland, all impacts to terrestrial and aquatic habitat will be avoided, and the development will not result in a significant impact to the species. Blue-winged Parrot Based on the absence of an important population, absence of any impact to habitat critical to the survival of the species, and low likelihood of collision, the development will not result in a significant impact to the species. Conclusion The windfarm development footprint has been designed to avoid significant impacts to all areas of native vegetation and matters of NES. The proposed action is highly unlikely to have a significant impact on any matter of NES. As such, a referral to the Commonwealth Environment Minister is not required regarding matters listed under the EPBC Act.	No further action required.
Flora and Fauna Guarantee Act 1988	One flora 'protected' under the FFG Act (Golden Wattle *Acacia pycnantha*), and four fauna listed as threatened (Brolga, Growling Grass Frog, Blue-winged Parrot and Eastern Bent-wing Bat) *were* recorded during the ecological assessments. Based on the requirements under the FFG Act, a permit is not required. However, the Responsible Authority must consider potential impacts to FFG Act matters to ensure decisions and policies are made with proper consideration of the potential impacts on biodiversity.	No further action required.
Planning and Environment Act 1987	The impact to the Modelled Wetland has been included as native vegetation, with the modelled condition score assigned to this area. The study area is within Location 1, with 0.082 hectares of native vegetation proposed to be removed. As such, the permit application falls under the Basic assessment pathway. The offset requirement for native vegetation removal is 0.015 General Habitat Units. A permit to remove native vegetation under Clause 52.17 of the Pyrenees Planning Scheme is required. A permit is required under Clause 52.32 of the Pyrenees Shire Planning Scheme to use and develop a wind energy facility	Prepare and submit a Planning Permit application under Clause 52.17 and Clause 52.32.
Catchment and Land Protection Act 1994	Two (2) weed species listed under the CaLP Act were recorded within the wind farm development boundary (Gorse *Ulex europaeus*, and Spear Thistle *Cirsium vulgare*). To meet requirements under the CaLP Act, listed noxious weeds should be appropriately controlled throughout the wind farm development boundary.	Listed noxious weeds should be appropriately controlled throughout the wind farm development boundary

Relevant Legislation	Implications	Further Action
Wildlife Act 1975	Any persons engaged to conduct salvage and relocation or general handling of terrestrial fauna species must hold a current Management Authorisation.	Ensure wildlife specialists hold a current Management Authorisation.

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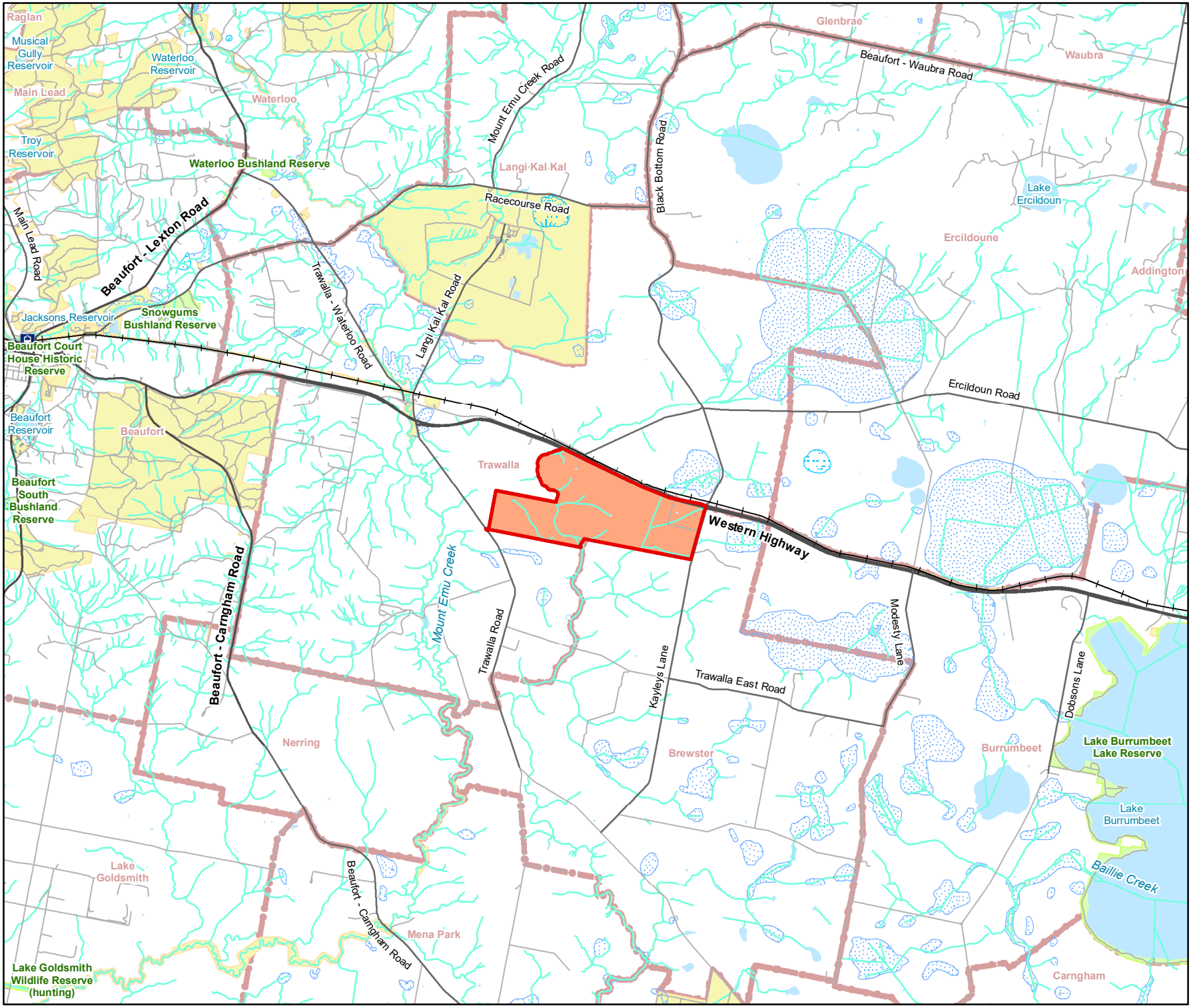
FIGURES



Legend

- Wind Farm Parcel Boundary
- Railway
- Major Road
- Collector Road
- Minor Road
- Proposed Road
- Minor Watercourse
- Permanent Waterbody
- Land Subject to Inundation
- Wetland/Swamp
- Parks and Reserves
- Crown Land
- Localities

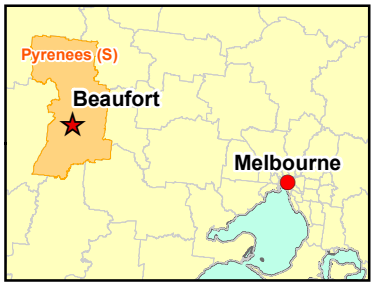


Figure 1

Location of the study area

Ecological Assessment for Brewster Wind Farm, Beaufort

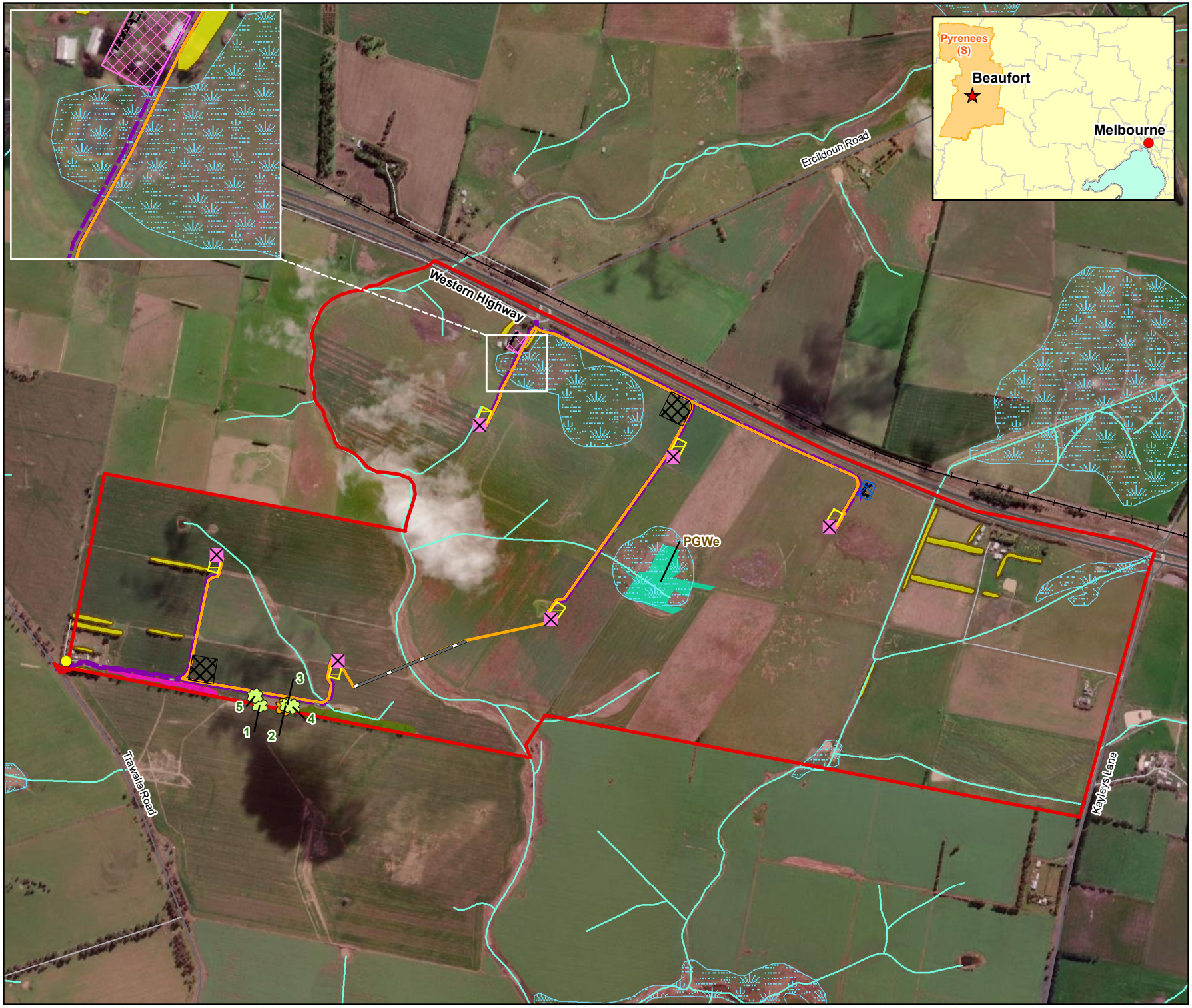
0 1,000 2,000

Metres

Map Scale: 1:100,000 @ A4

Coordinate System: GDA 1994 MGA Zone 54

ecology & heritage partners



Legend

- Wind Farm Parcel Boundary
- Turbine location including foundation area
- Access track
- Area Infraestructure
- Hardstand
- Laydown Area
- Passing bay
- Site office and staging area
- Substation area
- Underground cabling footprint
- Above ground cabling

Planted vegetation

- Planted Large Tree
- Planted Small Tree
- Planted Sugar Gum
- Planted Windrows
- Planted River Red-Gum

Native vegetation

- Plains Grassy Wetland (EVC 125)
- Current Wetlands

FFG Act protected flora

- Golden Wattle

Figure 2a

Ecological features

Ecological Assessment for Brewster Wind Farm, Beaufort

N

0 250 500

Metres

Map Scale: 1:20,000 @ A4
Coordinate System: GDA 1994 MGA Zone 54

ecology & heritage partners

13850_Fig02a_EcoFeat 19/07/2024 dvaladares

Legend

- Wind Farm Parcel Boundary
- Current Wetlands
- Anabat location
- Bird survey point count location

Development footprint

- Turbine location including foundation area
- Access track
- Area Infraestructure
- Hardstand
- Laydown Area
- Passing bay
- Site office and staging area
- Substation area
- Underground cabling footprint
- Above ground cabling

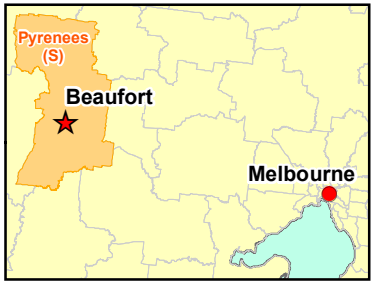


Figure 3a

Fauna survey effort

Ecological Assessment for Brewster Wind Farm, Beaufort

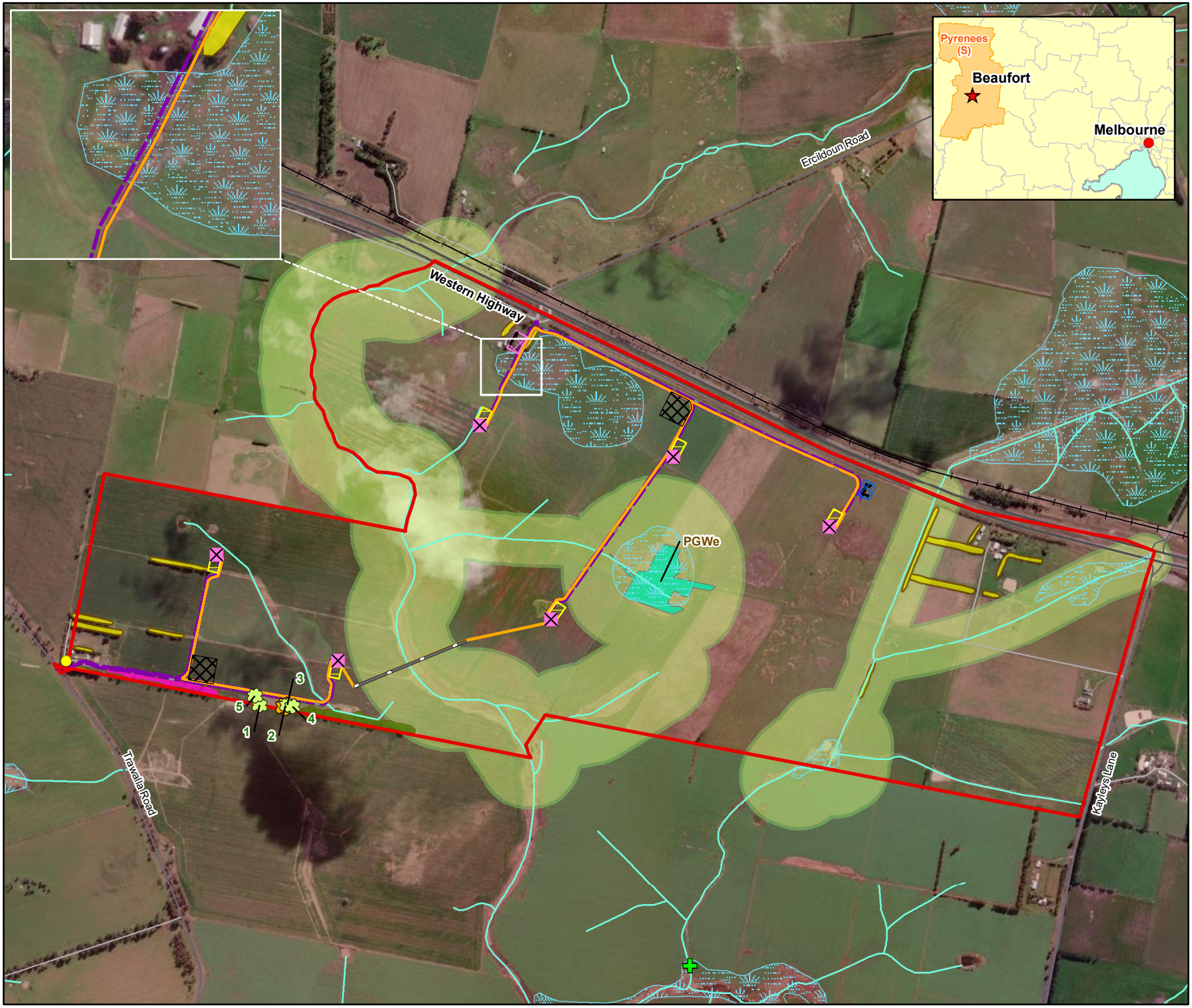
N

0 250 500

Metres

Map Scale: 1:20,000 @ A4
Coordinate System: GDA 1994 MGA Zone 54

ecology & heritage partners



Legend

- Wind Farm Parcel Boundary
- Potential Growling Grass Frog foraging habitat
- Growling Grass Frog

Development footprint

- Turbine location including foundation area
- Access track
- Area Infraestructure
- Hardstand
- Laydown Area
- Passing bay
- Site office and staging area
- Substation area
- Underground cabling footprint
- Above ground cabling

Planted vegetation

- Planted Large Tree
- Planted Small Tree
- Planted Sugar Gum
- Planted Windrows
- Planted River Red-Gum

Native vegetation

- Plains Grassy Wetland (EVC 125)
- Current Wetlands

FFG Act Listed Flora

- Golden Wattle

Figure 3b

Growling Grass Frog buffers

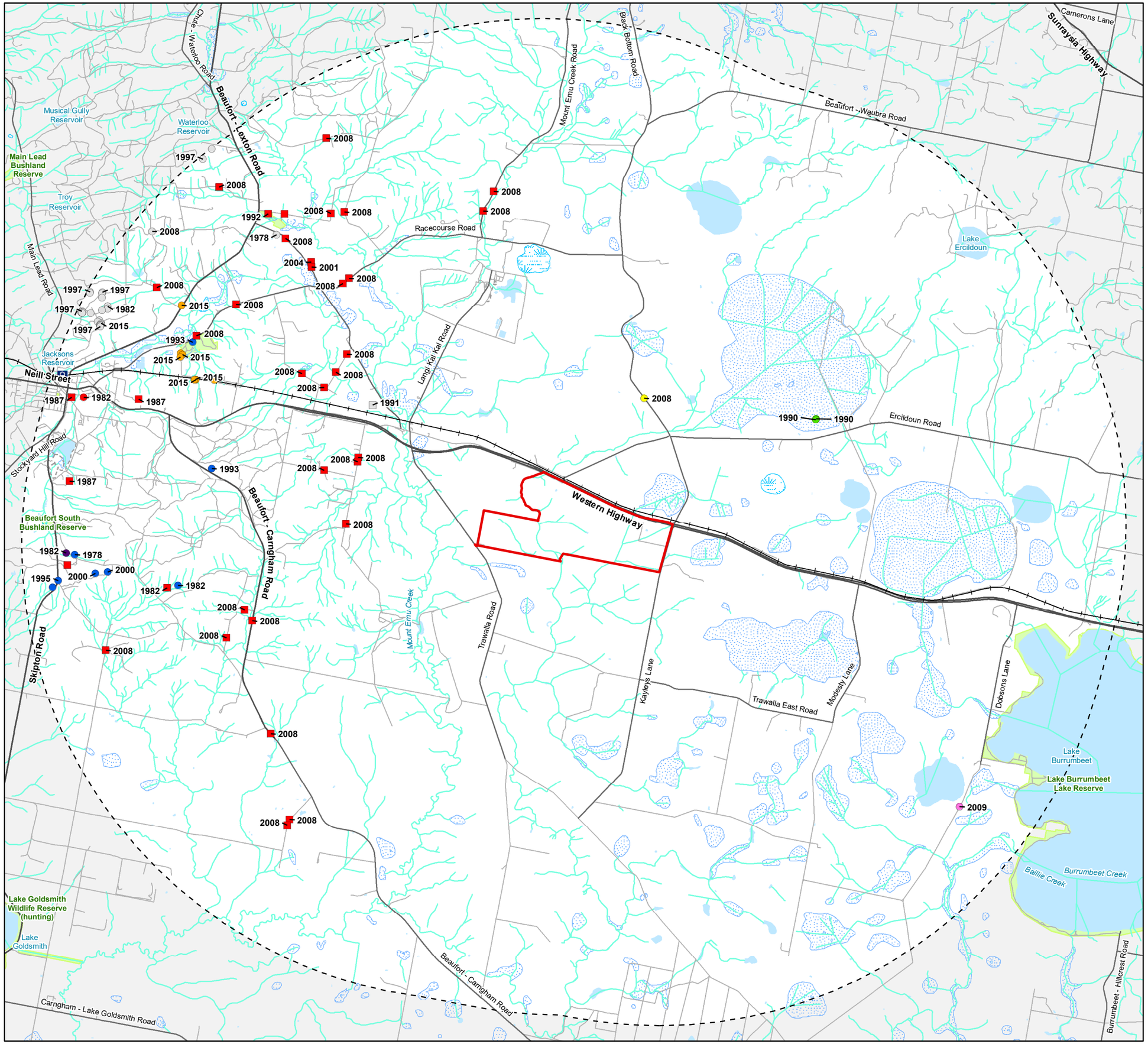
Ecological Assessment for Brewster Wind Farm, Beaufort

0 250 500
Metres

Map Scale: 1:20,000 @ A4
Coordinate System: GDA 1994 MGA Zone 54

ecology & heritage partners

13850_Fig03b_GGF_Buffers 19/07/2024 dvaladares



Legend

Wind Farm Parcel Boundary

Significant flora

- Ben Major Grevillea
- Buxton Gum
- Matted Flax-lily
- Pale Swamp Everlasting
- Plump Swamp Wallaby-grass
- Rough Wattle
- Salt Paperbark
- Shiny Tea-tree
- Swamp Everlasting
- Yarra Gum

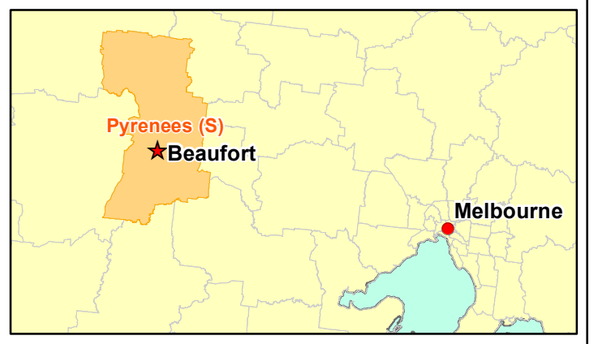


Figure 4

Previously documented significant flora within 10km of the study area

Ecological Assessment for Brewster Wind Farm, Beaufort

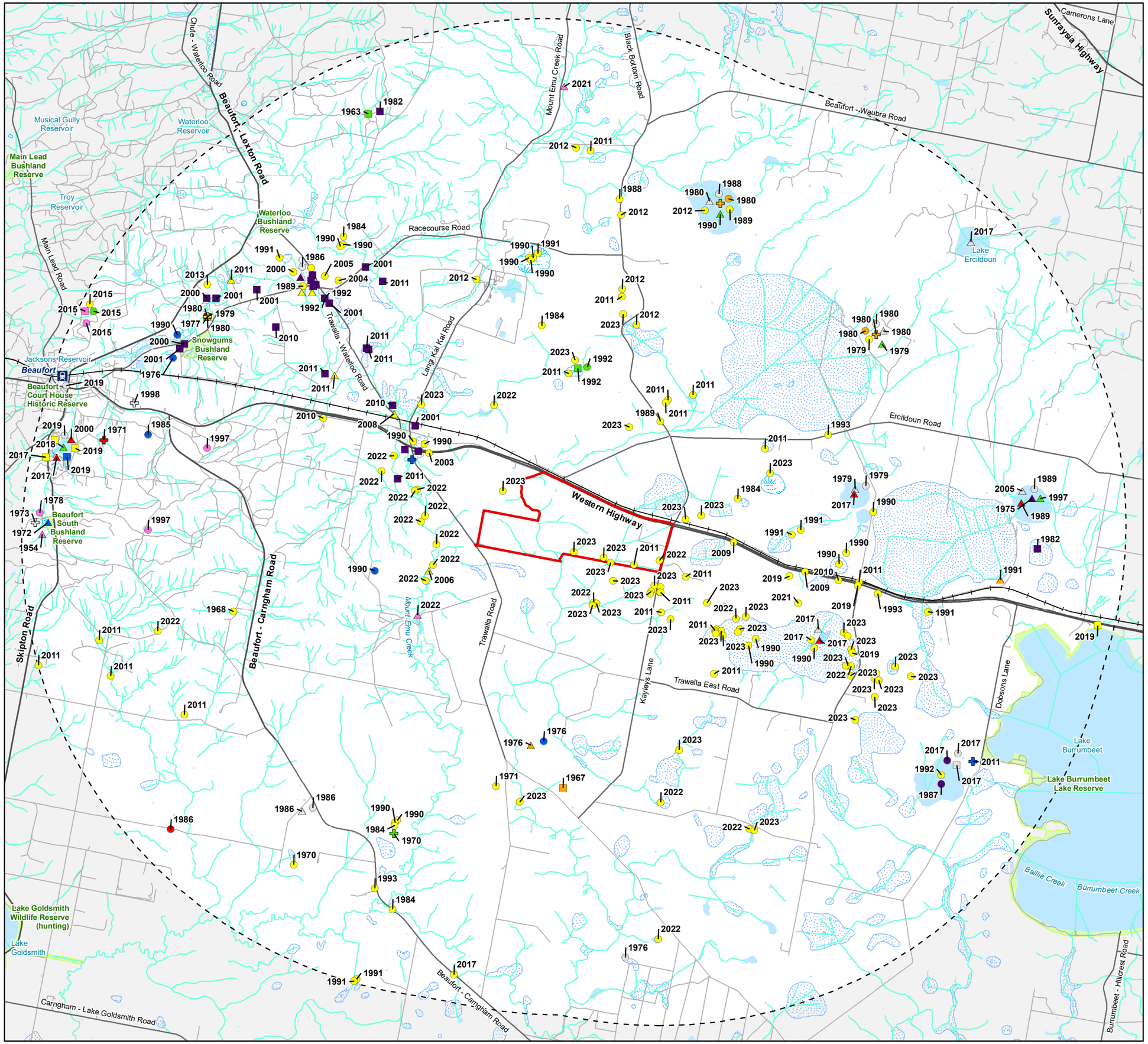
N

0 2 4

Kilometres

Map Scale: 1:80,000 @ A3
Coordinate System: GDA 1994 MGA Zone 54

ecology & heritage partners



Legend

Wind Farm Parcel Boundary

Significant fauna

- Australasian Shoveler
- Australian Gull-billed Tern
- Blue-billed Duck
- Brolga
- Brown Toadlet
- Brown Treecreeper
- Brush-tailed Phascogale
- Caspian Tern
- Common Greenshank
- Diamond Firetail
- Eastern Barred Bandicoot
- Eastern Great Egret
- Fat-tailed Dunnart
- Freckled Duck
- Golden Sun Moth
- Growling Grass Frog
- Hardhead
- Latham's Snipe
- Little Eagle
- Little Galaxias
- Musk Duck
- Painted Honeyeater
- Platypus
- Plumed Egret
- Powerful Owl
- Regent Honeyeater
- Sharp-tailed Sandpiper
- Southern Whiteface
- Speckled Warbler
- Striped Legless Lizard

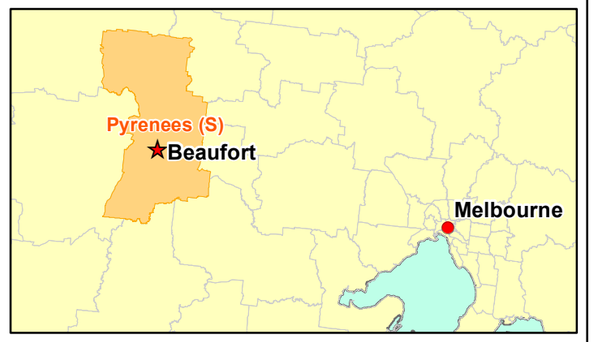


Figure 5

Previously documented significant fauna within 10km of the study area

Ecological Assessment for Brewster Wind Farm, Beaufort

N

0 2 4

Kilometres

Map Scale: 1:80,000 @ A3
Coordinate System: GDA 1994 MGA Zone 54

ecology & heritage partners

APPENDIX 1 - FLORA

Appendix 1.1 - Flora Results

Legend:

***** Listed as a noxious weed under the CaLP Act;

w Weed of National Significance;

****** Planted indigenous species in the study area.

P Protected flora under the FFG Act.

Table A1.1. Flora within the wind farm development boundary.

Scientific Name	Common Name	Notes
NATIVE		
Acacia mearnsii	Black Wattle	**
Acacia melanoxylon	Blackwood	**
Acacia pycnantha	Golden Wattle	**P**
Amphibromus nervosus	Common Swamp Wallaby-grass	
Correa reflexa	Common Correa	**
Deyeuxia quadriseta	Reed Bent-grass	
Dianella admixta.	Black-anther Flax-lily	**
Eleocharis acuta	Common Spike-sedge	
Eucalyptus camaldulensis	River Red-gum	**
Eucalyptus leucoxylon	Yellow Gum	**
Eucalyptus melliodora	Yellow Box	**
Eleocharis pusilla	Small Spike-sedge	
Eucalyptus tricarpa	Red Ironbark	**
Potamogeton tricarinatus s.l.	Floating Pondweed	
Lomandra longifolia	Spiny-headed Mat-rush	**
Ranunculus inundatus	River Buttercup	
NON-NATIVE		
Acetosella vulgaris	Sheep Sorrel	
Agrostis capillaris	Brown-top Bent	
Anthoxanthum odoratum	Sweet Vernal-grass	
Arctotheca calendula	Cape Weed	
Avena fatua	Wild Oat	
Brassica napus	Canola	
Bromus diandrus	Great Brome	
Cirsium vulgare	Spear Thistle	*
Cynedon dactylon	Couch	

Scientific Name	Common Name	Notes
Eucalytpus cladocalyx	Sugar Gum	
Holcus lanatus	Yorkshire Fog	
Hordeum vulgare	Barley	
Hypochaeris radicata	Flatweed	
Pennisetum clandestinum	Kikuyu	
Lolium spp.	Rye-grass	
Pennisetum clandestinum	Kikuyu	
Phalaris aquatica	Toowoomba Canary-grass	
Pinus radiata	Radiata Pine	
Plantago lanceolata	Ribwort	
Ulex europaeus	Gorse	***w**
Urtica dioica	Giant Nettle	

Appendix 1.2 - Habitat Hectare Assessment

Table A1.2. Habitat Hectare Assessment Table

Study Area Option		Wind Farm Boundary
Vegetation Zone		**PGWe**
Bioregion		VVP
EVC / Tree		PGWe
EVC Number		125
EVC Conservation Status		En
Patch Condition	Large Old Trees /10	0
	Canopy Cover /5	0
	Under storey /25	15
	Lack of Weeds /15	6
	Recruitment /10	3
	Organic Matter /5	5
	Logs /5	0
	Treeless EVC Multiplier	1.36
	Subtotal =	39.44
Landscape Value /25		3
Habitat Points /100		42
Habitat Score		**0.42**

Note: PGWe = Plains Grassy Wetland; VVP = Victorian Volcanic Plain bioregion.

Appendix 1.3 Significant Flora Species

Significant flora within 10 kilometres of the study area is provided in the Table A1.4.3 at the end of this section, with Tables A1.4.1 and A1.4.2 below providing the background context for the values in Table 1.4.3.

Table A1.4.1 Conservation status of each species for each Act. The values in this table correspond to Columns 5 and 6 in Table A1.4.3.

EPBC (*Environment Protection and Biodiversity Conservation Act 1999*):		FFG (*Flora and Fauna Guarantee Act 1988*):	
EX	Extinct	ex	Extinct
CR	Critically endangered	cr	Critically endangered
EN	Endangered	en	Endangered
VU	Vulnerable	vu	Vulnerable
#	Listed on the Protected Matters Search Tool		

Table A1.4.2 Likelihood of occurrence rankings: Habitat characteristics assessment of significant flora species previously recorded within 10 kilometres of the study area, or that may potentially occur within the study area to determine their likelihood of occurrence. The values in this table correspond to Column 7 in Table A1.4.3.

1	Known Occurrence	• Recorded within the study area recently (i.e. within ten years).
2	High Likelihood	• Previous records of the species in the local vicinity; and/or, • The study area contains areas of high-quality habitat.
3	Moderate Likelihood	• Limited previous records of the species in the local vicinity; and/or • The study area contains poor or limited habitat.
4	Low Likelihood	• Poor or limited habitat for the species, however other evidence (such as lack of records or environmental factors) indicates there is a very low likelihood of presence.
5	Unlikely	• No suitable habitat and/or outside the species range.

Table A1.4.3 Significant flora recorded within 10 kilometres of the study area.

Scientific name	Common name	Total # of documented records	Last documented record	EPBC	FFG	Likely occurrence in study area	Rationale for likelihood of occurrence
NATIONAL SIGNIFICANCE							
Amphibromus fluitans #	River Swamp Wallaby-grass	-	-	VU	-	4	Not observed within study area
Caladenia concolor #	Crimson Spider-orchid	-	-	VU	en	5	No suitable habitat within study area
Caladenia ornata #	Ornate Pink Fingers	-	-	VU	en	5	No suitable habitat within study area
Caladenia tensa #	Greencomb Spider-orchid	-	-	EN	-	5	No suitable habitat within study area
Caladenia versicolor #	Candy Spider-orchid	-	-	VU	en	5	No suitable habitat within study area
Daviesia laevis #	Grampians Bitter-pea	-	-	VU	cr	5	No suitable habitat within study area
Dianella amoena	Matted Flax-lily	8	2015	EN	cr	4	No suitable habitat within study area
Dodonaea procumbens #	Trailing Hop-bush	-	-	VU	-	4	No suitable habitat within study area
Eucalyptus aggregata #	Black Gum	-	-	VU	vu	5	Not present within study area
Eucalyptus crenulata	Buxton Gum	1	1982	EN	en	5	Not present within study area
Glycine latrobeana #	Clover Glycine	-	-	VU	vu	5	No suitable habitat within study area
Grevillea floripendula	Ben Major Grevillea	37	2015	VU	cr	5	No suitable habitat within study area
Lachnagrostis adamsonii #	Adamson's Blown-grass	-	-	EN	en	4	No suitable habitat within study area
Lepidium aschersonii #	Spiny Peppercress	-	-	VU	en	4	No suitable habitat within study area
Lepidium hyssopifolium #	Basalt Pepper-cress	-	-	EN	en	4	No suitable habitat within study area
Leucochrysum albicans subsp. *tricolor #*	Hoary Sunray	-	-	EN	en	4	No suitable habitat within study area
Pimelea spinescens subsp. *spinescens #*	Spiny Rice-flower	-	-	CR	cr	5	No suitable habitat within study area
Poa sallacustris #	Salt-lake Tussock-grass	-	-	VU	cr	4	No suitable habitat within study area
Prasophyllum suaveolens #	Fragrant Leek-orchid	-	-	EN	cr	5	No suitable habitat within study area
Prasophyllum validum #	Sturdy Leek-orchid	-	-	VU	-	5	No suitable habitat within study area
Pterostylis chlorogramma #	Green-striped Greenhood	-	-	VU	en	5	No suitable habitat within study area
Rutidosis leptorhynchoides #	Button Wrinklewort	-	-	EN	en	5	No suitable habitat within study area

Scientific name	Common name	Total # of documented records	Last documented record	EPBC	FFG	Likely occurrence in study area	Rationale for likelihood of occurrence
Senecio behrianus #	Stiff Groundsel	-	-	EN	cr	5	No suitable habitat within study area
Senecio macrocarpus #	Large-fruit Fireweed	-	-	VU	cr	5	No suitable habitat within study area
Senecio psilocarpus #	Swamp Fireweed	-	-	VU	-	4	No suitable habitat within study area
Swainsona murrayana #	Slender Darling-pea	-	-	VU	en	5	Outside species range. No suitable habitat within the study area
Thelymitra matthewsii #	Spiral Sun-orchid	-	-	VU	en	5	No suitable habitat within study area
Thelymitra orientalis #	Hoary Sun-orchid	-	-	CR	cr	5	No suitable habitat within study area
Xerochrysum palustre	Swamp Everlasting	1	1991	VU	cr	4	Poor quality habitat with study area
STATE SIGNIFICANCE							
Acacia aspera subsp. *parviceps*	Rough Wattle	8	2000	-	en	4	Not observed within study area. No suitable habitat.
Amphibromus pithogastrus	Plump Swamp Wallaby-grass	2	1990	-	cr	4	Poor quality habitat with study area
Coronidium gunnianum	Pale Swamp Everlasting	1	2008	-	cr	4	Poor quality habitat with study area
Eucalyptus yarraensis	Yarra Gum	40	2008	-	cr	4	Not observed within study area.
Leptospermum turbinatum	Shiny Tea-tree	1	1982	-	en	4	Not observed within study area.
Melaleuca halmaturorum	Salt Paperbark	1	2009	-	en	4	Not observed within study area.

Data Sources: Victorian Biodiversity Atlas (DELWP 2022d); Protected Matters Search Tool (DCCEEW 2022).

APPENDIX 2 - FAUNA

Appendix 2.1 Significant Fauna Species

Significant fauna within 10 kilometres of the study area is provided in the Table A2.1.3 at the end of this section, with Tables A2.1.1 and A2.1.2 below providing the background context for the values in Table 2.1.3.

Table A2.1.1 Conservation status of each species for each Act/policy. The values in this table correspond to Columns 5 to 8 in Table A2.1.3.

EPBC (*Environment Protection and Biodiversity Conservation Act 1999*):				FFG (*Flora and Fauna Guarantee Act 1988*):			
EX	Extinct	VU	Vulnerable	ex	Extinct	vu	Vulnerable
CR	Critically endangered	CD	Conservation Dependent	cr	Critically endangered	cd	Conservation Dependent
EN	Endangered	#	Listed on the Protected Matter Search Tool	en	Endangered		

Table A2.1.2 Likelihood of occurrence rankings: Habitat characteristics assessment of significant fauna species previously recorded within 10 kilometres of the study area, or that may potentially occur within the study area to determine their likelihood of occurrence. The values in this table correspond to Column 9 in Table A2.1.3.

1	Known Occurrence	• Recorded within the project area recently (i.e. within 10 years).
2	High Likelihood	• Likely resident in the study area based on site observations, database records, or expert advice; and/or, • Recent records (i.e. within five years) of the species in the local area (DELWP 2018); and/or, • The study area contains the species' preferred habitat.
3	Moderate Likelihood	• The species is likely to visit the study area regularly (i.e. at least seasonally); and/or, • Previous records of the species in the local area (DELWP 2021); and/or, • The study area contains some characteristics of the species' preferred habitat.
4	Low Likelihood	• The species is likely to visit the study area occasionally or opportunistically whilst en route to more suitable sites; and/or, • There are only limited or historical records of the species in the local area (i.e. more than 20 years old); and/or, • The study area contains few or no characteristics of the species' preferred habitat.
5	Unlikely	• No previous records of the species in the local area; and/or, • The species may fly over the study area when moving between areas of more suitable habitat; and/or,

		• Out of the species' range; and/or, • No suitable habitat present.

Table A2.1.3 Significant fauna recorded within 10 kilometres of the study area.

Scientific name	Common name	Total # of documented records	Last documented record	EPBC	FFG	Likely occurrence in study area	Rationale for likelihood of occurrence
NATIONAL SIGNIFICANCE							
Anthochaera phrygia	Regent Honeyeater	1	1971	CR	cr	4	Few recent records, no suitable habitat
Aphelocephala leucopsis	Southern Whiteface	1	1977	VU	-	4	Few recent records, no suitable habitat
Aprasia parapulchella #	Pink-tailed Worm-lizard	-	-	VU	en	4	Outside species range. No suitable habitat.
Botaurus poiciloptilus #	Australasian Bittern	-	-	EN	cr	4	No suitable habitat
Calidris acuminata	Sharp-tailed Sandpiper	5	1980	VU	-	4	No suitable habitat
Calidris ferruginea #	Curlew Sandpiper	-	-	CR	cr	4	No suitable habitat
Callocephalon fimbriatum #	Gang-gang Cockatoo	-	-	EN	en	4	No suitable habitat
Climacteris picumnus	Brown Treecreeper	11	1990	VU	-	4	No suitable habitat
Dasyurus maculatus maculatus (SE mainland population) #	Spot-tailed Quoll	-	-	EN	en	4	No suitable habitat
Delma impar	Striped Legless Lizard	2	2012	VU	en	4	No suitable habitat
Gallinago hardwickii	Latham's Snipe	7	2017	VU	-	4	No suitable habitat
Grantiella picta	Painted Honeyeater	1	1972	VU	vu	4	No suitable habitat
Hirundapus caudacutus #	White-throated Needletail	-	-	VU	vu	4	No suitable habitat
Isoodon obesulus obesulus #	Southern Brown Bandicoot (eastern)	-	-	EN	en	4	No suitable habitat
Lathamus discolor #	Swift Parrot	-	-	CR	cr	4	No suitable habitat
Limosa lapponica baueri #	Nunivak Bar-tailed Godwit	-	-	EN	-	4	No suitable habitat
Lissolepis coventryi #	Swamp Skink	-	-	EN	en	4	No suitable habitat
Litoria raniformis	Growling Grass Frog	27	2013	VU	vu	3	Known to occur in Wetland 121 – immediately south of the wind farm

Scientific name	Common name	Total # of documented records	Last documented record	EPBC	FFG	Likely occurrence in study area	Rationale for likelihood of occurrence
							boundary. May utilise Spring Hill Creek for dispersal.
Melanodryas cucullata cucullata #	South-eastern Hooded Robin	-	-	EN	vu	4	No suitable habitat
Nannoperca obscura #	Yarra Pygmy Perch	-	-	EN	vu	4	No suitable habitat
Neophema chrysostoma #	Blue-winged Parrot	-	-	VU	-	3	Observed during bird surveys. No suitable habitat within the study area.
Pedionomus torquatus#	Plains-wanderer	-	-	CR	cr	4	No suitable habitat
Perameles gunnii	Eastern Barred Bandicoot	24	1967	EN	en	4	No suitable habitat
Petauroides volans #	Greater Glider (southern and central)	-	-	EN	en	4	No suitable habitat
Petaurus australis australis #	Yellow-bellied Glider (south-eastern)	-	-	VU	vu	4	No suitable habitat
Pteropus poliocephalus #	Grey-headed Flying-fox	-	-	VU	vu	4	No suitable habitat
Rostratula australis #	Australian Painted Snipe	-	-	EN	cr	4	No suitable habitat
Stagonopleura guttata	Diamond Firetail	1	1977	VU	vu	4	No suitable habitat
Synemon plana	Golden Sun Moth	2	2015	VU	vu	4	No suitable habitat
Tringa nebularia	Common Greenshank	4	2017	EN	en	4	No suitable habitat
STATE SIGNIFICANCE							
Antigone rubicunda	Brolga	213	2023	-	en	1	Known to occur within locality. Limited preferred habitats present within the study area
Ardea alba modesta	Eastern Great Egret	7	2019	-	vu	4	Limited historical records, limited suitable habitat
Ardea intermedia plumifera	Plumed Egret	2	2000	-	cr	4	Limited historical records, limited suitable habitat
Biziura lobata	Musk Duck	12	2018	-	vu	3	Limited preferred habitat, species may visit study area opportunistically
Galaxiella toourtkoourt	Little Galaxias	17	2011	-	en	4	No suitable habitat
Gelochelidon macrotarsa	Australian Gull-billed Tern	2	1992	-	en	4	No suitable habitat

Scientific name	Common name	Total # of documented records	Last documented record	EPBC	FFG	Likely occurrence in study area	Rationale for likelihood of occurrence
Hieraaetus morphnoides	Little Eagle	3	1991	-	vu	3	Limited preferred habitat, species may visit study area opportunistically
Hydroprogne caspia	Caspian Tern	6	2017	-	vu	4	No suitable habitat
Ninox strenua	Powerful Owl	4	1998	-	vu	4	No suitable habitat
Ornithorhynchus anatinus	Platypus	3	2022	-	vu	5	No suitable habitat
Oxyura australis	Blue-billed Duck	3	1980	-	vu	4	No suitable habitat
Phascogale tapoatafa	Brush-tailed Phascogale	5	2015	-	vu	4	No suitable habitat
Pseudemoia pagenstecheri	Tussock Skink	3	2014	-	en	4	No suitable habitat
Pseudophryne bibronii	Brown Toadlet	4	2015	-	en	4	Outside species range. No suitable habitat
Pyrrholaemus sagittatus	Speckled Warbler	3	1970	-	en	4	No suitable habitat
Sminthopsis crassicaudata	Fat-tailed Dunnart	2	1992	-	vu	4	No suitable habitat
Spatula rhynchotis	Australasian Shoveler	15	2019	-	vu	4	No suitable habitat
Stictonetta naevosa	Freckled Duck	1	2019	-	en	3	Limited historical records, limited suitable habitat

Data Sources: Victorian Biodiversity Atlas (DELWP 2022d); Protected Matters Search Tool (DCCEEW 2022).

Appendix 2.2 – Fauna Species List

Common Name	Scientific Name	Hollow Use	Observation Type	Flying at RSA
Mammals				
European Rabbit *	*Oryctolagus cuniculus*	-	S	N/A
Birds				
Australian Magpie	*Gymnorhina tibicen*	-	S	NO
Australian Shelduck	*Tadorna tadornoides*	Total	S	NO
Australian Wood Duck	*Chenonetta jubata*	Total	S	NO

Common Name	Scientific Name	Hollow Use	Observation Type	Flying at RSA
Black-shouldered Kite	*Elanus axillaris*	-	S	NO
Brolga	*Antigone rubicunda*	-	S	NO
Chestnut Teal	*Anas castanea*	Total	S	NO
Crescent Honeyeater	*Phylidonyris pyrrhoptera*	-	H	NO
Eastern Yellow Robin	*Eopsaltria australis*	-	S	NO
European Goldfinch	*Carduelis carduelis*	-	S	NO
European Skylark*	*Alauda arvensis*	-	S	NO
Galah	*Eolophus roseicapilla*	Total	S	NO
Grey Shrike-thrush	*Colluricincla harmonica*	Partial	H	NO
Little Corella	*Cacatua sanguinea*	Total	S	NO
Little Raven	*Corvus mellori*	-	S	NO
Superb Fairy-wren	*Malurus cyaneus*	-	S	NO
Welcome Swallow	*Petrochelidon neoxena*	Partial	S	NO
White-eared Honeyeater	*Lichenostomus leucotis*	-	S	NO
White-throated Treecreeper	*Cormobates Leucophaeus*	Total	H	NO
Amphibian				
Common Froglet	*Crinia signifera*	-	H	N/A
Growling Grass Frog	*Litoria raniformis*	-	H	N/A

* Fauna list as per observations made during field assessments (excluding bird utilisation surveys)

APPENDIX 3 – NATIVE VEGETATION REMOVAL REPORT

Native vegetation removal report

This report provides information to support an application to remove, destroy or lop native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation*. The report **is not an assessment by DELWP** of the proposed native vegetation removal. Native vegetation information and offset requirements have been determined using spatial data provided by the applicant or their consultant.

Date of issue: **24/11/2021**
Time of issue: **2:03 pm**

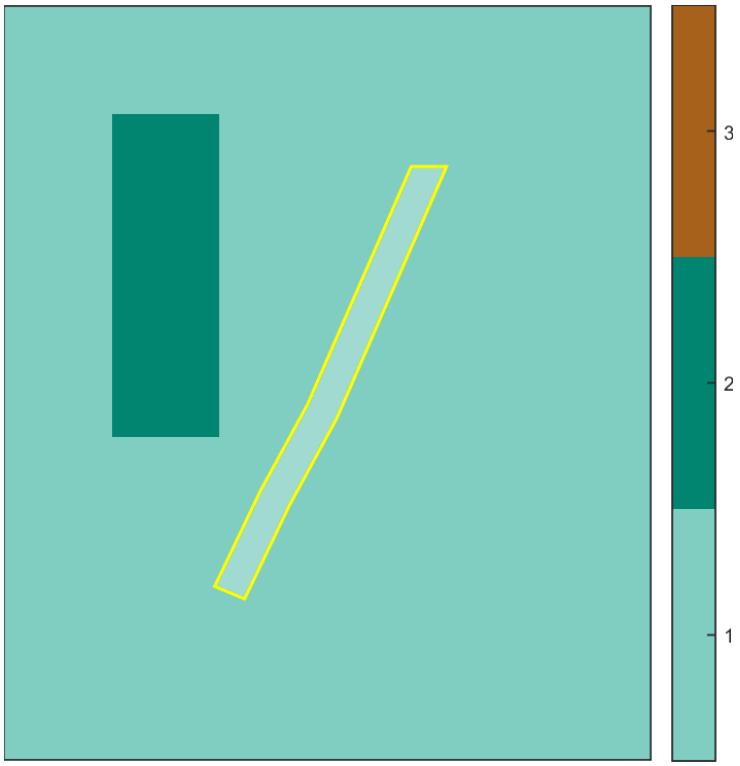
Report ID: EHP_2021_190

Project ID	EHP13850_BrewsterWF_VG94

Assessment pathway

Assessment pathway	**Basic Assessment Pathway**
Extent including past and proposed	0.082 ha
Extent of past removal	0.000 ha
Extent of proposed removal	0.082 ha
No. Large trees proposed to be removed	0
Location category of proposed removal	Location 1 The native vegetation is not in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map), sensitive wetland or coastal area. Removal of less than 0.5 hectares in this location will not have a significant impact on any habitat for a rare or threatened species

1. Location map



Offset requirements if a permit is granted

Any approval granted will include a condition to obtain an offset that meets the following requirements:

General offset amount[1]	0.015 general habitat units
Vicinity	Glenelg Hopkins Catchment Management Authority (CMA) or Pyrenees Shire Council
Minimum strategic biodiversity value score[2]	0.168
Large trees	0 large trees

NB: values within tables in this document may not add to the totals shown above due to rounding

Appendix 1 includes information about the native vegetation to be removed

Appendix 2 includes information about the rare or threatened species mapped at the site.

Appendix 3 includes maps showing native vegetation to be removed and extracts of relevant species habitat importance maps

1 The general offset amount required is the sum of all general habitat units in Appendix 1.

2 Minimum strategic biodiversity score is 80 per cent of the weighted average score across habitat zones where a general offset is required

Next steps

Any proposal to remove native vegetation must meet the application requirements of the Basic Assessment Pathway and it will be assessed under the Basic Assessment Pathway.

If you wish to remove the mapped native vegetation you are required to apply for a permit from your local council. Council will refer your application to DELWP for assessment, as required. **This report is not a referral assessment by DELWP.**

This *Native vegetation removal report* must be submitted with your application for a permit to remove, destroy or lop native vegetation.

Refer to the *Guidelines for the removal, destruction or lopping of native* vegetation (the Guidelines) for a full list of application requirements This report provides information that meets the following application requirements:

- The assessment pathway and reason for the assessment pathway
- A description of the native vegetation to be removed (met unless you wish to include a site assessment)
- Maps showing the native vegetation and property
- The offset requirements determined in accordance with section 5 of the Guidelines that apply if approval is granted to remove native vegetation.

Additional application requirements must be met including:

- Topographical and land information
- Recent dated photographs
- Details of past native vegetation removal
- An avoid and minimise statement
- A copy of any Property Vegetation Plan that applies
- A defendable space statement as applicable
- A statement about the Native Vegetation Precinct Plan as applicable
- An offset statement that explains that an offset has been identified and how it will be secured.

Authorised by the Victorian Government, 8 Nicholson Street, East Melbourne.

For more information contact the DELWP Customer Service Centre 136 186

www.delwp.vic.gov.au

Appendix 1: Description of native vegetation to be removed

All zones require a general offset, the general habitat units each zone is calculated by the following equation in accordance with the Guidelines:

General habitat units = extent x condition x general landscape factor x 1.5, where the general landscape factor = 0.5 + (strategic biodiversity value score/2)

The general offset amount required is the sum of all general habitat units per zone.

Native vegetation to be removed

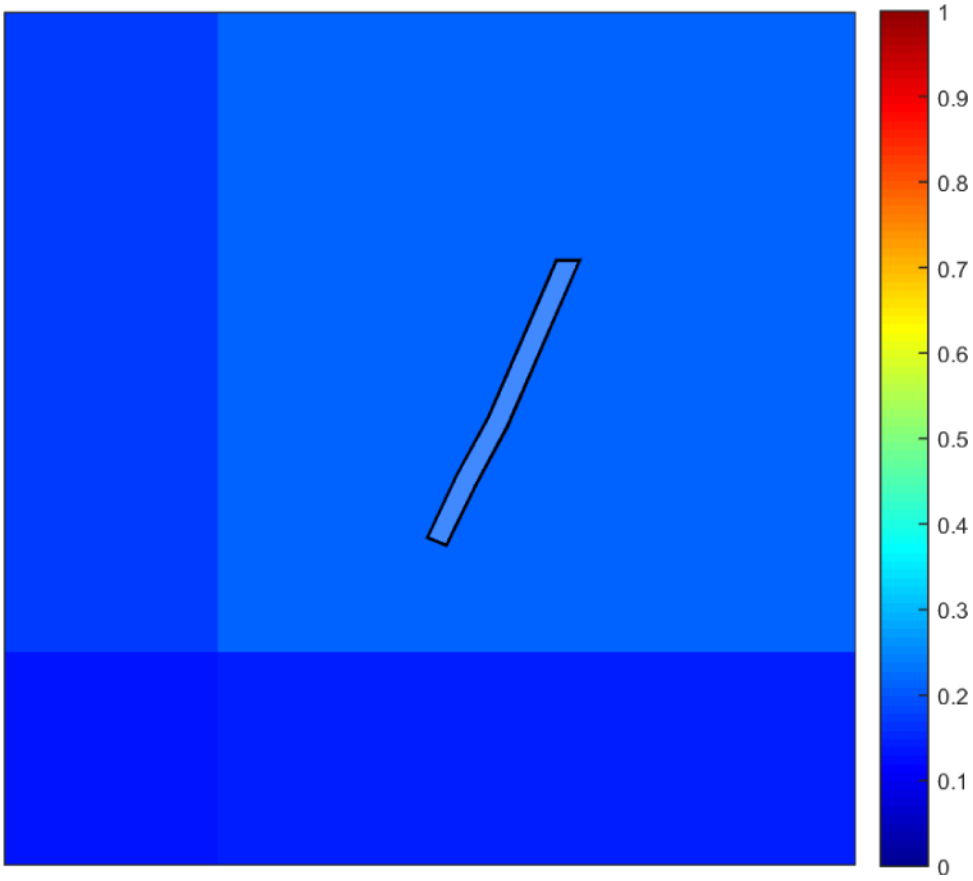
Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	**Type**	**BioEVC**	**BioEVC conservation status**	**Large tree(s)**	**Partial removal**	**Condition score**	**Polygon Extent**	**Extent without overlap**	**SBV score**	**HI score**	**Habitat units**	**Offset type**
1-CW	Patch	vvp_0132	Endangered	0	no	0.200	0.082	0.082	0.210		0.015	General

Appendix 2: Information about impacts to rare or threatened species' habitats on site

This is not applicable in the Basic Assessment Pathway.

Appendix 3 – Images of mapped native vegetation

2. Strategic biodiversity values map



3. Aerial photograph showing mapped native vegetation

4. Map of the property in context

Yellow boundaries denote areas of proposed native vegetation removal.

APPENDIX 4 – OFFSET CREDIT STATEMENT

Report of available native vegetation credits

This report lists native vegetation credits available to purchase through the Native Vegetation Credit Register.

This report is **not evidence** that an offset has been secured. An offset is only secured when the units have been purchased and allocated to a permit or other approval and an allocated credit extract is provided by the Native Vegetation Credit Register.

Date and time: 20/06/2024 05:24 **Report ID: 24959**

What was searched for?

General offset

General habitat units	Strategic biodiversity value	Large trees	Vicinity (Catchment Management Authority or Municipal district)	
0.015	0.168	0	CMA	Glenelg Hopkins
			or LGA	Pyrenees Shire

Details of available native vegetation credits on 20 June 2024 05:24

These sites meet your requirements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
BBA-0639	4.618	0	Glenelg Hopkins	Moyne Shire	Yes	Yes	No	Bio Offsets
BBA-0667	1.567	0	Glenelg Hopkins	Southern Grampians Shire	Yes	Yes	No	Contact NVOR
BBA-0668	0.085	0	Glenelg Hopkins	Southern Grampians Shire	Yes	Yes	No	VegLink
BBA-0741	1.691	0	North Central	Pyrenees Shire	Yes	Yes	No	VegLink
BBA-1139_05	1.141	0	Glenelg Hopkins	Moyne Shire	No	Yes	No	VegLink
BBA-2088	0.193	5	Glenelg Hopkins	Southern Grampians Shire	Yes	Yes	No	VegLink
BBA-2467	0.236	11	Glenelg Hopkins	Glenelg Shire	No	Yes	No	
BBA-3027	1.231	267	Glenelg Hopkins	Pyrenees Shire	Yes	Yes	No	VegLink
BBA-3031	3.378	114	North Central	Pyrenees Shire	Yes	Yes	No	VegLink
BBA-3041	0.289	252	Glenelg Hopkins	Moyne Shire	Yes	Yes	No	VegLink
TFN-C0228	4.637	0	Glenelg Hopkins	Glenelg Shire	No	Yes	No	Bio Offsets
TFN-C0543	0.407	7	Glenelg Hopkins	Southern Grampians Shire	No	Yes	No	Bio Offsets
VC_CFL-3076_01	8.450	46	North Central	Pyrenees Shire	Yes	Yes	No	Bio Offsets

VC_CFL-3693_01	2.194	600	Glenelg Hopkins	Ararat Rural City	Yes	Yes	No	VegLink
VC_CFL-3727_01	12.327	24	Glenelg Hopkins	Ararat Rural City	Yes	Yes	No	VegLink
VC_CFL-3756_01	25.909	0	Glenelg Hopkins	Ararat Rural City	Yes	Yes	No	VegLink
VC_CFL-3763_01	3.246	266	Glenelg Hopkins	Glenelg Shire	Yes	Yes	No	VegLink
VC_TFN-C2046_01	7.575	1446	Glenelg Hopkins	Southern Grampians Shire	Yes	Yes	No	Ecocentric, Ethos, VegLink

These sites meet your requirements using alternative arrangements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)

There are no sites listed in the Native Vegetation Credit Register that meet your offset requirements when applying the alternative arrangements as listed in section 11.2 of the Guidelines for the removal, destruction or lopping of native vegetation.

These potential sites are not yet available, land owners may finalise them once a buyer is confirmed.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
VC_CFL-3814_01	13.719	526	Glenelg Hopkins	Southern Grampians Shire	Yes	Yes	No	Contact NVOR

LT - Large Trees *CMA - Catchment Management Authority* *LGA - Municipal District or Local Government Authority*

Next steps

If applying for approval to remove native vegetation
Attach this report to an application to remove native vegetation as evidence that your offset requirement is currently available.

If you have approval to remove native vegetation
Below are the contact details for all brokers. Contact the broker(s) listed for the credit site(s) that meet your offset requirements. These are shown in the above tables. If more than one broker or site is listed, you should get more than one quote before deciding which offset to secure.

Broker contact details

Broker Abbreviation	Broker Name	Phone	Email	Website
Abezco	Abzeco Pty. Ltd.	(03) 9431 5444	offsets@abzeco.com.au	www.abzeco.com.au
Baw Baw SC	Baw Baw Shire Council	(03) 5624 2411	bawbaw@bawbawshire.vic.gov.au	www.bawbawshire.vic.gov.au
Bio Offsets	Biodiversity Offsets Victoria	0452 161 013	info@offsetsvictoria.com.au	www.offsetsvictoria.com.au
Contact NVOR	Native Vegetation Offset Register	136 186	nativevegetation.offsetregister@delwp.vic.gov.au	www.environment.vic.gov.au/native-vegetation
Ecocentric	Ecocentric Environmental Consulting	0410 564 139	ecocentric@me.com	Not avaliable
Ethos	Ethos NRM Pty Ltd	(03) 5153 0037	offsets@ethosnrm.com.au	www.ethosnrm.com.au
Nillumbik SC	Nillumbik Shire Council	(03) 9433 3316	offsets@nillumbik.vic.gov.au	www.nillumbik.vic.gov.au
TFN	Trust for Nature	8631 5888	offsets@tfn.org.au	www.trustfornature.org.au
VegLink	Vegetation Link Pty Ltd	(03) 8578 4250 or 1300 834 546	offsets@vegetationlink.com.au	www.vegetationlink.com.au
Yarra Ranges SC	Yarra Ranges Shire Council	1300 368 333	biodiversityoffsets@yarraranges.vic.gov.au	www.yarraranges.vic.gov.au

For more information contact the DEECA Customer Service Centre 136 186 or the Native Vegetation Credit Register at nativevegetation.offsetregister@delwp.vic.gov.au

APPENDIX 5 – MICROBAT CALL IDENTIFICATION REPORT

Microbat Call Identification Report

Prepared for ("Client"):	Ecology & Heritage Partners
Survey location/project name:	Beaufort, Victoria
Survey dates:	1-21 October 2021
Client project reference:	
Job no.:	EHP-2101
Report date:	20 November 2021

Methods

Data received

Balance Environmental received four raw data files (data.dat) from four Anabat SD1 bat detectors. The detectors were deployed over a three-week period (1-21 October 2021) at sites in the Beaufort area, central Victoria.

Zero-crossing analysis bat-call sequence files (ZC files) were extracted from the data.dat files using *CFCread* Version 4.6c (Corben 2018).

Call identification

Call analyses were undertaken with *Anabat Insight* (Version 2.0.1; Titley Scientific, Brisbane). All ZC files were passed through a noise filter to separate files containing only non-bat background noise. The remaining files (*i.e.* those with bat calls) were then processed manually, with species identification achieved by comparing call spectrograms and derived metrics with those of regionally relevant reference calls (G. Ford and A. Lo Cascio, unpublished data) and published call descriptions (*e.g.* Pennay *et al.* 2004).

The likelihood of species' occurrence in the study area was further confirmed by referring to distribution maps in the online *BatMap* application (Australasian Bat Society 2021) and other published distributional information (e.g. Churchill 2008; van Dyck et al. 2013).

Reporting standard

The format and content of this report follows Australasian Bat Society standards for the interpretation and reporting of bat call data (Reardon 2003), available on-line at http://www.ausbats.org.au/.

Species nomenclature follows Armstrong *et al.* (2020).

Results & Discussion

The data conversion process yielded 2552 ZC files; however, noise filtration excluded 1946 of those files from further analysis. The remaining 607 ZC files contained 612 identifiable bat calls, 70% of which (428 calls) were positively identified. The other 184 calls had characteristics potentially attributable to two or more species. These "unresolved" calls were assigned to multi-species groups and all members of those groups should be considered "possibly present" if they were not also reliably identified from other calls.

Nine species were reliably identified (see upper section of **Table 1**).

Most of the unresolved calls represented species that were otherwise positively identified (**Table 1** bottom portion); however, 31 calls represented at least one and potentially up to three additional species (*Myotis* macropus and/or *Nyctophilus* geoffroyi and/or *N.* gouldi).

Table 1 Microbat species recorded during the Beaufort survey, 1-21 October 2021. Count of calls recorded per detector.

Detector #	1	2	3	4	Species Total
Total nights with calls	17	6	15	2	
Positively identified calls					
Chalinolobus gouldii	6	3	43	6	58
Chalinolobus morio	43	6	26		75
Falsistrellus tasmaniensis	35	5	4		44
Vespadelus darlingtoni	48	3	93		144
Vespadelus regulus			7	1	8
Vespadelus vulturnus	3	2	22	3	30
Miniopterus orianae oceanensis	57	1	4	1	63
Austronomus australis	6		1		7
Ozimops planiceps	3			1	4
Unresolved calls					
Myotis macropus / Nyctophilus sp.		1	30		31
F. tasmaniensis / V. darlingtoni	69	4	54		127
V. darlingtoni / V. regulus	3		6		9
V. regulus / V. vulturnus			8		8
V. vulturnus / C. morio	1		3		4
Detector Total	274	25	301	12	612

References

Armstrong, K.N., Reardon, T.B., and Jackson, S.M. (2020). A current taxonomic list of Australian Chiroptera. *Australasian Bat Society*. Version 2020-06-09. URL: http://ausbats.org.au/species-list/4593775065

Australasian Bat Society (2021). *BatMap*. http://ausbats.org.au/batmap. Accessed 19/11/2021.

Churchill, S. (2008). *Australian Bats*. Jacana Books, Allen & Unwin; Sydney.

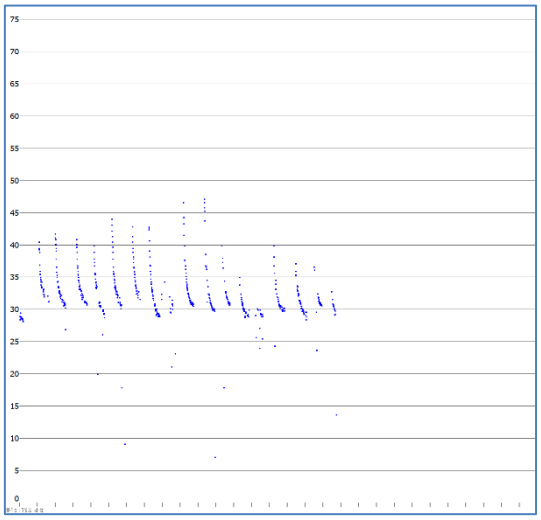
Corben, C. (2018). *CFCread Storage ZCAIM interface*. Version 4.6c, 20 June 2018.

Pennay, M., Law, B. and Reinhold, L. (2004). *Bat Calls of New South Wales*. Department of Environment and Conservation, Hurstville.

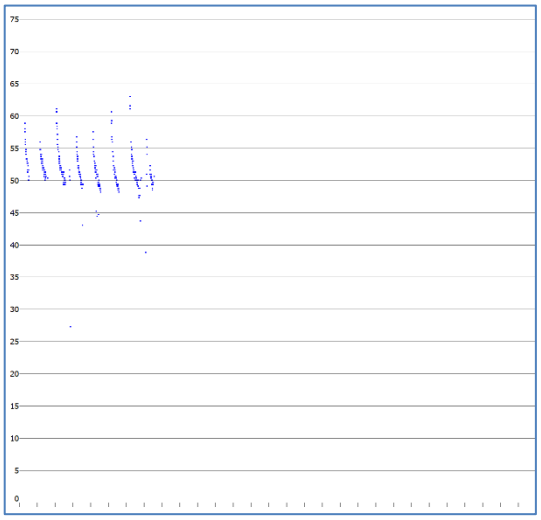
Reardon, T. (2003). Standards in bat detector based surveys. *Australasian Bat Society Newsletter* **20**, 41-43.

van Dyck, S., Gynther, I. and Baker, A. (ed.) (2013). *Field Companion to the Mammals of Australia.* New Holland; Sydney.

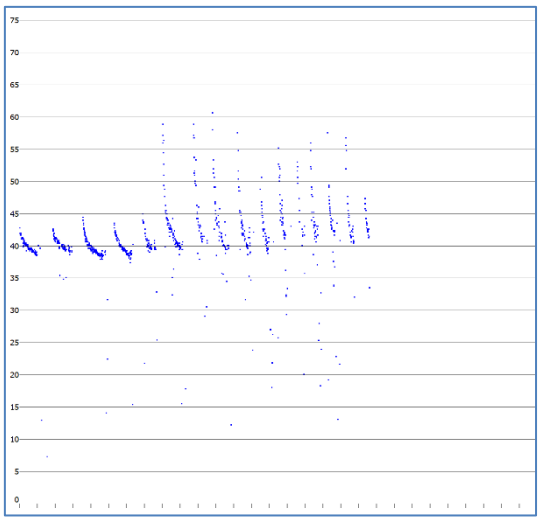
Appendix 1 Representative call sequences from the Beaufort dataset, recorded 1-21 October 2021. Scale: 10msec per tick; time between pulses removed (*Anabat Insight* F7 compressed view)



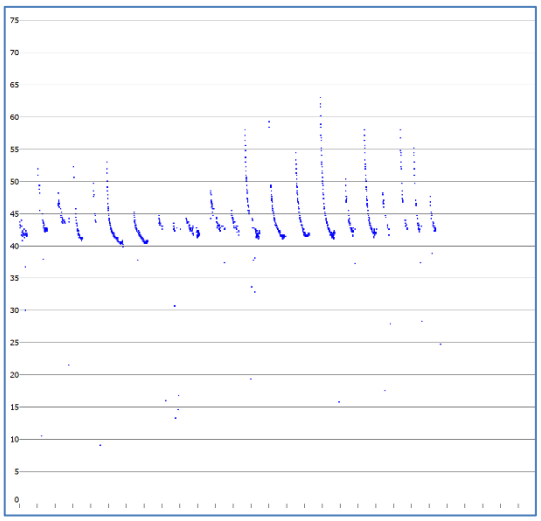
Chalinolobus gouldii



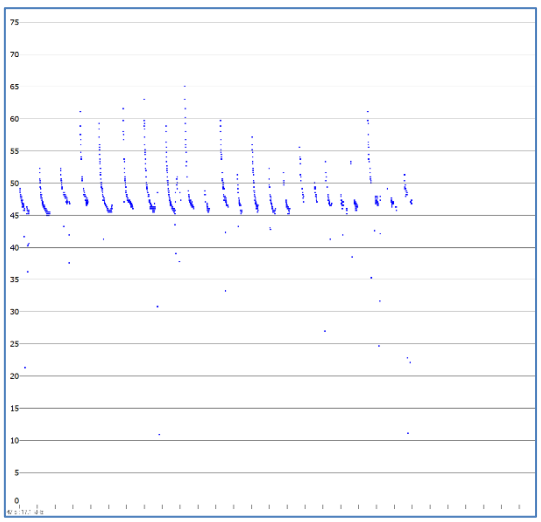
Chalinolobus morio



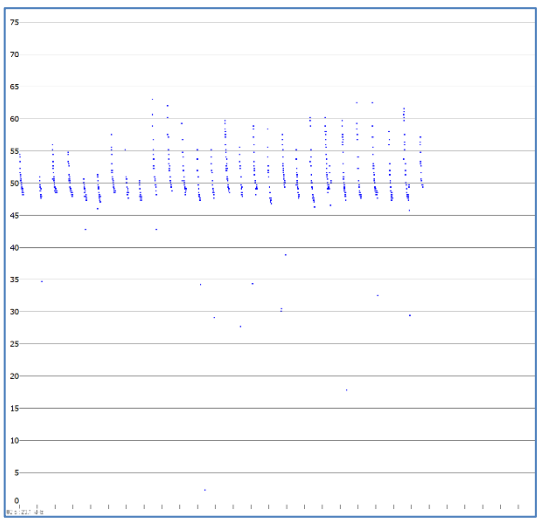
Falsistrellus tasmaniensis



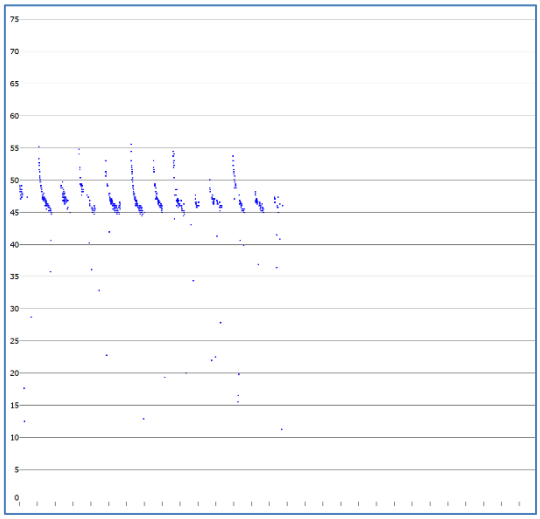
Vespadelus darlingtoni



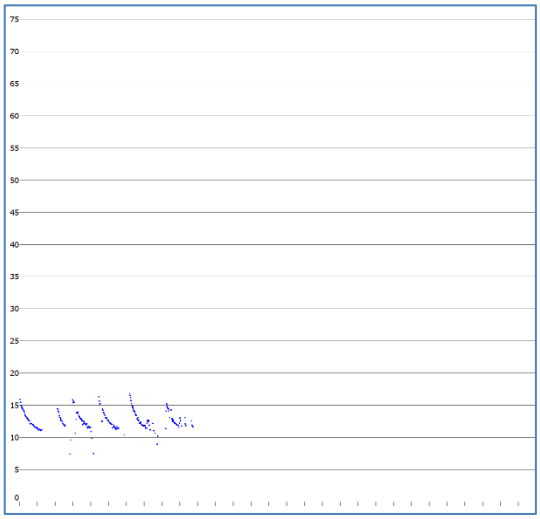
Vespadelus regulus



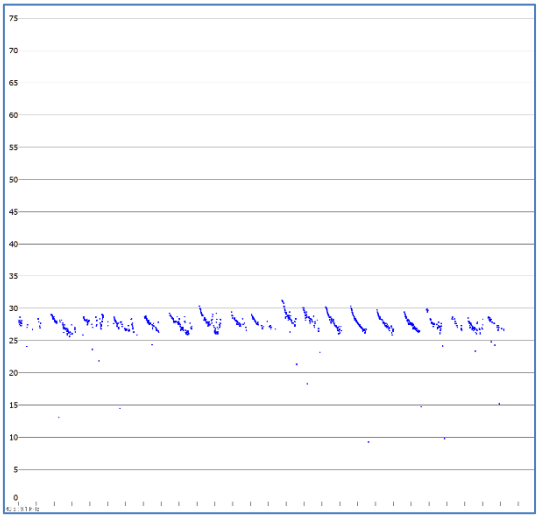
Vespadelus vulturnus



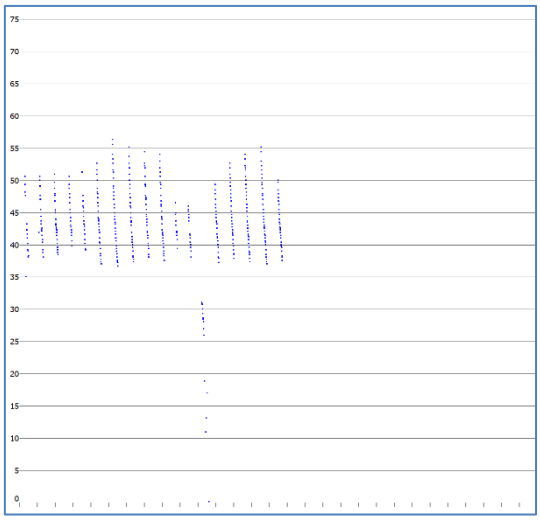
Miniopterus orianae oceanensis



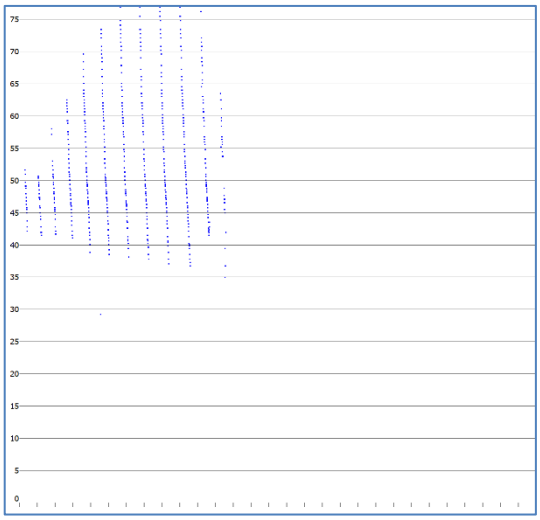
Austronomus australis



Ozimops planiceps



Possibly *Myotis macropus*



Possibly *Nyctophilus sp.*

APPENDIX 6 – TRAWALLA PARISH MAP

Plate A6.1. Trawalla Parish Map - 1922