

Final Report v2.0

Biodiversity Assessment for the proposed Delburn Wind Farm, Gippsland, Victoria

Prepared for

Delburn Wind Farm Pty Ltd (OSMI Australia Pty Ltd)

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GLOSSARY

Acronym	Description
CaLP	<i>Catchment and Land Protection Act 1994</i>
CMA	Catchment Management Authority
DBH	Diameter at Breast Height
DELWP	Victorian Department of Environment, Land, Water and Planning
DEPI	(former) Victorian Department of Environment and Primary Industries
DAWE	Commonwealth Department of Agriculture, Water and the Environment
EES	Environment Effects Statement
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EVC	Ecological Vegetation Class
FFG Act	<i>Flora and Fauna Guarantee Act 1988</i>
FIS	Flora Information System
LT	Large Tree
NES	National Environmental Significance
NVIM Tool	Native Vegetation Information Management Tool (DELWP)
PMST	Protected Matters Search Tool (DAWE)
ST	Small Tree
TPZ	Tree Protection Zone
VBA	Victorian Biodiversity Atlas (DELWP)

SUMMARY

Introduction

Ecology and Heritage Partners Pty Ltd were commissioned by Delburn Wind Farm Pty Ltd (OSMI Australia Pty Ltd) to prepare a Biodiversity Assessment report for the proposed Delburn Wind Farm in the Strzelecki Ranges, Gippsland, Victoria (the study area). The proposed Delburn Wind Farm will involve the installation of up to 35 turbines and associated infrastructure, primarily the wind turbine hardstands, expansion of existing roads and access tracks, creation of new access tracks, installation of underground cabling, electrical substation(s), battery storage facility, operations and maintenance centre, meteorological masts, and temporary construction hardstands and facilities throughout the study area.

The original infrastructure layout was 53 turbines, which has since been revised down to 35 turbines (Layout 2.1) (11 Jul 2019). The current assessment of native vegetation impacts and offset calculations is based a revised infrastructure layout (Layout v2.2) (12 September 2019). It is understood that the infrastructure layout has been revised again and the future planning permit application for the project, including the proposed vegetation impacts and offset calculations, will be updated to reflect the final layout.

Several ecological investigations associated with the proposed development have been undertaken between 2018 and 2020. The purpose of the investigations was to determine the ecological values, including the extent and quality of native vegetation, the known or potential presence of significant flora and fauna species, and/or ecological communities within the study area. An assessment of the likely or potential impacts to ecological values, and the provision of avoidance and mitigation measures undertaken, or that will be undertaken as part of the proposed development, are provided.

In addition, an assessment of native vegetation within the study area has been undertaken to determine the biodiversity offsets required for any permitted removal of native vegetation as part of the project (i.e. under Clause 52.17 of the Latrobe and South Gippsland Planning Schemes). The report also discusses any additional ecological and legislative implications/considerations associated with the project, and provides recommendations to address or further reduce impacts to ecological values associated with the proposed development.

Study area and Impact Area

The study area is located in the Strzelecki Ranges, Central Gippsland region and is approximately 4,985 hectares in area (Figure 1). It is located south of Moe and the Princess Freeway and north of Boolarra-Mirboo North Road, and within the plantation land centred in the Delburn area, covering the HVP Plantations Thorpdale Tree Farm. The impact area (which is based on the infrastructure layout) is within the study area, and includes the actual extent of proposed disturbance (infrastructure layout, v2.2). Given the size of the study area and the type and extent of the proposed development (i.e. only a very small proportion of the study area is proposed to be disturbed), vegetation assessments and targeted surveys primarily focused in areas within or adjacent to the infrastructure layout. However, surveyors also undertook a broad ecological assessment (i.e. not detailed vegetation mapping or habitat hectares assessments) outside of the infrastructure layout.

Methods

Relevant literature, online-resources and databases were reviewed to provide an assessment of flora and fauna values associated with the study area. Detailed field assessments were undertaken between 17 July 2018 and 20 February 2020 have been undertaken over multiple survey periods, and during different seasons and conditions were undertaken to determine the extent and quality of native vegetation (including mapping of large trees), to record flora and fauna species, and to assess fauna habitats within the study area. Targeted

surveys for significant species such as Strzelecki Gum, Growling Grass Frog and forest owls were also undertaken in known or potentially suitable habitats.

Bird utilisation surveys (point counts and incidental observation) were conducted over Winter (4-6 June and 11-13 June 2019) and Spring (2-4 October 2019, 30 and 31 October 2019, 1 November 2019, and 6-8 November 2019) to document the species composition of birds, the frequency with which each of those species use the study area, bird height and the distribution of these species across the landscape.

Bat surveys were undertaken in accordance with Commonwealth *Survey Guidelines for Australia's threatened bats* (DEWHA 2010b). To detect the presence of microbat species bat detectors (Songmeter SM4BAT FS) were deployed across three days in October (2-4 October 2019) and retrieved on 1 November 2019 (i.e. left out for 29 days).

All fieldwork was carried out under the appropriate licences, including a Research Permit (10008283) and Scientific Procedures Fieldwork Licence (SPFL 20005) issued by DELWP under the *Wildlife Act 1975*, and an Animal Research permit issued by the Wildlife and Small Institutions Animal Ethics Committee (22.13).

Results

Flora

The desktop and field assessments identified key ecological features within the study area and surrounding landscape (Table S1). Surveys of the study area recorded 65 species of flora (including 51 native species and 14 introduced species), and 77 species of fauna (70 native species and seven introduced species).

The study area intersects two bioregions: the Gippsland Plain and Strzelecki Ranges. However, the native vegetation identified and geographic context of the study area, provided justification to map all EVCs according to the Strzelecki Ranges bioregion. The native vegetation assessment identified seven EVCs, including Aquatic Herbland (EVC 653), Damp Forest (EVC 29), Herb-rich Foothill Forest (EVC 23), Lowland Forest (EVC 16), Swamp Scrub (EVC 53), Swampy Woodland (EVC 937) and Tall Marsh (EVC 821). Most mapped patches of native vegetation within or adjacent to the impact area were of moderate to high quality, based on the habitat condition score for each habitat zone using the Vegetation Quality Assessment method.

The VBA contains records of four nationally significant and 35 state significant flora species previously recorded within 10 kilometres of the study area. The majority of these species are located in areas of relatively high quality, undisturbed habitat (i.e. Morwell National Park) or waterways and roadsides. The Commonwealth Protected Matters Search Tool (PMST) predicted an additional five nationally significant species which have not been recorded in the locality but have the potential to occur. Of the nine nationally significant flora species that are known to, or are predicted to occur within the locality, four were considered to have a moderate or higher likelihood of occurrence within the study area (Strzelecki Gum *Eucalyptus strzeleckii*, River Swamp Wallaby-grass *Amphibromus fluitans*, Matted Flax-lily *Dianella amoena* and Dwarf Cypress-pine *Callitris oblonga* subsp. *oblonga*).

Fauna

The study area contains patches of remnant native vegetation with a high density of large trees, which provide important habitat for an array of native species. Arboreal mammals such as gliders and many species of birds (i.e. parrots, owls) utilise tree hollows for nesting and/or denning. The largest patch (320 hectares in area) adjoining the eastern boundary of the study area is referred to as the Darlimurla Forest Block. Sayers Trig Bushland Reserve (north) and Mirboo North Regional Park (south) are also directly adjacent to the study area and combined with remnant vegetation in road reserves (e.g. large trees), act as dispersal corridors for fauna. While the native vegetation within the study area is patchy, much of it is connected along road reserves, to riparian corridors or the surrounding vegetation within reserves or regional/state parks bordering the study area.

The VBA contains records of six nationally significant, 35 state significant and nine regionally significant fauna species previously recorded within 10 kilometres of the study area. The PMST nominated an additional 11 nationally significant species which have not been previously recorded but have the potential to occur in the locality. The majority of these species are located in areas of relatively high quality, undisturbed habitat (i.e. Morwell National Park and Mirboo North Regional Park) or waterways and roadsides.

One nationally significant fauna species (Growling Grass Frog *Litoria raniformis*) was recorded within the study area during the targeted surveys. This species is listed as vulnerable under the EPBC Act, threatened under the FFG Act and vulnerable on the Victorian Advisory List.

Of the 18 nationally significant fauna species that are known to, or are predicted to occur within the locality, two additional species have a high (Grey-headed Flying-fox) or moderate likelihood (Greater Glider) of occurring / using habitat resources within the study area.

Ecological communities

One EPBC Act-listed ecological community: Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and Associated Native Grassland, predicted to potentially occur within the study area. Due to the absence of Gippsland Red-gum (Plains Grassy Woodland EVC) and other key indicator species, Gippsland Red Gum Grassy Woodland and Associated Native Grassland is not present within the study area.

The native vegetation within and adjacent to the impact area did not meet the descriptive characteristics of Herb-rich Plains Grassy Wetland (West Gippsland) Community, which is an FFG Act-listed ecological community. As such, this listed FFG Act-listed ecological community, or any other listed communities do not occur within the study area (DELWP 2019a).

Table S1. Summary of the ecological values that occur in or adjacent to the impact area.

Species Diversity	A diverse assemblage of plants and animals, with 58 flora species and 77 fauna species recorded during 2018-2020 surveys conducted by Ecology and Heritage Partners.
Remnant Vegetation	<p>Over 200 hectares of mapped native vegetation (excludes scattered trees and modelled Current Wetlands). Mapped native vegetation is represented by seven EVCs of the Strzelecki Ranges bioregion:</p> <ul style="list-style-type: none"> - Aquatic Herbland (EVC 653) - Damp Forest (EVC 29) - Herb-rich Foothill Forest (EVC 23) - Lowland Forest (EVC 16) - Swamp Scrub (EVC 53) - Swampy Woodland (EVC 937) - Tall Marsh (EVC 821) <p>379 large trees in patches (excluding Strzelecki Gum) were recorded in or adjacent to the impact area (A.1.3). 81 large scattered trees and 41 small scattered trees (excluding Strzelecki Gums) were recorded.</p> <p>A total of 146 Strzelecki Gums (including 14 large scattered trees) were identified (Plate 13). All impacts to Strzelecki Gum have been avoided through design refinements.</p> <p>The area of native vegetation likely to be impacted by the proposed wind farm is between 15.604 hectares (impact area only) and 41.412 hectares (i.e. including the impact area and within 17 metres either side of the impact area).</p> <p>When no buffer is applied to the impact area, 96 large trees are impacted.</p> <p>When a 17-metre buffer is applied to the impact area to account for the Tree Protection Zones (TPZs) of large trees in patches, 154 large trees are impacted.</p>
Wetlands	<p>The Corner Inlet Ramsar site is located approximately 20 kilometres south of the study area (downstream).</p> <p>The Gippsland Lakes Ramsar site is located approximately 80 kilometres east of the study area (downstream).</p>

Significant Ecological Communities	No national or State significant ecological communities occur within the study area.
Significant Flora Species	<p>The known occurrence of one nationally significant flora species within the study area:</p> <ul style="list-style-type: none"> - Strzelecki Gum <i>Eucalyptus strzeleckii</i> - No additional state significant flora species were recorded - FFG Act Protected Flora: Acacia species, including <i>Acacia mearnsii</i> were recorded in the study area
Significant Fauna Species	<p>The known occurrence of one nationally significant fauna species recorded within the study area:</p> <ul style="list-style-type: none"> - Growling Grass Frog <p>Non-threatened species of community interest within the study area include:</p> <ul style="list-style-type: none"> - Koala <i>Phascolarctos cinereus</i>; - Wedge-tailed Eagle <i>Aquila audax</i>; and; - Yellow-tailed Black-Cockatoo <i>Calyptorhynchus funereus</i>.

Relevant Legislation and Policy

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Given the presence of EPBC Act-listed species (Growling Grass Frog and Strzelecki Gum) identified within the study area, an EPBC Act referral has been submitted to the Commonwealth (2020/8612). The Minister will decide whether the proposed action is a 'controlled action', and if so, will require further assessment to determine whether approval will be granted under the EPBC Act. However, given that it is anticipated that the proposed development will not impact these species or associated habitats, or any other matters of NES, it is unlikely that the proposed development would result in a significant impact under the EPBC Act.

Environment Effects Act 1978 (EE Act)

The criteria for an EES referral are outlined in the *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978*. The project impacts have been considered against these referral criteria and an EES referral is deemed required for this project. A referral under the EE Act will be submitted to determine whether the proposed development will trigger the requirement for an Environmental Effects Statement. Based on the nature of the project and the localised extent of proposed impacts, from an ecological perspective, is it unlikely that the project would need to be assessed through an EES.

Flora and Fauna Guarantee Act 1988 (FFG Act)

There is suitable habitat within the study area for several species listed and protected under the FFG Act. Any native vegetation on private land does not require a permit under the FFG Act. However, the proposed development will impact native vegetation within publicly owned road reserves, in which case, an FFG Act permit is required.

Planning and Environment Act 1987

Under the *Planning and Environment Act 1987*, Clause 52.17 of the respective Planning Scheme requires a planning permit from the Baw Baw, Latrobe and Gippsland South Councils to remove native vegetation. The assessment process for the clearing of vegetation follows the '*Guidelines for the removal, destruction or lopping of native vegetation*' (Guidelines).

Two native vegetation removal scenarios are provided and these are based on Layout v2.2 (12 September 2019). It is understood that the infrastructure layout has been revised again and the future planning permit application for the project, including the proposed vegetation impacts and offset calculations, will be updated to reflect the final layout. It is assumed all vegetation within the impact area will be removed and offsets are required to compensate for this removal. Further details regarding offset obligations associated with this assessment are provided in Section 4.3.2. The Native Vegetation Removal Report is provided in Appendix 4.

Due to the linear nature of the impact area, large scale of the study area and high density of large trees within patches, two native vegetation removal scenarios (lower and upper estimates) are provided below:

- 1) **Scenario 1:** Is the proposed area of direct native vegetation removal and does not account for the Tree Protection Zone (TPZs) for large trees in patches. The total calculated area of native vegetation loss is 15.604 hectares.

The offset requirement under the scenario for native vegetation removal is 0.517 General Habitat Units (GHUs), 10.995 Species Habitat Units (SHUs) for Strzelecki Gum and 96 Large Trees.

- 2) **Scenario 2:** Accounts for direct native vegetation loss and a 17-metre buffer to accommodate the TPZs for large trees in patches. The total impacted area of native vegetation under this scenario is 41.412 hectares. However, this is likely an over-estimate as not all patches of impacted native vegetation contain large trees, in which case no buffer is required.

The offset requirement under the scenario for native vegetation removal is 0.517 General Habitat Units (GHUs), 10.995 Species Habitat Units (SHUs) for Strzelecki Gum and 96 Large Trees.

A permit is required under Clause 52.32 of the Baw Baw Shire, South Gippsland Shire and Latrobe City Council Planning Schemes to use and develop a wind energy facility. A planning permit for the proposed removal of native vegetation is also required.

Potential Impacts

The majority of the study area has been cleared of native vegetation and little of the pre-1750 extent of EVCs remain within the study area and immediate surrounds. Potential impacts to flora and fauna associated with the proposed development include the removal of remnant native vegetation and fauna habitat, decreases in population sizes of local flora species as a consequence of habitat loss, further spread of noxious and environmental weeds from on-site activities and subsequent degradation of remaining native vegetation, an increase in sedimentation and deterioration in water quality as a result of water runoff during construction, and direct mortality of fauna species during construction.

Based on the site conditions and the results of the desktop analysis and detailed field surveys, there is a low likelihood that the proposed wind farm development will impact any significant bird and bat species.

In addition, there are no other projects have been identified within the broader region which are likely to lead to significant cumulative impacts on the species and communities identified in this assessment.

Avoidance and mitigation measures

Under the original infrastructure layout (Layout v1.5) that comprised 53 turbines, a total of 64.455 hectares of native vegetation (including 201 large trees) was calculated as potentially been impacted. The infrastructure layout has been adjusted to reduce impacts to ecological values (particularly areas of native vegetation) across the study area. Following a review of the infrastructure layout and projected impacts to native vegetation, the number of turbines was reduced to 35.

Additionally, while Strzelecki Gum is present throughout the project area, potential impacts from works associated with the construction of the windfarm (including road widening and underground cable installation) have been managed by design changes to completely avoid both direct and indirect impacts to trees (e.g. impacts to the root zone).

Except for the road widening at Nursery Track where there is proposed to be localised disturbance that will be managed, the infrastructure layout (Layout v2.2) avoids all known and potential Growling Grass Frog habitat. This has been achieved by altering the development footprint to avoid road crossings that are in close proximity to Growling Grass Frog habitat.

Recommendations

It is understood that the infrastructure layout will continue to be refined, and once finalised, the extent of impacts to ecological values (including native vegetation) will be determined together with the biodiversity offsets requirements for the project. After the finalisation of the infrastructure layout a detailed EMP (or similar document/s) relating to the construction and operational phases of the project should be prepared for the project. This should be a requirement of a planning permit condition.

A Weed Management Plan and a Bat and Avifauna Management Plan (BAM Plan) should also be prepared for the project. The Plan would need to be prepared to the satisfaction of the Responsible Authority, in consultation with the DELWP. When approved, the BAM Plan would be endorsed by the Responsible Authority.

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1 INTRODUCTION

1.1 Background

Ecology and Heritage Partners Pty Ltd were commissioned by Delburn Wind Farm Pty Ltd (OSMI Australia Pty Ltd) to prepare a Biodiversity Assessment report for the proposed Delburn Wind Farm in the Strzelecki Ranges, Gippsland, Victoria (the study area). The proposed Delburn Wind Farm will involve the installation of 35 turbines and associated infrastructure, primarily the wind turbine hardstands, expansion of existing roads and access tracks, creation of new access tracks, installation of underground cabling, electrical substation(s), battery storage facility, operations and maintenance centre, meteorological masts, and temporary construction hardstands and facilities throughout the study area.

The original infrastructure layout was 53 turbines, which was revised down to 35 turbines (Layout v2.1) (11 Jul 2019). The infrastructure layout was revised again (i.e. same number of turbines with minor adjustments to roads and cables) (Layout v2.2) (12 September 2019), and the current assessment of native vegetation impacts and offset calculations outlined in this report is based on this Layout (i.e. Layout v2.2). It is understood that the infrastructure layout has been revised again and the future planning permit application for the project, including the proposed vegetation impacts and offset calculations, will be updated to reflect the final layout.

Several ecological investigations associated with the proposed development have been undertaken between 2018 and 2020 (Ecology and Heritage Partners 2020). The purpose of the investigations was to determine the ecological values, including the extent and quality of native vegetation, the known or potential presence of significant flora and fauna species, and/or ecological communities within the study area. An assessment of the likely or potential impacts to ecological values, and the provision of avoidance and mitigation measures undertaken, or that will be undertaken as part of the proposed development, are provided.

In addition, an assessment of native vegetation within the study area has been undertaken to determine the biodiversity offsets required for any permitted removal of native vegetation as part of the project (i.e. under Clause 52.17 of the Latrobe and South Gippsland Planning Schemes). The report also discusses any additional ecological and legislative implications / considerations associated with the project, and provides recommendations to address or further reduce impacts to ecological values associated with the proposed development.

Targeted surveys were also undertaken in 2018-2019 for significant flora and fauna species known to, or considered likely to occur within the study area (Ecology and Heritage Partners 2020). The project was referred to the Commonwealth Minister for the Environment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 10 January 2020. A Matters of National Environmental Significance report accompanied the referral (Ecology and Heritage Partners 2019). The Minister is yet to decide on whether the proposed action will result in a significant impact on any matters of National Environmental Significance (NES).

1.2 Study Area

The study area is located in the Strzelecki Ranges, Central Gippsland region and is approximately 4,985 hectares in area. It is located south of Moe and the Princess Freeway and north of Boolarra-Mirboo North Road, and within the plantation land centred in the Delburn area, covering the HVP Plantations Thorpdale Tree Farm. The study area is bound by Hearn Oak to the north, Coalville, Narracan and Thorpdale to the west, Darlimurla to the south, and Driffield, Boolarra and Yinnar to the east. It is approximately 144 kilometres east of Melbourne's CBD (Figure 1) and intersects the Gippsland Plain and Strzelecki bioregions and is applicable to the West Gippsland Catchment Management Authority (CMA).

The study area comprises a mosaic of native vegetation, pine and Blue Gum plantations. Private agricultural land surrounds the study and project areas. The mapped native vegetation within the study area represents seven Ecological Vegetation Classes (EVCs) from two bioregions. Patches of native vegetation adjacent to the study area includes Sayers Trig Bushland Reserve (north), Darlimurla Forest Block (east), and Mirboo North Regional Park (west). Darlimurla Forest Block (340 hectares) supports high quality vegetation and fauna habitat represented by seven EVCs, including Herb Rich Foothill Forest, Lowland Forest, Dry Valley Forest, Heathy Woodland, Riparian Forest, Swampy Riparian Complex and Swamp Scrub (Biosis 1998). Tributaries of the Morwell River, Ten Mile Creek, and associated wetlands intersect the study area, while artificial waterbodies (e.g. farm dams, fire dams) are scattered throughout.

1.3 Impact Area

The proposed Delburn Wind Farm involves the installation of 35 turbines and associated infrastructure: primarily the expansion of existing roads and access tracks, throughout the study area (Figure 1). The infrastructure layout (impact area) is approximately 210 hectares in size (Layout v2.2). Of this, between 15.604 – 41.412 hectares of native vegetation is proposed to be impacted by the development (Section 2.3). Given the size of the study area, the native vegetation assessment (including the detailed habitat hectares assessment) was undertaken within or directly adjacent to the impact area.

2 METHODS

2.1 Desktop Assessment

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

- The DELWP NVIM Tool (DELWP 2020a) and NatureKit Map (DELWP 2020b) for:
 - Modelled data for location risk, remnant vegetation patches, scattered trees and habitat for rare or threatened species;
 - The extent of historic and current Ecological Vegetation Classes (EVCs);
 - Previously documented flora and fauna records within the project locality
- EVC benchmarks (DELWP 2020c) for descriptions of EVCs within the Highland – Southern Fall bioregion;
- The Victorian Biodiversity Atlas (VBA) for previously documented flora and fauna records within the project locality (DELWP 2018a);
- Birdline Victoria archives (multiple dates) for previous documented records of birds within the local area, including significant species (e.g. White-bellied Sea-eagle, Freckled Duck and Australasian Bittern);
- The Commonwealth Department of Agriculture, Water and the Environment (DAWE) Protected Matters Search Tool (PMST) for matters of National Environmental Significance (NES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (DAWE 2020);
- Relevant listings under the *Flora and Fauna Guarantee Act 1988* (FFG Act), including the latest Threatened and Protected listings (DSE 2009, 2013a; DEPI 2014; DELWP 2019a, 2019b);
- VicPlan (DELWP 2020d) and Planning Schemes Online (DELWP 2020e) to ascertain current zoning and environmental overlays in the project area;
- Aerial photography of the study area; and,
- Previous ecological assessments relevant to the study area and other relevant documents, including:
 - Existing conditions report (Ecology and Heritage Partners 2020);
 - Matters of National Environmental Significance report (Ecology and Heritage Partners 2019);
 - Flora and Fauna Assessment of Darlimurla Forest Block (Biosis 1998);
 - Development of Wind Energy Facilities in Victoria: Policy and Planning Guidelines (DELWP 2017a); and,
 - Developing a science-based approach to defining key species of birds and bats of concern for wind farm developments in Victoria. Arthur Rylah Institute for Environmental Research Technical Report Series No. 301. Department of Environment, Land, Water and Planning, Heidelberg, Victoria (Lumsden *et al.* 2019).

2.2 Consultation

The ecological assessments also involved consultation with relevant Government agencies, stakeholders, landowners and species experts, including, but not limited to:

- DELWP Traralgon regarding key ecological values and relevant legislation and Government policy that need to be considered as part of the project; and,
- Two community open days (1, 2 and 3 August 2019, and 13 and 14 March 2020) where there was an opportunity to meet members of the local community, and discuss the project and how ecological values have been assessed and considered as part of the design and assessment of the project. Valuable information was obtained from several local residents who have an interest in the project and the ecology within the study area and throughout the local area; and,
- The Delburn Wind Farm has a shop/information centre where community members have provided useful information regarding the local flora and fauna species in the region, and this information has been used as part of the project planning and assessment.

2.3 Summary of Field Surveys

Detailed field assessments over multiple survey periods, and during different seasons and conditions (note: different survey types were undertaken concurrently) were undertaken to determine the extent and quality of native vegetation (including mapping of large trees), to record flora and fauna species, and to assess fauna habitats within the study area. A summary of the field surveys is provided (Table 1).

Table 1. Summary of field surveys completed within the study area as part of the detailed ecological investigations.

Category	Survey dates	Number of survey days and approximate hours
Native vegetation and Large Tree assessments, general fauna assessments	<ul style="list-style-type: none"> - 17-19 July 2018 - 18-20 March 2019 - 5-7 August 2019 - 19-20 February 2020 	11 survey days (2 surveyors), 176 hours (average 8 hour day)
Significant flora species surveys	<ul style="list-style-type: none"> - 12-16 November 2018 (Strzelecki Gum <i>Eucalyptus strzeleckii</i>, Matted Flax-lily <i>Dianella amoena</i> and other significant species) - 18-20 March 2019 - 5-7 August 2019 - 19-20 February 2020 (Strzelecki Gum) 	13 survey days (2 surveyors), 208 hours (average 8 hour day)
Arboreal Mammals and Forest Owl surveys	<ul style="list-style-type: none"> - 12-16 November 2018 - 2-4 October 2019 - 30-31 October 2019 and 1 November 2019 	8 nights (2 surveyors), 144 hours (average 9 hour day)
Ground-dwelling mammal surveys	<ul style="list-style-type: none"> - 12-16 November 2018 - Between 2 October 2019 and 1 November 2019 	29 days cameras were recording (15 hours to set up and pick up camera traps)
Targeted Growling Grass Frog <i>Litoria raniformis</i> surveys	<ul style="list-style-type: none"> - 12-16 November 2018 - 2-4 October 2019 	8 days and 6 nights (2 surveyors), 144 hours (average 9 hour day)
Bird Utilisation Surveys (winter and spring)	<ul style="list-style-type: none"> - 4-6 June 2019 - 11-13 June 2019 - 2-4 October 2019 	15 survey days (2 surveyors), 540 hours (average 9 hour day)

Category	Survey dates	Number of survey days and approximate hours
	<ul style="list-style-type: none"> - 30-31 October 2019 and 1 November 2019 - 6-8 November 2019 	
Bats surveys	<ul style="list-style-type: none"> - 2 October 2019 to 1 November 2019 	29 days (15 hours Anabat set up and pick up)

Note: Some of the field surveys for each category were undertaken concurrently (e.g. targeted forest owl surveys and Growling Grass Frog surveys).

Given the size of the study area and the type and extent of the proposed development (i.e. only a very small proportion of the study area is proposed to be disturbed), vegetation surveys and targeted surveys primarily focused in areas within or adjacent to the infrastructure layout. However, surveyors also undertook a broad ecological assessment (i.e. not detailed vegetation mapping or habitat hectares assessments) outside of the infrastructure layout (Figure 2).

The study area was walked and/or driven, with all observed vascular flora and fauna species within or adjacent to the impact area recorded, and any observations of significant species were mapped and the overall condition of vegetation and habitats noted. Ecological Vegetation Classes were determined with reference to DELWP pre-1750 and extant EVC mapping and their published descriptions (DELWP 2020c).

Where remnant vegetation was identified within the revised infrastructure layout (Layout v2.2) (and also the former layout – Layout 1.5) a habitat hectare assessment was undertaken following methodology described in the Vegetation Quality Assessment Manual (DSE 2004) (see Habitat Zones in Figure 2). Native vegetation was classified in accordance with the definitions provided in Table 2, as defined in the ‘*Guidelines for the removal, destruction or lopping of native vegetation*’ (the Guidelines) (DELWP 2017b).

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

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

Under the *Planning and Environment Act 1987*, Clause 52.17 of the respective Planning Scheme requires a planning permit from the Baw Baw Shire, Latrobe and Gippsland South Councils to remove native vegetation. The assessment process for the clearing of vegetation follows the ‘*Guidelines for the removal, destruction or lopping of native vegetation*’ (Guidelines) (DELWP 2017b). The ‘*Assessor’s handbook – applications to remove, destroy or lop native vegetation*’ (Assessor’s handbook) (DELWP 2018b) provides clarification regarding the application of the Guidelines.

Two Native Vegetation Removal (NVR) report scenarios have been prepared. Scenario 1 is the proposed area of direct native vegetation removal and does not account for the Tree Protection Zone (TPZs) for large trees in patches.

Scenario 2 accounts for direct native vegetation loss and a 17-metre buffer to accommodate the Tree Protection Zones for large trees in patches. The Native Vegetation Removal Reports for the two scenarios are provided below (Appendix 4.1 and 4.2).

2.4.1.1 Assessment Pathway

The Guidelines manage the impacts on biodiversity from native vegetation removal using an assessment-based approach. Two factors – extent and location – are used to determine the assessment pathway 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 DELWP's Native Vegetation Information Management (NVIM) Tool (DELWP 2020a). Determination of the assessment pathway is summarised below (Table 2).

Table 2. Assessment pathways for applications to remove native vegetation (DELWP 2017b).

Extent		Location		
		1	2	3
Native Vegetation	< 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.

2.4.1.2 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 (Appendix 1.3).

In addition, all mapped wetlands (based on the DELWP 'Current Wetlands' layer) was included as native vegetation, with the modelled condition score assigned to them (DELWP 2017b).

Table 3. Determination of remnant native vegetation (DELWP 2017b).

Category	Definition	Extent	Condition
Remnant 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 <i>Current wetlands map</i> , available in DELWP systems and tools.	Measured in hectares. Based on hectare area of the remnant patch.	Vegetation Quality Assessment Manual (DSE 2004) OR Modelled condition for <i>Current Wetlands</i> .
Scattered tree	A native canopy tree that does not form part of a remnant 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 Targeted Flora Surveys

Based on the outcomes of the desktop assessment, targeted surveys for significant flora species (principally Strzelecki Gum and Matted Flax-lily), including species listed as threatened under the EPBC Act and/or FFG Act were undertaken during the vegetation assessments to determine their presence or absence within the study area. To maximise the likelihood of detecting significant flora species identified as having the potential to occur within or directly adjacent to the impact area, incidental records of the target species were undertaken during the initial vegetation and Large tree assessments and bird utilisation surveys.

Targeted surveys were undertaken by a team of Ecologists and involved systematically walking road reserves and tracks in areas where significant species (e.g. Strzelecki Gum and Matted Flax-lily) had the highest potential to occur within the impact area. Handheld GPS units were used to record the location of any significant flora species encountered.

2.6 Terrestrial Fauna Surveys

Fauna surveys were undertaken concurrently with the vegetation assessment undertaken concurrently with the native vegetation and Large Tree assessments between 17 July 2018 and 20 February 2020, as well as during the bird utilisation surveys (Table 1). The study area was visually assessed and active searching under and around ground debris for reptiles, frogs and small mammals 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 waterbodies and other habitats that may provide shelter, food or other resources for significant species.

At most locations, assessment was made on foot by walking into the areas considered likely to support the highest-quality and representative habitat (judgement based on aerial imagery and prior field experience). Zoologists remained adaptable in the field, and opportunistically included other nearby areas in the investigation if those areas were thought to provide higher quality habitat or help provide information on fauna that might use the project boundary. Observations of threatened species were recorded at locations if seen/heard.

A summary of the fauna survey techniques and a description of the survey methods is provided below (Table 4). Targeted surveys for significant fauna were undertaken in November 2018 and October - November 2019 to maximise the likelihood of detecting significant fauna identified as having the potential to occur within the impact area.

Table 4. Summary of fauna survey techniques and total survey effort.

Survey technique	Target species	Sites	Survey effort
Habitat assessments and incidental observations of fauna	Southern Brown Bandicoot <i>Isoodon obesulus obesulus</i> , Greater Glider <i>Petauroides Volans</i> , Powerful Owl, Sooty Owl Masked Owl and Growling Grass Frog.	Within suitable habitats across the entire the study area.	Eight separate survey periods between 17 July 2018 and 20 February 2020.
Spotlighting – arboreal mammals and forest owls	Greater Glider, Koala <i>Phascolarctos cinereus</i> , Powerful Owl, Sooty Owl and Masked Owl.	Spotlighting transects undertaken in suitable forested habitats across the study area.	Four nights of spotlighting (12-16 November 2018). Two nights of surveys (2-4 October 2019). Two nights spotlighting (30-31 October 2019 and 1 November 2019).
Nocturnal call playback	Koala, Powerful Owl, Sooty Owl and Masked Owl.	Call playback occurred at beginning of spotlighting transects in suitable forested habitats across the study area.	Four nights of spotlighting (12-16 November 2018). Two nights of surveys (2-4 October 2019). Two nights spotlighting (30-31 October 2019 and 1 November 2019).
Bat detectors	Common Bent-wing Bat	Four sites (three within and one outside the study area) in a selection of habitat types.	Bat detectors deployed 2-4 October 2019 and retrieved 1 November 2019.
Motion detecting cameras to detect ground-dwelling mammals	Significant mammal species principally Southern Brown Bandicoot.	Five sites at selected native vegetation remnants within the study area. 12 sites in total (11 within the study area and one south of the study area.	Four nights of motion detecting camera surveys (12-16 November 2018). Cameras deployed 2-4 October 2019 and retrieved 1 November 2019.
Targeted Growling Grass Frog surveys - Diurnal and nocturnal call playback and active searching. Spotlighting at potentially suitable waterbodies	Growling Grass Frog	At least 13 waterbodies across the study area that are known to (e.g. Luxford Pond), or that have potential to support Growling Grass Frog.	Four nights of survey (12-16 November 2018). Two nights of surveys (2-4 October 2019).

2.6.1.1 Arboreal Mammals

Survey methods (i.e. spotlighting and active searching for den trees) for arboreal mammals followed the Commonwealth *Survey Guidelines for Threatened Mammals* (SEWPaC 2011a) and targeted surveys for Greater Glider *Petauroides Volans* (DSE 2011a). Targeted surveys were undertaken over eight nights 12-16 November 2018, 2-4 October 2019, and 30-31 October 2019. Although, surveys targeted arboreal mammals and forest owls, observers also opportunistically recorded other fauna species, including any significant species such as Southern Brown Bandicoot *Isoodon obesulus obesulus*.

Greater Glider is Australia's largest gliding marsupial and inhabits forested areas of eastern Victoria, including the Strzelecki Ranges, and the species is known to be present in suitable forest habitat south and south west of the study area (DELWP 2018a, 2019c) (Figure 4). Greater Gliders are dependent on forested habitat where they forage on eucalypt leaves, with large trees that provide hollows for shelter and nesting (Lindenmayer *et al.* 1990).

Spotlight transects (200-500 metres) were undertaken within remnant native vegetation and along roadsides adjacent to patches of potentially suitable forest habitat in the study area (DSE 2011a). Surveys were conducted well after dark, as Greater Gliders may not emerge from their hollows as early as some other species. Stag watching, to identify arboreal mammals emerging from tree stag hollows at dusk, was also conducted at selected sites.

Field personnel used LED hand-held spotlights (up to 1020 lumens/8.4 volts) and traversed the spotlighting transects on foot to increase the detection of animals in closed or thick vegetation. As well as direct observation, other signs of site use were also noted, such as scratch marks on tree trunks or around hollows, audible calls or scats on the ground.

Koala, although not a significant species (i.e. not listed as threatened under the EPBC Act, FFG Act or on DELWP's threatened fauna advisory list), was also targeted during spotlighting surveys given the importance of the population (i.e. likely to be genetically distinct from all other populations across Victoria) throughout the Strzelecki Ranges bioregion.

2.6.1.2 Ground-dwelling Mammals

Mammal surveys were undertaken in accordance with Commonwealth *Survey Guidelines for Australia's threatened mammals* (SEWPaC 2011a) and the *Survey Guidelines for endangered Southern Brown Bandicoot (eastern)*, *Isodon obesulus obesulus* (SEWPaC 2011b). Daytime searches for the presence of potentially suitable habitat resources for nests or burrows such as boulders, crevices in the ground or between rocks, as well as signs of the species' presence such as tracks, nests, burrows or scats were undertaken.

Surveys for ground-dwelling mammals were undertaken using motion detecting cameras, which is one of the most effective methods of detecting species at low or moderate densities (Vine *et al.* 2009). Initial surveys were undertaken across four consecutive nights between 12 and 16 November 2018 to determine mammal activity across native forest remnants within the study area. Cameras were positioned within suitable habitat with the focal points aimed at bait stations. Motion detecting cameras were also deployed 2-4 October 2019 and retrieved 1 November 2019 (29 days of survey), to target significant species such as Southern Brown Bandicoot (SEWPaC 2011b). Once the cameras were collected the images were download onto a computer and then analysed.

2.6.1.3 Growling Grass Frog Surveys

Targeted surveys for the nationally significant Growling Grass Frog were undertaken over six nights in Spring (12-16 November 2018, and 2-4 October 2019), when Growling Grass Frog is most active. The survey was conducted with reference to the prescribed methods detailed in the following guidelines:

- *Significant Impact Guidelines for the Vulnerable Growling Grass Frog (Litoria raniformis) EPBC Act Policy Statement 3.14* (DEWHA 2009a); and
- *Commonwealth Survey Guidelines for Australia's Threatened Frogs* (DEWHA 2010a).

Survey methodology is outlined below:

- Nocturnal surveys (spotlighting, active searching, call play-back) was undertaken by two qualified zoologists visiting each site on three occasions, targeting both adults and metamorphs;
- Nocturnal surveys were conducted on still nights when air temperatures were above 15°C, and within 24 hours of rain;
- An initial period of five minutes was spent recording any calling frogs (all species) in and adjacent to wetlands;

- The advertisement call was broadcast to elicit a response from any adult males present;
- Experienced personnel used “Olight” LED hand-held spotlights (up to 1020 lumens/8.4 volts) to locate any calling males on floating vegetation in the waterbody and around the perimeter of wetlands; and,
- Surveyors actively searched ground-level habitat including surface rocks, underneath hard litter, and at the base of vegetation for frogs.

2.7 Avifauna and Bat Surveys

2.7.1 Bird Utilisation

Bird utilisation surveys are the most commonly used method for generating quantitative data on bird use of a potential wind farm site. Bird utilisation surveys were conducted over Winter (4-6 June and 11-13 June 2019) and Spring (2-4 October 2019, 30 and 31 October 2019, 1 November 2019, and 6-8 November 2019).

The bird utilisation surveys were 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 proposed wind farm sites and are used to inform the design of higher-level investigations, if required. The total number of point counts was determined based on both the habitat conditions of the study area and the number of turbines proposed, in addition to any existing data that has already been collected (e.g. detailed significant species data).

2.5.1.1 *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, an indicative bird utilisation survey 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.

For the proposed wind farm development a Level One investigation was undertaken.

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.

2.5.2.1 Fixed Point Bird Counts

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:

- Eight locations were established at which to undertake fixed point counts. The locations chosen were to ensure that a range of habitat types were represented in the sample, including two outside of the study area near waterbodies (Figure 5);
- 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 eight times over the course of the survey period.

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. Birds seen adjacent to the study area were also recorded. Where suitable habitat for wading birds (principally Chradriiformes) and other waterbirds (ducks and herons) was observed, this habitat was surveyed for these species as per the *'Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species'* (DoEE 2017).

Two fixed-point bird counts were taken outside of the study area (Figure 5). Site X was located north of the study area, along Narracan Creek. Site Z was located south of the Darlimurla Forest Block to the south-east of the study area, adjacent to a wetland. Both sites were selected, to detect the presence of water-dependent species, including the potential for migratory birds. This approach was also taken to detect 'Species of Concern', including significant species and/or species with specialised habitat requirements (Lumsden *et al.* 2019).

To detect the presence of Wedge-tailed Eagles *Aquila audax* in the study area, searches for nests were undertaken during bird utilisation surveys.

2.7.2 Bat Surveys

Bat surveys were undertaken in accordance with Commonwealth *Survey Guidelines for Australia's threatened bats* (DEWHA 2010b). To detect the presence of microbat species bat detectors (Songmeter SM4BAT FS) were deployed across three days in October (2-4 October 2019) and retrieved on 1 November 2019 (i.e. left out for 29 days). Bat detector locations were chosen, based on geography and habitat type to capture a representative sample of the study area. 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 will be adopted, at selected locations within the study area.

Targeted Grey-headed Flying-fox surveys were also conducted at dusk during the Spring bird utilisation surveys.

2.7.3 Forest Owls

Nocturnal surveys were undertaken in accordance with Commonwealth *Survey Guidelines for Australia's threatened birds* (DEWHA 2010c), the survey standards for Powerful Owl, Sooty Owl and Masked Owl (DSE 2011b, 2011c, 2011d), and broadly in accordance with Wintle *et al.* (2005). Target species included Powerful Owl *Ninox strenua*, Masked Owl *Tyto novaehollandiae*, Barking Owl *Ninox connivens* and Sooty Owl *Tyto tenebricosa*. Sites were selected based on the presence of remnant vegetation and/or hollow-bearing trees, and the location of previous records (Figure 2c, 2p and 2q). Survey involved call playback, spotlighting and active searching for nest and roosting trees.

The calls of each species were broadcast through a hand-held speaker to attract them to the survey site or to elicit a response. This was followed by listening and spotlighting in the immediate area to locate any owls attracted to the site. This technique relies on the fact that most species of owl are territorial and use calls as a method of defending their territory from individuals of their own species. Call-playback for owls was undertaken over eight nights of spotlighting (12-16 November 2018, 2-4 October 2019 and 30-31 October 2019), during a suitable season and weather conditions conducive to detect the targeted species. Survey methods are outlined below:

- Nocturnal call playback surveys were conducted under clear and still weather conditions (avoiding windy, rainy conditions);
- Call-play back was undertaken in areas of potentially suitable habitat for forest owls to maximise detection. Approximately 20 minutes of call-playback was undertaken at each site as follows:
 - 5 minutes initial passive listening;
 - 2-minutes of call playback;
 - 2-minutes of listening;
 - Repeat method for each species

Note: if a bird responded to call-playback, call-playback for that species was ceased to avoid disturbance; and

- Owl calls were broadcast in the following sequence: Powerful Owl, Sooty Owl, Barking Owl and Masked Owl.

3 RESULTS

A total of 65 flora species (including 51 native species and 14 introduced species), and 78 fauna species (71 native species and seven introduced species) were recorded during the detailed field surveys (Appendix 2.2 and 3.1).

3.1 Vegetation Condition

3.1.1 Patches of Native Vegetation

Two modelled bioregions intersect the study area: Gippsland Plain and Strzelecki Ranges. However, considering the geographic context of the study area and following native vegetation assessments, there is a high level of confidence that all EVCs surveyed are representative of the Strzelecki Ranges bioregion. A defining characteristic of the Strzelecki Ranges bioregion is that the locality is within the Strzelecki Ranges themselves. The geography of the study area consists of moderate to steep slopes with sandstone, siltstone, shales and swampy alluvial fans in the depressions. The mapped native vegetation includes Damp Forest and Lowland Forest, which are dominant EVCs for this bioregion. In contrast, the Gippsland Plain is comprised of flat low lying coastal and alluvial plains with undulating terrain which is not representative of the study area.

Native vegetation within the study area is representative of seven EVCs, including Aquatic Herbland (EVC 653), Damp Forest (EVC 29), Herb-rich Foothill Forest (EVC 23), Lowland Forest (EVC 16), Swamp Scrub (EVC 53), Swampy Woodland (EVC 937) and Tall Marsh (EVC 821).

This assessment is broadly consistent with (Pre-1750s) DELWP modelled EVCs for the locality, with four modelled EVCs aligning with vegetation mapping: Damp Forest, Herb-rich Foothill Forest, Lowland Forest, Swamp Scrub (Figure 2).

A total of 241.04 hectares of mapped native vegetation (excluding scattered trees) was mapped within the study area. In addition, 46.96 hectares of modelled Current Wetland is also within the study area. Specific details relating to mapped EVCs identified in or adjacent to the impact area during 2018-20 surveys and their Biodiversity Conservation Status (BCS) are provided below, with a summary of the extent of each vegetation type provided below (Table 5).

Table 5. Extent of mapped vegetation type (EVC) and BCS within the surveyed area.

Bioregion	EVC	BCS	Mapped Area (ha)
Strzelecki Ranges	Aquatic Herbland (EVC 653)	Not specified	0.69
	Damp Forest (EVC 29)	Endangered	65.62
	Herb-rich Foothill Forest (EVC 23)	Endangered	115.00
	Lowland Forest (EVC 16)	Vulnerable	44.53
	Swamp Scrub (EVC 53)	Endangered	0.11
	Swampy Woodland (EVC 937)	Endangered	14.34
	Tall Marsh (EVC 821)	Not specified	0.75

3.1.1.1 Aquatic Herbland

Aquatic Herbland is typically a permanent to semi-permanent wetland dominated by submerged or floating to emergent aquatic herbs and sedges. It generally occurs within continuously inundated wetlands and floodplains where creeks and rivers broaden and decrease in flow (Oates and Taranto 2001).

Aquatic Herbland is present within some permanent waterbodies (dams) in the study area, with most patches dominated by one of, or a combination of Tall Spike-sedge *Eleocharis sphacelata*, Common Reed *Phragmites australis* or Rush *Juncus* spp. Although these wetlands have previously been modified and do not constitute natural wetlands, they support a range of indigenous aquatic herbs, sedges and rushes with eucalypts often along the fringes.

Tall aquatic species present in low densities, included Tall Rush *Juncus procerus*. Submerged and floating aquatic species include Ferny Azolla *Azolla pinnata*, Round Water-starwort *Callitriche muelleri* and Slender Knotweed *Persicaria decipiens*. Species present along the fringes of the waterbodies include Common Spike-sedge *Eleocharis acuta*, Swamp Club-sedge *Isolepis inundata* and Billabong Rush *Juncus usitatus* (Plate 1 and 2).



Plate 1. Aquatic Herbland within the study area (Ecology and Heritage Partners Pty Ltd 22/03/2019).



Plate 2. *Juncus* sp. within the study area (Ecology and Heritage Partners Pty Ltd 22/03/2019).

3.1.1.2 Damp Forest

Damp Forest grows on a wide range of geologies on well-developed generally colluvial soils on a variety of aspects, from sea level to montane elevations. Dominated by a tall eucalypt tree layer to 30m tall over a medium to tall dense shrub layer of broad-leaved species typical of wet forest mixed with elements from dry forest types. The ground layer includes herbs and grasses as well as a variety of moisture-dependent ferns (DELWP 2020c).

Canopy trees observed included Swamp Gum *Eucalyptus ovata* and Mountain Grey Gum *Eucalyptus cypellocarpa* along with midstorey species such as Blackwood *Acacia melanoxylon*, Prickly Moses *Acacia verticillata* and Blanket Leaf *Bedfordia arborescens*. Patches composed of only understorey species were typically dominated by Bracken *Pteridium esculentum*, Common Bulrush *Typha domingensis* and Common Reed *Phragmites australis* (Plate 3 and 4).



Plate 3. Damp Forest within the study area (Ecology and Heritage Partners Pty Ltd 21/03/2019).



Plate 4. Damp Forest within the study area (Ecology and Heritage Partners Pty Ltd 21/03/2019).

3.1.1.3 Herb-rich Foothill Forest

Herb-rich Foothill Forest is typically an open forest with an understorey supporting shrubs and bracken with a diversity of grasses and herbs. The overstorey is typically dominated by Messmate Stringybark *Eucalyptus obliqua* and Narrow-leaf Peppermint *Eucalyptus radiata*, however several other eucalypt species can also occur. It generally occurs on relatively fertile, well-drained soils in foothill areas with moderate rainfall (Oates and Taranto 2001).

Herb-rich Foothill Forest is the dominant EVC within the study area and generally occurs south of the ridge line on the south-facing slopes (Figure 2). Although Messmate Stringybark and Narrow-leaf Peppermint are present, the dominant overstorey species is Mountain Grey-gum *Eucalyptus cypellocarpa*. The understorey component ranges from dominance by shrubs, herbs and native grasses to introduced pasture grasses.

Typical native species present in the understorey include Austral Bracken, Hop Goodenia *Goodenia ovata*, Prickly Moses, Weeping Grass *Microlaena stipoides* var. *stipoides*, Wattle Mat Rush *Lomandra filiformis*, Common Heath *Epacris impressa*, Thatch Saw-sedge *Gahnia radula*, and Dusty Miller *Spyridium parvifolium*.



Plate 5. Herb-rich Foothills Forest within the study area (Ecology and Heritage Partners Pty Ltd 22/03/2019).



Plate 6. Herb-rich Foothills Forest within the study area (Ecology and Heritage Partners Pty Ltd 14/11/2018).

3.1.1.4 Lowland Forest

Lowland Forest is typically an open forest dominated by Messmate Stringybark and Narrow-leaf Peppermint with an understorey of shrubby ericoid species, saw-sedges and wire-grasses. It generally occurs within lowland plains and lower foothill slopes on moderately fertile soils (Oates and Taranto 2001).

Lowland Forest generally occurs within the drier areas on north and east-facing slopes within the far eastern and far western portion of the study area (Figure 2). It is generally dominated by Messmate Stringybark, Narrow-leaf Peppermint and Silverleaf Stringybark *Eucalyptus cephalocarpa*. However, Lowland Forest also supports Mountain Grey-gum *Eucalyptus cypellocarpa* and Manna Gum *Eucalyptus viminalis* subsp. *viminalis* (Plate 7 and Plate 8). In most cases, areas containing Lowland Forest vegetation are contiguous with remnant vegetation in adjoining properties to the east and west of the study area (Figure 2).

The understorey within Lowland Forest mapped within the study area is generally of high quality, supporting a high cover of indigenous shrubs, sedges, herbs and grasses including Blackwood Wattle, Prickly Tea-tree *Leptospermum continentale*, Trailing Ground-berry *Acrotriche prostrata*, Tall Sundew *Drosera auriculata*, Common Raspwort *Gonocarpus tetragynus*, Shining Pennywort *Hydrocotyle sibthorpiodes*, Common Heath, and Weeping Grass.



Plate 7. Lowland Forest within the study area (Ecology and Heritage Partners Pty Ltd 22/03/2019).



Plate 8. Lowland within the study area (Ecology and Heritage Partners Pty Ltd 13/11/2018).

3.1.1.5 Swamp Scrub

Swamp Scrub typically occurs at low elevations along nutrient rich streams or on poorly drained sites. It is generally dominated by thickets of Swamp Paperbark *Melaleuca ericifolia* which out-compete other species. Ground cover often consists of herbaceous species and moss/lichen/liverworts. Swamp Scrub occurs as small pockets in gullies and natural depressions within the study area.

3.1.1.6 Swampy Woodland

Swampy Woodland generally occupies streambanks within the foothills and plains, and typically comprised of a combination of shrubs and tussock grasses underneath a eucalypt canopy (DELWP 2020c).

Swampy Riparian Woodland is located throughout the impact area in association with creeklines (Figure 2). A total of five habitat zones are present, with most zones supporting a Swamp Gum overstorey, with Woolly Tea-tree *Leptospermum lanigerum* and Prickly Tea-tree *Leptospermum continentale* dominating the shrub layer. Tussock grasses and other graminoids were typically absent from this EVC (Plate 9 and 10).



Plate 9. Swampy Woodland within the study area (Ecology and Heritage Partners Pty Ltd 22/03/2019).



Plate 10. Swampy Woodland within the study area (Ecology and Heritage Partners Pty Ltd 21/03/2019).

3.1.1.7 Tall Marsh

Tall Marsh (EVC 821) occurs primarily on estuarine sands, peaty soils and silty clays in areas with an average rainfall of approximately 600mm. Occurring close to open grasslands, Tall Marsh is generally dominated by Common Reed *Phragmites australis* and Cumbungi *Typha* spp.

Small patches of native vegetation identified as Tall Marsh were identified across the study area in both the northern and southern sections (Plate 11 and 12).



Plate 11. Tall Marsh within the study area (Ecology and Heritage Partners Pty Ltd 22/03/2019).



Plate 12. Tall Marsh within the study area (Ecology and Heritage Partners Pty Ltd 22/03/2019).

3.1.2 Large Trees and Scattered Trees

A total of 379 large trees in patches (not including Strzelecki Gums) were recorded adjacent to the impact area, however the majority will be retained. 96 large trees are proposed to be directly impacted. When a 17-metre buffer is applied to the impact area, the number of large trees directly and indirectly impacted is 154 large trees. The most common species recorded were Mountain Grey Gum, Messmate and Manna Gum.

Eighty-two large scattered trees and 41 small scattered trees (not including Strzelecki Gums) were recorded in or adjacent to the impact area. In addition, a total of 146 Strzelecki Gums (including 14 large scattered

trees) were recorded (Plate 13). Strzelecki Gum will not be impacted by the proposed development, as the infrastructure layout has been modified to avoid this species (i.e. based on the revised Layout v2.2).



Plate 13. Strzelecki Gum scattered tree (Ecology and Heritage Partners Pty Ltd 06/08/2019).



Plate 14. Large tree within patch in study area (Ecology and Heritage Partners Pty Ltd 22/03/2019).

3.1.3 Introduced and Planted Vegetation

3.1.3.1 Introduced Vegetation

Current land uses such as forestry operations and agriculture, have resulted in the introduction of non-native vegetation, particularly in road reserves. Disturbed areas are dominated by environmental weeds such as Cocksfoot *Dactylis glomerata* and Paspalum *Paspalum* spp.

Noxious weeds are present throughout the study area, with scattered occurrences of Soursob *Oxalis pes-caprae* and Spear Thistle *Cirsium vulgare*, along with the Weeds of National Significance (WONS): African Boxthorn *Lycium ferocissimum* and Blackberry *Rubus fruticosus* spp. agg.

3.1.3.2 Planted Vegetation

Planted vegetation within the study area is dominated by Pine *Pinus radiata* plantation coupes. Tasmanian Blue gum *Eucalyptus globulus* plantations are also present.

3.1.4 Fauna Habitat

The study area contains patches of remnant native vegetation with a high density of large trees, which provide important habitat for an array of native species. Arboreal mammals such as gliders and many species of birds (i.e. parrots, owls) utilise tree hollows for nesting and/or denning. The largest patch (320 hectares in area) adjoining the eastern boundary of the study area is referred to as the Darlimurla Forest Block (Biosis 1998). Sayers Trig Bushland Reserve (north) and Mirboo North Regional Park (south) are also directly adjacent to the study area and combined with remnant vegetation in road reserves (e.g. large trees), enhance connectivity and act as dispersal corridors for fauna. While the native vegetation within the study area is patchy, there is connectivity along road reserves, to riparian corridors or to larger patches of native vegetation within reserves or regional/state parks bordering the study area.

Riparian habitat acts as important dispersal corridors for native flora and fauna. The Morwell River to the east connects with Stony Creek which passes through the study area. Such connectivity is important in a landscape that has largely been cleared for agricultural purposes. Wildlife corridors and 'stepping stones' of vegetation have numerous benefits to native flora and fauna populations, particularly in modified landscapes where much of the surrounding vegetation is restricted to linear strips along roadsides.

Fauna of interest (non-threatened) recorded in the study area during the site surveys include Wedge-tailed Eagle *Aquila audax*, Koala and Yellow-tailed Black-Cockatoo *Calyptorhynchus funereus*. Koala was observed in remnant forest patches within the study area during nocturnal spotlighting surveys (Figure 2c). It was also heard during nocturnal surveys. It is not expected that the proposed wind farm will have an impact on the local Koala population(s), as the area of native vegetation proposed to be removed is primarily restricted to existing tracks or cleared areas (i.e. pine plantations) and does not intersect any larger forest patches. It is understood that the *National Koala Conservation and Management Strategy 2009 – 2014* (DEWHA 2009b) will be referred to during the final planning stages of the proposed wind farm.

3.2 Avifauna and Bat Surveys

3.2.1 Bird Utilisation

Fifty-five native species of birds were recorded, comprising 1,285 individual birds, during the 64 fixed-point bird counts and incidental surveys. Four bird species were recorded 50% or more of the time during the survey period: Australian Magpie *Gymnorhina tibicen* 78%, Crimson Rosella *Platycercus elegans* 97%, Superb Lyrebird *Menura novaehollandiae* 59% and Yellow-tailed Black Cockatoo *Calyptorhynchus funereus* 67%. No significant bird species were observed during the fixed-point count surveys.

A total of 64% (289 of 449) of bird observations made during the point counts were of individuals that were either on the ground or flying at or below the Rotor Swept Area. Birds observed flying at Rotor Swept Area include Yellow-tailed Black Cockatoo, Little or Australian Raven and Australian Magpie. All species observed within the Rotor Swept Area were common birds and not listed as threatened on DELWP's Advisory list, or listed under the EPBC Act or FFG Act. No birds recorded during the bird utilisation surveys, or recorded during the detailed field surveys are defined as 'species of interest' as outlined in Lumsden *et al.* (2019) (see Section 6.5).

3.2.2 Bat Surveys

Five native bat species (all common in the local area) were detected during the Anabat surveys, including White-striped Freetail Bat *Tadarida australis*, Eastern False Pipistrelle *Falsistrellus tasmaniensis*, Gould's Wattled Bat *Chalinolobus gouldi*, Chocolate Wattled Bat *Chalinolobus morio* and Little Forest Bat *Vespadelus vulturnus* (Table 6). With the exception of White-striped Freetail Bat, which is known to regularly fly within Rotor Swept Area, the remainder are expected to forage at lower heights around vegetation and waterbodies. Although nocturnal and Anabat surveys were undertaken across the study area over several nights, no significant species (e.g. Grey-headed Flying-fox, Common Bent-wing Bat or Yellow-bellied Sheath-tail-bat) were detected within, or adjacent to the study area.

Table 6. Bat species detected across the study area during Anabat surveys.

Site	BS-01	BS-02	BS-05	BS-06
Number of Detections	330	11,277	16,496	14,052
Species				
White-striped Freetail Bat <i>Tadarida australis</i>	✓	✓	✓	-
Eastern False Pipistrelle <i>Falsistrellus tasmaniensis</i>	-	✓	✓	✓
Gould's Wattled Bat <i>Chalinolobus gouldi</i>	✓	✓	✓	✓
Chocolate Wattled Bat <i>Chalinolobus morio</i>	-	-	✓	✓
Little Forest Bat <i>Vespadelus vulturnus</i>	✓	✓	✓	✓
Not identified to species level				
White-striped Freetail Bat or Yellow-bellied Sheath-tail Bat <i>Tadarida australis</i> / <i>Saccolaimus flaviventris</i>	-	-	✓	-
Nyctophilus spp. <i>Nyctophilus geoffroyi</i> / <i>Nyctophilus gouldi</i>	-	✓	✓	-
Forest Bat spp. <i>Vespadelus darlingtoni</i> / <i>V. Regulus</i>	✓	✓	✓	✓
Eastern False Pipistrelle or Eastern Broad-nosed Bat	-	-	✓	✓

3.2.3 Forest Owls

Although nocturnal surveys and active searching for evidence of the targeted forest owl species (i.e. pellets, white-wash, prey remains and/or use of hollows) in suitable habitats was undertaken across suitable habitats within the study area none of the targeted owls were detected. There is a moderate to high likelihood that Powerful Owl uses native vegetation within the study area for foraging and roosting activities, although the other owl species are less likely to occupy habitat within the study area.

3.3 Terrestrial Fauna Surveys

3.3.1 Habitat Connectivity

Adjoining the eastern boundary of the study area is approximately 320 hectares of remnant vegetation, referred to as the Darlimurla Forest Block. Sayers Trig Bushland Reserve (north), Mirboo North Regional Park (south west) and Mount Worth State Park (west) are also located several kilometres outside of the study area. Although these areas are not directly connected to the study area, there is a potential for more mobile fauna (e.g. birds and mammals) to move between these larger consolidated areas of habitat and the study area (e.g. through remnant native vegetation along roadsides). While the native vegetation within the study area largely occurs as isolated patches, some are connected to riparian corridors or vegetation within road reserves (e.g. Strzelecki Highway) or larger areas of forest adjoining the study area.

Riparian habitat acts as important dispersal corridors for native flora and fauna. The Morwell River to the east connects with Stony Creek which passes through the study area. Such connectivity is important in a landscape that has largely been cleared for agricultural purposes. Wildlife corridors and 'stepping stones' of vegetation have numerous benefits to native flora and fauna populations, particularly in modified landscapes where much of the surrounding vegetation is restricted to linear strips along roadsides. Some of the key benefits of habitat patches and wildlife corridors associated with the maintenance of biodiversity on a local and landscape level include:

- Protection and ongoing maintenance of ecosystem functionality through the reduction of threatening processes (erosion, weed spread, hydrological alterations);

- Protection for populations of threatened species, or disturbance sensitive species (e.g. orchids) that may have been lost from the surrounding landscape;
- Provision of habitat (refuge, shelter, breeding opportunities) for a range of fauna either residing within corridors, or moving through the landscape;
- Maintenance of species richness and diversity;
- A source of seed dispersal for flora species sensitive to moderate levels of disturbance;
- Immigration of animals to supplement declining populations, thus reducing the likelihood of local extinctions;
- Availability of habitat for reintroduction following extinction events;
- Prevent demographic changes occurring in populations that may result from prolonged isolation from other populations of the same species by aiding gene flow, thus enhancement of genetic variation and prevention of inbreeding; and,
- Facilitating fauna movement through modified landscapes to more optimal habitats.

3.3.2 Ground-dwelling Fauna and Arboreal Mammals

Incidental records of common bird and mammal species were recorded during field assessments (Appendix 3.1). Species include Swamp Wallaby *Wallabia bicolor* and Short-beaked Echidna *Tachyglossus aculeatus* and Crimson Rosella *Platycercus elegans*. A variety of common ground-dwelling species, including Common Wombat *Vombatus ursinus* and Common Brushtail Possum *Trichosurus vulpecula* were detected during camera trapping, while arboreal mammals (Sugar Glider *Petaurus breviceps*, Common Brushtail Possum and Common Ring-tailed Possum *Pseudocheirus peregrinus*) were also detected during spotlighting surveys.

While targeted surveys for Greater Glider were undertaken in potentially suitable habitat, under suitable survey conditions (warm, still nights, with no rain, fog or bright moonlight), the species was not recorded within the study area.

3.3.3 Growling Grass Frog Surveys

Two Growling Grass Frogs were observed during nocturnal surveys on the 14 November 2018 near a small pool/creekline in the centre of the study area (Plate 15) (Figure 2j - 2m). They were recorded on either side of an existing dirt track, on the grassy banks of a small pool with fringing vegetation during call playback and spotlighting surveys. On the night when Growling Grass Frog was detected, it was a clear sky, ambient air temperature of 20.3°C, slight wind (25.9 kph), 55% relative humidity and no rainfall. A large chorus of Growling Grass Frog was also heard on 2 October 2019 at Luxford Pond (Figure 2l).

Other common species, including Common Froglet *Crinia signifera*, Striped Marsh Frog *Limnodynastes peronii*, Peron's Tree Frog *Litoria peronii* and Eastern Banjo Frog *Limnodynastes dumerilii* (Plate 16) were recorded at several survey locations (e.g. wetlands, depressions, dams, creeklines) within the study area during site surveys (Plate 16).



Plate 15. Growling Grass Frog within the study area (Ecology and Heritage Partners Pty Ltd 14/11/2018).



Plate 16. Eastern Banjo Frog within the study area (Ecology and Heritage Partners Pty Ltd 15/11/2018).

3.3.4 Aquatic Fauna Habitat

Natural creeklines and pools exist throughout the study area. Artificial wetlands are also present and have been created by either being dug out or by damming a section of the catchment. The majority of dams provide moderate to high quality habitat to a diversity of aquatic fauna, including common native fish species. Artificial dams within and adjacent to the study area support a varying cover of aquatic habitat features (i.e. aquatic vegetation and good water quality), and have limited connectivity to downstream waterways which is likely to restrict the movement of aquatic species. The Morwell River flows north-south to the east of the study area and a number of wetlands, formed from natural depressions are present within and surrounding the study area.

3.4 Nationally Significant Values

Matters of National Environmental Significance (NES) are listed and protected under the EPBC Act. Matters of NES relating to biodiversity are discussed below and are based on the results of the PMST (DAWE 2020), the review of literature and the results of field surveys.

3.4.1 Flora

The VBA contains records of four nationally significant species previously recorded within 10 kilometres of the study area (DELWP 2018a) (Appendix 2.4) (Figure 3). The PMST nominated an additional five nationally significant species which have not been recorded in the locality but have the potential to occur (DAWE 2020; Appendix 2.4). Strzelecki Gum was recorded at multiple locations throughout the study area (Figure 2h, 2j, 2l, 2m). All records were associated with Herb-rich Foothill Forest and Swampy Woodland. As part of the design phase of the project, all Strzelecki Gums and their Tree Protection Zones (TPZs) have been avoided through the adjustment of the development footprint.

Of the nine nationally significant flora species that are known to, or that are predicted to occur within the locality, four were considered to have a low to moderate likelihood of occurrence within the study area (Appendix 2.4) (Table 7).

Table 7. Nationally significant flora within the study area.

Species	Suitable habitat within the study area	Known records
Strzelecki Gum <i>Eucalyptus strzeleckii</i>	Targeted surveys recorded the species along watercourses and wetter areas of Swampy Woodland and Herb-rich Foothill Forest (Ecology and Heritage Partners 2019, 2020).	A large number of records are located along roadsides and watercourses in the centre of the study area (Figure 2). The impact area avoids areas containing Strzelecki Gum (i.e. no trees are proposed to be impacted).
River Swamp Wallaby-grass <i>Amphibromus fluitans</i>	The species is associated with wetland, and low-lying swampy habitat. There is potentially suitable habitat for this species in very small areas within the impact area (i.e. low-lying drainage lines and waterbodies).	Not recorded within the study area during recent surveys. There have been recent records (dated 2003) of this species approximately 750 metres to the north east of Turbine 25 and south of Stocks Road (DELWP 2018a) (Figure 3). This species has a low-moderate likelihood of occurring within the proposed impact area.
Matted Flax-lily <i>Dianella amoena</i>	The species typically occurs in native grassland areas, outside of the Strzelecki Ranges (study area) across the low-lying grassland plains.	Not recorded within the study area during recent surveys. This species has a low-moderate likelihood of occurring within the proposed impact area.
Dwarf Cypress-pine <i>Callitris oblonga</i> subsp. <i>oblonga</i>	This species is not considered indigenous to Victoria as its natural population is limited to disjunct sites in north-eastern Tasmania and in NSW on the eastern edge of the New England Tablelands and on the Corang River near Nerriga (DEWHA 2008). As such, there is no suitable habitat for this species within the study area.	Not recorded within the study area during recent surveys. There are two previous records (dated 1998) within the study area (Figure 3). This species has a low-moderate likelihood of occurring within the proposed impact area.

3.4.2 Fauna

The VBA contains records of seven nationally significant fauna species previously recorded within 10 kilometres of the study area (DELWP 2018a) (Appendix 3.2). The PMST nominated an additional 11 nationally significant species which have not been previously recorded but have the potential to occur in the locality (DAWE 2020). The majority of these species are located in areas of relatively high quality, undisturbed habitat (i.e. Morwell National Park and Mirboo North Regional Park), or waterways and roadsides outside of the study area (Figure 4).

Of the 18 nationally significant fauna species that are known to, or are predicted to occur within the locality (DAWE 2020), a resident population of one species (Growling Grass Frog) is present within the study area (i.e. Luxford Pond and other waterbodies) (Figure 2j and 2l). Two additional species have a high (Grey-headed Flying-fox) or moderate likelihood (Greater Glider) of occurring / using habitat resources within the study area (Appendix 3.2) (Table 8). The likelihood of additional nationally significant fauna occurring within or adjacent to the impact area is considered low as a result of the field surveys and due to the absence of suitable habitat (Appendix 3.2).

Table 8. Nationally significant fauna within the study area.

Species	Suitable habitat within the study area	Known records
Growling Grass Frog <i>Litoria raniformis</i>	<p>The species was recorded at a pool in the centre of the study area, just south of Clarks Road (Figure 2j).</p>	<p>A resident Growling Grass Frog population was recorded at multiple sites (e.g. Luxford Pond and other waterbodies) within study area during the 2019/20 breeding period (Figure 2j and 2l). The species has previously been recorded (1997) from Luxford Pond (DELWP 2018a) (Figure 4).</p>
Greater Glider <i>Petauroides volans</i>	<p>The species is not common within the Gippsland Plain and requires large hollows to nest and den (Menkhorst 1995). While stands of large trees with hollows are present, often in the form of isolated patches of forest, exist within the study area, most are part of road reserves and therefore do not provide large patches of consolidated habitat for the species.</p>	<p>Greater Glider was not detected during targeted surveys undertaken within the study area. There are several documented records of Greater Glider approximately 300 metres east of the study area (Figure 4). Resident populations occur to the south and south west of the study area (i.e. Mirboo North Regional Park and comparatively larger consolidated forest habitat south of Creamery Road along Stony Creek and remnants south of the creek) (DELWP 2018a). There is a potential for the species to occur in isolated, semi-connected patches of forest, although the proposed development will not result in the removal of suitable habitat (including suitable hollow-bearing trees or large mature trees that may support suitable den sites in the future).</p>
Grey-headed Flying-fox <i>Pteropus poliocephalus</i>	<p>The species was formerly an autumn-winter visitor to areas throughout Victoria; however, it has now established permanent and seasonal colonies throughout the state. The species is capable of nightly flights of up to 50 kilometres from roost sites to forage on the nectar and pollen of native and introduced plant species. Flowering eucalypts provide potentially suitable habitat for the species within the study area.</p>	<p>Grey-headed Flying-fox was not detected during field surveys (including nocturnal surveys that were undertaken over several nights within the study area). Although the species has not been documented as occurring within 10- kilometres of the study area, there are several records from within 20 kilometres of the study area (DELWP 2018a). There is a high likelihood that small numbers of the species would fly over the study area on an infrequent or occasional basis during dispersal between camps between Melbourne and East Gippsland.</p>
Southern Brown Bandicoot <i>Isodon obesulus</i>	<p>Southern Brown Bandicoot occupies a variety of habitats and prefers areas with contain dense understorey vegetation (e.g. Swamp Scrub, heath, dense blackberry and/or Gorse thickets) where individuals can seek cover. There is marginal habitat for this species within the study area.</p>	<p>Southern Brown bandicoot was not detected during field surveys (including targeted surveys within the study area). The species has previously been recorded in the study area (1973) along Silver Creek, north of Smiths Road (Figure 4). The most recent record is from outside of the study area (VBA record in 1978). The species is considered to have a low likelihood of occurring in the study area based on the results of the site surveys (including targeted surveys) time since last record, and the lack of highly suitable habitat for the species.</p>
Dwarf Galaxias <i>Galaxiella pusilla</i>	<p>There is potential suitable habitat for this species in low-lying drainage lines and water courses. However, there is not suitable habitat within the proposed impact area.</p>	<p>Targeted surveys for Dwarf Galaxias were not undertaken given that species is considered to have a low likelihood of occurrence based on the lack of available habitat. The species has not previously been recorded within the study area and there is one documented record (2012) approximately 14 kilometres north-east of the study area (DELWP 2018a).</p> <p>While the proposed development will involve the removal of some native vegetation along existing tracks, it is unlikely to impact or disturb creeklines, swamps or riparian habitats.</p>

3.4.2.1 Ramsar Wetlands and Migratory Species

The closest Ramsar wetland is the Corner Inlet, located approximately 35 kilometres to the south of the study area. The proposed development will not impact this Ramsar site or any other Ramsar wetlands.

Migratory species listed under the EPBC Act are those protected under international agreements to which Australia is a signatory. These include the Japan Australia Migratory Bird Agreement (JAMBA), the China Australia Migratory Bird Agreement (CAMBA), the Republic of Korea Migratory Bird Agreement (ROKAMBA), and the Bonn Convention on the Conservation of Migratory Species of Wild Animals. Migratory species are considered matters of NES under the EPBC Act.

While migratory bird species (e.g. Latham's Snipe *Gallinago hardwickii*) may occasionally inhabit the study area, the study area is not considered to be classed as an 'important habitat' as defined under the EPBC Act Policy Statement 1.1 Principal Significant Survey Guidelines (DoE 2013), in that it does not contain:

- Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species;
- Habitat utilised by a migratory species which is at the limit of the species range; or,
- Habitat within an area where the species is declining.

Several EPBC Act-listed migratory species have previously been recorded within a 10-kilometre radius of the study area (DELWP 2018a). Suitable habitat within the study area for EPBC Act migratory species is limited to the small low-lying areas (drainage lines and creeks) that would be inundated periodically, and the primary species that would use these habitats include Latham's Snipe. The main areas of suitable habitat for migratory species is several kilometres to the south the study area (i.e. in intertidal areas along the coast and throughout Corner Inlet and also Gippsland Lakes Ramsar sites).

In addition, as outlined in DoEE (2017):

'Important habitats in Australia for migratory shorebirds under the EPBC Act include those recognised as nationally or internationally important. The widely accepted and applied approach to identifying internationally important shorebird habitat throughout the world has been through the use of criteria adopted under the Ramsar Convention on Wetlands. According to this approach, wetland habitat should be considered internationally important if it regularly supports:

- 1 per cent of the individuals in a population of one species or subspecies of waterbird OR
- a total abundance of at least 20 000 waterbirds.

Nationally important habitat for migratory shorebirds can be defined using a similar approach to these international criteria, i.e. if it regularly supports:

- 0.1 per cent of the flyway population of a single species of migratory shorebird OR
- 2000 migratory shorebirds OR
- 15 migratory shorebird species'.

Based on the criteria outlined above no habitat within or immediately adjacent to the study area constitutes important habitat for migratory species. In addition, whilst individuals or small numbers of Latham's Snipe may occupy habitats on an occasional basis, there is no important or limiting habitat for this species within study area. Latham's Snipe does not commonly aggregate in large flocks or use the same habitats as many other migratory shorebird species. Consequently, habitat important to this species is not regularly identified by applying the criteria outlined above, and different criteria are applied (DoEE 2017).

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

of 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.

3.4.3 Communities

One nationally listed ecological community Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and Associated Native Grassland is a listed ecological community that is predicted to potentially occur within the study area (DAWE 2020). Due to the absence of Gippsland Red-gum (Plains Grassy Woodland EVC) and other key indicator species, Gippsland Red Gum Grassy Woodland and Associated Native Grassland is not present within the study area.

3.4.4 Other Matters of NES

The study area does not support any other features corresponding with matters of NES protected under the EPBC Act (e.g. World or National Heritage Areas) (DAWE 2020). The closest Ramsar wetland is the Corner Inlet Ramsar site approximately 35 kilometres to the south of the study area.

3.5 State Significant Values

State significant matters present within the study area that are considered of significance to the State of Victoria are outlined below.

3.5.1 Flora

The VBA contains records of 35 State significant flora species within 20 kilometres of the study area (DELWP 2018a) (Appendix 2.5) (Figure 3). The majority of these species are located in areas of relatively high quality, undisturbed habitat (i.e. Morwell National Park) or waterways and roadsides (Figure 4). In addition to the nationally significant flora species (Section 3.4.1), there is suitable habitat for 16 species within the study area (Appendix 2.5). However, none of these species were detected within the study area despite active searching during appropriate times of the year. Based on the habitat type and vegetation quality throughout the study area there is varying degrees of likelihood for each of these species within the study area (Appendix 2.5).

Ten State-significant flora species, comprising nine 'common' FFG Act 'protected' species and Yarra Gum (listed as rare on the Advisory List of Threatened Flora in Victoria [DEPI 2014]) were recorded within the study area (Appendix 2.2). Based on the results of the targeted surveys, habitat assessments and landscape context, the remaining state significant fauna species previously recorded, or considered as having potential habitat within the project locality have been assessed as having a low likelihood of occurrence within the study area. This determination is based on the results of the targeted surveys within areas of suitable habitat conducted over multiple years.

3.5.2 Fauna

The VBA contains records of 36 State significant fauna species previously recorded within 20 kilometres of the study area (DELWP 2018a) (Figure 4) (Appendix 3.2). The majority of these species are located in areas of high quality, undisturbed habitat (i.e. Morwell National Park and Mirboo North Regional Park), or waterways and roadsides.

No state significant fauna species were identified within the study area. However, of the 36 State significant fauna species that are known to, or are predicted to occur within the locality (DELWP 2018a), a number of species have a moderate or high likelihood of occurrence within the study area (likelihood of occurrence for each species is provided in Appendix 3.2), including:

- Five waterbirds (Australasian Shoveler *Anas rhynchos*, Blue-billed Duck *Oxyura australis*, Hardhead *Aythya australis*, Musk Duck *Biziura lobata* and Eastern Great Egret *Ardea modesta*) that are likely to visit the study area on a frequent or occasional basis (e.g. Luxford Pond and artificial waterbodies such as farm dams) for foraging or breeding on a frequent or occasional basis. However, higher quality habitat that is known to be used by these species is present at the Morwell Wetlands, located approximately 4.5 kilometres north east of the study area (Figure 4).
- Six waterbirds (Freckled Duck *Stictonetta naevosa*, Intermediate Egret *Ardea intermedia*, Lewin's Rail *Lewinia pectoralis pectoralis*, Little Bittern *Ixobrychus minutus dubius*, Gull-billed Tern *Gelochelidon nilotica macrotarsa* and Little Egret *Egretta garzetta nigripes*) that may temporarily reside within the study area (e.g. Luxford Pond and artificial waterbodies such as farm dams) on rare occasions.
- Three diurnal raptors (White-bellied Sea-eagle *Haliaeetus leucogaster*, Black Falcon *Falco subniger* and Grey Goshawk *Accipiter novaehollandiae novaehollandiae*) for which there are a small number of documented records of these three species within the local area (Figure 4). With the exception of White-bellied Sea-eagle, which is likely to fly across the study area on occasions (small numbers of individuals) between more optimal habitats (e.g. large waterbodies such as Morwell Wetlands, Lake Narracan and Hazelwood Pondage lake system several kilometres to the north and east of the study area).
- Three nocturnal raptors (Powerful Owl, Sooty Owl and Masked Owl), for which there have been several documented records of Powerful Owl [known breeding pair(s)] within the local area (DSE 2013b; Willig 2014, 2016, 2017). More recently, Powerful Owl is known to occur in larger consolidated forest habitat approximately 300 metres east of the study area (Figure 4). A breeding pair is known to occur to the south and south west of the study area (i.e. Mirboo North Regional Park and comparatively larger consolidated forest habitat south of Creamery Road along Stony Creek and remnants south of the creek) (DELWP 2018a). While the study area may form part of the home-range of at least one breeding pair, habitat use is expected to be concentrated to dense forest habitat (e.g. along gullies) where there is sufficient prey (e.g. Common Ring-tailed Possum, Common Brush-tailed Possum). Powerful Owl has been recorded adjacent to the study area in Darlimurla Forest Block (Biosis 1998), Toora-Gunyah Road to the north of the study area, and Morwell National Park to the south (Willig and Atkins 2014, 2016, 2017).

Despite extensive targeted forest owl surveys been undertaken over several years, Sooty Owl and Masked Owl have not previously been recorded within, or in close proximity to the study area (DSE 2013b; Willig 2014, 2016, 2017). Neither of these species were detected during the recent targeted surveys across the study area.

- One swift species (White-throated Needletail *Hirundapus caudacutus*) is non-breeding migrant in Australia, and flocks of birds are known to visit the local area during its migration period (i.e. spring and summer).
- Two woodland birds species (Hooded Robin *Melanodryas cucullata cucullata* and White-brown Treecreeper *Climacteris affinis*) that are unlikely to use habitat within the study area as the study area is outside the known range of both species. While Hood Robin has previously been recorded in the region this species, although with White-browed Treecreeper would only be vagrant visitors to the study area.
- Three reptile species (Lace Monitor *Varanus varius*, Glossy Grass Skink *Pseudemoia rawlinsoni* and Swamp Skink *Lissolepis coventryi*) where there have been a small number of documented records of these species within the local area. It is likely that Lace Monitor currently occupies remnant native vegetation within the study area, while Glossy Grass Skink and Swamp Skink may also occur around the edges of Luxford Pond and/or along or adjacent to low-lying drainage lines across the study area.

Lower quality habitat for Glossy Grass Skink and Swamp Skink occurs along the small number of drainage lines that are proposed to be disturbed by the proposed development (i.e. the upgrade and construction of existing access tracks).

- One amphibian (Southern Toadlet *Pseudophryne semimarmorata*) which could potentially occur in small numbers in low-lying ephemeral drainage lines within the study area. The species has previously been recorded (seven records) within the local area, with the nearest document record occurring adjacent the Morwell River (north of the Princes Highway), approximately 4.5 kilometres to the north east of the study area (Figure 4). There is potential habitat for this species at Luxford Pond or along drainage lines within the study area.
- Four freshwater crayfish (Gippsland Burrowing Crayfish *Engaeus hemicirratulus*, South Gippsland Spiny Crayfish *Euastacus neodiversus*, Strzelecki Burrowing Crayfish *Engaeus rostrigaleatus* and Narracan Burrowing Crayfish *Engaeus phyllocercus*). There is potentially suitable habitat in the study area for Narracan Burrowing Crayfish (DSE 2003), Strzelecki Burrowing Crayfish and Gippsland Burrowing Crayfish. These species are associated with riparian habitat where they build burrows along the banks of a river or creek.

It is highly unlikely that any other State significant species would use habitat within the study area given the lack of suitable habitat.

3.5.3 Communities

The native vegetation within and adjacent to the impact area did not meet the descriptive characteristics of Herb-rich Plains Grassy Wetland (West Gippsland) Community, which is an FFG Act-listed ecological community. As such, this listed FFG Act-listed ecological community, or any other listed communities do not occur within the study area (DELWP 2019a).

3.6 Regionally Significant Values

The VBA contains records of an additional nine regionally significant fauna species previously recorded within the study area locality (DELWP 2018a) (Appendix 3.2). Of these species, three (Azure Kingfisher *Alcedo azurea*, Latham's Snipe and Nankeen Night Heron *Nycticorax caledonicus hillii*) are considered to have a moderate to high likelihood of occurring within the study area (Appendix 3.2). There is habitat for a small number of additional regionally significant fauna (e.g. Eastern Long-necked Turtle *Chelodina longicollisi*) within the study area.

4 REMOVAL OF NATIVE VEGETATION (THE GUIDELINES)

Two native vegetation removal scenarios are provided and these are based on the Layout v2.2 (12 September 2019). It is understood that the infrastructure layout has been revised again and the future planning permit application for the project, including the proposed vegetation impacts and offset calculations, will be updated to reflect the final layout.

It is assumed all vegetation within the impact area will be removed and offsets are required to compensate for this removal. Further details regarding offset obligations associated with this assessment are provided in Section 4.3.2. The Native Vegetation Removal Report is provided in Appendix 4.

Due to the linear nature of the impact area, large scale of the study area and high density of large trees within patches, two native vegetation removal scenarios (lower and upper estimates) are provided below:

- 3) Scenario 1: Is the proposed area of direct native vegetation removal and does not account for the Tree Protection Zone (TPZs) for large trees in patches. The total calculated area of native vegetation loss is 15.604 hectares.
- 4) Scenario 2: Accounts for direct native vegetation loss and a 17-metre buffer to accommodate the TPZs for large trees in patches. The total impacted area of native vegetation under this scenario is 41.412 hectares. However, this is likely an over-estimate as not all patches of impacted native vegetation contain large trees, in which case no buffer is required.

It is important to note that the direct impact to native vegetation is likely to be closer to the lower estimate, as the upper estimate allows for a 17-metre buffer either side of the impact area to accommodate TPZs (for large trees in patches). The detailed design process will identify potential impacts more accurately and attempt to minimise encroachment / disturbance into TPZs.

4.1 Scenario 1: Native Vegetation proposed to be removed

The study area is within Location 3 with 15.604 hectares of native vegetation and 96 Large Trees proposed to be removed. As such, the permit application falls under the Detailed Assessment Pathway (Table 9).

Given that the application falls under the Detailed Assessment Pathway, condition scores for vegetation proposed to be removed are based on a habitat hectare assessment (Appendix 2.2). The location, number, circumference and species of scattered trees are provided in Appendix 2.3.

Table 9. Scenario 1: Removal of Native Vegetation (the Guidelines)

Assessment pathway	Detailed
Total Extent (past and proposed) (ha)	15.604
Extent of past removal (ha)	0.00
Extent of proposed removal (ha)	15.604
EVC Conservation Status of vegetation to be removed	Endangered: Aquatic Herbland (653), Damp Forest (29), Herb-rich Foothill Forest (23), Tall Marsh (863), Swampy Woodland (937) Vulnerable: Lowland Forest (16),
Large Trees (no.)	96
Location Category	3

4.1.1 Offset Targets

The offset requirement for native vegetation removal is 0.517 General Habitat Units (GHUs), 10.995 Species Habitat Units (SHUs) for Strzelecki Gum and 96 Large Trees (Table 10). A summary of proposed vegetation losses and associated offset requirements is presented in the Native Vegetation Removal report is presented in Appendix 4.1.

Table 10. Scenario 1: Offset targets

General Offsets Required	0.517 GHUs
Vicinity (catchment / LGA)	West Gippsland Catchment Management Authority or Latrobe City, South Gippsland Shire Council
Minimum Strategic Biodiversity Value*	0.259
Species Offsets Required	10.995 SHUs of habitat for Strzelecki Gum
Large Trees	96

Note: HU = Habitat Units; * The minimum Strategic Biodiversity Value is 80% of the weighted average score across habitat zones where a General offset is required.

4.2 Scenario 2: Native Vegetation proposed to be removed

The study area is within Location 3 with 41.412 hectares of native vegetation and 154 Large Trees proposed to be removed. As such, the permit application falls under the Detailed assessment pathway.

As the application falls under the Detailed Assessment Pathway, condition scores for vegetation proposed to be removed are based on a habitat hectare assessment (DELWP 2017b).

Table 11. Scenario 2: Removal of Native Vegetation (the Guidelines)

Assessment pathway	Detailed
Total Extent (past and proposed) (ha)	41.412
Extent of past removal (ha)	0.00
Extent of proposed removal (ha)	41.412
EVC Conservation Status of vegetation to be removed	Endangered: Aquatic Herbland (653), Damp Forest (29), Herb-rich Foothill Forest (23), Tall Marsh (863), Swampy Woodland (937) Vulnerable: Lowland Forest (16),
Large Trees (no.)	154
Location Category	3

4.2.1 Offset Targets

The offset requirement for native vegetation removal is 0.509 GHUs, 7.084 SHUs for Grey Goshawk, 32.331 SHUs for Strzelecki Gum and 154 Large Trees (Table 12). A summary of proposed vegetation losses and associated offset requirements is presented in the Native Vegetation Removal report is presented in Appendix 4.2.

Table 12. Scenario 2: Offset targets

General Offsets Required	0.509 GHUs
Vicinity (catchment / LGA)	West Gippsland Catchment Management Authority or Latrobe City, South Gippsland Shire Council
Minimum Strategic Biodiversity Value*	0.265
Species Offsets Required	7.084 SHUs for Grey Goshawk <i>Accipiter novaehollandiae novaehollandiae</i> and 32.331 SHUs for Strzelecki Gum
Large Trees	154

Note: GHU = General Habitat Units; SHU = Species Habitat Units; * The minimum Strategic Biodiversity Value is 80% of the weighted average score across habitat zones where a General offset is required.

5 LEGISLATIVE AND POLICY IMPLICATIONS

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 2017b)
- Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria (DELWP 2017a)
- Interim Guidelines for the Assessment, Avoidance, Mitigation and Offsetting of Potential Wind Farm Impacts on the Victorian Brolga Population (DSE 2012)
- Local Council Planning Scheme
- *Wildlife Act 1975* (Wildlife Act)
- *Catchment and Land Protection Act 1994* (CaLP Act).

5.1 Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

The EPBC Act establishes a Commonwealth process for the assessment of proposed actions (i.e. project, development, undertaking, activity, or series of activities) that are likely to have a significant impact on matters of national environmental significance (NES), or on Commonwealth land. An action, unless otherwise exempt, requires approval from the Commonwealth Environment Minister if it is considered likely to have an impact on any matters of NES.

5.1.1 Implications

Given the presence of EPBC Act-listed species (Growling Grass Frog and Strzelecki Gum) identified within the study area, an EPBC Act referral has been submitted to the Commonwealth (2020/8612). The Minister will decide whether the proposed action is a 'controlled action', and if so, will require further assessment to determine whether approval will be granted under the EPBC Act. However, given that it is anticipated that the proposed development will not impact these species or associated habitats, or any other matters of NES, it is unlikely that the proposed development would result in a significant impact under the EPBC Act.

5.2 Environment Effects Act 1978 (Victoria)

The *Environment Effects Act 1978* (EE Act) provides for assessments of proposed actions that are capable of exerting a significant impact on the environment and requires 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 to the Victorian Minister for Planning.

5.2.1 Implications

The criteria for an EES referral are outlined in the *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978* (DSE 2006). The project impacts have been considered against these referral criteria and an EES referral is deemed required for this project. A referral under the EE Act will be submitted to determine whether the proposed development will trigger the requirement for an Environmental Effects Statement. Based on the nature of the project and the localised extent of proposed impacts, from an ecological perspective, is it unlikely that the project would need to be assessed through an EES.

5.3 Flora and Fauna Guarantee Act 1988 (Victoria)

The FFG Act is the primary legislation dealing with biodiversity conservation and sustainable use of native flora and fauna in Victoria. Proponents are required to apply for an FFG Act Permit to ‘take’ listed and/or protected¹ 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.

5.3.1 Implications

There is suitable habitat within the study area for several species listed and protected under the FFG Act. Any native vegetation on private land does not require a permit under the FFG Act. However, the proposed development will impact native vegetation within publicly owned road reserves, in which case, an FFG Act permit is required.

5.4 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 on a site of more than 0.4 hectares, unless an exemption under clause 52.17-7 of the Victorian Planning Schemes applies. Local planning schemes may contain other provisions in relation to the removal of native vegetation.

5.4.1 Local Planning Schemes

The study area is located within the Baw Baw Shire Council, South Gippsland Shire Council and Latrobe City Council municipalities. The following zoning and overlays apply (DELWP 2020d):

- Farming Zone (FZ)
- Road Zone – Schedule 1 (RZ1)
- Special Use Zone – Schedule 1 (SUZ1)
- Environmental Significance Overlay – Schedule 5 (ESO5)

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.

- Bushfire Management Overlay (BMO).

5.4.1.1 Implications

The purpose of ESO5 is to protect areas prone to erosion by minimising land disturbance and vegetation loss and to prevent increased surface runoff or concentration of surface water runoff leading to erosion or siltation of watercourses. A planning permit under Clause 42.01 will be required for works associated with the construction of the project.

A permit is required under Clause 52.32 of the Baw Baw Shire, South Gippsland Shire and Latrobe City Council Planning Schemes to use and develop a wind energy facility. A planning permit for the proposed removal of native vegetation is also required.

5.4.2 The Guidelines

The State Planning Policy Framework and the decision guidelines at Clause 52.17 (Native Vegetation) and Clause 12.01 require Planning and Responsible Authorities to have regard for 'Guidelines for the removal, destruction or lopping of native vegetation' (Guidelines) (DELWP 2017b). Where the clearing of native vegetation is permitted, the quantity and type of vegetation to be offset is determined using methodology specified in the Guidelines. The primary objective of the regulations is '*no net loss in the contribution made by native vegetation to Victoria's biodiversity*'.

A permit will be referred to DELWP as a 'recommending authority' if vegetation removal is assessed under the Detailed Assessment Pathway.

5.4.3 Implications

The study area is within Location 3 and therefore the planning permit application falls under the Detailed assessment pathway. The offset requirement for native vegetation removal under Scenario 1 is 0.517 GHUs, 10.995 SHUs for Strzelecki Gum and 96 Large Trees, while the offset requirement for native vegetation removal under Scenario 2 is 0.517 GHUs, 7.084 SHUs for Grey Goshawk, 32.331 SHUs for Strzelecki Gum and 154 Large Trees (Section 3.6.1 and 3.6.2).

A planning permit from Baw Baw Shire, South Gippsland Shire and Latrobe City Councils is required to remove, destroy or lop native vegetation under Clause 52.17 of the Planning Scheme. In this instance, the application will be referred to DELWP.

5.5 *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 DELWP.

5.5.1 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*.

5.6 Water Act 1989 (Victoria)

The purposes of the *Water Act 1989* are manifold but (in part) relate to the orderly, equitable, efficient and sustainable use of water resources within Victoria. This includes the provision of a formal means of protecting and enhancing environmental qualities of waterways and their in-stream uses as well as catchment conditions that may affect water quality and the ecological environments within them.

5.6.1 Implications

Several ephemeral drainage lines and streams are present throughout the study area. A 'works on waterways' permit from the West Gippsland CMA is likely to be required where any action impacts on waterways within the study area. Additionally, where structures are installed within or across waterways that potentially interfere with the passage of fish or the quality of aquatic habitat, these activities should be referred to DELWP with the West Gippsland CMA included for comment.

5.7 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. Landowners are responsible for the control of any infestation of noxious weeds and pest fauna species to minimise their spread and impact on ecological values.

5.7.1 Implications

Weeds listed as noxious under the CaLP Act were recorded during the assessment. Similarly, there is evidence that the study area is currently occupied by several pest fauna species listed under the CaLP Act. A Weed Management Plan and a pest fauna eradication plan may be required.

5.8 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.

Responsible authorities 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.

5.8.1 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 native vegetation patches, scattered trees, and significant impacts to environmental values within the study area has been achieved by focusing construction and other project activity in areas that do not support native vegetation (i.e. in plantation areas).

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.

6 POTENTIAL IMPACTS

Any loss of ecological values within the study area should be viewed in the context of the overall ongoing loss, fragmentation, and deterioration in the quality of remnant vegetation throughout the Strzelecki Ranges and the broader south Gippsland region. Indeed, much of the study area has undergone dramatic change as a result of land clearing for plantations and agriculture. Consequently, incremental losses of ecological values are likely to continue across many areas throughout, and in the vicinity of the study area.

6.1 Vegetation and Habitat Removal

The majority of the study area has been cleared of native vegetation and little of the pre-1750 extent of EVCs remain within the study area and immediate surrounds. Potential impacts to flora and fauna associated with the proposed development include:

- Removal and/or disturbance to remnant native vegetation and isolated scattered trees and shrubs;
- Decreases in population sizes of local flora species as a consequence of habitat loss (forest and wetland habitat). However, there are opportunities to increase the total area of habitat via revegetation using locally indigenous species, and/or the protection and ongoing management of native vegetation in other areas across the study area (e.g. management of offset areas with the objective of enhancing the vegetation quality over time);
- Removal and/or disturbance to planted native and exotic trees and shrubs, which provide foraging, nesting and breeding habitat for fauna species (native mammals and birds);
- Potential for further spread of noxious and environmental weeds from on-site activities and subsequent degradation of remaining native vegetation;
- Removal and/or disturbance to a range of terrestrial and aquatic fauna habitats;
- Increase in sedimentation and deterioration in water quality as a result of water runoff during construction; and,
- Direct mortality of fauna species and associated habitats associated with the removal and/or disturbance to native vegetation and fauna habitats.

6.2 Impacts to Significant Flora, Fauna and Ecological Communities

6.2.1 Flora

Of the nine nationally significant and 35 State significant flora species that are known to, or that are predicted to occur within the locality, four were considered to have a low to moderate likelihood of occurrence within the study area (Appendix 2.4) (Table 7).

The proposed development could potentially result in the direct removal and/or disturbance to areas supporting known and/or potential habitat for significant flora species (e.g. Strzelecki Gum, Matted Flax-lily and River Swamp Wallaby-grass). However, based on the field results and the extent of proposed disturbance associated with the infrastructure Layout (Layout v2.2), all Strzelecki Gums are proposed to be avoided and therefore the potential for this species to be impacted is considered low.

There was no evidence of Matted Flax-lily within the study area, although should the species occur it is likely to be in very small numbers. River Swamp Wallaby-grass has previously been recorded within the study area, approximately 750 metres from the nearest area proposed to be impacted, and there is a potential (albeit low) that a small number of plants may be impacted by the proposed development (e.g. in low-lying areas). Based on the previously documented records (DELWP 2018a), the lack of suitable habitat and the results of the detailed flora surveys across the proposed infrastructure layout, there is a low likelihood that the proposed development would impact any significant species.

Given no additional significant flora species were detected through targeted surveys, any populations (if present) within the project area are expected to be very small in numbers and possibly represented by only a few individuals. No known locations of any other significant flora species will be impacted by the proposed development, and therefore no significant flora species are likely to be significantly impacted by the project.

6.2.2 Fauna

Of the 18 nationally significant fauna species that are known to, or are predicted to occur within the locality (DAWE 2020), a resident population of one species (Growling Grass Frog) is present within the study area (i.e. Luxford Pond and other waterbodies) (Figure 2j and 2l). The infrastructure layout intersects creeklines, including one location at Nursery Track which is confirmed Growling Grass Frog habitat. If appropriate mitigation measures are not adequately implemented at this location or other riparian areas, then there is a potential for indirect impacts on suitable habitat for Growling Grass Frog. However, the proposed development is not likely to significantly impact the resident Growling Grass Frog population and associated habitats within the study area. There is a high level of confidence that any indirect impacts (e.g. sedimentation and/or deterioration of water quality) will be managed through the implementation of a Construction Environmental Management Plan (Section 6).

Two additional species have a high (Grey-headed Flying-fox) or moderate likelihood (Greater Glider) of occurring / using habitat resources within the study area, while the likelihood of any additional significant fauna occurring within or adjacent to the impact area is considered low as a result of the field surveys and due to the absence of suitable habitat (Appendix 3.2). As such, the proposed wind farm is not expected to impact any significant fauna species listed in the table below (Appendix 3.2)

6.2.3 Ecological Communities

No national or State significant ecological communities were recorded within the study area, and as such, the proposed development is not expected to impact any listed ecological communities.

6.2.4 EPBC Act Migratory Species

The potential impact of loss of important habitat for an EPBC Migratory species is assessed here using the criteria outlined for Migratory species in the Impact Significance Guidelines 1.1 under the Commonwealth EPBC Act. The Migratory status of a species is a Commonwealth and international matter rather than a state (Victoria) matter. The consequence and severity of losing important habitat for a Migratory species would be major, because it could jeopardise the success or recovery of a species internationally. And, unless comparable habitat were replaced nearby, the duration would be long-term, because the habitat would be lost permanently. However, based on the current infrastructure layout (Layout v2.2) impacts to migratory species or important habitat for listed migratory species are not expected to occur.

6.3 Direct Fauna Mortality

Project construction may injure or result in fauna mortality, mainly through the removal of suitable habitat (i.e. native vegetation, drainage lines) or fauna straying into a construction area. Fauna most at risk are fauna that reside in the habitats to be removed and that have limited mobility (such as possums, reptiles and amphibians), and/or dependent young (such as young birds in a nest), or fauna that stray into a construction area during a quiet time (for example, overnight). Fauna straying into a noisy active construction site during the day is considered unlikely, and would be actively managed by the site environmental officer (via a CEMP).

Diurnal (day active) and mobile species, such as birds, are likely to move away from the path of clearing and may not be greatly affected unless they are nesting. However, other species that are less mobile (i.e. ground dwelling mammals, reptiles and amphibians), or those that are nocturnal and nest or roost in tree hollows during the day (i.e. arboreal mammals such as possums and microchiropteran bat species), may find it difficult to escape roosts and move rapidly over relatively large distances when disturbed. During clearing activities, susceptible species are at high risk of direct mortality.

Entrapment of wildlife in trenches or other excavations is another potential cause of fauna injury or death. Species most likely to become trapped in pits or other excavations are larger ground dwelling species that can move across a modified landscape in the absence of woodland or forest habitat (e.g. macropods, reptiles and frogs). There is also the potential for an increase in fauna mortality through vehicle strike during the construction and operational phases of the project.

6.4 Loss of Hollow-bearing Trees

Whilst habitat loss is recognised above (Section 5.1.1), the loss of hollow-bearing trees requires specific mention due to the important role hollows play in supporting a wide range of fauna and the difficulty associated with the replacement of this resource. Several fauna species (e.g. Powerful Owl, Greater Glider, microchiropteran bats and other arboreal mammals such as possums and gliders) that are known to, or that may occupy habitats within the study area rely on tree hollows for breeding and roosting.

The size of the hollow entrance utilised varies for many species, as entrance size is related to the body length of individuals (Goldingay 2009). Hollows less than 10 centimetres would be utilised by microchiropteran bats, hollows between 11-15 centimetres by lorikeets and parrots, and hollows 20 centimetres or larger by owls and mammals. Most hollows within the study area are between 10 and 20 centimetres. However, a high numbers of larger tree hollows were observed in the patches of more mature native vegetation. While many attributes of tree hollows may be selected by hollow using species, such as hollow depth, entrance size and hollow type, hollows are more likely to occur and be used by wildlife in large trees that are many decades or even centuries old (Goldingay 2009).

Based on the detailed site assessments and the areas where the proposed infrastructure layout intercepts native vegetation, there is a very small number of trees that are proposed to be impacted that contain tree hollows (largely small hollows). Large mature trees with hollows will be avoided as much as possible as part of the additional micro-siting measures that will be implemented prior to and during construction.

6.5 Birds

The primary focus of the impacts of wind farm on birds is related to the collision with wind turbines (Kuvlesky *et al.* 2007), although collision with powerlines associated with wind farms has also been recorded (Janss and Ferrer 2000; Kuvlesky *et al.* 2007). However, wind farms have the potential to directly and indirectly impact birds and other taxa in other ways as well. For example, in Europe, displacement through habitat loss is considered the main 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) and birds of prey that are frequently encountered within RSA (Farfán *et al.* 2009), although it is likely to affect all bird species to some extent. This effect is likely to occur because of the noise, movement and human disturbance associated with wind turbines (Leddy *et al.* 1999).

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

The majority of observations (i.e. 64% of observations) made during the point counts were of individuals that were either on the ground or flying below the Rotor Swept Area. All birds observed during the current point count surveys are common birds in south-eastern Australia. Further, it cannot be assumed that all the birds observed within the study area will collide with the wind turbines, as birds are known to adapt their behaviour in the presence of wind turbines to avoid an obstacle, such as a wind turbine, in their flight path (Farfán *et al.* 2009).

Moloney *et al.* (2019) provides a summary of the results of existing post-construction mortality monitoring at Victorian wind farms to assess its utility in estimating mortality rates. In this report the authors examined and analysed existing post-construction mortality monitoring data from Victorian wind farms and concluded that monitoring that has been undertaken at many wind farms was not designed or undertaken in a manner that would enable valid estimation of total mortalities (Moloney *et al.* 2019). The data available was deemed to be sufficient to enable statistical analysis to be validly applied in the estimation of total mortalities at only two of the 15 wind farms with mortality monitoring (Moloney *et al.* 2019).

However, overseas studies have shown that even collision-prone bird species avoid collisions with wind generators on most occasions (Winkelman 1992a; 1992b; Still *et al.* 1995). A range of avoidance rates of bird species from overseas studies range from 100% to 98% (Winkelman 1992; Still *et al.* 1995). In Australia, three avoidance rates are commonly used when calculating collision risk of birds at wind farms: 95%, 98% and 99%. Avoidance rates in Australia have previously been recorded at the Codrington Wind Farm in Victoria, where birds have regularly exhibited 100% avoidance of turbines.

Of importance with regards to assessing the risk of turbine collision are those birds that are threatened at a National, State or regional scale. In Lumsden *et al.* (2019), significant species and/or species with specialised habitat requirements are classified as 'species of interest'. No birds recorded during the bird utilisation surveys or during the detailed ecological investigations are defined as 'species of interest' as outlined in Lumsden *et al.* (2019). Powerful Owl is defined as a 'species of interest' (Lumsden *et al.* 2019), and individuals may occasionally fly over the study area (typically below Rotor Swept Area) between patches of forest.

Based on available information the proposed Delburn Wind Farm is unlikely to significantly impact any 'species of interest' that may occupy habitats within the study area.

6.6 Bats

Bats are susceptible to mortality caused by wind turbines (Arnett 2005; Bearwald *et al.* 2008, Kunz *et al.* 2007; Lumsden 2007). In some habitats both a high number of individuals and species 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). There is also potential for bats to die as a result of barotrauma caused by changes in pressure produced by the rotating turbines (Bearwald *et al.* 2008, Cryan and Barclay 2009).

To date little scientific data has been published regarding the impact of existing wind farms on Australian bat species. 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 Wattleed Bat (a high-flying, open-air foraging species) with the remaining being *Vespadelus* spp. (Hull and Cawthen 2012). A carcass survey within the small scale (two turbines) Hepburn Wind Farm detected a single White-Striped Freetail Bat mortality (Bennett 2012) and there have been several other operating wind farms in Victoria where White-Striped Freetail Bat mortality has occurred (Ecology and Heritage Partners unpublished data).

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).

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 farms (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 (Barclay 1985; Lumsden and Bennett 2000, 2005; Kunz *et al.* 2007, Horn *et al.* 2008a); and,
- The number of turbines contained within the wind farm.

6.6.1 Bat Species in the Study Area

The VBA (DELWP 2018a) indicates that 10 bat species have been recorded within the local area (Appendix 3.1). The majority of species previously recorded or predicted to occur within the study area are likely to focus their foraging activities in forested areas, around patches of vegetation and scattered remnant trees, at or below canopy height.

Species that use more open areas, such as the Lesser Long-eared Bat *Nyctophilus geoffroyi*, generally fly close to the ground (less than five metres high) when in these areas (Churchill 1998). Bat species that typically fly high are at the highest risk of flying within the RSA and suffering mortality from barotrauma or collision. Of the species likely to occur, the White-striped Freetail Bat is known to fly at height (50 metres or above) (Churchill 1998), and therefore this species is considered to be at highest risk of blade collisions and barotrauma. The potential impacts to bats during operation of the wind farm are expected to be low due to the Rotor Swept Height and the location of turbines (i.e. in a pine plantation).

6.7 Cumulative Biodiversity Impacts

The largest impact to biodiversity in the locality and encompassing bioregions has stemmed from increased European settlement and the subsequent land clearance for agriculture. Future disturbance associated with human activities in the broader region 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. The project will contribute a further clearing of between 15.604 hectares and 41.412 hectares of native patch vegetation located within the infrastructure layout. This includes between 96 and 154 Large Trees that may be directly or indirectly impacted.

No other projects have been identified within the broader region which are likely to lead to significant cumulative impacts on the species and communities identified in this assessment.

7 IMPACT AVOIDANCE AND MINIMISATION

As outlined in the Guidelines (DELWP 2017b) a project should be designed to take into consideration the three-step approach, which is:

- Avoid environmental impacts;
- Minimise impacts; and,
- Where impacts cannot be avoided or minimised, compensate for the residual impacts using other mitigation measures such as offsets.

These principles have been followed, where possible, for the project.

7.1 Avoidance

Under the original infrastructure layout (Layout v1.5) that comprised 53 turbines, a total of 64.455 hectares of native vegetation (including 201 large trees) was calculated as potentially been impacted. The infrastructure layout has been adjusted to reduce impacts to ecological values (particularly areas of native vegetation) across the study area. Following a review of the infrastructure layout and projected impacts to native vegetation, the number of turbines was reduced to 35. Two native vegetation removal scenarios have been developed and these are based on the revised infrastructure layout (Layout v2.2) and are detailed below:

- 1) Scenario 1: Is the proposed area of direct native vegetation removal and does not account for the Tree Protection Zone (TPZs) for large trees in patches. The total calculated area of native vegetation loss is 15.604 hectares (including 96 large trees).
- 2) Scenario 2: Accounts for direct native vegetation loss and a 17-metre buffer to accommodate the Tree Protection Zones for large trees in patches. The total impacted area of native vegetation under this scenario is 41.412 hectares (including 154 large trees).

In the case of Scenario 2, this is likely an over-estimate as not all patches of impacted native vegetation contain large trees, in which case no buffer is required. Minor changes to the infrastructure layout are currently being investigated.

Additionally, while Strzelecki Gum is present throughout the project area, potential impacts from works associated with the construction of the windfarm, including road widening and underground cable installation, have been managed by design changes to completely avoid both direct and indirect impacts (e.g. Impacts to the root zone) have been avoided entirely. in the case of Strzelecki Gum

Except for the road widening at Nursery Track (Figure 2l) where there is proposed to be localised disturbance that will be managed, the infrastructure layout (Layout v2.2) avoids all known and potential Growling Grass Frog habitat. This has been achieved by altering the development footprint to avoid road crossings that are in close proximity to Growling Grass Frog habitat. The development footprint sought to widen an existing dirt road intersecting the northern reaches of Luxford Pond at one of three potential locations; Clarks Road, Nursery Track or the unnamed existing road in between these two roads (Figure 2l). Nursery Track was selected as the preferred crossing, as it completely avoids all Strzelecki Gum. Although Nursery Track crosses the creek and the northern reaches of the Luxford Pond wetland, the expansion of the existing dirt road is not likely to impact the resident population. The development footprint also includes the widening of the dirt road to the east of wetland Site E (Figure 2o), although the proposed road widening will not directly impact the wetland.

7.2 Minimisation Mitigation Measures

7.2.1 Best Practice Mitigation Measures

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

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

Further information regarding TRZ is outlined in DELWP's *Native Vegetation Technical information sheet: Defining an acceptable distance for tree retention during construction works* (DSE 2011b).

- Removal of any habitat trees or shrubs (particularly hollow-bearing trees) should be undertaken under the supervision of an appropriately qualified zoologist to salvage and translocate any displaced fauna. A Fauna Management Plan may be required to guide the salvage and translocation process;
- Where possible, construction stockpiles, machinery, roads, and other infrastructure should be placed away from areas supporting native vegetation, Large Trees and/or wetlands;
- Construction should have an environmental audit process in place for the construction works to be audited on a regular basis;
- All chemicals on site should be correctly banded and stored following EPA Banding Guidelines (EPA 1992).
- Ensure that best practice sedimentation and pollution control measures are undertaken at all times, in accordance with Environment Protection Authority guidelines (EPA 1991; EPA 1996; Victorian Stormwater Committee 1999) to prevent offsite impacts to waterways and wetlands. Actions to avoid

erosion along or adjacent to creeklines, during the construction and operational phase of the project should be undertaken; 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.

7.3 Recommendations

It is understood that the infrastructure layout will continue to be refined, and once finalised, the extent of ecological values impacts (including native vegetation) will be determined and the biodiversity offsets under the Guidelines will be determined. After the finalisation of the infrastructure layout a detailed EMP [or similar document(s)] relating to the construction and operational phases of the project should be prepared for the project. This should be a requirement of a planning permit condition. The EMP or other equivalent document should include:

- Detailed information on the type, location and responsibility for the implementation of mitigation measures;
- Staff and contractor inductions to address the location of sensitive ecological values and their roles and responsibilities in the protection and/or minimisation of impacts to all native biodiversity;
- Pre-clearing surveys and fauna salvage/ translocation where practical;
- Vegetation clearing protocols;
- Contingency measures to manage the potential unexpected discovery of significant flora and fauna species during construction and operation of the project; and,
- Rehabilitation and restoration measures for incorporation into a Rehabilitation Plan, including the establishment of:
 - Rehabilitation protocols;
 - Weed control measures;
 - Pest management measures; and
 - A flora and fauna monitoring program to better understand and manage impacts and rehabilitation actions to flora and fauna.

In addition to these measures, the following documents should be prepared (as part of a planning permit condition) and implemented prior to any construction activities:

- Weed Management Plan. This plan should follow the guidelines set out in the CaLP Act, and clearly outline any obligations of the project team in relation to minimising the spread of weeds as a result of this project. This may include a pre-clearance weed survey undertaken prior to any construction activities to record and map the locations of all noxious and environmental weeds;
- A Bat and Avifauna Management Plan (BAM Plan). The Plan would need to be prepared to the satisfaction of the Responsible Authority, in consultation with the DELWP. When approved, the BAM Plan would be endorsed by the Responsible Authority. The BAM Plan should 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 DELWP;
- c) A monitoring period of not less than two years to record, by species, any bird and bat strikes; and,
- d) A strategy to manage and/or monitor the wind farm beyond the two-year period depending upon the results of the two years period referred to above. The strategy would include provisions to take account of any changes to weather patterns during the initial two-year monitoring period.

8 ADDITIONAL REQUIREMENTS

Further requirements associated with development of the study area, as well as additional studies or reporting that may be required, are provided in Table 13.

Table 13. Summary of project planning and approval pertaining to biodiversity.

Relevant Legislation	Implications	Further Action
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Given the presence of significant species (Strzelecki Gum and Growling Grass Frog) identified within the study area, an EPBC Act referral has been submitted to the Commonwealth (2020/8612).	An EPBC Act referral has been submitted to DAWE and based on the detailed field investigations (Ecology and Heritage Partners 2019) the project is not likely to significantly impact any matters of National Environmental Significance, including listed species and ecological communities.
<i>Environment Effects Act 1978</i>	Based on a review of ecological impacts associated with the proposed development, it is Ecology and Heritage Partners' position that an EES referral is required for this project.	Refer the project to the Victorian Minister for Planning.
<i>Flora and Fauna Guarantee Act 1988</i>	Field surveys recorded one 'listed' flora species (Strzelecki Gum) and several species listed as 'protected' species under the FFG Act. There are no proposed impacts to Strzelecki Gum. A permit under the FFG Act will be required for 'protected' species proposed to be impacted to facilitate access and egress to the site via public roads.	Prepare and submit a FFG Act Permit application.
<i>Planning and Environment Act 1987</i>	A Planning Permit from Baw Baw Shire, South Gippsland Shire and Latrobe City Councils will be required under Clause 52.17 to remove <u>any</u> native vegetation within the project footprint. A permit will also be required under Clause 42.01 (ESO5) and Clause 52.32	Prepare and submit a Planning Permit application(s).
<i>Catchment and Land Protection Act 1994</i>	Several weed species listed under the CaLP Act were recorded within the study area. To meet requirements under the CaLP Act, listed noxious weeds should be appropriately controlled throughout the study area.	Manage the risk of introducing and spreading weeds/ pests during construction.
<i>Wildlife Act 1975</i>	Any persons engaged to conduct salvage and translocation 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

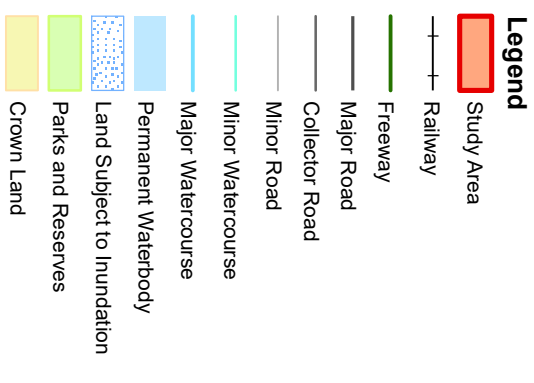
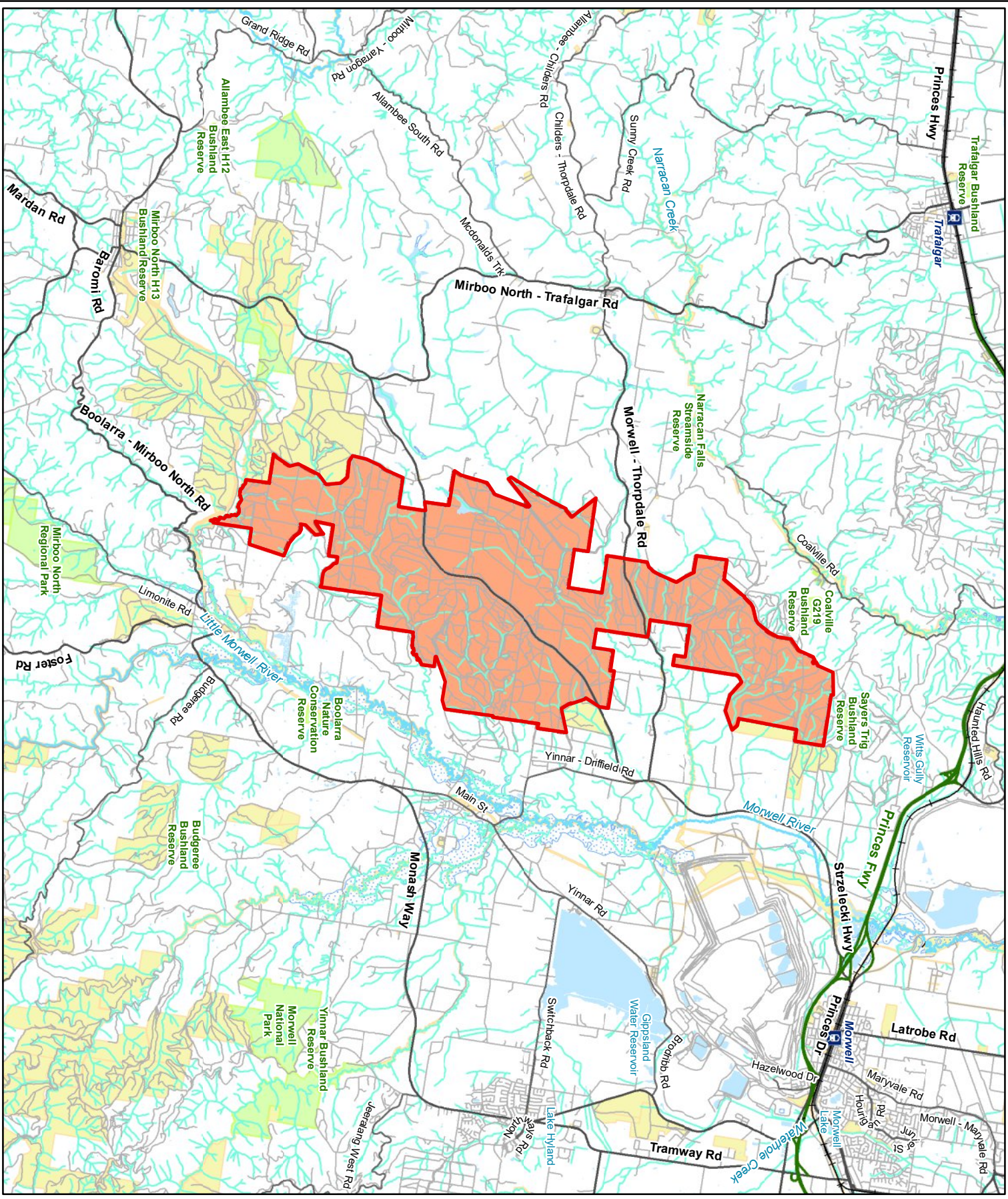
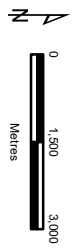
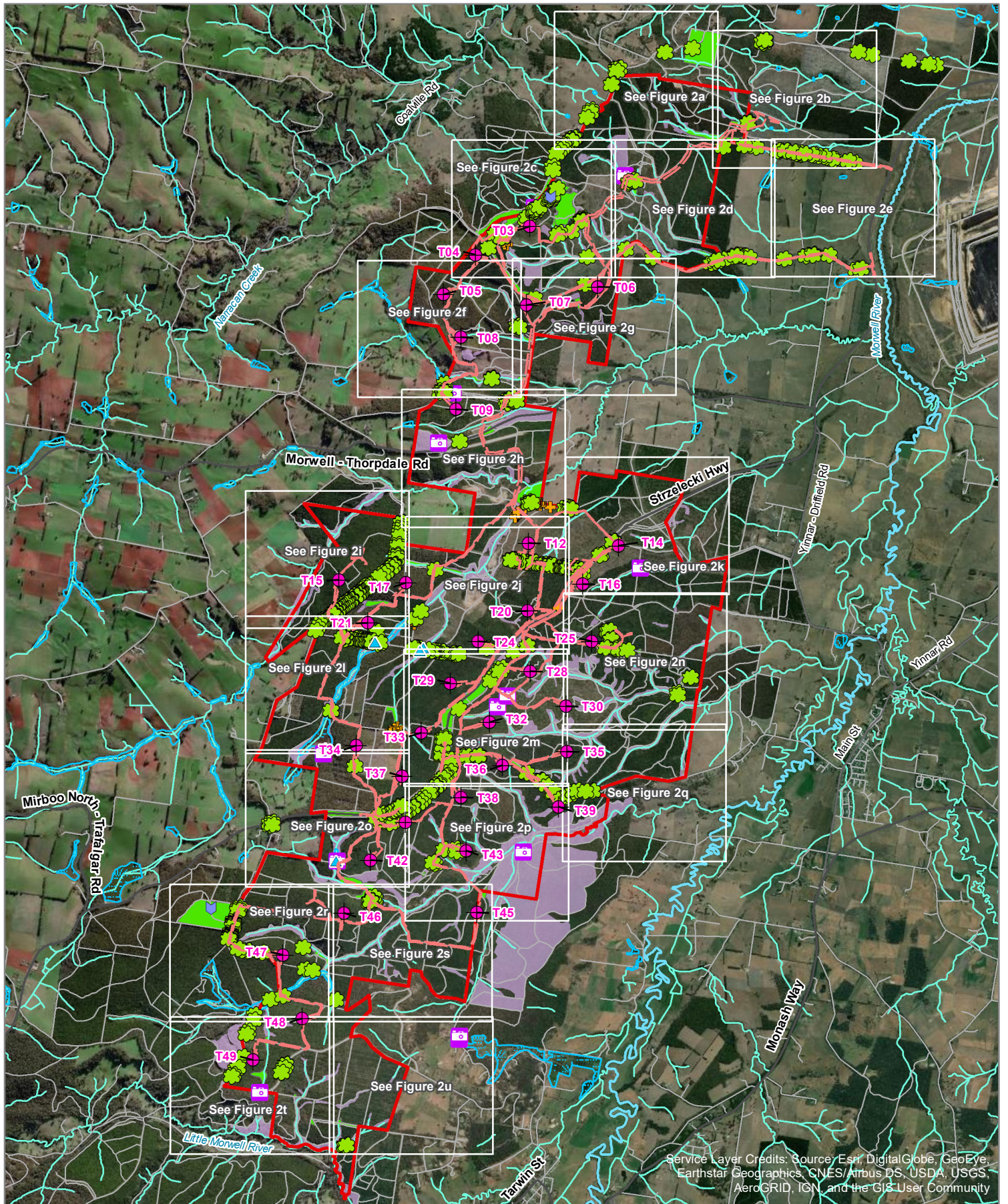


Figure 1
Location of the study area
Biodiversity Assessment for
the Delburn Wind Farm



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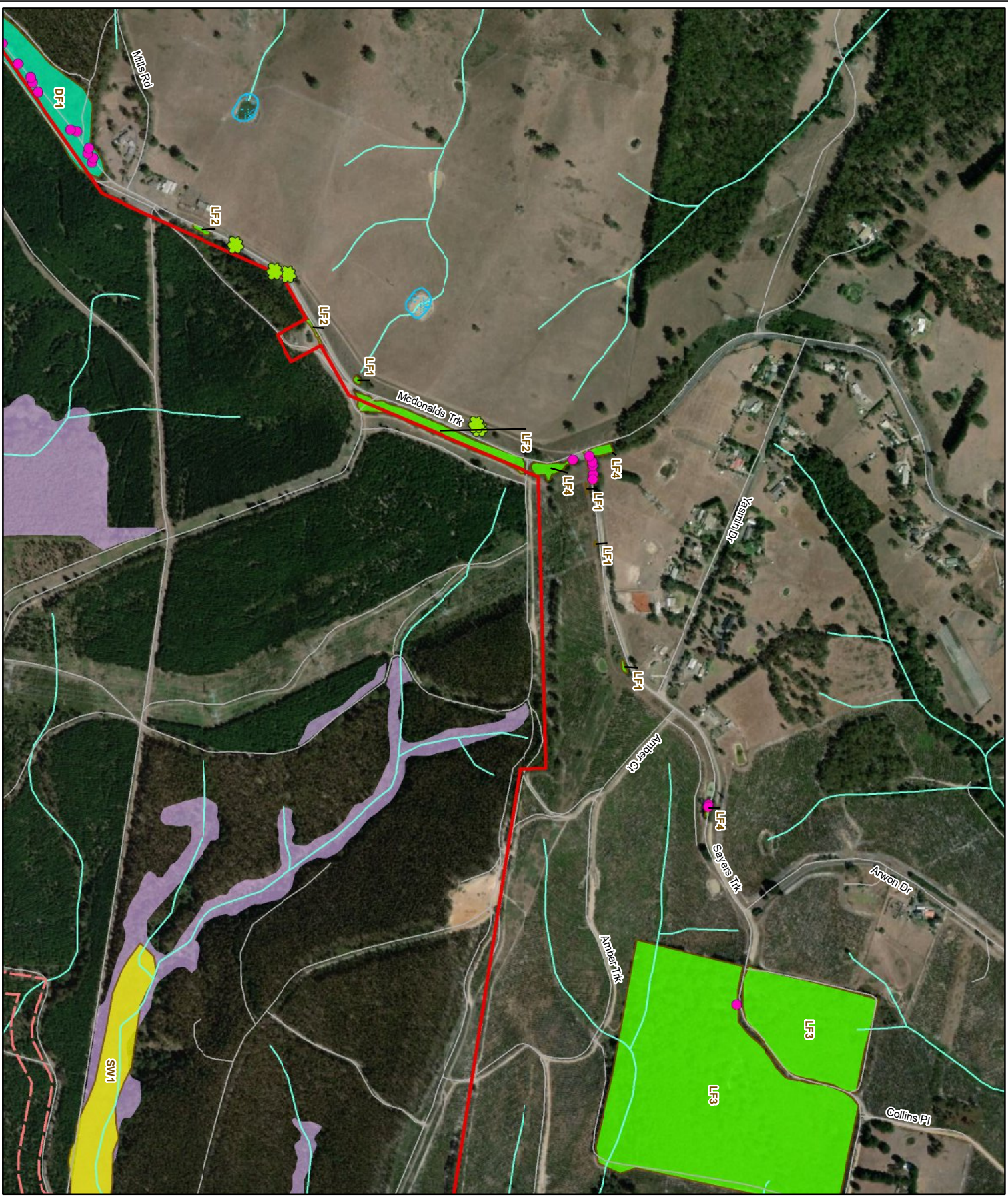
Figure 2 Overview
Ecological features
Biodiversity Assessment for the Delburn Wind Farm

- Legend**
- Study Area
 - Wind turbines
 - Impact footprint
 - Native trees
 - + Strzelecki Gum confirmed records 2018/19
 - ▲ Growsing Grass Frog records
 - 🏠 Koala records (13/11/2018)
 - 📷 Bat detectors and cameras
 - Current Wetlands
 - Native vegetation identified by HVP
 - Native vegetation



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- Legend**
- Study Area
 - Impact footprint by HVP
 - Native vegetation identified by HVP
 - Scattered Large Tree
 - Large Tree within a patch
- Ecological Vegetation Classes**
- Damp Forest (EVC 29)
 - Lowland Forest (EVC 16)
 - Swampy Woodland (EVC 937)

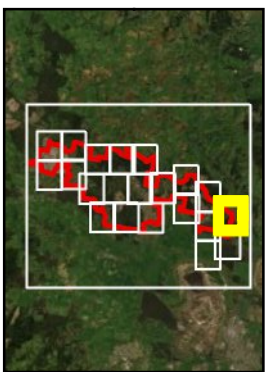
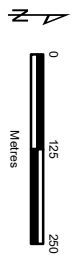
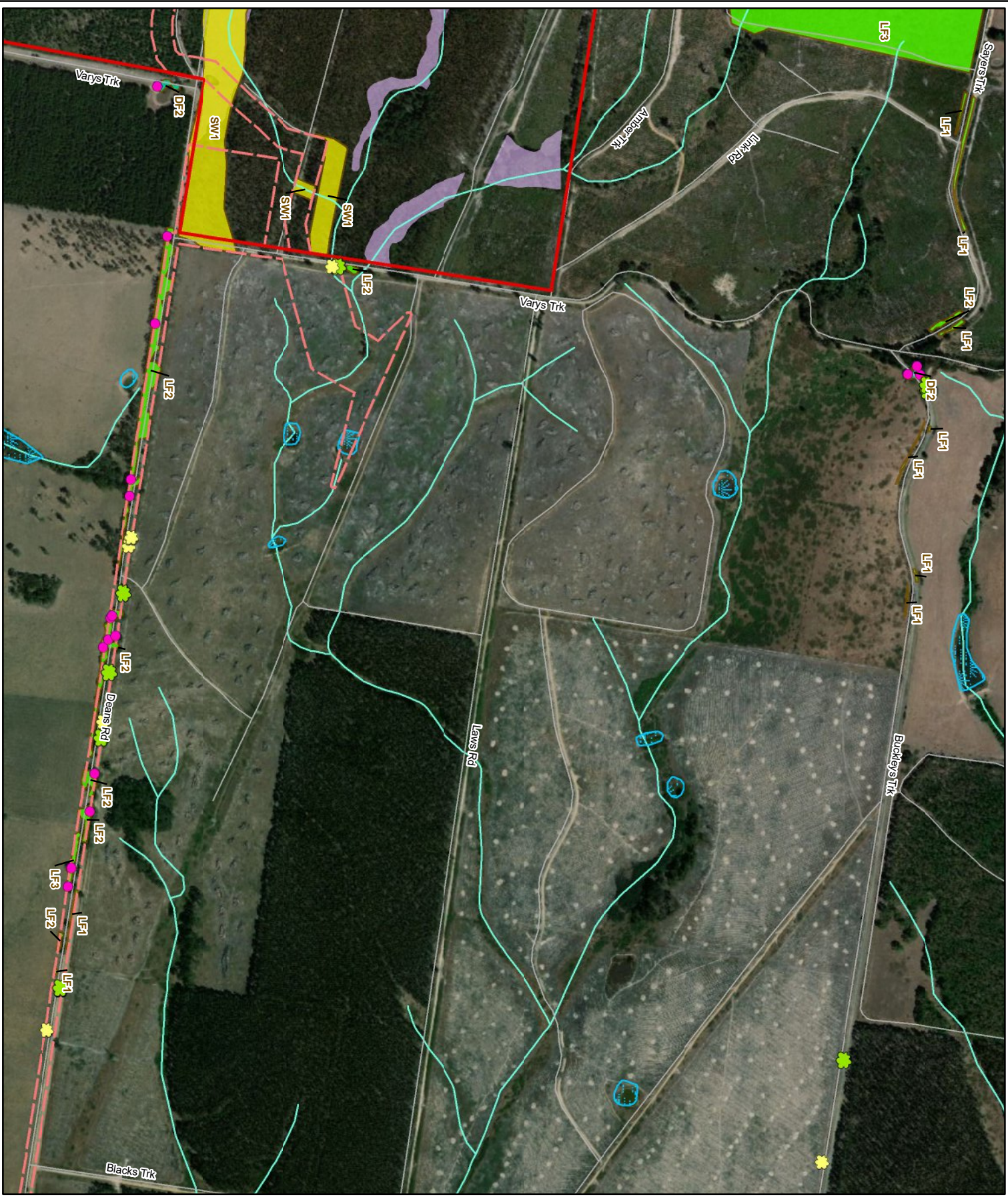


Figure 2a
Ecological features
Biodiversity Assessment for
the Delburn Wind Farm



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Legend

- Study Area
 - Impact footprint
 - Native vegetation identified by HVP
 - Scattered Large Tree
 - Scattered Small Tree
 - Large Tree within a patch
- Ecological Vegetation Classes**
- Damp Forest (EVC 29)
 - Lowland Forest (EVC 16)
 - Swampy Woodland (EVC 937)

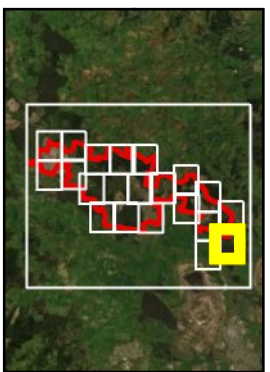
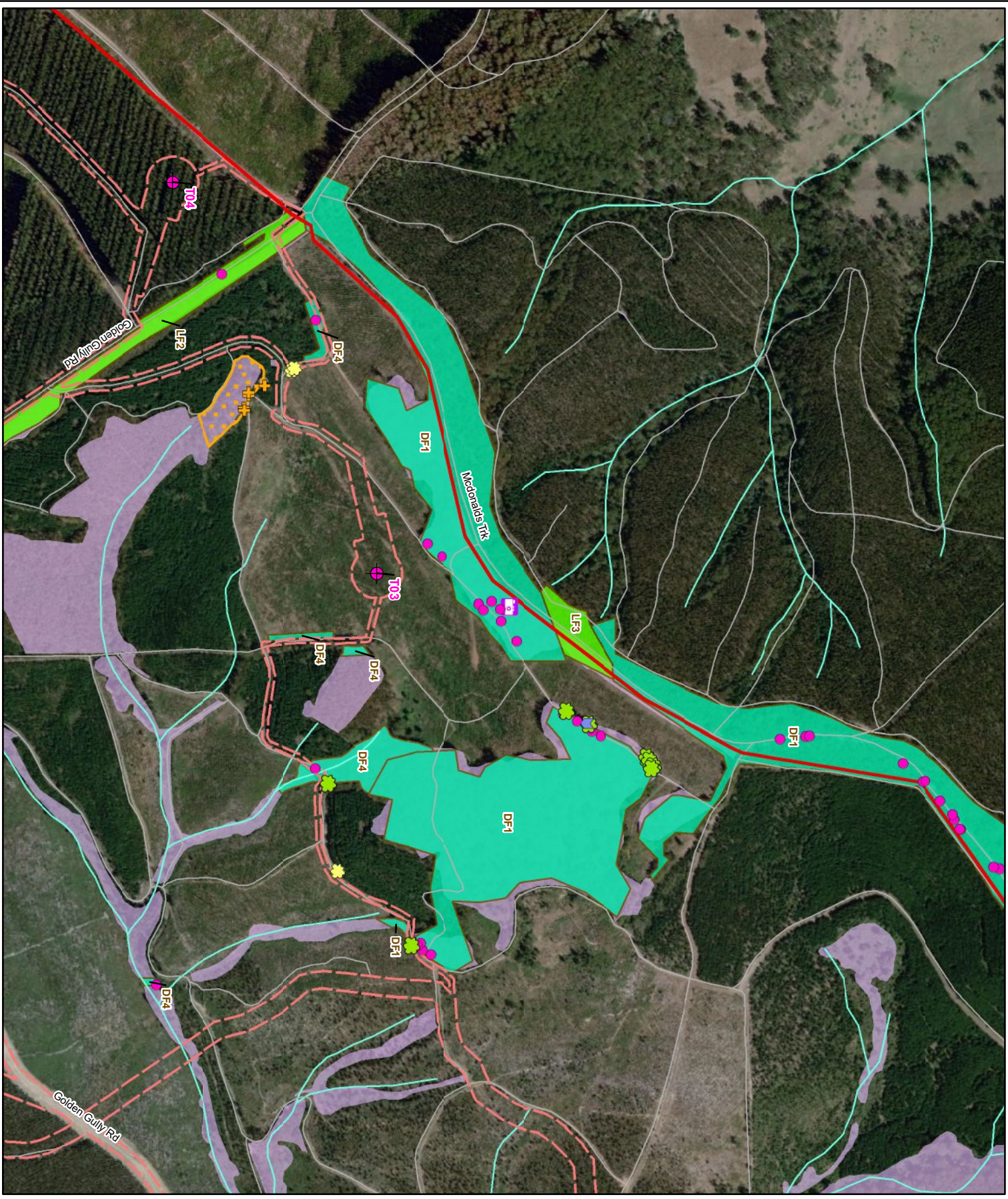


Figure 2b
Ecological features
Biodiversity Assessment for
the Delburn Wind Farm



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Legend

- Study Area
- Wind turbines
- Impact footprint
- Native vegetation identified by HVP
- Scattered Large Tree
- Scattered Small Tree
- Large Tree within a patch
- Strzelecki Gum confirmed records 2018/19
- Koala records (13/11/2018)
- Bat detector and camera
- Patch of Strzelecki Gums
- Ecological Vegetation Classes**
- Damp Forest (EVC 29)
- Lowland Forest (EVC 16)

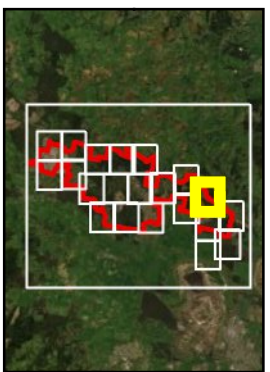
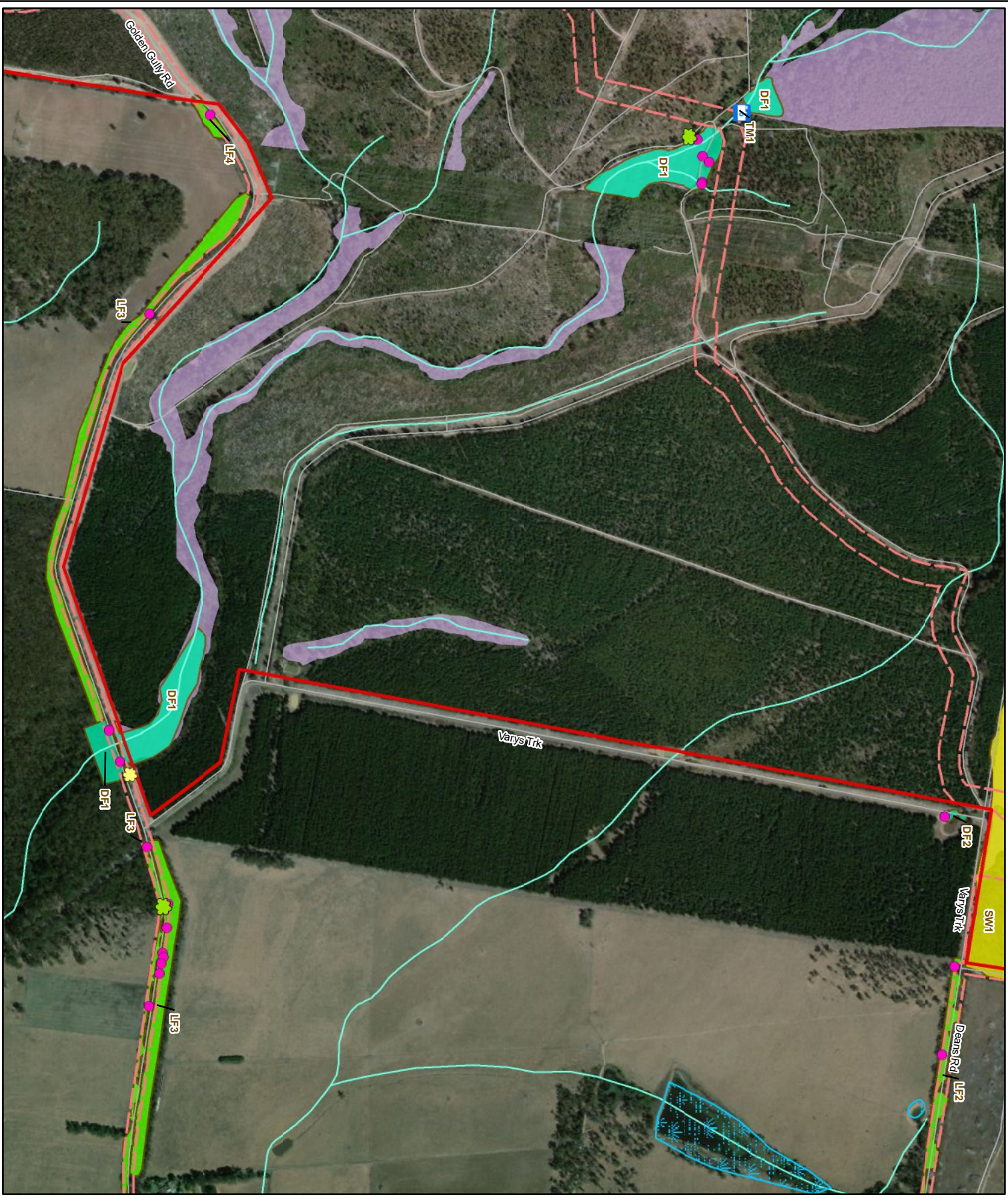


Figure 2c
Ecological features
 Biodiversity Assessment for
 the Delburn Wind Farm



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- Legend**
- Study Area
 - Impact footprint
 - Native vegetation identified by HVP
 - Scattered Large Tree
 - Scattered Small Tree
 - Large Tree within a patch
 - Camera
- Ecological Vegetation Classes**
- Damp Forest (EVC 29)
 - Lowland Forest (EVC 16)
 - Swampy Woodland (EVC 937)
 - Tall Marsh (EVC 821)

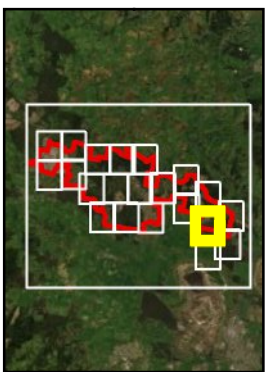
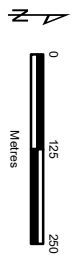


Figure 2d
Ecological features
Biodiversity Assessment for
the Delburn Wind Farm



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- Legend**
- Impact footprint
 - Scattered Large Tree
 - Scattered Small Tree
 - Large Tree within a patch
- Ecological Vegetation Classes**
- Lowland Forest (EVC 16)

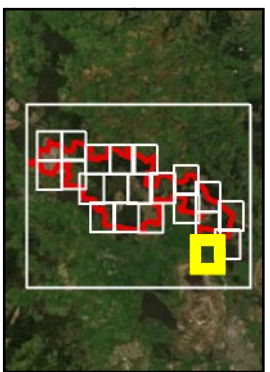
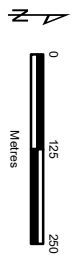
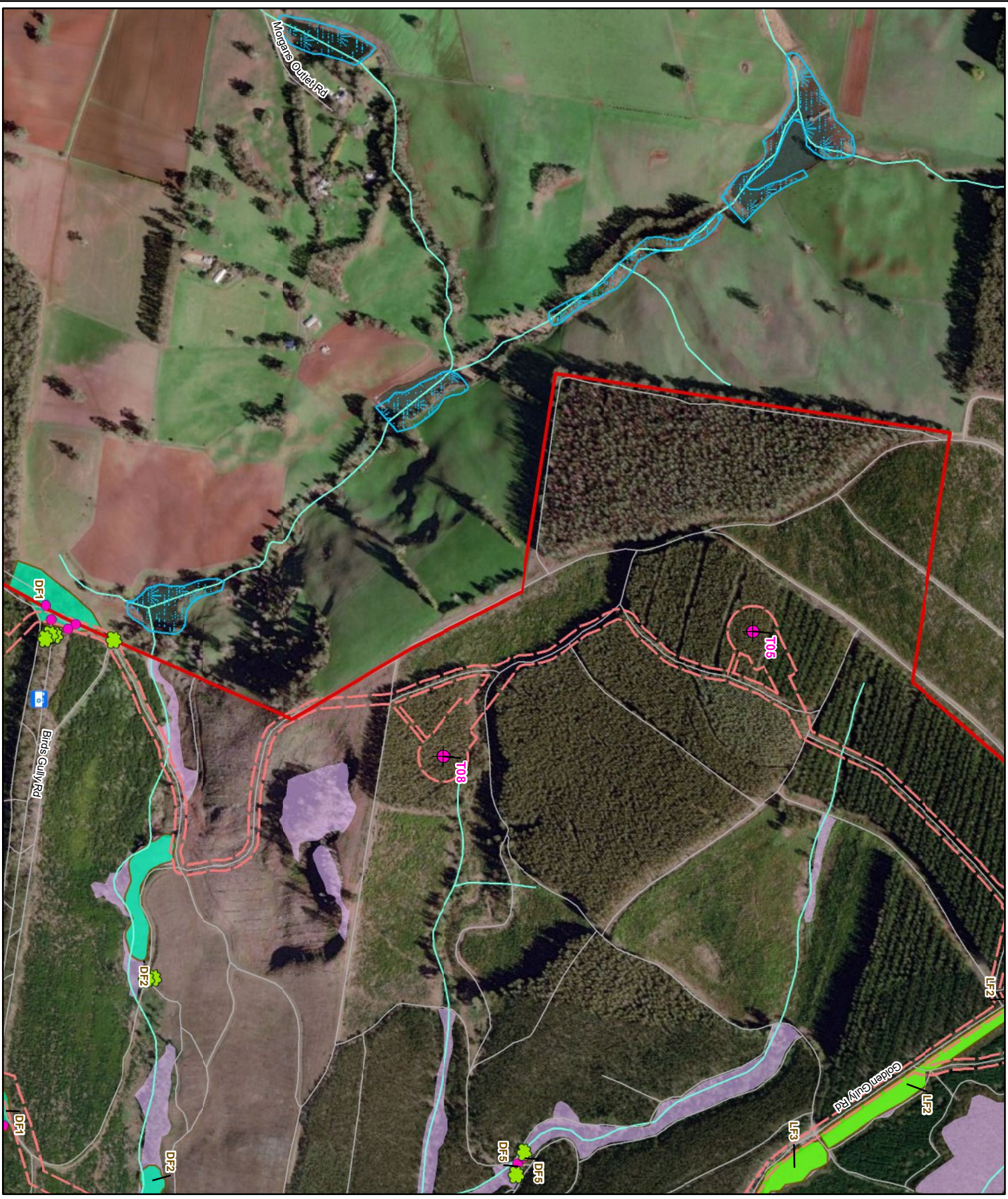


Figure 2e
Ecological features
 Biodiversity Assessment for
 the Delburn Wind Farm



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- Legend**
- Study Area
 - Wind turbines
 - Impact footprint
 - Native vegetation identified by HVP
 - Scattered Large Tree
 - Large Tree within a patch
 - Camera
- Ecological Vegetation Classes**
- Damp Forest (EVC 29)
 - Lowland Forest (EVC 16)

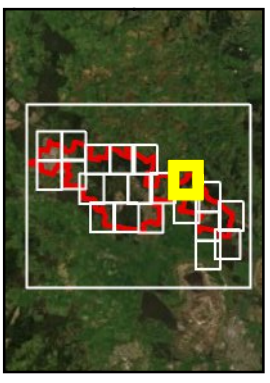




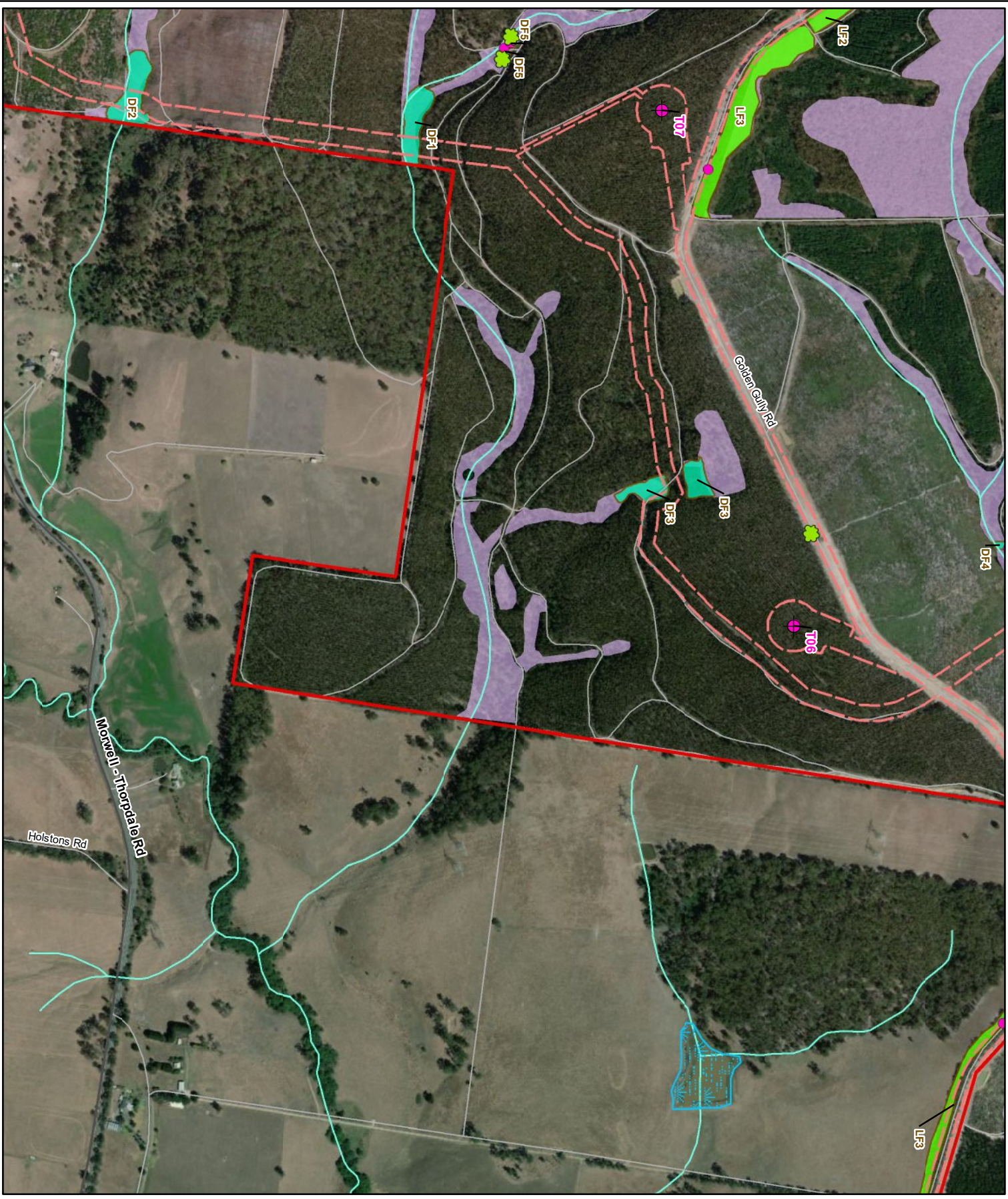
Figure 2f
Ecological features
 Biodiversity Assessment for
 the Delburn Wind Farm



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Metres



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 10745_Fig02_EcoFeat_MB_23/03/2020_malesley



- Legend**
- Study Area
 - Wind turbines
 - Impact footprint
 - Native vegetation identified by HVP
 - Scattered Large Tree
 - Large Tree within a patch
- Ecological Vegetation Classes**
- Damp Forest (EVC 29)
 - Lowland Forest (EVC 16)

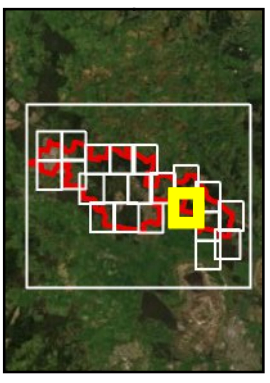


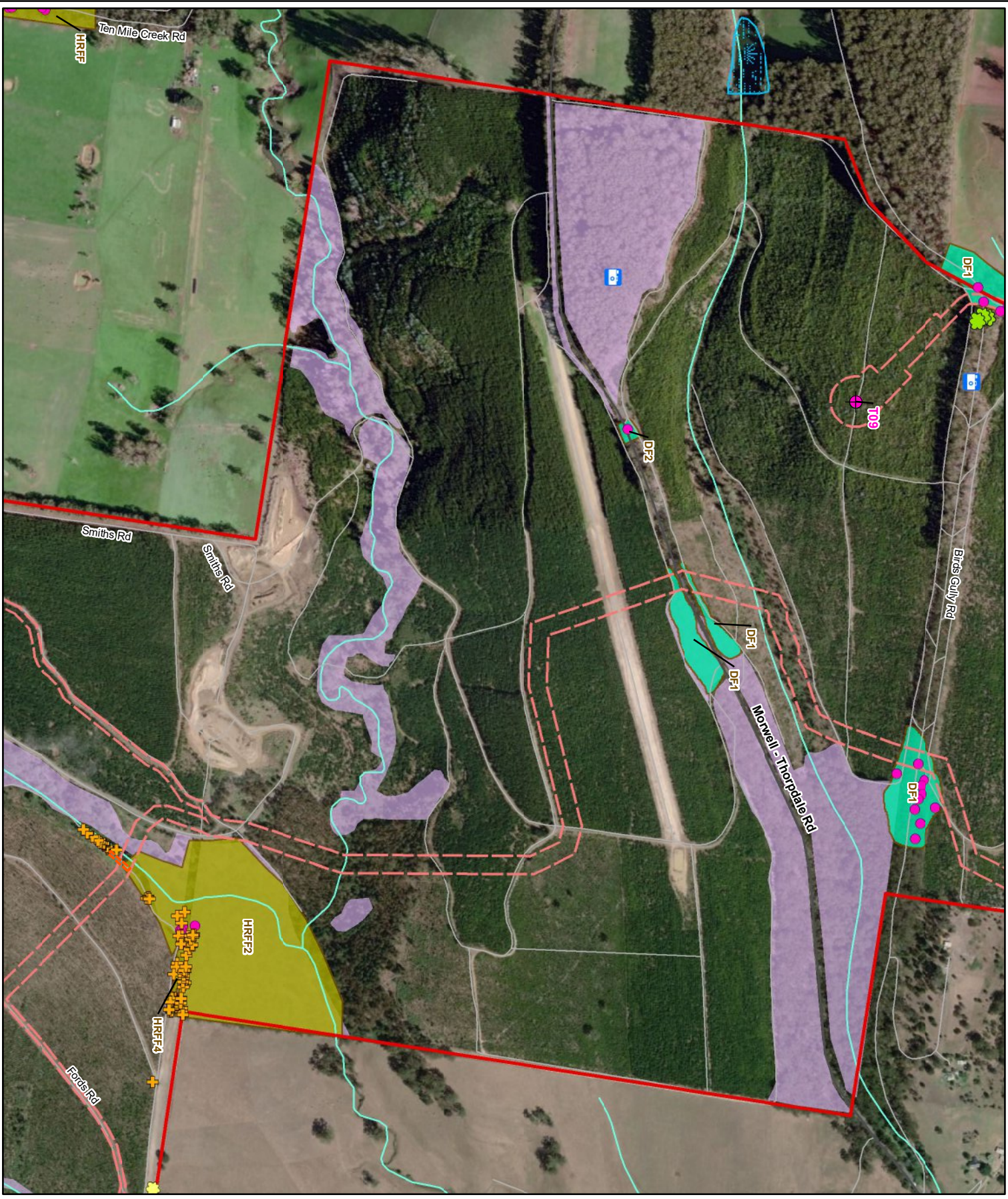
Figure 2g
Ecological features
Biodiversity Assessment for
the Delburn Wind Farm

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 Metres

N

ecology & heritage
 partners

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 10745_Fig02_EcoFeat_M8_23/03/2020_melsley



Legend

- Study Area
- Wind turbines
- Impact footprint
- Native vegetation identified by HVP
- Scattered Large Tree
- Scattered Small Tree
- Large Tree within a patch
- Sitzelecki Gum confirmed records 2018/19
- Camera
- Ecological Vegetation Classes**
- Damp Forest (EVC 29)
- Herb-rich Foothill Forest (EVC 23)

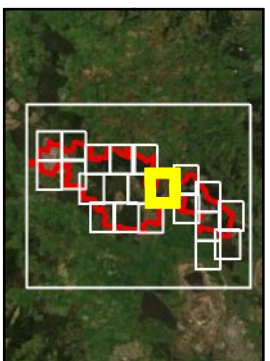


Figure 2h
Ecological features
 Biodiversity Assessment for
 the Delburn Wind Farm

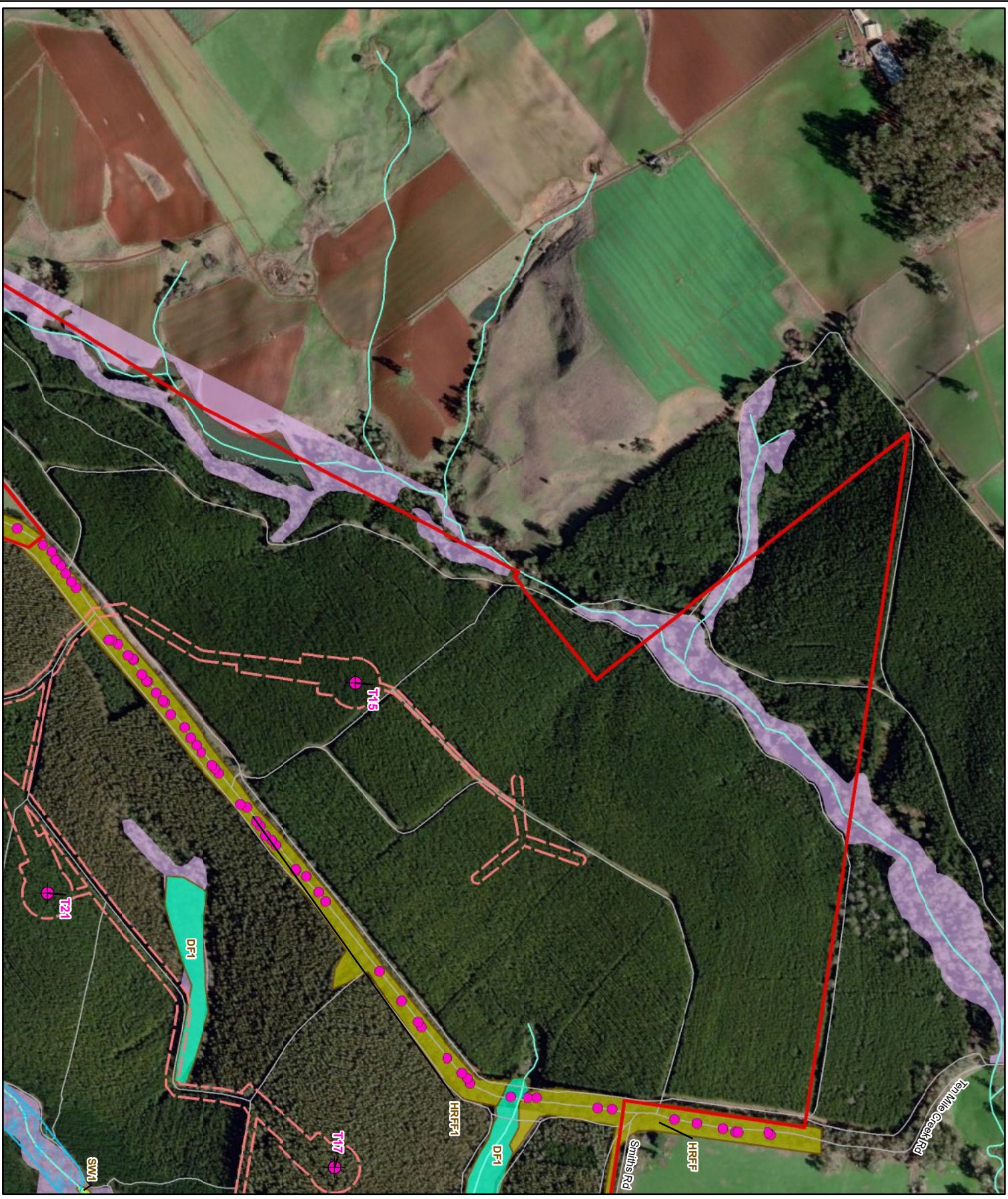
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N

ecology & heritage partners

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10745_Fig02_EcoFeat_MB_23/03/2020_malsley



Legend

- Study Area
 - Wind turbines
 - Impact footprint
 - Native vegetation identified by HVP
 - Large Tree within a patch
- Ecological Vegetation Classes**
- Damp Forest (EVC 29)
 - Herb-rich Foothill Forest (EVC 23)
 - Swampy Woodland (EVC 937)

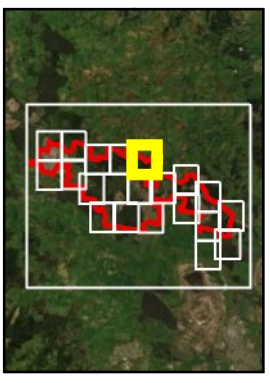
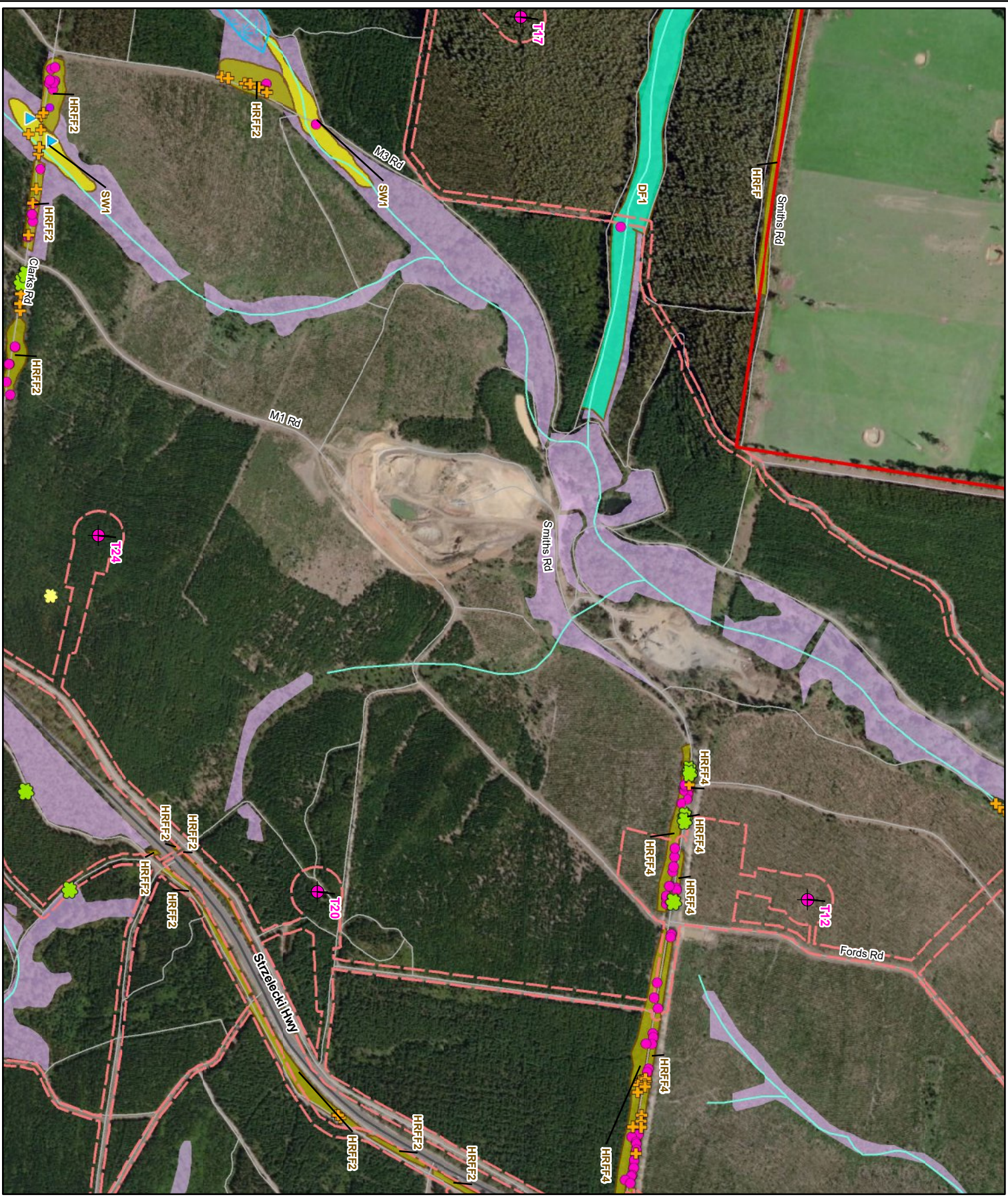


Figure 2i
Ecological features
 Biodiversity Assessment for
 the Delburn Wind Farm



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Legend

- Study Area
 - Wind turbines
 - Impact footprint
 - Native vegetation identified by HVP
 - Scattered Large Tree
 - Scattered Small Tree
 - Large Tree within a patch
 - Small Tree within a patch
 - Strydom Gum confirmed records 20/18/19
 - Growing Grass Frog records (13/11/2018)
- Ecological Vegetation Classes**
- Damp Forest (EVC 29)
 - Herb-rich Foothill Forest (EVC 23)
 - Swampy Woodland (EVC 937)

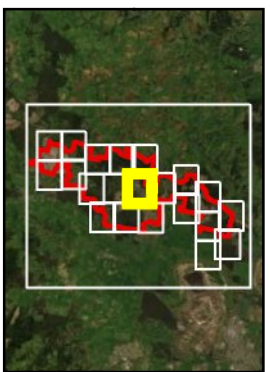
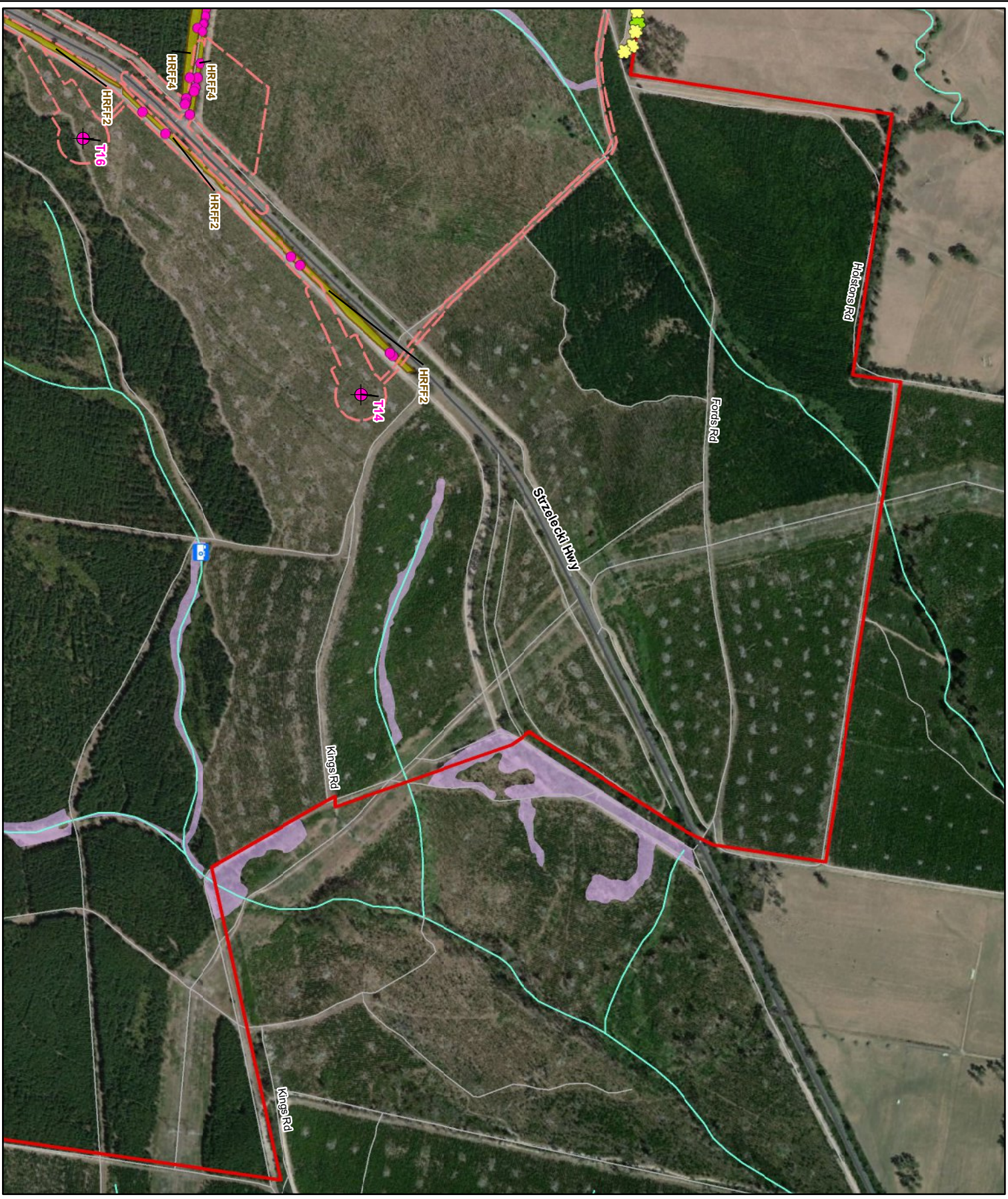


Figure 2j
Ecological features
 Biodiversity Assessment for
 the Delburn Wind Farm



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Legend

- Study Area
- Wind turbines
- Impact footprint
- Native vegetation identified by HVP
- Scattered Large Tree
- Scattered Small Tree
- Large Tree within a patch
- Camera
- Ecological Vegetation Classes**
- Herb-rich Foothill Forest (EVC 23)

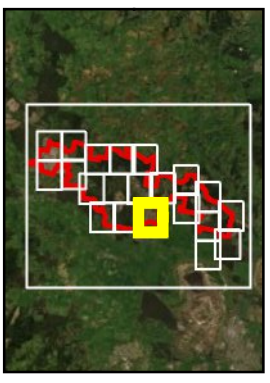
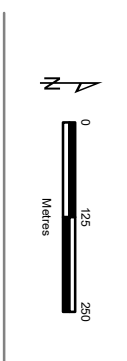
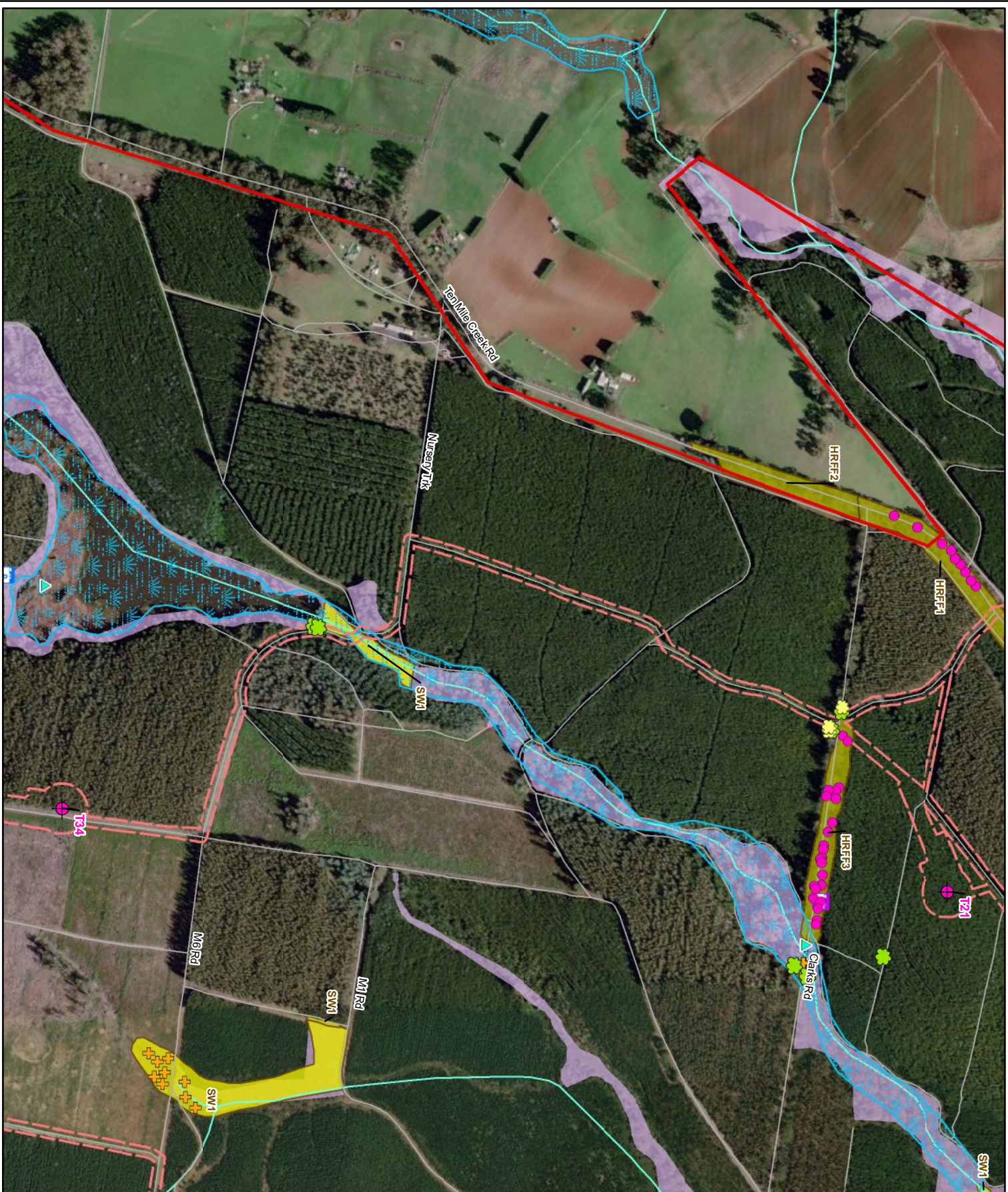


Figure 2k
Ecological features
 Biodiversity Assessment for
 the Delburn Wind Farm



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Legend

- Study Area
 - Wind turbines
 - Impact footprint
 - Native vegetation identified by HVP
 - Scattered Large Tree
 - Scattered Small Tree
 - Large Tree within a patch
 - Strydom Gum confirmed records 20/18/19
 - Growing Grass Frog records (04/10/2019)
 - Camera
 - Bat detector and camera
- Ecological Vegetation Classes**
- Herb-rich Foothill Forest (EVC 23)
 - Swampy Woodland (EVC 937)
 - Swampy Woodland (EVC 937)

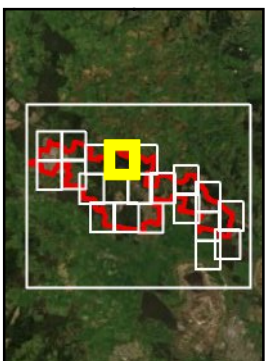
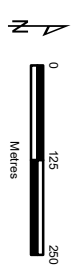


Figure 21
Ecological features
Biodiversity Assessment for
the Delburn Wind Farm



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- Legend**
- Study Area
 - Wind turbines
 - Impact footprint
 - Native vegetation identified by HVP
 - Scattered Large Tree
 - Scattered Small Tree
 - Large Tree within a patch
 - Small Tree within a patch
 - Strzelecki Gum confirmed records 2018/19
 - Growing Grass Frog records (13/11/2018)
 - Bat detector
 - Camera
- Ecological Vegetation Classes**
- Herb-rich Foothill Forest (EVC 23)
 - Swampy Woodland (EVC 937)

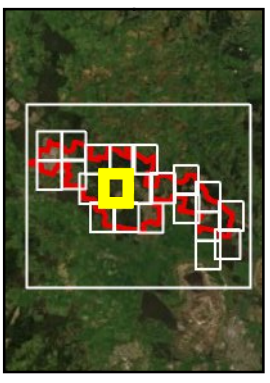
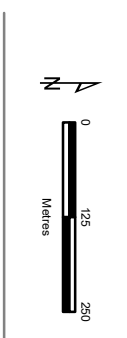
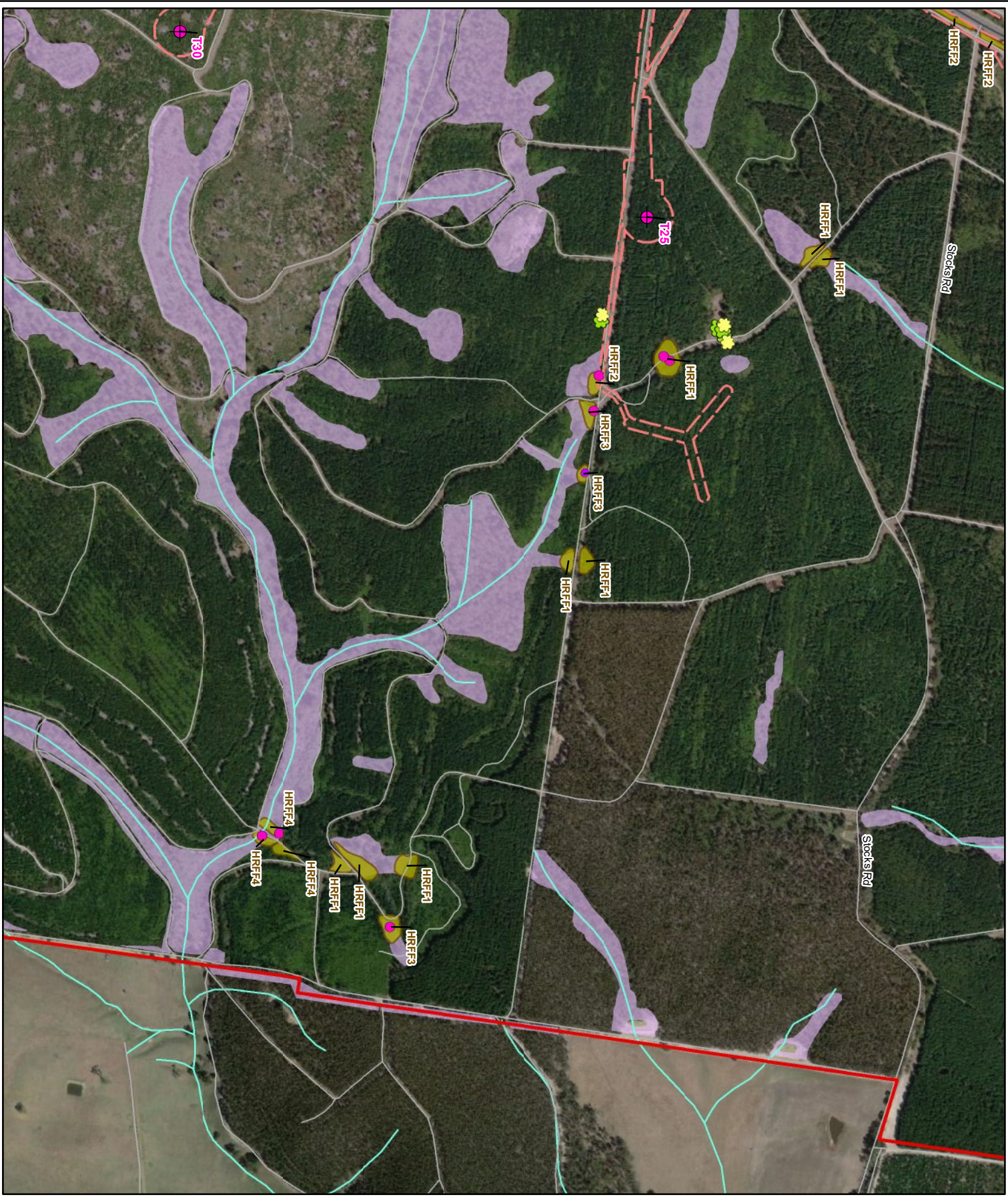


Figure 2m
Ecological features
Biodiversity Assessment for
the Delburn Wind Farm



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Legend

-  Study Area
-  Wind turbines
-  Impact footprint
-  Native vegetation identified by HVP
-  Scattered Large Tree
-  Scattered Small Tree
-  Large Tree within a patch
-  Small Tree within a patch
- Ecological Vegetation Classes**
-  Herb-rich Foothill Forest (EVC 23)

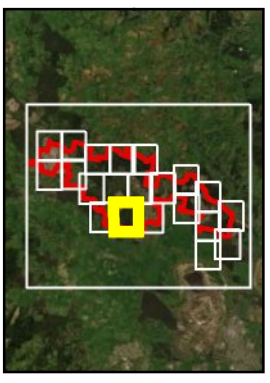
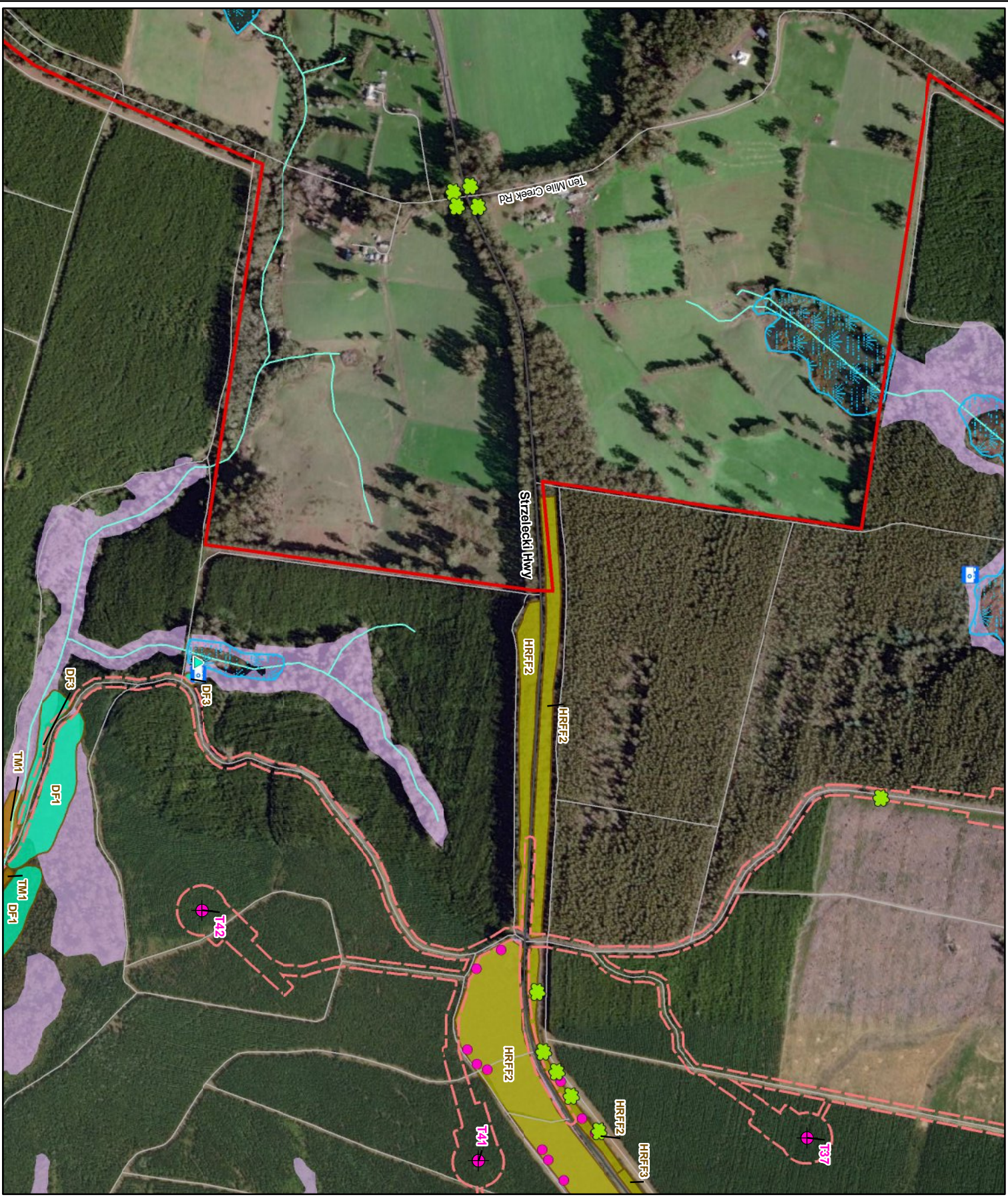


Figure 2n
Ecological features
Biodiversity Assessment for
the Delburn Wind Farm



ViMap Data: The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.



Legend

- Study Area
 - Wind turbines
 - Impact footprint
 - Native vegetation identified by HVP
 - Scattered Large Tree
 - Large Tree within a patch
 - Growing Grass Frog records (04/10/2019)
 - Camera
- Ecological Vegetation Classes**
- Damp Forest (EVC 29)
 - Herb-rich Foothill Forest (EVC 23)
 - Tall Marsh (EVC 821)

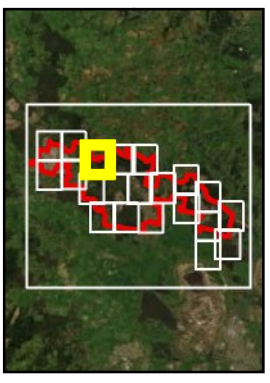
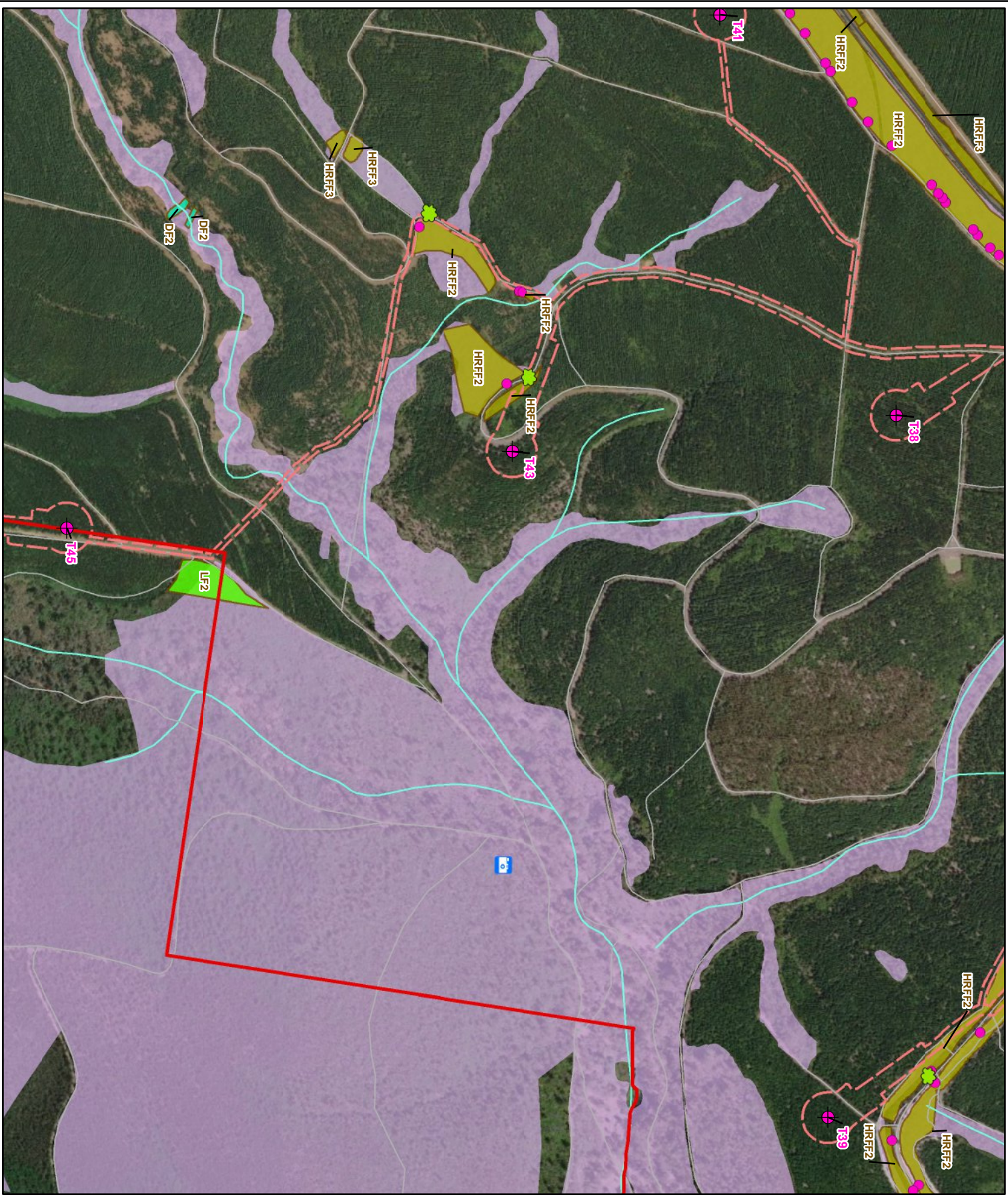


Figure 20
Ecological features
 Biodiversity Assessment for
 the Delburn Wind Farm



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- Legend**
- Study Area
 - Wind turbines
 - Impact footprint
 - Native vegetation identified by HVP
 - Scattered Large Tree
 - Large Tree within a patch
 - Camera
- Ecological Vegetation Classes**
- Damp Forest (EVC 29)
 - Herb-rich Foothill Forest (EVC 23)
 - Lowland Forest (EVC 16)

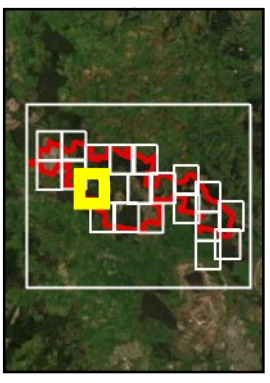
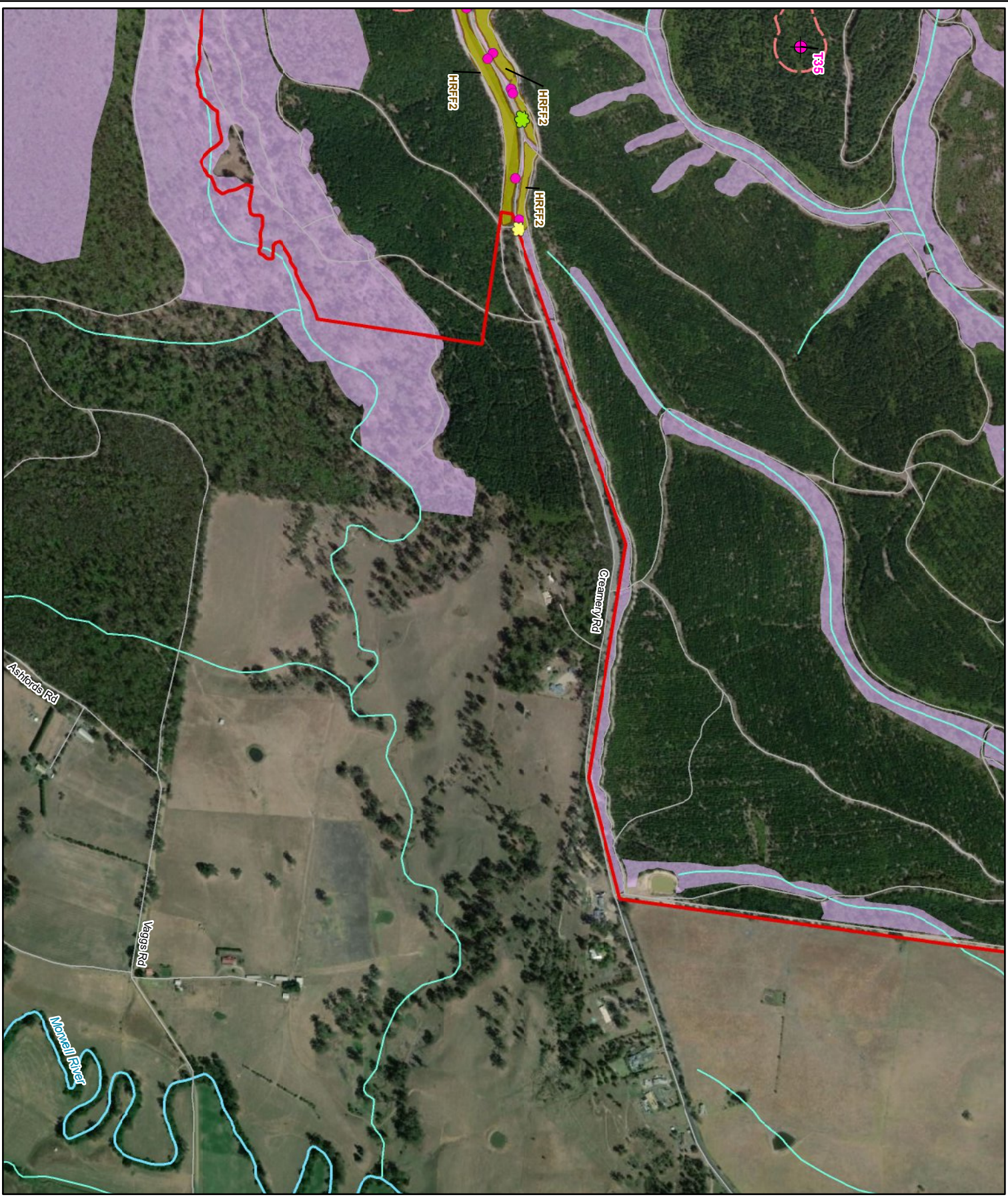


Figure 2p
Ecological features
 Biodiversity Assessment for
 the Delburn Wind Farm

0 125 250
Metres

Viewmap Data: The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.

10745_Fig02_EcolFeat_MB_23/03/2020_malsiev



- Legend**
- Study Area
 - Wind turbines
 - Impact footprint
 - Native vegetation identified by HVP
 - Scattered Large Tree
 - Scattered Small Tree
 - Large Tree within a patch
- Ecological Vegetation Classes (EVC 23)**
- Herb-rich Foothill Forest

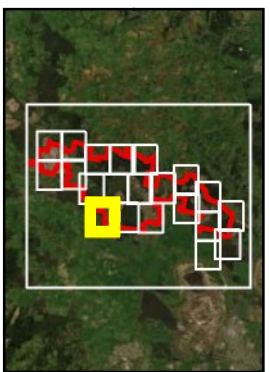
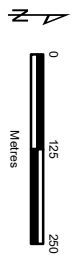
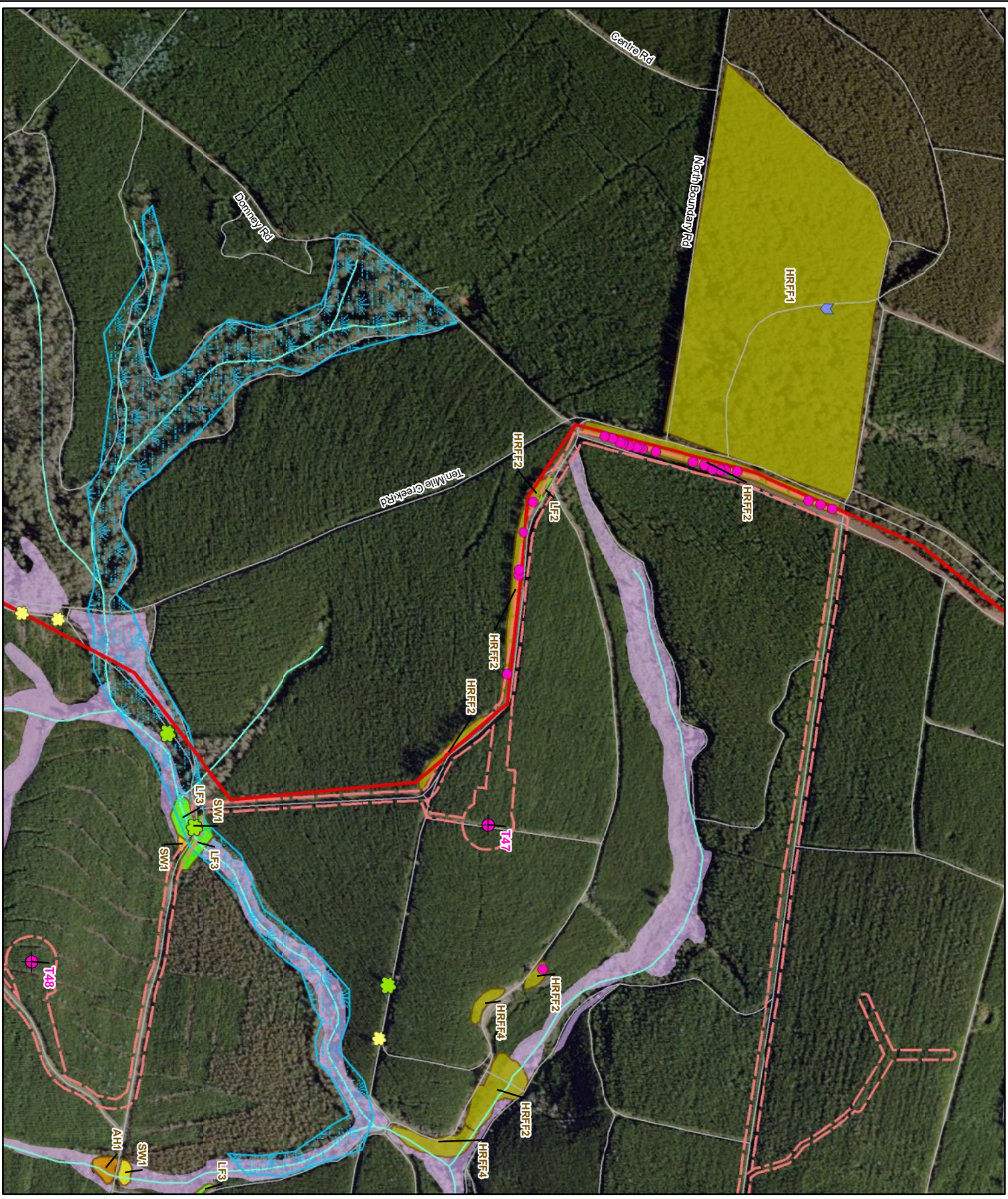


Figure 2q
Ecological features
 Biodiversity Assessment for
 the Delburn Wind Farm



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Legend

- Study Area
 - Wind turbines
 - Impact footprint
 - Native vegetation identified by HVP
 - Scattered Large Tree
 - Scattered Small Tree
 - Large Tree within a patch
 - Koala records (1/3/11/2018)
- Ecological Vegetation Classes**
- Aquatic Hermland (EVC 653)
 - Herb-rich Foothill Forest (EVC 23)
 - Lowland Forest (EVC 16)
 - Swampy Woodland (EVC 937)

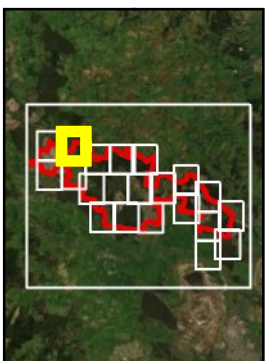
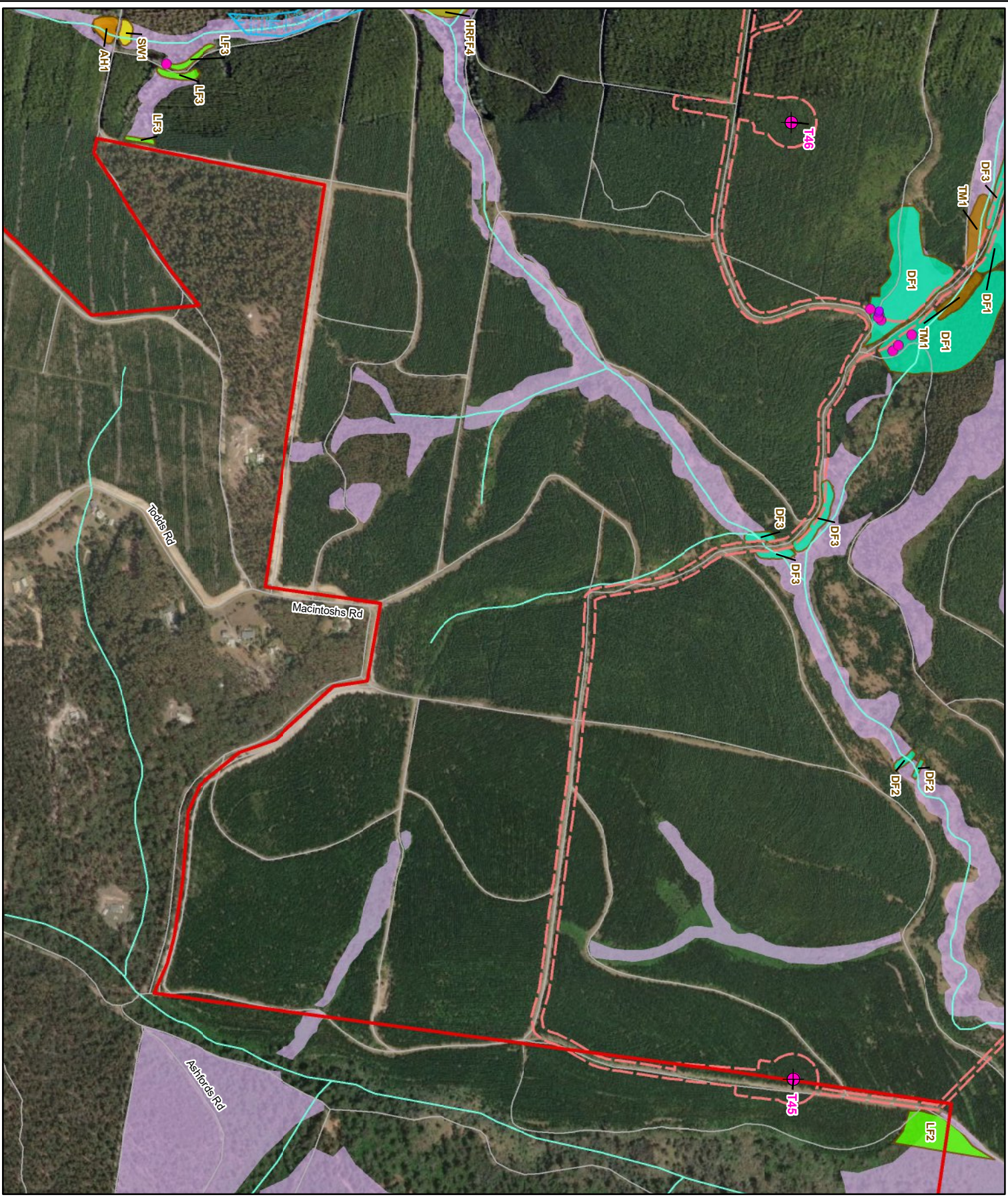


Figure 2r
Ecological features
Biodiversity Assessment for
the Delburn Wind Farm



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- Legend**
- Study Area
 - Wind turbines
 - Impact footprint
 - Native vegetation identified by HVP
 - Large Tree within a patch
 - Small Tree within a patch
- Ecological Vegetation Classes**
- Aquatic Hermland (EVC 653)
 - Damp Forest (EVC 29)
 - Herb-rich Foothill Forest (EVC 23)
 - Lowland Forest (EVC 16)
 - Swampy Woodland (EVC 937)
 - Tall Marsh (EVC 821)

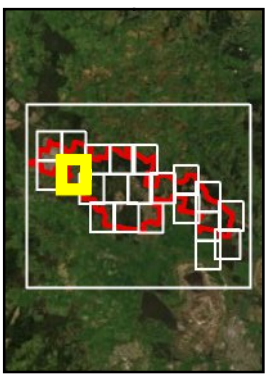
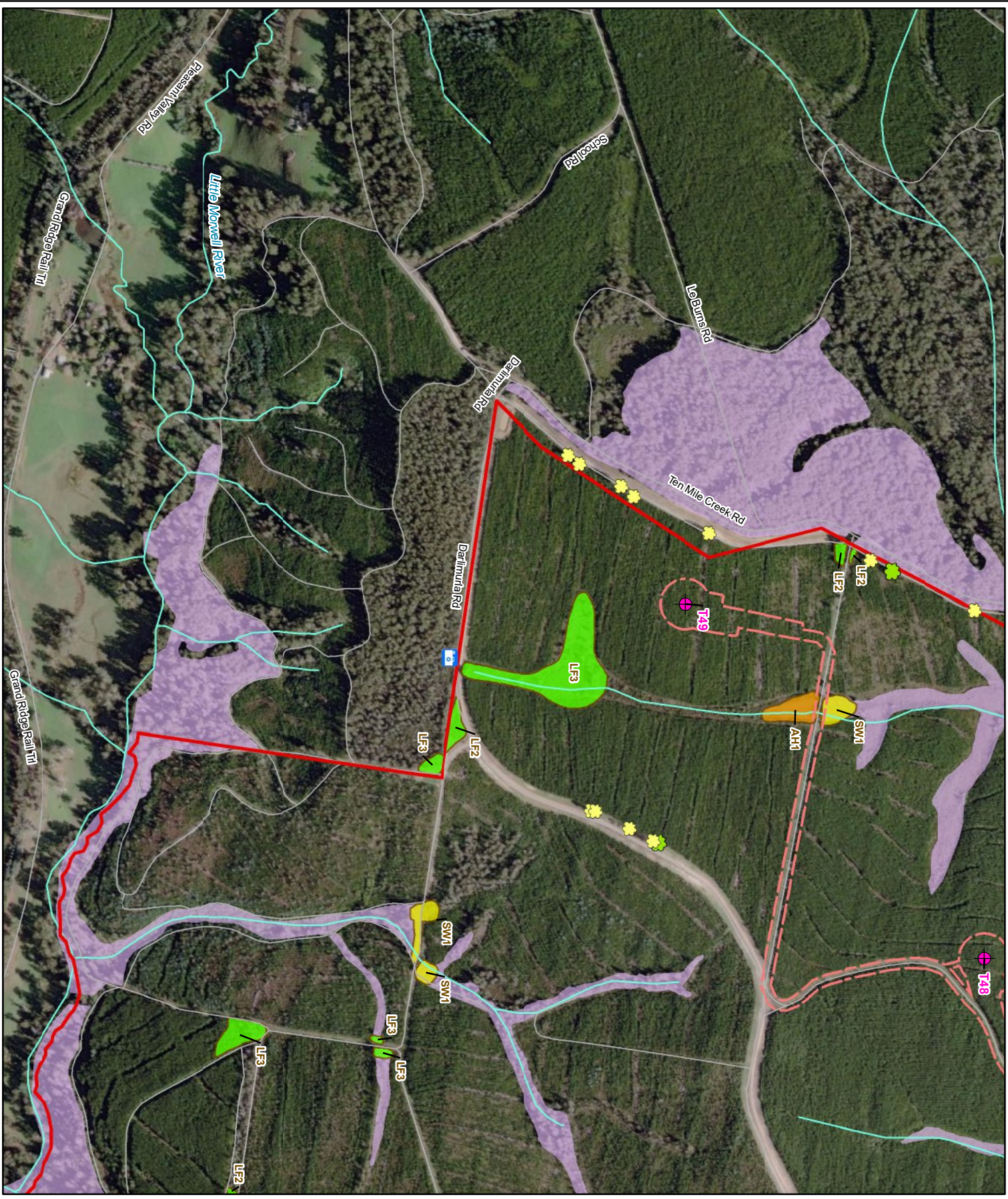


Figure 2s
Ecological features
 Biodiversity Assessment for
 the Delburn Wind Farm

0 125 250
Metres



- Legend**
- Study Area
 - + Wind turbines
 - Impact footprint
 - Native vegetation identified by HVP
 - Scattered Large Tree
 - Scattered Small Tree
 - 📷 Camera
- Ecological Vegetation Classes**
- Aquatic Hermland (EVC 653)
 - Lowland Forest (EVC 16)
 - Swampy Woodland (EVC 937)

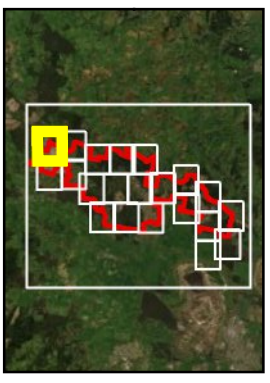




Figure 21
Ecological features
 Biodiversity Assessment for
 the Delburn Wind Farm

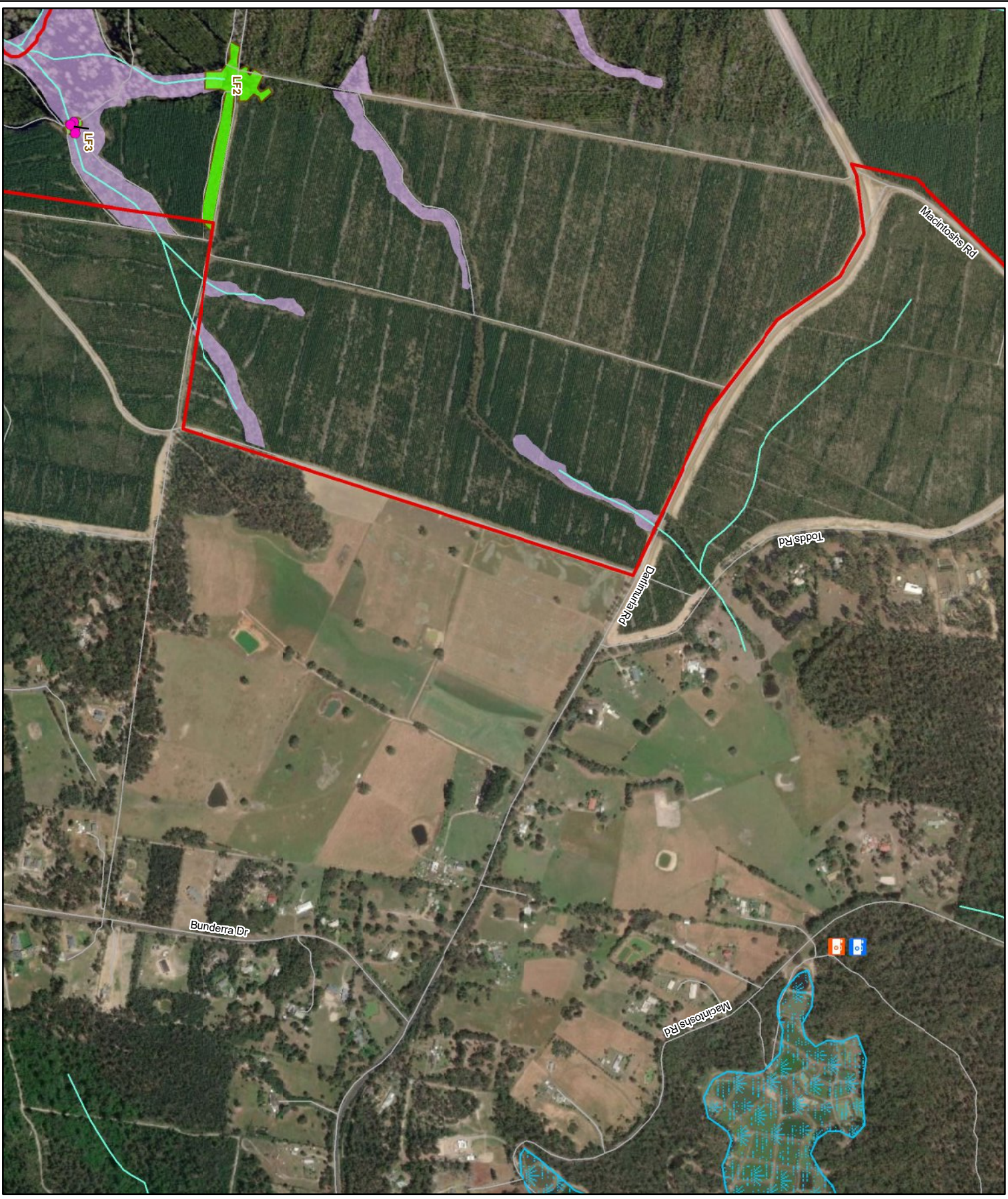


0 125 250
Metres



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10745_Fig02_EcolFeat_MB_23/03/2020_malsley



Legend

- Study Area
 - Native vegetation identified by HVP
 - Large Tree within a patch
 - Bat detector
 - 📷 Camera
- Ecological Vegetation Classes**
- Lowland Forest (EVC 16)

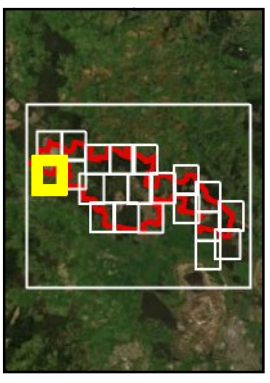
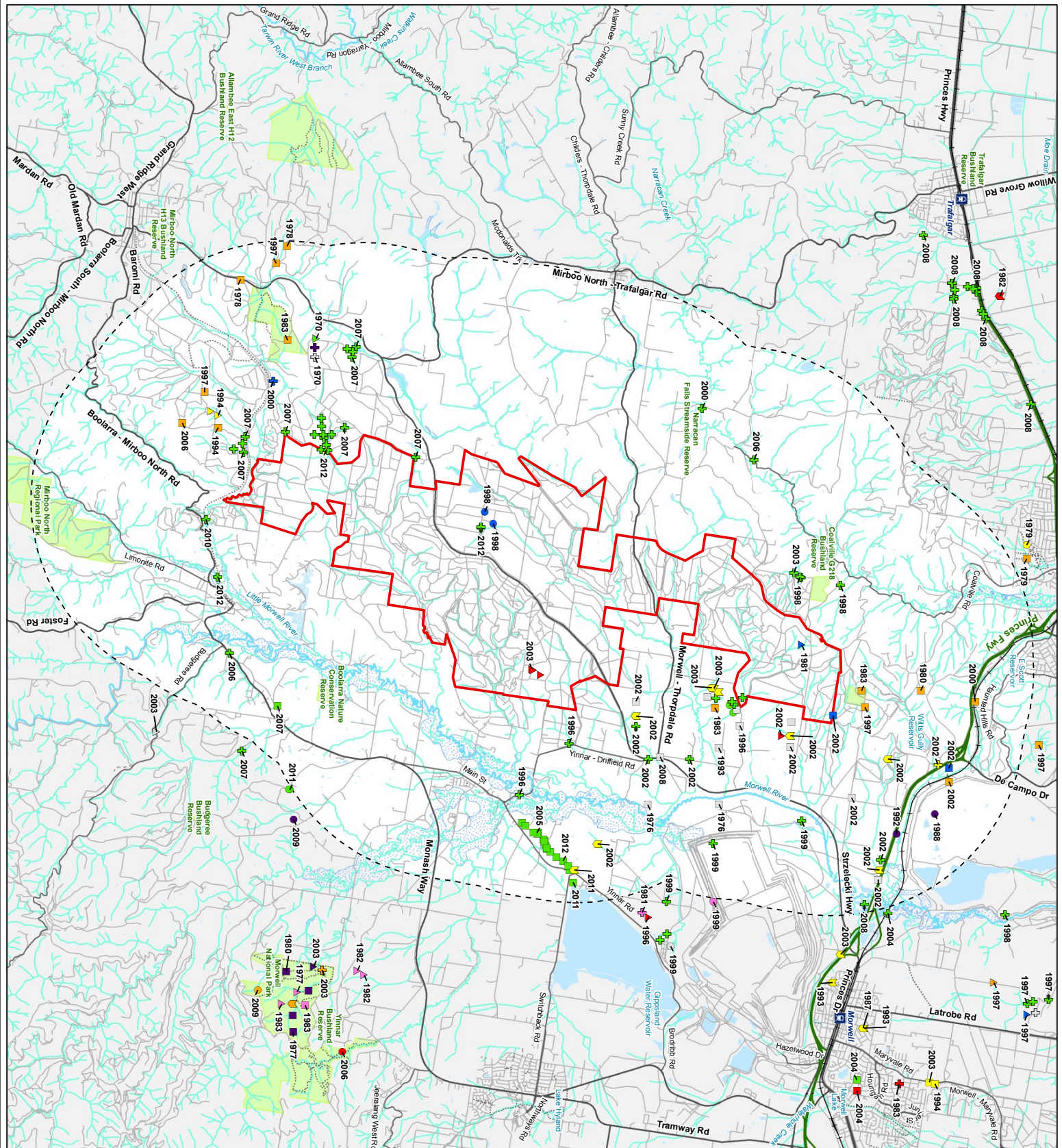


Figure 2u
Ecological features
Biodiversity Assessment for
the Delburn Wind Farm



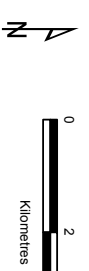
ViMap Data: The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.



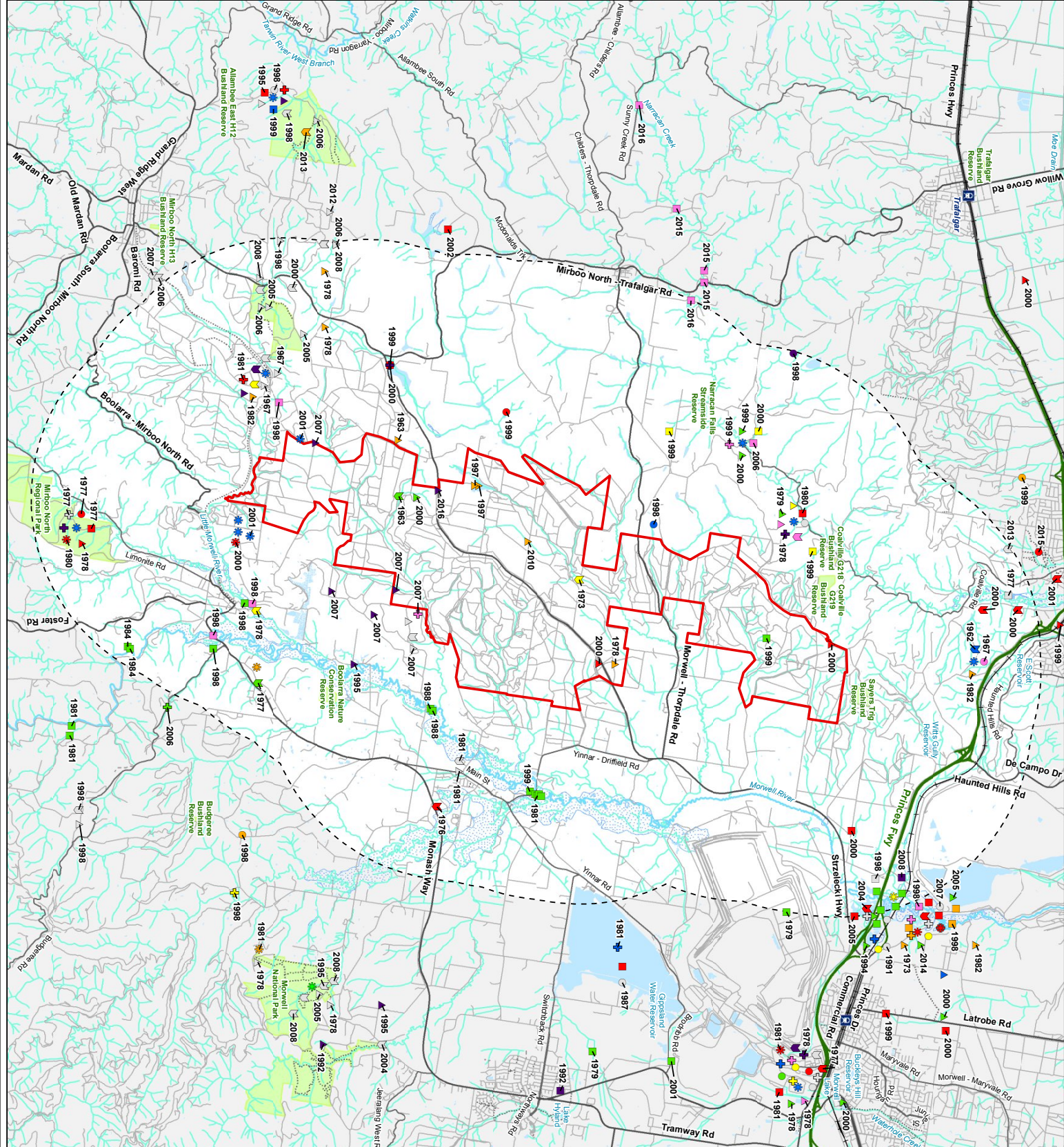
- Legend**
- Study Area
 - Significant Flora**
 - Annual Bitter-cress
 - Austral Crane-s-bill
 - Bear's-ear
 - Bog Gum
 - Cobra Greenhood
 - Dwarf Cypress-pine
 - Fluffy-fruit Wood-sorrel
 - Giant Honey-myrtle
 - Green Scenbark
 - Grey Billy-buttons
 - Hairpin Banksia
 - Heath Playsace
 - Matted Flex-illy
 - Mountain Bird-orchid
 - Orange-tip Finger-orchid
 - Oval Fork-fern
 - Prickly Beauty
 - ▲ River Swamp Wallaby-grass
 - ▲ Rosemary Grevillea
 - ▲ Rush Lily
 - ▲ Rusty Velvet-bush
 - ▲ Slender Bitter-cress
 - ▲ Slender Fork-fern
 - ▲ Slender Tick-trefoil
 - ▲ Slender Tree-fern
 - ▲ Smooth Nardoo
 - ▲ Southern Spider-orchid
 - ▲ Sticky Wattie
 - ▲ Strzelecki Gum
 - ▲ Swamp Sun-orchid
 - ▲ Thin Pondweed
 - ▲ Toothed Leionema
 - ▲ Veined Spear-grass
 - ▲ Winged Water-orchid
 - ▲ Yarra Gum



Figure 3
 Previously documented significant flora within 5km of the study area
 Biodiversity Assessment for the Strzelecki Wind Farm



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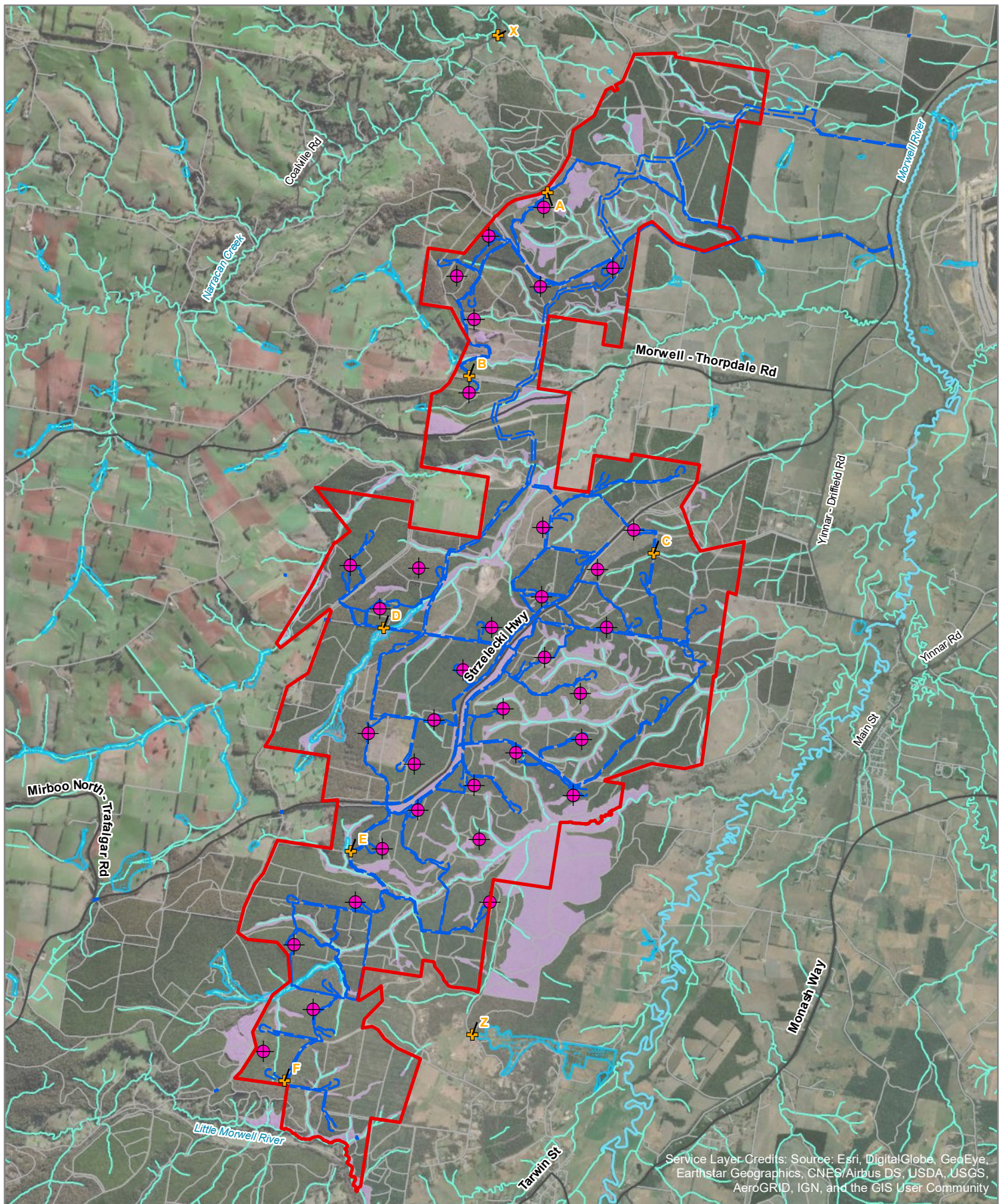


- Legend**
- Study Area
 - Significant Fauna**
 - Australasian Shoveler
 - Azure Kingfisher
 - Black Falcon
 - Blue-billed Duck
 - Caspian Tern
 - Chestnut-rumped Heathwren
 - Common Bent-wing Bat
 - Diamond Firetail
 - Dwarf Galaxias
 - Eastern Great Egret
 - Eastern Snake-necked Turtle
 - Emu
 - Flinders Pygmy Perch
 - Gipsland Burrowing Crayfish
 - Gipsland Spiny Crayfish
 - Glossy Grass Skink
 - Greater Glider
 - Grey Goshawk
 - Growing Grass Frog
 - Gull-billed Tern
 - Hardhead
 - Hooded Robin
 - ▲ Intermediate Egret
 - ▲ Lace Monitor
 - ▲ Latham's Shrike
 - ▲ Lewin's Rail
 - ▲ Little Bittern
 - ▲ Little Egret
 - ▲ Masked Owl
 - ▲ Musk Duck
 - ▲ Nankeen Night Heron
 - ▲ Pied Cormorant
 - ▲ Powerful Owl
 - ▲ Royal Spoonbill
 - ▲ South Gipsland Spiny Crayfish
 - ▲ Southern Brown Bandicoot
 - ▲ Southern Toadlet
 - ▲ Spotted-tailed Quoll
 - ▲ Spotted Harrier
 - ▲ Spotted Quail-thrush
 - ▲ Swamp Skink
 - ▲ Swift Parrot
 - ▲ White-bellied Sea-Eagle
 - ▲ White-browed Treecreeper
 - ▲ White-throated Needletail

Figure 4
Previously documented significant fauna within 5km of the study area
Biodiversity Assessment for the Strzelecki Wind Farm



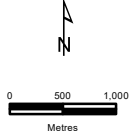
DATA SOURCES: Victorian Biodiversity Atlas (Sourced from VBA_A1, GCA25, VBA_A1, GCA101, VBA_A2, GCA25 and VBA_A2, GCA101) © The State of Victoria, Department of Environment, Land, Water and Planning. Records prior to 1980 not shown. © The State of Victoria, Department of Environment, Land, Water and Planning. Viable Data: The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person relying or acting upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, omissions, delays or omissions in this information. 10/20/2016 3:09:29 PM 31.65/150.11/16m



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 5
Bird utilisation survey sites
Biodiversity Assessment for the Delburn Wind Farm

- Legend**
- Study Area
 - ⊗ Wind turbines
 - Impact footprint
 - Current Wetlands
 - Native vegetation identified by HVP
 - + Bird utilisation survey sites



VicMap Data: The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.

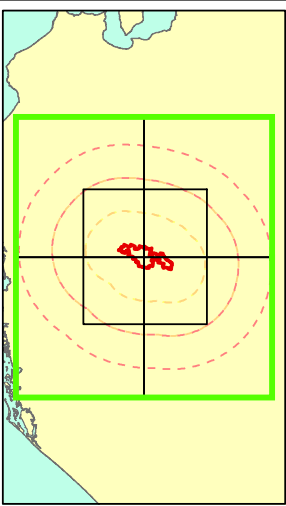
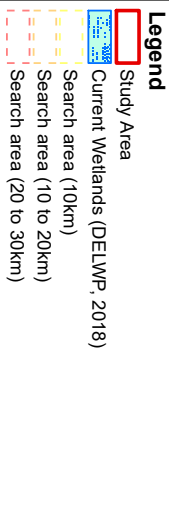
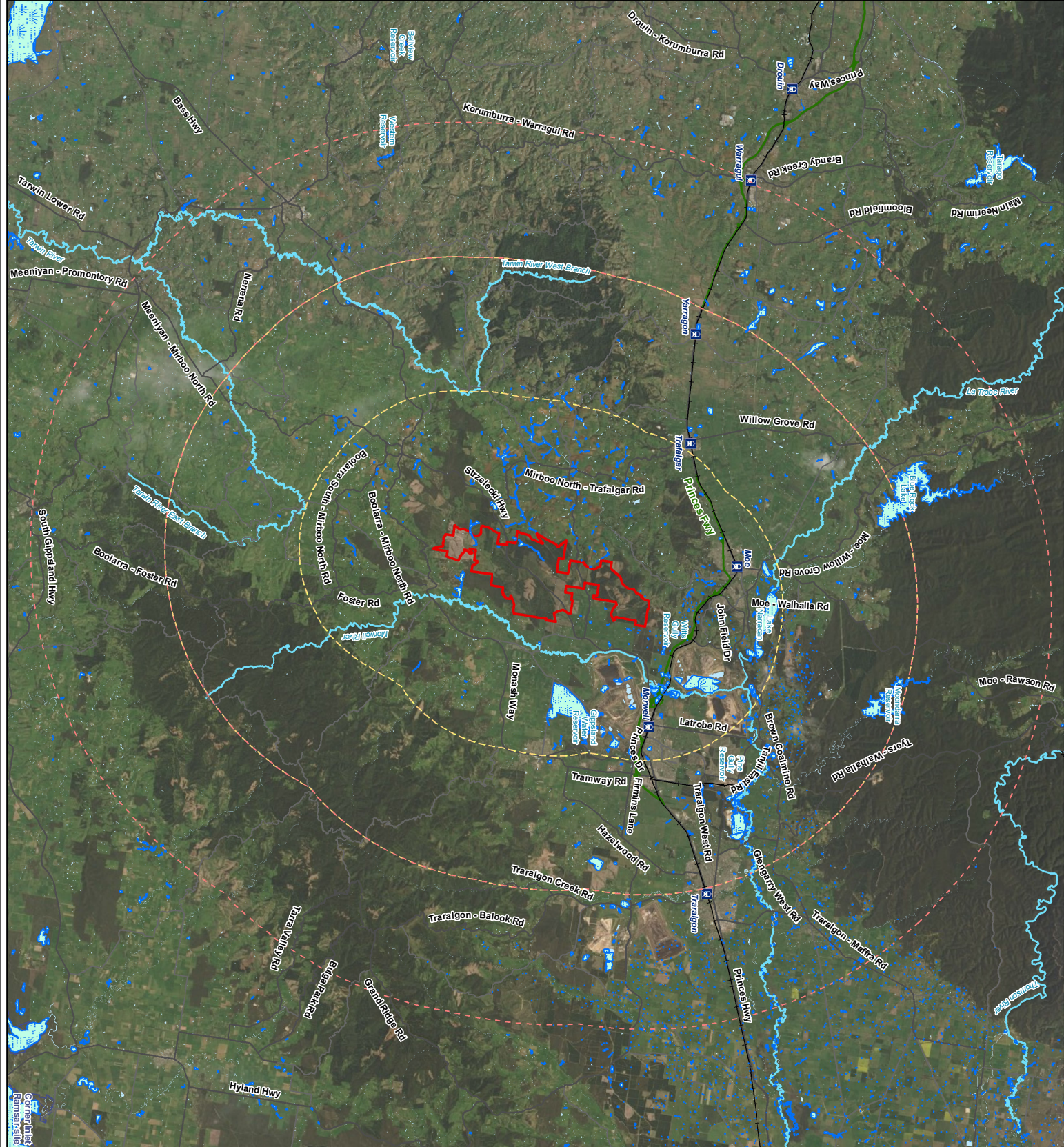
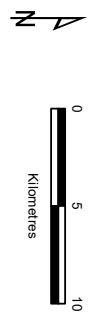


Figure 6 Overview
Current Wetlands within 30km of the study area
Biodiversity Assessment for the Delburn Wind Farm



VBA 5013 - Victorian Biodiversity Atlas / Sourced from VBA_FLORA_25 - VBA_FLORA_103 - VBA_FLORA_25 and VBA_FLORA_103 - The State of Victoria, Department of Environment, Land, Water and Planning. Records prior to 1980 not shown. © The State of Victoria, Department of Environment, Land, Water and Planning. VBA 5013 - The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information. 10/01/2023, 10:00:00 AM

APPENDICES

APPENDIX 1

Appendix 1.1 – Rare or Threatened Categories for Listed Victorian Taxa

Table A1.1. Rare or Threatened categories for listed Victorian taxa.

Rare or Threatened Categories
Conservation Status in Australia (Based on the EPBC Act 1999)
EX - Extinct: Extinct is when there is no reasonable doubt that the last individual of the species has died.
CR - Critically Endangered: A species is critically endangered when it is facing an extremely high risk of extinction in the wild in the immediate future.
EN - Endangered: A species is endangered when it is not critically endangered but is facing a very high risk of extinction in the wild in the near future.
VU - Vulnerable: A species is vulnerable when it is not critically endangered or endangered but is facing a high risk of extinction in the wild in the medium-term future.
R* - Rare: A species is rare but overall is not currently considered critically endangered, endangered or vulnerable.
K* - Poorly Known: A species is suspected, but not definitely known, to belong to any of the categories extinct, critically endangered, endangered, vulnerable or rare.
Conservation Status in Victoria (Based on DSE 2009, DSE 2013a or DEPI 2014)
x - Presumed Extinct in Victoria: not recorded from Victoria during the past 50 years despite field searches specifically for the plant, or, alternatively, intensive field searches (since 1950) at all previously known sites have failed to record the plant.
e - Endangered in Victoria: at risk of disappearing from the wild state if present land use and other causal factors continue to operate.
v - Vulnerable in Victoria: not presently endangered but likely to become so soon due to continued depletion; occurring mainly on sites likely to experience changes in land-use which would threaten the survival of the plant in the wild; or, taxa whose total population is so small that the likelihood of recovery from disturbance, including localised natural events such as drought, fire or landslip, is doubtful.
r - Rare in Victoria: rare but not considered otherwise threatened - there are relatively few known populations or the taxon is restricted to a relatively small area.
k - Poorly Known in Victoria: poorly known and suspected, but not definitely known, to belong to one of the above categories (x, e, v or r) within Victoria. At present, accurate distribution information is inadequate.

Appendix 1.2 – Defining Ecological Significance

Table A1.2. Criteria for defining Ecological Significance ratings for significant flora, fauna and communities.

National Significance
<p>Flora: National conservation status is based on the EPBC Act list of taxa considered threatened in Australia (i.e. extinct, critically endangered, endangered, vulnerable).</p>
<p>Fauna: National conservation status is based on the EPBC Act list of taxa considered threatened in Australia (i.e. Extinct, Critically Endangered, Endangered, Vulnerable). Fauna listed as Extinct, Critically Endangered, Endangered, Vulnerable, or Rare under National Action Plans for terrestrial taxon prepared for DoE: mammals (Woinarski <i>et al.</i> 2014), bats (Duncan <i>et al.</i> 1999), birds (Garnett <i>et al.</i> 2011), reptiles (Cogger <i>et al.</i> 1993), amphibians (Tyler 1997) and butterflies (Sands and New 2002).</p>
<p>Communities: Vegetation communities considered critically endangered, endangered or vulnerable under the EPBC Act and considering vegetation condition.</p>
State Significance
<p>Flora: Threatened taxa listed under the provisions of the FFG Act. Flora listed in the State Government’s Advisory List of Rare or Threatened Plants in Victoria (DEPI 2014).</p>
<p>Fauna: Threatened taxon listed under Schedule 2 of the FFG Act. Fauna listed as Extinct, Critically Endangered, Endangered and Vulnerable on the State Government’s Advisory List of Threatened Vertebrate Fauna in Victoria (DSE 2013). Listed as Lower Risk (Near Threatened, Conservation Dependent or Least concern) or Data Deficient under National Action Plans for terrestrial species prepared for the DoE: mammals (Woinarski <i>et al.</i> 2014), bats (Duncan <i>et al.</i> 1999), birds (Garnett <i>et al.</i> 2011), reptiles (Cogger <i>et al.</i> 1993), amphibians (Tyler 1997) and butterflies (Sands and New 2002).</p>
<p>Communities: Ecological communities listed as threatened under the FFG Act (DELWP 2017h). EVC listed as threatened (i.e. endangered, vulnerable) or rare in a Native Vegetation Plan for a particular bioregion and considering vegetation condition.</p>
Regional Significance
<p>Fauna: Fauna with a disjunct distribution, or a small number of documented recorded or naturally rare in the particular Bioregion in which the study area is located. A particular taxon that is has an unusual ecological or biogeographical occurrence or listed as Lower Risk – Near Threatened, Data Deficient or Insufficiently Known on the State Government’s Advisory List of Threatened Vertebrate Fauna in Victoria (DSE 2009).</p>
<p>Communities: EVC listed as depleted or least concern in a Native Vegetation Plan for a particular bioregion) and considering vegetation condition. EVC considered rare by the author for a particular bioregion.</p>
Local Significance
<p>Local significance is defined as flora, fauna and ecological communities indigenous to a particular area, which are not considered rare or threatened on a national, state or regional level.</p>

Appendix 1.3 – Vegetation Condition and Habitat Quality

Table A1.4.1 Defining Vegetation Condition ratings.

Criteria for defining Vegetation Condition
<p>High Quality: Vegetation dominated by a diversity of indigenous species, with defined structures (where appropriate), such as canopy layer, shrub layer, and ground cover, with little or few introduced species present.</p>
<p>Moderate Quality: Vegetation dominated by a diversity of indigenous species, but is lacking some structures, such as canopy layer, shrub layer or ground cover, and/or there is a greater level of introduced flora species present.</p>
<p>Low Quality: Vegetation dominated by introduced species, but supports low levels of indigenous species present, in the canopy, shrub layer or ground cover.</p>

Table A1.4.2 Defining Habitat Quality.

Criteria for defining Habitat Quality
<p>High Quality:</p> <ul style="list-style-type: none"> • High degree of intactness (i.e. floristically and structurally diverse), containing several important habitat features such as ground debris (logs, rocks, vegetation), mature hollow-bearing trees, and a dense understorey component. • High species richness and diversity (i.e. represented by a large number of species from a range of fauna groups). • High level of foraging and breeding activity, with the site regularly used by native fauna for refuge and cover. • Habitat that has experienced, or is experiencing low levels of disturbance and/or threatening processes (i.e. weed invasion, introduced animals, soil erosion, salinity). • High contribution to a wildlife corridor, and/or connected to a larger area(s) of high quality habitat. • Provides known, or likely habitat for one or more rare or threatened species listed under the EPBC Act, FFG Act, or species considered rare or threatened according to DSE 2009, 2013a; DEPI 2014.
<p>Moderate Quality:</p> <ul style="list-style-type: none"> • Moderate degree of intactness, containing one or more important habitat features such as ground debris (logs, rocks, vegetation), mature hollow-bearing trees, and a dense understorey component. • Moderate species richness and diversity - represented by a moderate number of species from a range of fauna groups. • Moderate levels of foraging and breeding activity, with the site used by native fauna for refuge and cover. • Habitat that has experienced, or is experiencing moderate levels of disturbance and/or threatening processes. • Moderate contribution to a wildlife corridor, or is connected to area(s) of moderate quality habitat. • Provides potential habitat for a small number of threatened species listed under the EPBC Act, FFG Act, or species considered rare or threatened according to DSE 2009, 2013a; DEPI 2014.
<p>Low Quality:</p> <ul style="list-style-type: none"> • Low degree of intactness, containing few important habitat features such as ground debris (logs, rocks, vegetation), mature hollow-bearing trees, and a dense understorey component. • Low species richness and diversity (i.e. represented by a small number of species from a range of fauna groups). • Low levels of foraging and breeding activity, with the site used by native fauna for refuge and cover. • Habitat that has experienced, or is experiencing high levels of disturbance and/or threatening processes. • Unlikely to form part of a wildlife corridor, and is not connected to another area(s) of habitat. • Unlikely to provide habitat for rare or threatened species listed under the EPBC Act, FFG Act, or considered rare or threatened according to DSE 2009, 2013a; DEPI 2014.

APPENDIX 2 - FLORA

Appendix 2.1 – Flora Species

Table A1.2. Flora recorded within the study area.

Legend:

CR/EN/VU Listed as Critically Endangered/Endangered/Vulnerable under the EPBC Act

I Protected under the FFG Act (DELWP 2019b)

L Listed under the FFG Act (DELWP 2018a)

v/r Listed as vulnerable (v) and rare (r) in Victoria under the Advisory List of Rare or Threatened Plants in Victoria (DEPI 2014)

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

w Weed of National Significance

Planted Victorian and non-Victorian species

Scientific Name	Common Name	Comments
Native Species		
<i>Acacia dealbata</i>	Silver Wattle	-
<i>Acacia implexa</i>	Lightwood	-
<i>Acacia mearnsii</i>	Black Wattle	I
<i>Acacia melanoxylon</i>	Blackwood	-
<i>Acacia mucronata</i> subsp. <i>longifolia</i>	Narrow-leaf Wattle	I
<i>Acacia verticillata</i>	Prickly Moses	I
<i>Acrotriche serrulata</i>	Honey-pots	I
<i>Austrostipa</i> spp.	Spear Grass	-
<i>Banksia spinulosa</i> var. <i>cunninghamii</i>	Hairpin Banksia	-
<i>Bedfordia arborescens</i>	Blanket Leaf	I
<i>Carex appressa</i>	Tall Sedge	-
<i>Cassinia aculeata</i>	Common Cassinia	I
<i>Clematis</i> spp.	Clematis	-
<i>Coprosma quadrifida</i>	Prickly Currant-bush	-
<i>Cyathea australis</i>	Rough Tree-fern	I
<i>Cyperus</i> spp.	Flat Sedge	-
<i>Dianella tasmanica</i>	Tasman Flax-lily	-
<i>Dichondra repens</i>	Kidney-weed	-
<i>Drosera auriculata</i>	Tall Sundew	-
<i>Epacris impressa</i>	Common Heath	I
<i>Eucalyptus angophoroides</i>	Apple Box	-
<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	-
<i>Eucalyptus dives</i>	Broad-leaf Peppermint	-
<i>Eucalyptus goniocalyx</i> s.l.	Bundy	-
<i>Eucalyptus obliqua</i>	Messmate Stringybark	-
<i>Eucalyptus ovata</i>	Swamp Gum	-
<i>Eucalyptus radiata</i>	Narrow-leaf Peppermint	-

Scientific Name	Common Name	Comments
<i>Eucalyptus rubida</i>	Candlebark	-
<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	VU, L, v
<i>Eucalyptus viminalis</i>	Manna Gum	-
<i>Eucalyptus yarraensis</i>	Yarra Gum	r
<i>Exocarpos cupressiformis</i>	Cherry Ballart	-
<i>Gahnia radula</i>	Thatch Saw-sedge	-
<i>Geranium</i> spp.	Crane's Bill	-
<i>Gonocarpus tetragynus</i>	Common Raspwort	-
<i>Goodenia</i> spp.	Goodenia	-
<i>Hydrocotyle sibthorpioides</i>	Shining Pennywort	-
<i>Kunzea ericoides</i> spp. agg.	Burgan	-
<i>Lachnagrostis palustris</i>	Marsh Blown-grass	-
<i>Lepidosperma laterale</i>	Variable Sword-sedge	-
<i>Leptospermum continentale</i>	Prickly Tea-tree	-
<i>Lomandra filiformis</i>	Wattle Mat-rush	-
<i>Phragmites australis</i>	Common Reed	-
<i>Poa</i> spp.	Tussock Grass	-
<i>Pomaderris aspera</i>	Hazel Pomaderris	-
<i>Prostanthera lasianthos</i>	Victorian Christmas-bush	
<i>Pteridium esculentum</i>	Austral Bracken	-
<i>Rubus parvifolius</i>	Small-leaf Bramble	-
<i>Senecio quadridentatus</i>	Cotton Fireweed	
<i>Senecio</i> spp.	Groundsel	
<i>Tetrarrhena juncea</i>	Forest Wire-grass	-
Introduced Species		
<i>Arctotheca calendula</i>	Capeweed	-
<i>Cirsium vulgare</i>	Spear Thistle	*
<i>Cynodon dactylon</i>	Couch	-
<i>Dactylis glomerata</i>	Cocksfoot	-
<i>Lycium ferocissimum</i>	African Box-thorn	*W
<i>Oxalis pes-caprae</i>	Soursob	*
<i>Oxalis purpurea</i>	Large-flower Wood-sorrel	-
<i>Paspalum</i> spp.	Paspalum	-
<i>Pinus radiata</i>	Radiata Pine	#
<i>Plantago lanceolata</i>	Plantain	-
<i>Rubus fruticosus</i> spp. agg.	Blackberry	*W
<i>Sporobolus</i> spp.	Rat-tail Grass	-
<i>Trifolium repens</i> var. <i>repens</i>	White Clover	-
<i>Vinca major</i>	Blue Periwinkle	-

Appendix 2.2 – Habitat Hectare Assessment

Table A1.4. Flora recorded within the study area.

Vegetation Zone	LF ₁	LF ₂	LF ₃	LF ₄	HrFF ₁	HrFF ₂	HrFF ₃	HrFF ₄	DF ₁	DF ₂	DF ₃	DF ₄	DF ₅	SS ₁	TM ₁	SW ₁	AH ₁
Bioregion	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR
EVC / Tree	LF	LF	LF	LF	HrFF	HrFF	HrFF	HrFF	DF	DF	DF	DF	DF	SS	TM	SW	AH
EVC Number	16	16	16	16	23	23	23	23	29	29	29	29	29	53	863	937	653
EVC Conservation Status	Vu	Vu	Vu	Vu	En	En	En	En	En	En	En	En	En	En	En	En	En
Large Old Trees /10	0	0	0	6	0	3	0	10	10	10	0	2	8	0	0	3	0
Canopy Cover/5	0	3	5	3	5	5	2	5	5	5	3	4	7	0	0	3	0
Under storey /25	5	5	15	5	15	15	11	6	15	5	7	15	5	5	5	15	13
Lack of Weeds /15	2	6	11	6	11	9	15	10	9	6	15	9	0	4	0	7	15
Patch Recruitment /10	3	0	3	0	3	10	10	1	5	0	3	5	0	0	0	3	0
Organic Matter /5	2	5	5	5	5	5	5	5	5	3	3	5	5	3	3	3	5
Logs /5	0	0	0	0	0	2	3	0	5	0	2	0	0	0	0	5	0
Treeless EVC Multiplier	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.15	1.36	1.00	1.36
Subtotal =	12.00	19.00	39.00	25.00	39.00	49.00	46.00	37.00	54.00	29.00	33.00	40.00	25.00	13.80	10.88	39.00	44.88
Landscape Value /25	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Habitat Points /100	22	29	49	35	49	59	56	47	64	39	43	50	35	24	21	49	55
Habitat Score	0.22	0.29	0.49	0.35	0.49	0.59	0.56	0.47	0.64	0.39	0.43	0.50	0.35	0.24	0.21	0.49	0.55

Appendix 2.3 – Scattered Trees and Large Trees in Patches

Table A1.3. Scattered trees, large trees in patches and Strzelecki Gums recorded within or adjacent to the impact area.

Tree ID	Species Name	Common name	DBH	Size Class
1	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	150	Large Tree within a patch
2	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	125	Large Tree within a patch
3	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	170	Large Tree within a patch
4	<i>Eucalyptus obliqua</i>	Messmate	100	Large Tree within a patch
5	<i>Eucalyptus obliqua</i>	Messmate	71	Large Tree within a patch
6	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
7	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
8	<i>Eucalyptus obliqua</i>	Messmate	104	Large Tree within a patch
9	<i>Eucalyptus obliqua</i>	Messmate	87	Large Tree within a patch
10	<i>Eucalyptus obliqua</i>	Messmate	79	Large Tree within a patch
11	<i>Eucalyptus obliqua</i>	Messmate	112	Large Tree within a patch
12	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
13	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	140	Large Tree within a patch
14	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	100	Large Tree within a patch
15	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	120	Large Tree within a patch
16	<i>Eucalyptus obliqua</i>	Messmate	114	Large Tree within a patch
17	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	130	Large Tree within a patch
18	Stag	-	150	Large Tree within a patch
19	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
20	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
21	<i>Eucalyptus obliqua</i>	Messmate	100	Large Tree within a patch
22	<i>Eucalyptus obliqua</i>	Messmate	110	Large Tree within a patch
23	<i>Eucalyptus obliqua</i>	Messmate	150	Large Tree within a patch
24	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	150	Large Tree within a patch
25	<i>Eucalyptus obliqua</i>	Messmate	110	Large Tree within a patch
26	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	95	Large Tree within a patch
27	<i>Eucalyptus obliqua</i>	Messmate	101	Large Tree within a patch
28	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	90	Large Tree within a patch
29	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
30	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	150	Large Tree within a patch
31	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
32	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
33	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	110	Large Tree within a patch
34	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	100	Large Tree within a patch
35	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	95	Large Tree within a patch
36	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
37	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
38	Stag	-	95	Large Tree within a patch
39	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
40	<i>Eucalyptus obliqua</i>	Messmate	100	Large Tree within a patch

Tree ID	Species Name	Common name	DBH	Size Class
41	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
42	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
43	<i>Eucalyptus radiata</i>	Narrow-leaf Peppermint	100	Large Tree within a patch
44	<i>Eucalyptus obliqua</i>	Messmate	110	Large Tree within a patch
45	<i>Eucalyptus yarriensis</i>	Yarra Gum	70	Large Tree within a patch
46	<i>Eucalyptus angophoroides</i>	Apple Box	75	Large Tree within a patch
47	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	85	Large Tree within a patch
48	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
49	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
50	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
51	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
52	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
53	<i>Eucalyptus obliqua</i>	Messmate	85	Large Tree within a patch
54	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
55	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
56	<i>Eucalyptus obliqua</i>	Messmate	110	Large Tree within a patch
57	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
58	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	140	Large Tree within a patch
59	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	140	Large Tree within a patch
60	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	80	Large Tree within a patch
61	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	75	Large Tree within a patch
62	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	140	Large Tree within a patch
63	<i>Eucalyptus obliqua</i>	Messmate	100	Large Tree within a patch
64	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
65	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
66	<i>Eucalyptus obliqua</i>	Messmate	120	Large Tree within a patch
67	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	110	Large Tree within a patch
68	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	90	Large Tree within a patch
69	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
70	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
71	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	120	Large Tree within a patch
72	<i>Eucalyptus obliqua</i>	Messmate	85	Large Tree within a patch
73	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
74	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
75	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
76	<i>Eucalyptus obliqua</i>	Messmate	85	Large Tree within a patch
77	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
78	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
79	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
80	<i>Eucalyptus obliqua</i>	Messmate	85	Large Tree within a patch
81	<i>Eucalyptus obliqua</i>	Messmate	95	Large Tree within a patch
82	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
83	<i>Eucalyptus obliqua</i>	Messmate	85	Large Tree within a patch
84	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch

Tree ID	Species Name	Common name	DBH	Size Class
85	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
86	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
87	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	90	Large Tree within a patch
88	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	90	Large Tree within a patch
89	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	120	Large Tree within a patch
90	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
91	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	85	Large Tree within a patch
92	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
93	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
94	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
95	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	180	Large Tree within a patch
96	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	140	Large Tree within a patch
97	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
98	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	85	Large Tree within a patch
99	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
100	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
101	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
102	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
103	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
104	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
105	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
106	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	150	Large Tree within a patch
107	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	90	Large Tree within a patch
108	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
109	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
110	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
111	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
112	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Manna Gum	75	Large Tree within a patch
113	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Manna Gum	135	Large Tree within a patch
114	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Manna Gum	100	Large Tree within a patch
115	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Manna Gum	80	Large Tree within a patch
116	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Manna Gum	80	Large Tree within a patch
117	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Manna Gum	80	Large Tree within a patch
118	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Manna Gum	80	Large Tree within a patch
119	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Manna Gum	90	Large Tree within a patch
120	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Manna Gum	75	Large Tree within a patch

Tree ID	Species Name	Common name	DBH	Size Class
121	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Manna Gum	75	Large Tree within a patch
122	<i>Eucalyptus radiata</i>	Narrow-leaf Peppermint	80	Large Tree within a patch
123	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Manna Gum	75	Large Tree within a patch
124	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	80	Large Tree within a patch
125	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	95	Large Tree within a patch
126	<i>Eucalyptus radiata</i>	Narrow-leaf Peppermint	45	Scattered Small Tree
127	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Manna Gum	83	Scattered Large Tree
128	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Manna Gum	35	Scattered Small Tree
129	<i>Eucalyptus radiata</i>	Narrow-leaf Peppermint	50	Scattered Small Tree
130	<i>Eucalyptus radiata</i>	Narrow-leaf Peppermint	89	Scattered Large Tree
131	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	135	Scattered Large Tree
132	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	135	Scattered Large Tree
133	<i>Eucalyptus obliqua</i>	Messmate	110	Scattered Large Tree
134	<i>Eucalyptus obliqua</i>	Messmate	85	Scattered Large Tree
135	<i>Eucalyptus obliqua</i>	Messmate	189	Scattered Large Tree
136	Stag	-	130	Scattered Large Tree
137	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	211	Scattered Large Tree
138	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	90	Scattered Large Tree
139	<i>Eucalyptus obliqua</i>	Messmate	30	Scattered Small Tree
140	<i>Eucalyptus obliqua</i>	Messmate	70	Scattered Large Tree
141	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Manna Gum	91	Scattered Large Tree
142	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Manna Gum	65	Scattered Small Tree
143	<i>Eucalyptus radiata</i>	Narrow-leaf Peppermint	90	Scattered Large Tree
144	<i>Eucalyptus</i> sp.	-	80	Scattered Large Tree
145	<i>Eucalyptus</i> sp.	-	45	Scattered Small Tree
146	<i>Eucalyptus</i> sp.	-	75	Scattered Large Tree
147	<i>Eucalyptus</i> sp.	-	76	Scattered Large Tree
148	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Manna Gum	70	Scattered Large Tree
149	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Manna Gum	60	Scattered Small Tree
150	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	90	Scattered Large Tree
151	<i>Eucalyptus obliqua</i>	Messmate	60	Scattered Small Tree
152	<i>Eucalyptus obliqua</i>	Messmate	60	Scattered Small Tree
153	<i>Eucalyptus obliqua</i>	Messmate	60	Scattered Small Tree
154	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Manna Gum	90	Scattered Large Tree
155	<i>Eucalyptus viminalis</i> subsp. <i>pryoriana</i>	Manna Gum	75	Scattered Large Tree
156	<i>Eucalyptus obliqua</i>	Messmate	50	Scattered Small Tree

Tree ID	Species Name	Common name	DBH	Size Class
157	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
158	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	65	Scattered Small Tree
159	<i>Eucalyptus obliqua</i>	Messmate	70	Scattered Large Tree
160	<i>Eucalyptus</i> sp.	-	60	Scattered Small Tree
161	<i>Eucalyptus radiata</i>	Narrow-leaf Peppermint	75	Scattered Large Tree
162	<i>Eucalyptus obliqua</i>	Messmate	60	Scattered Small Tree
163	<i>Eucalyptus obliqua</i>	Messmate	50	Scattered Small Tree
164	<i>Eucalyptus radiata</i>	Narrow-leaf Peppermint	80	Scattered Large Tree
165	<i>Eucalyptus radiata</i>	Narrow-leaf Peppermint	65	Scattered Small Tree
166	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	0	Scattered Small Tree
167	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	0	Scattered Small Tree
168	<i>Eucalyptus radiata</i>	Narrow-leaf Peppermint	0	Scattered Small Tree
169	<i>Eucalyptus radiata</i>	Narrow-leaf Peppermint	60	Scattered Small Tree
170	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	60	Scattered Small Tree
171	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	90	Scattered Large Tree
172	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	90	Large Tree within a patch
173	<i>Eucalyptus obliqua</i>	Messmate	0	Large Tree within a patch
174	<i>Eucalyptus obliqua</i>	Messmate	0	Large Tree within a patch
175	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	100	Large Tree within a patch
176	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	115	Large Tree within a patch
177	<i>Eucalyptus obliqua</i>	Messmate	163	Large Tree within a patch
178	<i>Eucalyptus obliqua</i>	Messmate	128	Large Tree within a patch
179	<i>Eucalyptus obliqua</i>	Messmate	120	Large Tree within a patch
180	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	130	Large Tree within a patch
181	<i>Eucalyptus obliqua</i>	Messmate	95	Large Tree within a patch
182	<i>Eucalyptus obliqua</i>	Messmate	91	Large Tree within a patch
183	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	200	Large Tree within a patch
184	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	117	Large Tree within a patch
185	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
186	<i>Eucalyptus obliqua</i>	Messmate	90	Scattered Large Tree
187	<i>Eucalyptus obliqua</i>	Messmate	110	Large Tree within a patch
188	<i>Eucalyptus obliqua</i>	Messmate	90	Scattered Large Tree
189	<i>Eucalyptus obliqua</i>	Messmate	150	Large Tree within a patch
190	<i>Eucalyptus obliqua</i>	Messmate	110	Large Tree within a patch
191	<i>Eucalyptus obliqua</i>	Messmate	95	Scattered Large Tree
192	<i>Eucalyptus obliqua</i>	Messmate	200	Scattered Large Tree
193	<i>Eucalyptus obliqua</i>	Messmate	90	Scattered Large Tree
194	<i>Eucalyptus obliqua</i>	Messmate	120	Scattered Large Tree
195	<i>Eucalyptus obliqua</i>	Messmate	100	Large Tree within a patch
196	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	110	Large Tree within a patch
197	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	110	Large Tree within a patch
198	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	130	Large Tree within a patch
199	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	180	Scattered Large Tree
200	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	100	Scattered Large Tree

Tree ID	Species Name	Common name	DBH	Size Class
201	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	110	Scattered Large Tree
202	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	110	Large Tree within a patch
203	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	100	Large Tree within a patch
204	<i>Eucalyptus obliqua</i>	Messmate	95	Large Tree within a patch
205	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	130	Large Tree within a patch
206	<i>Eucalyptus obliqua</i>	Messmate	100	Large Tree within a patch
207	<i>Eucalyptus obliqua</i>	Messmate	110	Large Tree within a patch
208	<i>Eucalyptus obliqua</i>	Messmate	130	Large Tree within a patch
209	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	95	Large Tree within a patch
210	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	110	Large Tree within a patch
211	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	101	Large Tree within a patch
212	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	130	Large Tree within a patch
213	<i>Eucalyptus obliqua</i>	Messmate	114	Large Tree within a patch
214	<i>Eucalyptus obliqua</i>	Messmate	100	Large Tree within a patch
215	<i>Eucalyptus obliqua</i>	Messmate	135	Large Tree within a patch
216	<i>Eucalyptus obliqua</i>	Messmate	130	Large Tree within a patch
217	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	150	Large Tree within a patch
218	<i>Eucalyptus obliqua</i>	Messmate	100	Scattered Large Tree
219	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	110	Scattered Large Tree
220	<i>Eucalyptus obliqua</i>	Messmate	115	Large Tree within a patch
221	<i>Eucalyptus obliqua</i>	Messmate	140	Large Tree within a patch
222	<i>Eucalyptus obliqua</i>	Messmate	130	Large Tree within a patch
223	<i>Eucalyptus obliqua</i>	Messmate	145	Large Tree within a patch
224	<i>Eucalyptus ovata</i>	Swamp Gum	98	Large Tree within a patch
225	<i>Eucalyptus ovata</i>	Swamp Gum	70	Scattered Small Tree
226	<i>Eucalyptus ovata</i>	Swamp Gum	70	Small Tree within a patch
227	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	95	Large Tree within a patch
228	<i>Eucalyptus obliqua</i>	Messmate	95	Large Tree within a patch
229	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
230	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	99	Large Tree within a patch
231	<i>Eucalyptus obliqua</i>	Messmate	110	Large Tree within a patch
232	<i>Eucalyptus obliqua</i>	Messmate	100	Large Tree within a patch
233	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	102	Large Tree within a patch
234	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
235	<i>Eucalyptus obliqua</i>	Messmate	150	Large Tree within a patch
236	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	135	Large Tree within a patch
237	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	80	Large Tree within a patch
238	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	120	Large Tree within a patch
239	<i>Eucalyptus obliqua</i>	Messmate	110	Large Tree within a patch
240	<i>Eucalyptus obliqua</i>	Messmate	105	Large Tree within a patch
241	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	130	Scattered Large Tree
242	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	90	Large Tree within a patch
243	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
244	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch

Tree ID	Species Name	Common name	DBH	Size Class
245	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	101	Large Tree within a patch
246	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	80	Large Tree within a patch
247	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	90	Large Tree within a patch
248	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	100	Large Tree within a patch
249	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	110	Large Tree within a patch
250	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	105	Large Tree within a patch
251	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	125	Large Tree within a patch
252	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	120	Large Tree within a patch
253	<i>Eucalyptus obliqua</i>	Messmate	95	Large Tree within a patch
254	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	110	Large Tree within a patch
255	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	115	Large Tree within a patch
256	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	135	Large Tree within a patch
257	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	180	Large Tree within a patch
258	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	170	Large Tree within a patch
259	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	70	Large Tree within a patch
260	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	70	Large Tree within a patch
261	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	95	Large Tree within a patch
262	<i>Eucalyptus obliqua</i>	Messmate	110	Large Tree within a patch
263	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
264	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
265	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
266	<i>Eucalyptus obliqua</i>	Messmate	55	Scattered Small Tree
267	Stag	-	86	Large Tree within a patch
268	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	90	Large Tree within a patch
269	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	90	Large Tree within a patch
270	Stag	-	95	Large Tree within a patch
271	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	100	Large Tree within a patch
272	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	100	Large Tree within a patch
273	Stag	-	106	Large Tree within a patch
274	Stag	-	106	Scattered Large Tree
275	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	75	Large Tree within a patch
276	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	95	Large Tree within a patch
277	Stag	-	95	Large Tree within a patch
278	Stag	-	95	Large Tree within a patch
279	Stag	-	95	Large Tree within a patch
280	Stag	-	80	Large Tree within a patch
281	Stag	-	80	Scattered Large Tree
282	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	85	Large Tree within a patch
283	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
284	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
285	<i>Eucalyptus obliqua</i>	Messmate	78	Large Tree within a patch
286	<i>Eucalyptus obliqua</i>	Messmate	98	Large Tree within a patch
287	<i>Eucalyptus obliqua</i>	Messmate	98	Scattered Large Tree
288	<i>Eucalyptus obliqua</i>	Messmate	80	Scattered Large Tree

Tree ID	Species Name	Common name	DBH	Size Class
289	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
290	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
291	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
292	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
293	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
294	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
295	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
296	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
297	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	80	Large Tree within a patch
298	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	80	Large Tree within a patch
299	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	85	Large Tree within a patch
300	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	85	Large Tree within a patch
301	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	85	Large Tree within a patch
302	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
303	Stag	-	95	Large Tree within a patch
304	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	98	Large Tree within a patch
305	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	109	Large Tree within a patch
306	<i>Eucalyptus obliqua</i>	Messmate	105	Large Tree within a patch
307	<i>Eucalyptus obliqua</i>	Messmate	105	Large Tree within a patch
308	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
309	Stag	-	80	Large Tree within a patch
310	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	80	Large Tree within a patch
311	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	110	Large Tree within a patch
312	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	90	Large Tree within a patch
313	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
314	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	90	Large Tree within a patch
315	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
316	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	90	Large Tree within a patch
317	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	90	Large Tree within a patch
318	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	110	Large Tree within a patch
319	<i>Eucalyptus obliqua</i>	Messmate	95	Large Tree within a patch
320	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
321	<i>Eucalyptus obliqua</i>	Messmate	75	Scattered Large Tree
322	<i>Eucalyptus obliqua</i>	Messmate	50	Scattered Small Tree
323	<i>Eucalyptus obliqua</i>	Messmate	50	Scattered Small Tree
324	<i>Eucalyptus obliqua</i>	Messmate	50	Scattered Small Tree
325	<i>Eucalyptus obliqua</i>	Messmate	50	Scattered Small Tree
326	<i>Eucalyptus obliqua</i>	Messmate	80	Scattered Large Tree
327	<i>Eucalyptus obliqua</i>	Messmate	75	Scattered Large Tree
328	<i>Eucalyptus obliqua</i>	Messmate	75	Scattered Large Tree
329	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
330	Stag	-	85	Scattered Large Tree
331	<i>Eucalyptus obliqua</i>	Messmate	85	Large Tree within a patch
332	<i>Eucalyptus obliqua</i>	Messmate	85	Scattered Large Tree

Tree ID	Species Name	Common name	DBH	Size Class
333	Stag	-	80	Large Tree within a patch
334	<i>Eucalyptus dives</i>	Broad-leaf Peppermint	70	Scattered Large Tree
335	<i>Eucalyptus dives</i>	Broad-leaf Peppermint	50	Scattered Small Tree
336	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	70	Scattered Large Tree
337	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	70	Scattered Large Tree
338	<i>Eucalyptus obliqua</i>	Messmate	65	Scattered Small Tree
339	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
340	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	75	Large Tree within a patch
341	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
342	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	85	Large Tree within a patch
343	<i>Eucalyptus obliqua</i>	Messmate	70	Scattered Large Tree
344	<i>Eucalyptus obliqua</i>	Messmate	65	Scattered Small Tree
345	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	75	Large Tree within a patch
346	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	65	Small Tree within a patch
347	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	75	Large Tree within a patch
348	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	80	Large Tree within a patch
349	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
350	<i>Eucalyptus ovata</i>	Swamp Gum	80	Scattered Large Tree
351	<i>Eucalyptus ovata</i>	Swamp Gum	75	Scattered Large Tree
361	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
362	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
363	<i>Eucalyptus</i> sp.	-	72	Large Tree within a patch
364	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
365	Stag	-	80	Scattered Large Tree
366	<i>Eucalyptus obliqua</i>	Messmate	75	Scattered Large Tree
367	<i>Eucalyptus obliqua</i>	Messmate	80	Scattered Large Tree
405	Stag	-	110	Large Tree within a patch
409	<i>Eucalyptus rubida</i>	Candlebark	78	Large Tree within a patch
410	<i>Eucalyptus rubida</i>	Candlebark	76	Large Tree within a patch
411	<i>Eucalyptus rubida</i>	Candlebark	81	Large Tree within a patch
414	<i>Eucalyptus obliqua</i>	Messmate	92	Scattered Large Tree
415	<i>Eucalyptus obliqua</i>	Messmate	83	Scattered Large Tree
416	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
418	<i>Eucalyptus obliqua</i>	Messmate	76	Large Tree within a patch
419	<i>Eucalyptus obliqua</i>	Messmate	85	Large Tree within a patch
420	<i>Eucalyptus obliqua</i>	Messmate	71	Large Tree within a patch
421	<i>Eucalyptus obliqua</i>	Messmate	75	Scattered Large Tree
422	<i>Eucalyptus obliqua</i>	Messmate	80	Scattered Large Tree
423	<i>Eucalyptus obliqua</i>	Messmate	81	Large Tree within a patch
424	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
425	<i>Eucalyptus obliqua</i>	Messmate	76	Scattered Large Tree
426	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
427	<i>Eucalyptus obliqua</i>	Messmate	86	Large Tree within a patch
428	<i>Eucalyptus obliqua</i>	Messmate	76	Large Tree within a patch

Tree ID	Species Name	Common name	DBH	Size Class
429	<i>Eucalyptus obliqua</i>	Messmate	82	Large Tree within a patch
430	<i>Eucalyptus obliqua</i>	Messmate	71	Large Tree within a patch
431	<i>Eucalyptus obliqua</i>	Messmate	82	Large Tree within a patch
432	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
433	<i>Eucalyptus obliqua</i>	Messmate	82	Large Tree within a patch
434	<i>Eucalyptus obliqua</i>	Messmate	95	Large Tree within a patch
435	<i>Eucalyptus dives</i>	Broad-leaf Peppermint	74	Large Tree within a patch
436	<i>Eucalyptus obliqua</i>	Messmate	110	Large Tree within a patch
437	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
438	<i>Eucalyptus obliqua</i>	Messmate	73	Large Tree within a patch
439	<i>Eucalyptus obliqua</i>	Messmate	70	Large Tree within a patch
440	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
441	<i>Eucalyptus obliqua</i>	Messmate	81	Large Tree within a patch
442	<i>Eucalyptus obliqua</i>	Messmate	72	Large Tree within a patch
443	<i>Eucalyptus obliqua</i>	Messmate	74	Large Tree within a patch
444	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
445	<i>Eucalyptus obliqua</i>	Messmate	76	Large Tree within a patch
446	<i>Eucalyptus obliqua</i>	Messmate	77	Large Tree within a patch
447	<i>Eucalyptus obliqua</i>	Messmate	86	Large Tree within a patch
448	<i>Eucalyptus obliqua</i>	Messmate	73	Large Tree within a patch
449	<i>Eucalyptus obliqua</i>	Messmate	81	Large Tree within a patch
450	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
466	<i>Eucalyptus obliqua</i>	Messmate	99	Large Tree within a patch
467	<i>Eucalyptus obliqua</i>	Messmate	72	Large Tree within a patch
468	<i>Eucalyptus obliqua</i>	Messmate	76	Large Tree within a patch
469	<i>Eucalyptus obliqua</i>	Messmate	78	Large Tree within a patch
470	<i>Eucalyptus obliqua</i>	Messmate	78	Large Tree within a patch
472	<i>Eucalyptus obliqua</i>	Messmate	78	Large Tree within a patch
473	<i>Eucalyptus obliqua</i>	Messmate	78	Large Tree within a patch
474	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
475	<i>Eucalyptus obliqua</i>	Messmate	76	Large Tree within a patch
476	<i>Eucalyptus obliqua</i>	Messmate	94	Large Tree within a patch
477	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
478	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
479	<i>Eucalyptus obliqua</i>	Messmate	76	Large Tree within a patch
480	<i>Eucalyptus obliqua</i>	Messmate	74	Large Tree within a patch
481	<i>Eucalyptus obliqua</i>	Messmate	77	Large Tree within a patch
482	<i>Eucalyptus obliqua</i>	Messmate	73	Large Tree within a patch
483	<i>Eucalyptus obliqua</i>	Messmate	82	Large Tree within a patch
484	<i>Eucalyptus obliqua</i>	Messmate	74	Large Tree within a patch
485	<i>Eucalyptus obliqua</i>	Messmate	85	Large Tree within a patch
486	<i>Eucalyptus</i> sp.	-	175	Large Tree within a patch
487	<i>Eucalyptus gonicalyx</i> s.l.	Bundy	90	Large Tree within a patch
488			80	Large Tree within a patch

Tree ID	Species Name	Common name	DBH	Size Class
489	<i>Eucalyptus ovata</i>	Swamp Gum		Large Tree within a patch
490	<i>Eucalyptus ovata</i>	Swamp Gum	80	Large Tree within a patch
491	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
492	<i>Eucalyptus obliqua</i>	Messmate	72	Large Tree within a patch
496	<i>Eucalyptus obliqua</i>	Messmate	97	Large Tree within a patch
497	<i>Eucalyptus obliqua</i>	Messmate	60	Scattered Large Tree
498	<i>Eucalyptus obliqua</i>	Messmate	97	Large Tree within a patch
499	<i>Eucalyptus obliqua</i>	Messmate	85	Large Tree within a patch
500	<i>Eucalyptus obliqua</i>	Messmate	86	Scattered Large Tree
501	Stag	-	115	Large Tree within a patch
502	<i>Eucalyptus obliqua</i>	Messmate	80	Large Tree within a patch
503	<i>Eucalyptus obliqua</i>	Messmate	85	Large Tree within a patch
504	<i>Eucalyptus obliqua</i>	Messmate	86	Large Tree within a patch
505	<i>Eucalyptus obliqua</i>	Messmate	90	Large Tree within a patch
506	<i>Eucalyptus obliqua</i>	Messmate	79	Large Tree within a patch
507	<i>Eucalyptus obliqua</i>	Messmate	72	Large Tree within a patch
508	<i>Eucalyptus obliqua</i>	Messmate	105	Large Tree within a patch
509	<i>Eucalyptus obliqua</i>	Messmate	76	Large Tree within a patch
510	<i>Eucalyptus obliqua</i>	Messmate	82	Large Tree within a patch
511	<i>Eucalyptus obliqua</i>	Messmate	98	Large Tree within a patch
512	<i>Eucalyptus obliqua</i>	Messmate	98	Large Tree within a patch
513	<i>Eucalyptus obliqua</i>	Messmate	91	Large Tree within a patch
514	<i>Eucalyptus obliqua</i>	Messmate	92	Large Tree within a patch
515	<i>Eucalyptus obliqua</i>	Messmate	93	Large Tree within a patch
516	<i>Eucalyptus obliqua</i>	Messmate	74	Large Tree within a patch
517	<i>Eucalyptus obliqua</i>	Messmate	75	Large Tree within a patch
518	<i>Eucalyptus obliqua</i>	Messmate	82	Large Tree within a patch
519	<i>Eucalyptus obliqua</i>	Messmate	78	Large Tree within a patch
520	<i>Eucalyptus obliqua</i>	Messmate	73	Large Tree within a patch
521	<i>Eucalyptus obliqua</i>	Messmate	80	Scattered Large Tree
522	<i>Eucalyptus obliqua</i>	Messmate	78	Large Tree within a patch
523	<i>Eucalyptus obliqua</i>	Messmate	78	Large Tree within a patch
524	<i>Eucalyptus obliqua</i>	Messmate	79	Large Tree within a patch
525	<i>Eucalyptus obliqua</i>	Messmate	86	Large Tree within a patch
526	<i>Eucalyptus obliqua</i>	Messmate	87	Large Tree within a patch
527	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	92	Large Tree within a patch
528	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	80	Small Tree within a patch
529	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	85	Small Tree within a patch
530	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	110	Large Tree within a patch
531	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	98	Large Tree within a patch
532	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	96	Large Tree within a patch
533	<i>Eucalyptus obliqua</i>	Messmate	55	Scattered Large Tree
534	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	98	Scattered Large Tree
535	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	80	Scattered Large Tree

Tree ID	Species Name	Common name	DBH	Size Class
536	<i>Eucalyptus obliqua</i>	Messmate	70	Scattered Large Tree
537	<i>Eucalyptus obliqua</i>	Messmate	35	Scattered Small Tree
538	<i>Eucalyptus obliqua</i>	Messmate	25	Scattered Small Tree
539	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	97	Scattered Large Tree
540	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	65	Scattered Small Tree
541	<i>Eucalyptus obliqua</i>	Messmate	160	Scattered Large Tree
542	<i>Eucalyptus obliqua</i>	Messmate	60	Scattered Small Tree
543	<i>Eucalyptus obliqua</i>	Messmate	46	Scattered Small Tree
544	<i>Eucalyptus obliqua</i>	Messmate	65	Scattered Small Tree
545	<i>Eucalyptus obliqua</i>	Messmate	49	Scattered Small Tree
547	<i>Eucalyptus radiata</i>	Narrow-leaf Peppermint	168	Large Tree within a patch
598	<i>Eucalyptus ovata</i>	Swamp Gum	42	Scattered Small Tree
599	<i>Eucalyptus obliqua</i>	Messmate	67	Scattered Small Tree
600	<i>Eucalyptus obliqua</i>	Messmate	98	Scattered Large Tree
601	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	135	Large Tree within a patch
602	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	173	Large Tree within a patch
603	Stag	-	111	Large Tree within a patch
604	Stag	-	127	Large Tree within a patch
605	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	111	Large Tree within a patch
606	<i>Eucalyptus radiata</i>	Narrow-leaf Peppermint	70	Scattered Large Tree
607	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	91	Large Tree within a patch
608	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	92	Scattered Large Tree
609	<i>Eucalyptus obliqua</i>	Messmate	97	Scattered Large Tree
610	<i>Eucalyptus obliqua</i>	Messmate	120	Scattered Large Tree
651	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	101	Large Tree within a patch
652	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	127	Large Tree within a patch
653	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	90	Scattered Large Tree
654	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	85	Large Tree within a patch
655	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	99	Scattered Large Tree
656	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	121	Large Tree within a patch
658	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	93	Scattered Large Tree
659	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	132	Scattered Large Tree
660	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	178	Scattered Large Tree
661	<i>Eucalyptus obliqua</i>	Messmate	101	Scattered Large Tree
662	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	158	Scattered Large Tree
663	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	110	Large Tree within a patch
664	<i>Eucalyptus</i> sp.	-	75	Large Tree within a patch
665	<i>Eucalyptus cypellocarpa</i>	Mountain Grey-gum	238	Large Tree within a patch
666	<i>Eucalyptus obliqua</i>	Messmate	138	Large Tree within a patch
672	<i>Eucalyptus obliqua</i>	Messmate	35	Scattered Small Tree
673	<i>Eucalyptus obliqua</i>	Messmate	35	Scattered Small Tree
Strzelecki Gums				
352	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
353	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree

Tree ID	Species Name	Common name	DBH	Size Class
354	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
355	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
356	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
357	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
358	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
359	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
360	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
370	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
371	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Scattered Tree
372	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Scattered Tree
373	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Scattered Tree
374	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Scattered Tree
375	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Scattered Tree
376	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
377	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
378	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
379	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
380	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
381	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Scattered Tree
382	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
383	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
384	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
385	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
386	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
387	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
388	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Scattered Tree
389	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Scattered Tree
390	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Scattered Tree
391	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Scattered Tree
392	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Scattered Tree
393	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Scattered Tree
394	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
395	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
396	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
397	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
398	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
399	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
400	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
401	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
402	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	80	Patch Tree
403	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	75	Patch Tree
404	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	92	Patch Tree
406	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	125	Patch Tree
407	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	80	Patch Tree

Tree ID	Species Name	Common name	DBH	Size Class
408	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	76	Patch Tree
412	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	60	Patch Tree
413	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	60	Patch Tree
417	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	87	Patch Tree
451	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	80	Patch Tree
452	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	78	Patch Tree
453	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	30	Patch Tree
454	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	45	Patch Tree
455	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	45	Patch Tree
456	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	45	Patch Tree
457	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	25	Patch Tree
458	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	30	Patch Tree
459	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	55	Patch Tree
460	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	25	Patch Tree
461	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	30	Patch Tree
462	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	25	Patch Tree
463	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	70	Patch Tree
464	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	65	Patch Tree
465	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	50	Patch Tree
471	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	60	Patch Tree
493	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	30	Patch Tree
494	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	50	Patch Tree
495	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	20	Patch Tree
546	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	43	Scattered Tree
548	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	81	Patch Tree
549	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	89	Patch Tree
550	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	80	Patch Tree
551	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	75	Patch Tree
552	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
553	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
554	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
555	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
556	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
557	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
558	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
559	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
560	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
561	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
562	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
563	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
564	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
565	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
566	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
567	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree

Tree ID	Species Name	Common name	DBH	Size Class
568	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
569	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
570	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
571	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
572	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
573	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Scattered Tree
574	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
575	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
576	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
577	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
578	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Scattered Tree
579	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
580	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
581	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
582	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
583	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
584	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Scattered Tree
585	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
586	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Scattered Tree
587	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
588	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
589	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
590	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
591	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
592	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
593	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
594	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
595	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
596	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	-	Patch Tree
613	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	40	Patch Tree
614	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	70	Patch Tree
615	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	70	Patch Tree
616	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	40	Patch Tree
617	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	40	Patch Tree
618	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	75	Scattered Tree
619	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	75	Scattered Tree
620	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	60	Scattered Tree
621	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	75	Scattered Tree
622	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	70	Scattered Tree
623	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	60	Scattered Tree
624	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	60	Scattered Tree
625	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	70	Scattered Tree
626	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	80	Scattered Tree
627	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	70	Scattered Tree

Tree ID	Species Name	Common name	DBH	Size Class
628	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	80	Scattered Tree
629	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	50	Scattered Tree
630	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	100	Scattered Tree
631	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	75	Scattered Tree
632	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	75	Scattered Tree
633	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	80	Scattered Tree
657	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	70	Scattered Tree
667	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	86	Scattered Tree
668	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	35	Scattered Tree
669	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	40	Scattered Tree
670	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	73	Scattered Tree
671	<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	85	Scattered Tree

Appendix 2.4 – Significant Flora Species

Table A1.4 Significant flora recorded within 10 kilometres of the study area

Key:

EPBC *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

FFG *Flora and Fauna Guarantee Act 1988* (FFG Act)

DEPI *Advisory List of Threatened Flora in Victoria* (DEPI 2014)

EX	Extinct	X	Extinct
CR	Critically endangered	e	Endangered
EN	Endangered	v	Vulnerable
VU	Vulnerable	r	Rare
K	Poorly Known (Briggs and Leigh 1996)	k	Poorly Known
#	Records identified from EPBC Act Protected Matters Search Tool.	L	Listed
*	Records identified from the FIS		

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 a 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.

Scientific name	Common name	Total # of documented records	Last documented record	EPBC	FFG	DEPI	Likely occurrence in study area
NATIONAL SIGNIFICANCE							
<i>Amphibromus fluitans</i>	River Swamp Wallaby-grass	6	2003	VU	X	-	3-4
<i>Caladenia tessellate</i> #	Thick-lip Spider-orchid	-	-	VU	-	-	4
<i>Callitris oblonga</i> subsp. <i>oblonga</i>	Dwarf Cypress-pine	2	1998	EN	-	-	3-4 (non-indigenous)
<i>Dianella amoena</i>	Matted Flax-lily	22	2012	EN	L	e	3-4
<i>Prasophyllum frenchii</i> #	Maroon Leek-orchid	-	-	EN	L	e	4
<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	75	2012	VU	L	v	1
<i>Glycine latrobeana</i> #	Clover Glycine	-	-	VU	L	v	4
<i>Pterostylis chlorogramma</i> #	Green-striped Greenhood	-	-	VU	L	v	4
<i>Xerochrysum palustre</i> #	Swamp Everlasting	-	-	VU	L	v	4
STATE SIGNIFICANCE							
<i>Acacia howittii</i>	Sticky Wattle	1	2002	-	-	r	3
<i>Austrostipa rudis</i> subsp. <i>australis</i>	Veined Spear-grass	1	1982	-	-	r	4
<i>Brachyscome salkiniae</i>	Elegant Daisy	2	1989	-	-	r	4
<i>Caladenia aurantiaca</i>	Orange-tip Finger-orchid	2	1983	-	-	r	4
<i>Caladenia australis</i>	Southern Spider-orchid	2	2003	-	-	k	3
<i>Caladenia vulgaris</i>	Slender Pink-fingers	1	2004	-	-	r	3
<i>Callitriche umbonata</i>	Winged Water-starwort	1	1983	-	X	r	4
<i>Cardamine paucijuga</i> s.s.	Annual Bitter-cress	1	1999	-	-	P	4



Scientific name	Common name	Total # of documented records	Last documented record	EPBC	FFG	DEPI	Likely occurrence in study area
<i>Cardamine tenuifolia</i>	Slender Bitter-cress	2	1997	-	-	P	4
<i>Chiloglottis janesii</i>	Mountain Bird-orchid	2	2002	-	-	r	3
<i>Craspedia canens</i>	Grey Billy-buttons	1	2004	-	L	e	3
<i>Cyathea cunninghamii</i>	Slender Tree-fern	2	1997	-	L	v	4
<i>Cymbonotus lawsonianus</i>	Bear's-ear	1	2009	-	-	r	3
<i>Desmodium varians</i>	Slender Tick-trefoil	4	2003	-	-	k	3
<i>Diuris X palachila</i>	Broad-lip Diuris	1	1947	-	-	r	4
<i>Eucalyptus fulgens</i>	Green Scentbark	15	2008	-	-	r	3
<i>Eucalyptus ignorabilis</i> s.s.	Grey Scentbark	1	2012	-	-	r	3
<i>Eucalyptus kitsoniana</i>	Bog Gum	1	1979	-	-	r	4
<i>Eucalyptus yarraensis</i>	Yarra Gum	14	2011	-	-	r	1
<i>Geranium solanderi</i> var. <i>solanderi</i> s.s.	Austral Crane's-bill	1	2006	-	-	v	3
<i>Grevillea rosmarinifolia</i>	Rosemary Grevillea	1	1997	-	-	P	4
<i>Lasiopetalum ferrugineum</i>	Rusty Velvet-bush	1	1970	-	-	P	4
<i>Leionema bilobum</i> subsp. <i>serrulatum</i>	Toothed Leionema	1	1970	-	-	r	4
<i>Marsilea mutica</i>	Smooth Nardoo	1	1983	-	-	k	4
<i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	Giant Honey-myrtle	3	2009	-	-	r	3
<i>Oxalis thompsoniae</i>	Fluffy-fruit Wood-sorrel	1	1999	-	-	k	4
<i>Platysace ericoides</i>	Heath Platysace	2	2003	-	-	r	3
<i>Potamogeton australiensis</i>	Thin Pondweed	3	1981	-	-	k	4
<i>Pterostylis grandiflora</i>	Cobra Greenhood	6	2011	-	-	r	3



Scientific name	Common name	Total # of documented records	Last documented record	EPBC	FFG	DEPI	Likely occurrence in study area
<i>Pultenaea juniperina</i> s.s.	Prickly Beauty	1	2003	-	-	r	3
<i>Pultenaea prolifera</i>	Otway Bush-pea	1	1989	-	-	r	4
<i>Sowerbaea juncea</i>	Rush Lily	2	2003	-	-	r	3
<i>Thelymitra incurva</i>	Swamp Sun-orchid	1	2000	-	L	e	3
<i>Tmesipteris elongata</i>	Slender Fork-fern	4	1983	-	-	v	4
<i>Tmesipteris ovata</i>	Oval Fork-fern	4	1983	-	-	r	4

Data source: Victorian Biodiversity Atlas (DELWP 2018); Protected Matters Search Tool (DAWE 2020). Taxonomic order Alphabetical.

APPENDIX 3 – FAUNA

Appendix 3.1 – Fauna Species

A.2.1. Fauna recorded during the 2018/19 surveys and previous fauna records within 20 kilometres of the study area.

Common name	Scientific name	EPBC Act	FFG Act	DSE 2013a	Most recent record	Recorded during current surveys (2018/19)
Agile Antechinus	<i>Antechinus agilis</i>	-	-	-	2016	-
Australasian Grebe	<i>Tachybaptus novaehollandiae</i>	-	-	-	2019	Yes
Australasian Pipit	<i>Anthus novaeseelandiae</i>	-	-	-	2012	-
Australasian Shoveler	<i>Anas rhynchotis</i>	-	-	vu	2007	-
Australian Admiral Butterfly	<i>Vanessa itea</i>	-	-	-	1939	-
Australian Bass	<i>Macquaria novemaculeata</i>	-	X	-	2002	-
Australian Copperheads	<i>fam. Elapidae gen. Austrelaps</i>	-	-	-	1978	-
Australian Grayling	<i>Prototroctes maraena</i>	V	L	vu	2010	-
Australian Hobby	<i>Falco longipennis</i>	-	-	-	2015	-
Australian King-Parrot	<i>Alisterus scapularis</i>	-	-	-	2019	Yes
Australian Magpie	<i>Cracticus tibicen</i>	-	-	-	2019	Yes
Australian Owllet-nightjar	<i>Aegotheles cristatus</i>	-	-	-	2015	-
Australian Pelican	<i>Pelecanus conspicillatus</i>	-	-	-	2014	-
Australian Raven	<i>Corvus coronoides</i>	-	-	-	2019	Yes
Australian Shelduck	<i>Tadorna tadornoides</i>	-	-	-	2011	-
Australian Smelt	<i>Retropinna semoni</i>	-	-	-	2017	-
Australian Spotted Crake	<i>Porzana fluminea</i>	-	-	-	1977	-
Australian White Ibis	<i>Threskiornis molucca</i>	-	-	-	2011	-
Australian Wood Duck	<i>Chenonetta jubata</i>	-	-	-	2019	Yes

Common name	Scientific name	EPBC Act	FFG Act	DSE 2013a	Most recent record	Recorded during current surveys (2018/19)
Azure Kingfisher	<i>Alcedo azurea</i>	-	-	nt	2015	-
Balonne Freshwater Mussel	<i>Vesunio ambiguus</i>	-	-	-	2016	-
Banded Lapwing	<i>Vanellus tricolor</i>	-	-	-	1977	-
Barking Owl	<i>Ninox connivens connivens</i>	-	L	en	2007	-
Bassian Thrush	<i>Zoothera lunulata</i>	-	-	-	2016	-
Beautiful Firetail	<i>Stagonopleura bella</i>	-	-	-	2000	-
Bell Miner	<i>Manorina melanophrys</i>	-	-	-	2008	-
Black Falcon	<i>Falco subniger</i>	-	N	vu	2001	-
Black Rat*	<i>Rattus rattus</i>	-	-	-	2011	-
Black Rock Skink	<i>Egernia saxatilis intermedia</i>	-	-	-	1998	-
Black Spot Moth	<i>Epicoma melanospilta</i>	-	-	-	1944	-
Black Swan	<i>Cygnus atratus</i>	-	-	-	2014	-
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	-	-	-	2015	-
Black-faced Monarch	<i>Monarcha melanopsis</i>	-	-	-	2006	-
Black-fronted Dotterel	<i>Elseyonnis melanops</i>	-	-	-	2009	-
Black-shouldered Kite	<i>Elanus axillaris</i>	-	-	-	2014	-
Black-tailed Native-hen	<i>Tribonyx ventralis</i>	-	-	-	2009	-
Black-tailed Wallaby	<i>Wallabia bicolor</i>	-	-	-	2016	-
Black-winged Stilt	<i>Himantopus himantopus</i>	-	-	-	2009	-
Blotched Blue-tongued Lizard	<i>Tiliqua nigrolutea</i>	-	-	-	2015	-
Blue Jewel Butterfly	<i>Hypochorysops delicia</i>	-	-	-	2000	-
Blue-billed Duck	<i>Oxyura australis</i>	-	L	en	2017	-
Blue-winged Parrot	<i>Neophema chrysostoma</i>	-	-	-	2015	-
Bright Copper Butterfly	<i>Paralucia aurifer</i>	-	-	-	1939	-
Brown Falcon	<i>Falco berigora</i>	-	-	-	2014	-
Brown Gerygone	<i>Gerygone mouki</i>	-	-	-	2016	-

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Brown Goshawk	<i>Accipiter fasciatus</i>	-	-	-	2015	-
Brown Quail	<i>Coturnix ypsilophora australis</i>	-	-	-	2000	-
Brown Songlark	<i>Cincloramphus curralis</i>	-	-	-	2000	-
Brown Thornbill	<i>Acanthiza pusilla</i>	-	-	-	2019	Yes
Brown Treecreeper (south-eastern ssp.)	<i>Climacteris picumnus victoriae</i>	-	-	nt	1916	-
Brown Trout*	<i>Salmo trutta</i>	-	-	-	2017	-
Brown-headed Honeyeater	<i>Melithreptus brevirostris</i>	-	-	-	2013	-
Brush Bronzewing	<i>Phaps elegans</i>	-	-	-	2016	-
Brush Cuckoo	<i>Cacomantis variolosus</i>	-	-	-	2012	-
Brush-tailed Phascogale	<i>Phascogale topotaifa</i>	-	L	vu	1967	-
Buff-banded Rail	<i>Gallinallus philipensis</i>	-	-	-	2010	-
Buff-rumped Thornbill	<i>Acanthiza reguloides</i>	-	-	-	2011	-
Burrowing Grayfish	<i>fam. Parastaciidae gen. Engaeus</i>	-	-	-	2017	-
Bush Rat	<i>Rattus fuscipes</i>	-	-	-	2019	Yes
Cabbage White Butterfly	<i>Pieris rapae</i>	-	-	-	1941	-
California Quail*	<i>Callipepla californicus</i>	-	-	-	2002	-
Caper White Butterfly	<i>Belenois java teutonia</i>	-	-	-	1939	-
Caspian Tern	<i>Hydroprogne caspia</i>	-	L	nt	1978	-
Central Highlands Spiny Crayfish	<i>Euastacus woiwuru</i>	-	-	-	2017	-
Chestnut Teal	<i>Anas castanea</i>	-	-	-	2017	-
Chestnut-rumped Heathwren	<i>Calamanthus pyrrhopygius</i>	-	L	vu	1998	-
Chocolate Wattled Bat	<i>Chalinolobus morio</i>	-	-	-	2015	-
Clamorous Reed Warbler	<i>Acrocephalus stentoreus</i>	-	-	-	2014	-
Climbing Galaxias	<i>Galaxias brevipinnis</i>	-	-	-	2002	-
Collared Sparrowhawk	<i>Accipiter cirrhocephalus</i>	-	-	-	2004	-
Common Bent-wing Bat	<i>Miniopterus schreibersii</i>	-	L	-	1990	-

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Common Blackbird*	<i>Turdus merula</i>	-	-	-	2019	Yes
Common Blue-tongued Lizard	<i>Tiliqua scincoides</i>	-	-	-	2014	-
Common Bronzewing	<i>Phaps chalcoptera</i>	-	-	-	2019	Yes
Common Brown Butterfly	<i>Heteronympha merope</i>	-	-	-	1941	-
Common Brush-tailed Possum	<i>Trichosurus vulpecula</i>	-	-	-	2018	Yes
Common Cicadabird	<i>Coracina tenuirostris</i>	-	-	-	2012	-
Common Freshwater Shrimp	<i>Paratya australiensis</i>	-	-	-	2017	-
Common Froglet	<i>Crinia signifera</i>	-	-	-	2018	Yes
Common Galaxias	<i>Galaxias maculatus</i>	-	-	-	2014	-
Common Imperial Blue Butterfly	<i>Jalmenus evagoras</i>	-	-	-	1934	-
Common Myna*	<i>Acridotheres tristis</i>	-	-	-	2019	Yes
Common Ring-tailed Possum	<i>Pseudocheirus peregrinus</i>	-	-	-	2018	Yes
Common Silver Xenica Butterfly	<i>Oreixenica lathoniella herceus</i>	-	-	-	1949	--
Common Splendid Ghost Moth	<i>Aenetus lignivoren</i>	-	-	-	1932	-
Common Starling*	<i>Sturnus vulgaris</i>	-	-	-	2019	Yes
Common Wombat	<i>Vombatus ursinus</i>	-	-	-	2019	Yes
Convict Cichlid*	<i>Ambattiana nigrofasciata</i>	-	-	-	1994	-
Coventry's Skink	<i>Niveoscincus coventryi</i>	-	-	-	1982	-
Crescent Honeyeater	<i>Phylidonyris pyrrhoptera</i>	-	-	-	2019	Yes
Crested Pigeon	<i>Ocyphaps lophotes</i>	-	-	-	2019	Yes
Crested Shrike-tit	<i>Falcunculus frontatus</i>	-	-	-	2015	-
Crimson Rosella	<i>Platycercus elegans</i>	-	-	-	2019	Yes
Darter	<i>Anhinga novaeollandiae</i>	-	-	-	2014	-
Delicate Skink	<i>Lampropholis delicata</i>	-	-	-	2015	-
Dendy's Toadlet	<i>Pseudophryne dendyi</i>	-	-	dd	1973	-
Diamond Firetail	<i>Stagonopleura guttata</i>	-	L	nt	1998	-

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Donmya Skipper Butterfly	<i>Hesperilla domyza</i>	-	-	-	1961	-
Dull-purple Azure Butterfly	<i>Ogyris olane</i>	-	-	-	1941	-
Dusky Antechinus	<i>Antechinus swainsonii</i>	-	-	-	2015	-
Dusky Moorhen	<i>Gallinula tenebrosa</i>	-	-	-	2017	-
Dusky Woodswallow	<i>Artamus cyanopterus</i>	-	-	-	2011	-
Dwarf Galaxias	<i>Galaxiella pusilla</i>	Vul	L	en	2012	-
Eastern Australian Smelt	<i>Retropinna</i> sp. 2	-	-	-	1998	-
Eastern Broad-nosed Bat	<i>Scotorepens orion</i>	-	-	-	1998	-
Eastern Brown Snake	<i>Pseudonaja textilis</i>	-	-	-	2010	-
Eastern False Pipistrelle	<i>Falsistrellus tasmaniensis</i>	-	-	-	2015	-
Eastern Gambusia *	<i>Gambusia holbrooki</i>	-	-	-	2012	-
Eastern Great Egret	<i>Ardea modesta</i>	-	L	Vu	2017	-
Eastern Grey Kangaroo	<i>Macropus giganteus</i>	-	-	-	2018	Yes
Eastern Quoll	<i>Dasyurus viverrinus</i>	En	L	ex	1900	
Eastern Rosella	<i>Platycercus eximius</i>	-	-	-	2019	Yes
Eastern Snake-necked Turtle	<i>Chelodina longicollis</i>	-	-	dd	2014	
Eastern Spinebill	<i>Acanthorhynchus tenuirostris</i>	-	-	-	2019	Yes
Eastern Whipbird	<i>Psophodes olivaceus</i>	-	-	-	2019	Yes
Eastern Yellow Robin	<i>Eopsaltria australis</i>	-	-	-	2019	Yes
Emu	<i>Dromaius novaehollandiae</i>	-	-	nt	2000	-
Eurasian Coot	<i>Fulica atra</i>	-	-	-	2017	-
Eurasian Tree Sparrow *	<i>Passer montanus</i>	-	-	-	2000	-
European Carp *	<i>Cyprinus carpio</i>	-	-	-	2010	-
European Goldfinch *	<i>Carduelis carduelis</i>	-	-	-	2011	-
European Greenfinch *	<i>Chloris chloris</i>	-	-	-	2010	-
European Hare *	<i>Lepus europeus</i>	-	-	-	2018	Yes

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European Rabbit*	<i>Oryctolagus cuniculus</i>	-	-	-	2018	Yes
European Skylark*	<i>Alauda arvensis</i>	-	-	-	2014	-
Fairy Martin	<i>Petrochelidon ariel</i>	-	-	-	2004	-
Fallow Deer*	<i>Cervus dama</i>	-	-	-	2018	Yes
Fan-tailed Cuckoo	<i>Cacomantis flabelliformis</i>	-	-	-	2016	-
Feathertail Glider	<i>Acrobates pygmaeus</i>	-	-	-	2012	-
Flame Robin	<i>Petroica phoenicea</i>	-	-	-	2019	Yes
Flathead Gudgeon	<i>Philypnodon grandiceps</i>	-	-	-	2014	-
Flinders Pygmy Perch	<i>Nannoperca</i> sp. 1	-	-	VU	2006	-
Forest Raven	<i>Corvus tasmanicus</i>	-	-	-	2001	-
Fork-tailed Swift	<i>Apus pacificus</i>	-	-	-	2001	-
Freckled Duck	<i>Stictonetta naevosa</i>	-	L	en	2007	-
Freshwater Blackfishes	<i>fam. Percichthyidae</i> gen. <i>Gadopsis</i>	-	-	-	1968	-
Freshwater Catfish	<i>Tandanus tandanus</i>	-	L	en	1993	-
Freshwater Eels	<i>fam. Anguillidae</i> gen. <i>Anguilla</i>	-	-	-	2007	-
Freshwater Mussel	<i>Hyridella (Hyridella) drapeta</i>	-	-	-	2016	-
Freshwater Snail	<i>Victoroboa victoriensis</i>	-	-	-	1988	-
Galah	<i>Eolophus roseicapillus</i>	-	-	-	2019	Yes
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	-	-	-	2013	-
Garden Skink	<i>Lampropholis guichenoti</i>	-	-	-	2015	-
Gippsland Burrowing Crayfish	<i>Engaeus hemicirratulus</i>	-	-	en	2017	-
Gippsland Spiny Crayfish	<i>Euastacus kershawi</i>	-	X	-	2017	-
Glossy Grass Skink	<i>Pseudemoia rawlinsoni</i>	-	-	VU	2008	-
Glossy Ibis	<i>Plegadis falcinellus</i>	-	-	nt	2019	Yes
Goat (feral)*	<i>Capra hircus</i>	-	-	-	2006	-
Golden Whistler	<i>Pachycephala pectoralis</i>	-	-	-	2019	Yes

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Golden-headed Cisticola	<i>Cisticola exilis</i>	-	-	-	2014	-
Goldfish*	<i>Carassius auratus</i>	-	-	-	2006	-
Gould's Long-eared Bat	<i>Nyctophilus gouldi</i>	-	-	-	2000	-
Gould's Wattled Bat	<i>Chalinolobus gouldii</i>	-	-	-	2015	-
Granular Burrowing Crayfish	<i>Engaeus cucicularius</i>	-	-	-	1999	-
Great Cormorant	<i>Phalacrocorax carbo</i>	-	-	-	2017	-
Great Crested Grebe	<i>Podiceps cristatus</i>	-	-	-	2002	-
Greater Glider	<i>Petauroides volans</i>	V	L	VU	2012	-
Grey Butcherbird	<i>Cracticus torquatus</i>	-	-	-	2019	Yes
Grey Currawong	<i>Strepera versicolor</i>	-	-	-	2019	Yes
Grey Fantail	<i>Rhipidura albiscapa</i>	-	-	-	2019	Yes
Grey Goshawk	<i>Accipiter novaehollandiae novaehollandiae</i>	-	L	VU	2000	-
Grey Shrike-thrush	<i>Colluricincla harmonica</i>	-	-	-	2019	Yes
Grey Teal	<i>Anas gracilis</i>	-	-	-	2014	-
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	V	L	VU	1982	-
Growing Grass Frog	<i>Litoria raniformis</i>	V	L	en	2018	Yes
Gull-billed Tern	<i>Gelochelidon nilotica macrotarsa</i>	-	L	en	1978	-
Hardhead	<i>Aythya australis</i>	-	-	VU	2017	-
Heath Ochre Butterfly	<i>Trapezites phigalia</i>	-	-	-	1939	-
Helmeted Guinea Fowl*	<i>Numida meleagris</i>	-	-	-	2000	-
Highland Copperhead	<i>Austrelaps ramsayi</i>	-	-	-	1994	-
Hoary-headed Grebe	<i>Polyocephalus poliocephalus</i>	-	-	-	2014	-
Hog Deer*	<i>Cervus porcinus</i>	-	-	-	1950	-
Hooded Robin	<i>Melanodryas cucullata cucullata</i>	-	L	nt	1999	-
Horsfield's Bronze-Cuckoo	<i>Chrysococcyx basalis</i>	-	-	-	2014	-
Horsfield's Bushlark	<i>Mirafra javanica</i>	-	-	-	2000	-

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House Mouse*	<i>Mus musculus</i>	-	-	-	2011	-
House Sparrow*	<i>Passer domesticus</i>	-	-	-	2011	-
Imperial Jeebel Butterfly	<i>Delias harpaluce</i>	-	-	-	1954	-
Indian Peafowl*	<i>Pavo cristatus</i>	-	-	-	2001	-
Intermediate Egret	<i>Ardea intermedia</i>	-	L	en	2019	Yes
Jack Dempsey Cichlid	<i>Rocio octofasciata</i>	-	-	-	1979	-
Jacky Winter	<i>Microeca fascians</i>	-	-	-	2001	-
Koala	<i>Phascolarctos cinereus</i>	-	-	-	2018	Yes
Lace Monitor	<i>Varanus varius</i>	-	-	en	2016	-
Large Forest Bat	<i>Vespodelus darlingtoni</i>	-	-	-	2015	-
Large-billed Scrubwren	<i>Sericornis magnirostris</i>	-	-	-	2016	-
Latham's Snipe	<i>Gallinago hardwickii</i>	-	-	nt	2014	-
Laughing Kookaburra	<i>Dacelo novaeguineae</i>	-	-	-	2019	Yes
Leaden Flycatcher	<i>Myiagra rubecula</i>	-	-	-	2010	-
Leaf Green Tree Frog	<i>Litoria nudidigitus</i>	-	-	-	2012	-
Lesser Long-eared Bat	<i>Nyctophilus geoffroyi</i>	-	-	-	2015	-
Lesueur's Frog	<i>Litoria lesueuri</i>	-	-	-	1965	-
Letter-winged Kite	<i>Elanus scriptus</i>	-	-	-	2019	Yes
Lewin's Honeyeater	<i>Meliphaga lewinii</i>	-	-	-	2016	-
Lewin's Rail	<i>Lewinia pectoralis pectoralis</i>	-	L	vu	2010	-
Little Bittern	<i>Ixobrychus minutus dubius</i>	-	L	en	2014	-
Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>	-	-	-	2017	-
Little Corella	<i>Cacatua sanguinea</i>	-	-	-	2019	Yes
Little Eagle	<i>Hieraetus morphnoides</i>	-	-	-	2004	-
Little Egret	<i>Egretta garzetta nigripes</i>	-	L	en	2000	-
Little Forest Bat	<i>Vespodelus vulturinus</i>	-	-	-	2015	-

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Little Grassbird	<i>Megalurus gramineus</i>	-	-	-	2017	-
Little Lorikeet	<i>Glossopsitta pusilla</i>	-	-	-	2009	-
Little Pied Cormorant	<i>Microcarbo melanoleucos</i>	-	-	-	2019	Yes
Little Raven	<i>Corvus mellori</i>	-	-	-	2019	Yes
Little Wattlebird	<i>Anthochaera chrysoptera</i>	-	-	-	2019	Yes
Long-billed Corella	<i>Cacatua tenuirostris</i>	-	-	-	2011	-
Long-eared bats	<i>fam. Vespertilionidae gen. Nyctophilus</i>	-	-	-	2014	-
Longfin Eel	<i>Anguilla reinhardtii</i>	-	-	-	2007	-
Lowland Burrowing Crayfish	<i>Engaeus quadrimanus</i>	-	-	-	1999	-
Lowland Copperhead	<i>Austrelaps superbus</i>	-	-	-	2014	Yes
Macleay's Swallowtail Butterfly	<i>Graphium macleayanum moggana</i>	-	-	-	1949	-
Macquarie Perch	<i>Macquaria australasica</i>	E	L	en	1959	-
Magpie-lark	<i>Gallinula cyanoleuca</i>	-	-	-	2019	Yes
Mainland Dusky Antechinus	<i>Antechinus mimetes</i>	-	-	-	2003	-
Masked Lapwing	<i>Vanellus miles</i>	-	-	-	2014	-
Masked Owl	<i>Tyto novaehollandiae novaehollandiae</i>	-	L	en	2006	-
Masked Woodswallow	<i>Artamus personatus</i>	-	-	-	1977	-
Mayflies	<i>subf. Atalophlebiinae gen. Atalophlebia</i>	-	-	-	1998	-
McCoy's Skink	<i>Anepischtos maccoyi</i>	-	-	-	2015	-
Metallic Skink	<i>Niveoscincus metallicus</i>	-	-	-	2014	-
Microcaddisflies	<i>fam. Hydroptiliidae gen. Acritoptilia</i>	-	-	-	1998	-
Mirror Carp *	<i>Cyprinus carpio var. mirror</i>	-	-	-	1999	-
Mistletoebird	<i>Dicaeum hirundinaceum</i>	-	-	-	2015	-
Mites and Ticks	<i>subc. Micrura infc. Acarina</i>	-	-	-	1998	-
Monarch Butterfly	<i>Danaus plexippus</i>	-	-	-	1953	-
'Morwell' Galaxias	<i>Galaxias sp. 15</i>	-	-	-	2017	-

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Mountain Brush-tailed Possum	<i>Trichosurus cunninghami</i>	-	-	-	2016	-
Mountain Dragon	<i>Rankinia diemensis</i>	-	-	-	2015	-
Mountain Galaxias complex	<i>Galaxias olidus complex</i>	-	-	-	1988	-
Murray Cod	<i>Maccullochella peelii</i>	V	L	VU	1992	-
Muscovy Duck	<i>Cairina moschata</i>	-	-	-	2015	-
Musk Duck	<i>Bizura lobata</i>	-	-	VU	2001	-
Musk Lorikeet	<i>Glossopsitta concinna</i>	-	-	-	2017	-
Nankeen Kestrel	<i>Falco cenchroides</i>	-	-	-	2011	-
Nankeen Night Heron	<i>Nycticorax caledonicus hillii</i>	-	-	nt	2014	-
Narracan River Corrugated Mussel	<i>Hyridella (Hyridella) narracemensis</i>	-	-	-	1889	-
New Holland Honeyeater	<i>Phylidonyris noveehollandiae</i>	-	-	-	2019	Yes
New Zealand Mudsnail	<i>Potamopyrgus antipodarum</i>	-	-	-	1991	-
Noisy Friarbird	<i>Philemon corniculatus</i>	-	-	-	1916	-
Noisy Miner	<i>Manorina melanoccephala</i>	-	-	-	2019	Yes
Non-parasitic Lamprey	<i>Mordacia praecox</i>	-	-	-	1983	-
Northern Mallard*	<i>Anas platyrhynchos</i>	-	-	-	2015	-
Olive Whistler	<i>Pachycephala olivacea</i>	-	-	-	2015	-
Olive-backed Oriole	<i>Oriolus sagittatus</i>	-	-	-	2017	-
Oriental Weatherloach*	<i>Misgurnus anguillicaudatus</i>	-	-	-	2012	-
Ornate Mountain Galaxias	<i>Galaxias ornatus</i>	-	-	-	2002	-
Ostrich*	<i>Struthio camelus</i>	-	-	-	1999	-
Owlet moth	<i>Proteuxoa marginalis</i>	-	-	-	1944	-
Pacific Barn Owl	<i>Tyto javanica</i>	-	-	-	1997	-
Pacific Black Duck	<i>Anas superciliosa</i>	-	-	-	2017	Yes
Painted Button-quail	<i>Turnix varia</i>	-	-	-	2012	-
Pale-headed Rosella	<i>Platyercus adscitus</i>	-	-	-	1977	-

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Pallid Cuckoo	<i>Cacomantis pallidus</i>	-	-	-	2012	-
Pea Clam	<i>Pisidium (Euglesa) etheridgei</i>	-	-	-	1995	-
Peaceful Dove	<i>Geopelia striata</i>	-	-	-	2001	-
Peregrine Falcon	<i>Falco peregrinus</i>	-	-	-	2015	-
Peron's Tree Frog	<i>Litoria peronii</i>	-	-	-	2014	-
Pied Cormorant	<i>Phalacrocorax varius</i>	-	-	nt	2000	-
Pied Currawong	<i>Strepera graculina</i>	-	-	-	2019	Yes
Pig (feral)*	<i>Sus scrofa</i>	-	-	-	1982	-
Pill Clam	<i>fam. Sphaeriidae gen. Pisidium</i>	-	-	-	1987	-
Plotbird	<i>Pycnoptilus floccosus</i>	-	-	-	2015	-
Pink Robin	<i>Petroica rodinogaster</i>	-	-	-	2003	-
Pink-eared Duck	<i>Malacorhynchus membranaceus</i>	-	-	-	2009	-
Plate-thigh beetles	<i>supf. Scirtidea fam. Eucinetidae</i>	-	-	-	1998	-
Platypus	<i>Ornithorhynchus anatinus</i>	-	-	-	2017	-
Plumed Whistling-Duck	<i>Dendrocygna eytoni</i>	-	-	-	2007	-
Pobblebonk Frog	<i>Limnodynastes dumerilii dumerilii</i>	-	-	-	2018	Yes
Pouched Lamprey	<i>Geotria australis</i>	-	-	-	1982	-
Powerful Owl	<i>Ninox strenua</i>	-	L	vu	2014	-
Purple Swamphen	<i>Porphyrio porphyrio</i>	-	-	-	2019	Yes
Rainbow Bee-eater	<i>Merops ornatus</i>	-	-	-	1978	-
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	-	-	-	2019	Yes
Rainbow Trout*	<i>Oncorhynchus mykiss</i>	-	-	-	1988	-
Ramshorn snail	<i>Ferrissia (Pettancylus) tasmanicus</i>	-	-	-	1998	-
Red Fox*	<i>Vulpes vulpes</i>	-	-	-	2018	Yes
Red Wattlebird	<i>Anthochaera carunculata</i>	-	-	-	2019	Yes
Red-bellied Black Snake	<i>Pseudechis porphyriacus</i>	-	-	-	2011	-

Common name	Scientific name	EPBC Act	FFG Act	DSE 2013a	Most recent record	Recorded during current surveys (2018/19)
Red-browed Finch	<i>Neochmia temporalis</i>	-	-	-	2019	Yes
Red-browed Treecreeper	<i>Climacteris erythrops</i>	-	-	-	2015	-
Redfin*	<i>Perca fluviatilis</i>	-	-	-	2010	-
Red-kneed Dotterel	<i>Erythronyx cinctus</i>	-	-	-	2009	-
Red-rumped Parrot	<i>Psephotus haematonotus</i>	-	-	-	1998	-
Red-whiskered Bulbul*	<i>Pycnonotus jocosus</i>	-	-	-	1977	-
Regent Honeyeater	<i>Anthochaera phrygia</i>	CE	L	cr	1970	-
Restless Flycatcher	<i>Myiagra inquieta</i>	-	-	-	2011	-
Riffle beetle	<i>Simsonia wilsoni</i>	-	-	-	1998	-
Riffle bug	<i>Microvelia (Austromicrovelia) peramoena</i>	-	-	-	1998	-
Ringed Xenica	<i>Geitoneura acantha</i>	-	-	-	1950	-
River Blackfish	<i>Gadopsis marmoratus</i>	-	-	-	2017	-
Rock Dove*	<i>Columba livia</i>	-	-	-	2001	-
Rose Robin	<i>Petroica rosea</i>	-	-	-	2015	-
Rosella species	<i>Platycercus</i> sp.	-	-	-	2001	-
Rove beetles	supf. <i>Staphylinidea</i> fam. <i>Staphylinidae</i>	-	-	-	1998	-
Royal Spoonbill	<i>Platalea regia</i>	-	-	nt	2007	-
Rufous Fantail	<i>Rhipidura rufifrons</i>	-	-	-	2015	-
Rufous Songlark	<i>Cincloramphus mathewsi</i>	-	-	-	2000	-
Rufous Whistler	<i>Pachycephala rufiventris</i>	-	-	-	2015	-
Rufous-bellied Pademelon	<i>Thylagale billiardieri</i>	-	L	rx	1830	-
Sacred Kingfisher	<i>Todiramphus sanctus</i>	-	-	-	2017	-
Sambar*	<i>Cervus unicolor</i>	-	-	-	2016	-
Satin Bowerbird	<i>Ptilonorhynchus violaceus</i>	-	-	-	2014	-
Satin Flycatcher	<i>Myiagra cyanoleuca</i>	-	-	-	2015	-
Satin-green Forester Moth	<i>Pollanillus viridipulverulenta</i>	-	-	-	1947	-

Common name	Scientific name	EPBC Act	FFG Act	DSE 2013a	Most recent record	Recorded during current surveys (2018/19)
Scarlet Honeyeater	<i>Myzomela sanguinolenta</i>	-	-	-	2015	-
Scarlet Robin	<i>Petroica boodang</i>	-	-	-	2013	-
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	-	-	-	2009	-
Sheep (feral)*	<i>Ovis aries</i>	-	-	-	2006	-
Shield bug	<i>Lubentius marginellus</i>	-	-	-	1982	-
Shining Bronze-Cuckoo	<i>Chrysococcyx lucidus</i>	-	-	-	2014	-
Short-beaked Echidna	<i>Tachyglossus aculeatus</i>	-	-	-	2018	Yes
Shorthead Lamprey	<i>Mordacia mordax</i>	-	-	-	2017	-
Shouldered Brown Butterfly	<i>Heteronympha penelope penelope</i>	-	-	-	2016	-
Silky Hairstreak Butterfly	<i>Pseudalmenus chlorinda</i>	-	-	-	1927	-
Silky Hairstreak Butterfly	<i>Pseudalmenus chlorinda zephyrus</i>	-	X	VU	1954	-
Silver Gull	<i>Chroicocephalus novaeollandiae</i>	-	-	-	2002	-
Silvereye	<i>Zosterops lateralis</i>	-	-	-	2017	-
Skinks	<i>infp. Scincomorpha</i> fam. <i>Scincidae</i>	-	-	-	1997	-
Soldier Flies	<i>Stratiomyidae</i> sp. 3 (EPA)	-	-	-	1998	-
Song Thrush*	<i>Turdus philomelos</i>	-	-	-	2000	-
Sooty Owl	<i>Tyto tenebricosa tenebricosa</i>	-	L	VU	2012	-
South Gippsland Spiny Crayfish	<i>Euastacus neodiversus</i>	-	L	en	2014	-
Southern Boobook	<i>Ninox novaezeelandiae</i>	-	-	-	2019	Yes
Southern Brown Bandicoot	<i>Isodon obesulus obesulus</i>	E	L	nt	1978	-
Southern Brown Tree Frog	<i>Litoria ewingii</i>	-	-	-	2017	-
Southern Bullfrog (ssp. unknown)	<i>Limnodynastes dumerilii</i>	-	-	-	2015	-
Southern Dung Beetle	<i>Onthophagus australis</i>	-	-	-	1963	-
Southern Emu-wren	<i>Stipiturus malachurus</i>	-	-	-	1981	-
Southern Forest Bat	<i>Vespertilio regulus</i>	-	-	-	2014	-
Southern Long-nosed Bandicoot	<i>Perameles nasuta</i>	-	-	-	2014	-

Common name	Scientific name	EPBC Act	FFGG Act	DSE 2013a	Most recent record	Recorded during current surveys (2018/19)
Southern Myotis	<i>Myotis macropus</i>	-	-	nt	2013	-
Southern Pygmy Perch	<i>Nannoperca australis</i>	-	-	-	2017	-
Southern Shortfin Eel	<i>Anguilla australis</i>	-	-	-	2017	-
Southern Toadlet	<i>Pseudophryne semimarmorata</i>	-	-	VU	1993	-
Southern Water Skink	<i>Eulamprus tympanum tympanum</i>	-	-	-	2013	-
Spencer's Skink	<i>Pseudemoia spenceri</i>	-	-	-	1897	-
Spiny Crayfish	<i>fam. Parastacidae gen. Euastacus</i>	-	-	-	2017	-
Spotless Crane	<i>Parzana tabuensis</i>	-	-	-	1992	-
Spot-tailed Quoll	<i>Dasyurus maculatus maculatus</i>	E	L	en	2016	-
Spotted Galaxias	<i>Galaxias truttaceus</i>	-	-	-	1979	-
Spotted Harrier	<i>Circus assimilis</i>	-	-	nt	2003	-
Spotted Marsh Frog	<i>Limnodynastes tasmaniensis</i>	-	-	-	2018	Yes
Spotted Pardalote	<i>Pardalotus punctatus punctatus</i>	-	-	-	2019	Yes
Spotted Quail-thrush	<i>Cinlosoma punctatum</i>	-	-	nt	2016	-
Spotted Tilapia*	<i>Pelmatolapia mariae</i>	-	-	-	1994	-
Spotted Turtle-Dove*	<i>Streptopelia chinensis</i>	-	-	-	2017	-
Straw-necked Ibis	<i>Threskiornis spinicollis</i>	-	-	-	2014	-
Striated Fieldwren	<i>Calamanthus fuliginosus</i>	-	-	-	1981	-
Striated Pardalote	<i>Pardalotus striatus</i>	-	-	-	2019	Yes
Striated Thornbill	<i>Acanthiza lineata</i>	-	-	-	2019	Yes
Striped Marsh Frog	<i>Limnodynastes peronii</i>	-	-	-	2018	Yes
Stubble Quail	<i>Coturnix pectoralis</i>	-	-	-	2001	-
Sugar Glider	<i>Petaurus breviceps</i>	-	-	-	2018	Yes
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	-	-	-	2017	-
Superb Fairy-wren	<i>Malurus cyaneus</i>	-	-	-	2019	Yes
Superb Lyrebird	<i>Menura novaeollandiae</i>	-	-	-	2019	Yes

Common name	Scientific name	EPBC Act	FFG Act	DSE 2013a	Most recent record	Recorded during current surveys (2018/19)
Swamp Harrier	<i>Circus approximans</i>	-	-	-	2014	Yes
Swamp Rat	<i>Rattus lutreolus</i>	-	-	-	2014	-
Swamp Skink	<i>Lissolepis coventryi</i>	-	L	VU	2007	-
Swift Parrot	<i>Lathamus discolor</i>	CE	L	en	1980	-
Tawny Frogmouth	<i>Podargus strigoides</i>	-	-	-	2019	Yes
Tench*	<i>Tinca tinca</i>	-	-	-	1913	-
Tiger Snake	<i>Notechis scutatus</i>	-	-	-	2014	-
Tree Martin	<i>Petrochelidon nigricans</i>	-	-	-	2010	-
Varied Sittella	<i>Daphoenositta chrysoptera</i>	-	-	-	2015	-
Varied Swordgrass Brown	<i>Tisiphone abeona</i>	-	-	-	2012	-
Verraux's Tree Frog	<i>Litoria verreauxii verreauxii</i>	-	-	-	2018	Yes
Victorian Smooth Froglet	<i>Geocrinia victoriana</i>	-	-	-	2016	-
Water Dragon	<i>Intelligama lesueurii</i>	-	-	-	2005	-
Water Rat	<i>Hydromys chrysogaster</i>	-	-	-	2013	-
Water Snipe-flies	<i>supf. Tabanoidea</i> fam. <i>Athericidae</i>	-	-	-	1998	-
Weasel Skink	<i>Saproscincus mustelinus</i>	-	-	-	2015	-
Wedge-tailed Eagle	<i>Aquila audax</i>	-	-	-	2015	-
Weebill	<i>Smicromis brevirostris</i>	-	-	-	2001	-
Welcome Swallow	<i>Hirundo neoxena</i>	-	-	-	2017	Yes
Western Carp Gudgeon (Species Complex)	<i>Hypseleotris klunzingeri</i>	-	-	-	1999	-
Whirligig beetle	<i>Macrogyrus (Tribolgyrus) australis</i>	-	-	-	1980	-
Whistling Kite	<i>Haliastur sphenurus</i>	-	-	-	2014	-
White-backed Swallow	<i>Cheramoeca leucosternus</i>	-	-	-	1942	-
White-bellied Cuckoo-shrike	<i>Coracina papuensis</i>	-	-	-	1999	-
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	-	L	VU	2014	-
White-browed Scrubwren	<i>Sericornis frontalis</i>	-	-	-	2019	Yes

Common name	Scientific name	EPBC Act	FFG Act	DSE 2013a	Most recent record	Recorded during current surveys (2018/19)
White-browed Treecreeper	<i>Climacteris affinis</i>	-	L	VU	2004	-
White-browed Woodswallow	<i>Artamus superciliosus</i>	-	-	-	1978	-
White-eared Honeyeater	<i>Lichenostomus leucotis</i>	-	-	-	2017	-
White-faced Heron	<i>Egretta novaehollandiae</i>	-	-	-	2017	-
White-footed Dunnart	<i>Sminthopsis leucopus</i>	-	L	nt	2017	-
White-fronted Chat	<i>Epthianura albifrons</i>	-	-	-	2009	-
White-lipped Snake	<i>Drysdalia coronoides</i>	-	-	-	2014	-
White-naped Honeyeater	<i>Melithreptus lunatus</i>	-	-	-	2016	-
White-necked Heron	<i>Ardea pacifica</i>	-	-	-	2011	-
White-plumed Honeyeater	<i>Lichenostomus penicillatus</i>	-	-	-	2019	Yes
White's Skink	<i>Liopholis whitii</i>	-	-	-	2013	-
White-striped Freetail Bat	<i>Tadarida australis</i>	-	-	-	2018	Yes
White-throated Gerygone	<i>Gerygone olivacea</i>	-	-	-	1978	-
White-throated Needle-tail	<i>Hirundapus caudactus</i>	-	-	VU	2007	-
White-throated Nightjar	<i>Eurostopodus mystacalis</i>	-	-	-	2015	-
White-throated Treecreeper	<i>Cornobates leucophaeus</i>	-	-	-	2019	Yes
White-winged Chough	<i>Corcorax melanorhamphos</i>	-	-	-	2000	-
White-winged Tiller	<i>Lalage sueurii</i>	-	-	-	2010	-
Willie Wagtail	<i>Rhipidura leucophrys</i>	-	-	-	2019	Yes
Wonga Pigeon	<i>Leucosarcia melanoleuca</i>	-	-	-	2016	-
Yellow Thornbill	<i>Acanthiza nana</i>	-	-	-	2019	Yes
Yellow-bellied Glider	<i>Petaurus australis</i>	-	-	-	2012	-
Yellow-billed Spoonbill	<i>Platalea flavipes</i>	-	-	-	2019	Yes
Yellow-faced Honeyeater	<i>Lichenostomus chrysops</i>	-	-	-	2019	Yes
Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>	-	-	-	2019	Yes
Yellow-tailed Black-Cockatoo	<i>Calyptorhynchus funereus</i>	-	-	-	2019	Yes

Common name	Scientific name	EPBC Act	FFG Act	DSE 2013a	Most recent record	Recorded during current surveys (2018/19)
Yellow-tufted Honeyeater	<i>Lichenostomus melanops</i>	-	-	-	2004	-

Appendix 3.2 – Significant Fauna Species

Table A2.2. Significant fauna within 10 kilometres of the study area.

Habitat characteristics of significant fauna species previously recorded within 10 kilometres of the study area, or that may potentially occur within the study area were assessed to determine their likelihood of occurrence. The likelihood of occurrence rankings for each of the threatened species are:

1	High Likelihood	<ul style="list-style-type: none"> Known 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 2018a); and/or, The study area contains the species' preferred habitat.
2	Moderate Likelihood	<ul style="list-style-type: none"> 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 2018a); and/or, The study area contains some characteristics of the species' preferred habitat.
3	Low Likelihood	<ul style="list-style-type: none"> 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.
4	Unlikely	<ul style="list-style-type: none"> 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.

EPBC *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
 FFG *Flora and Fauna Guarantee Act 1988* (FFG Act)
 DSE Advisory List of Threatened Vertebrate Fauna in Victoria (DSE 2013a); Advisory List of Threatened Invertebrate Fauna in Victoria (DSE 2009)
 NAP National Action Plan (Cogger *et al.*, 1993; Garnet and Crowley 2000; Maxwell *et al.*, 1996)

EX	Extinct	DD	Data deficient (insufficiently or poorly known)
RX	Regionally extinct	L	Listed as threatened under FFG Act
CR	Critically endangered	I	Invalid or ineligible for listing under the FFG Act
EN	Endangered	#	Listed on the Protected Matters Search Tool
VU	Vulnerable	*	Additional information from the Victorian Fauna Database
RA	Rare		
NT	Near threatened		
CD	Conservation dependent		
LC	Least concern		

Common Name	Scientific Name	Last Documented Record (VBA)	# Records (VBA)	EPBC Act	FFG ACT	DSE (2013)	Likelihood of occurrence within the study area
NATIONAL SIGNIFICANCE							
Australasian Bittern	<i>Botaurus poiciloptilus</i> #	2009 (Morwell Bridge – Birdline Victoria)	1	EN	L	EN	3
Australian Grayling	<i>Prototroctes maraena</i>	1981	2	VU	L	VU	4
Australian Painted Snipe	<i>Rostratula australis</i> #	-	1	VU	L	CR	4
Broad-toothed Rat	<i>Mastacomys fuscus mordicus</i> #	-	1	VU	L	EN	4
Curlew Sandpiper	<i>Calidris ferruginea</i> #	-	1	CR	-	EN	4
Dwarf Galaxias	<i>Galaxiella pusilla</i>	2012	7	VU	L	EN	3
Eastern Curlew	<i>Numenius madagascariensis</i> #	-	1	CR	-	VU	4
Eastern Quoll	<i>Dasyurus viverrinus</i>	-	1	EN	L	RX	4
Greater Glider	<i>Petauroides Volans</i>	2012	25	VU	-	VU	2
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i> #	-	-	VU	L	VU	2
Growing Grass Frog	<i>Litoria raniformis</i>	2010	15	VU	L	EN	1
Long-nosed Potoroo	<i>Potorous tridactylus tridactylus</i>	-	1	VU	L	NT	4
Painted Honeyeater	<i>Grantiella picta</i> #	-	1	VU	L	VU	4
Regent Honeyeater	<i>Anthochaera phrygia</i> #	-	1	CR	L	CR	4
Smoky Mouse	<i>Pseudomys fumeus</i> #	-	1	EN	L	EN	4
Southern Brown Bandicoot	<i>Isodon obesulus obesulus</i>	1978	4	EN	L	NT	3
Spot-tailed Quoll	<i>Dasyurus maculatus maculatus</i> #	-	3	EN	L	EN	4
Swift Parrot	<i>Lathamus discolor</i>	1977	3	CR	L	EN	4
STATE SIGNIFICANCE							
Australasian Shoveler	<i>Anas rhynchos</i>	2007	25	-	-	VU	2

Common Name	Scientific Name	Last Documented Record (VBA)	# Records (VBA)	EPBC Act	FFG ACT	DSE (2013)	Likelihood of occurrence within the study area
Black Falcon	<i>Falco subniger</i>	2000	4	-	-	VU	2
Blue-billed Duck	<i>Oxyura australis</i>	2014	26	-	L	EN	2
Brown Treecreeper (south-eastern ssp.)	<i>Climacteris picumnus victoricae</i>	1916	1	-	-	NT	4
Brush-tailed Phascogale	<i>Phascogale tapoatafa</i>	1932	3	-	L	VU	4
Caspian Tern	<i>Hydroprogne caspia</i>	1978	2	-	L	NT	4
Chestnut-rumped Heathwren	<i>Calamanthus pyrrophylgius</i>	1998	1	-	L	VU	4
Common Bent-wing Bat	<i>Miniopterus schreibersii</i>	1971	2	-	L	-	4
Common Sandpiper	<i>Actitis hypoleucos</i>	1993	1	-	-	VU	4
Diamond Firetail	<i>Stagonopleura guttata</i>	1998	2	-	L	NT	4
Eastern Great Egret	<i>Ardea modesta</i>	2013	54	-	L	VU	1
Freckled Duck	<i>Stictonetta naevosa</i>	2007	1	-	-	EN	3
Freshwater Catfish	<i>Tandanus tandanus</i>	1993	1	-	L	EN	4
Gippsland Burrowing Crayfish	<i>Engaeus hemicirratus</i>	1999	1	-	-	EN	2
Glossy Grass Skink	<i>Pseudemoia rawlinsoni</i>	2008	2	-	-	VU	2
Grey Goshawk	<i>Accipiter novaehollandiae novaehollandiae</i>	2000	8	-	L	VU	2
Gull-billed Tern	<i>Gelochelidon nilotica macrotarsa</i>	1978	1	-	L	EN	3
Hardhead	<i>Aythya australis</i>	2014	51	-	-	VU	1
Hooded Robin	<i>Melanodryas cucullata cucullata</i>	1999	1	-	L	NT	3
Intermediate Egret	<i>Ardea intermedia</i>	1980	4	-	L	EN	3
Lace Monitor	<i>Varanus varius</i>	2016	11	-	-	EN	1
Lewin's Rail	<i>Lewinia pectoralis pectoralis</i>	1997	2	-	L	VU	2
Little Bittern	<i>Ixobrychus minutus dubius</i>	2014	1	-	L	EN	2

Common Name	Scientific Name	Last Documented Record (VBA)	# Records (VBA)	EPBC Act	FFG ACT	DSE (2013)	Likelihood of occurrence within the study area
Little Egret	<i>Egretta garzetta nigripes</i>	1999	5	-	L	EN	2
Masked Owl	<i>Tyto novaehollandiae novaehollandiae</i>	2006	1	-	L	EN	2
Musk Duck	<i>Biziura lobata</i>	2001	23	-	-	VU	2
Narracan Burrowing Crayfish	<i>Engaeus phyllocercus</i>	2011	1	-	L	EN	3
Powerful Owl	<i>Ninox strenua</i>	2013	22	-	L	VU	1
South Gippsland Spiny Crayfish	<i>Euastacus neodiversus</i>	2012	1	-	L	EN	2
Southern Toadlet	<i>Pseudophryne semimarmorata</i>	1977	6	-	-	VU	3
Strzelecki Burrowing Crayfish	<i>Engaeus rostrogaleatus</i>	1999	1	-	L	EN	2
Swamp Skink	<i>Lissolepis coventryi</i>	2007	1	-	L	VU	2
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	2014	6	-	L	VU	2
White-browed Treecreeper	<i>Climacteris affinis</i>	2004	1	-	L	VU	2
White-footed Dunnart	<i>Smithopsis leucopus</i>	2007	1	-	L	NT	4
White-throated Needletail	<i>Hirundapus caudacutus</i>	2001	64	-	-	VU	1
REGIONAL SIGNIFICANCE							
Azure Kingfisher	<i>Alcedo azurea</i>	2015	5	-	-	NT	2
Emu	<i>Dromaius novaehollandiae</i>	2000	6	-	-	NT	4
Latham's Snipe	<i>Gallinago hardwickii</i>	2014	11	-	-	NT	1
Nankeen Night Heron	<i>Nycticorax caledonicus hillii</i>	2014	7	-	-	NT	1
Pectoral Sandpiper	<i>Calidris melanotos</i>	1993	1	-	-	NT	4
Pied Cormorant	<i>Phalacrocorax varius</i>	2000	20	-	-	NT	4
Royal Spoonbill	<i>Platalea regia</i>	2007	13	-	-	NT	4
Spotted Harrier	<i>Circus assimilis</i>	2003	2	-	-	NT	3

Common Name	Scientific Name	Last Documented Record (VBA)	# Records (VBA)	EPBC Act	FFG ACT	DSE (2013)	Likelihood of occurrence within the study area
Spotted Quail-thrush	<i>Cinclasona punctatum</i>	1979	4	-	-	NT	4

Data source: Victorian Biodiversity Atlas (DELWP 2018a); Protected Matters Search Tool (DAWE 2020a).

Taxonomic order: Mammals (Strahan 1995 *in* Menkhorst and Knight 2004); Birds (Christidis and Boles, 2008); Reptiles and Amphibians (Cogger *et al.* 1983 *in* Cogger 1996); Fish (Nelson 1994).

APPENDIX 4 - NATIVE VEGETATION REMOVAL REPORTS

Appendix 4.1 – Scenario 1: Native Vegetation Removal Report

Scenario test – native vegetation removal

This report provides offset requirements for internal testing of different proposals to remove native vegetation. **This report DOES NOT support an application to remove, destroy or lop native vegetation under Clause 52.16 or 52.17 of planning schemes in Victoria.** A report must be obtained from the Department of Environment, Land, Water and Planning (DELWP).

Date of issue: 23/09/2019

Time of issue: 12:17 pm

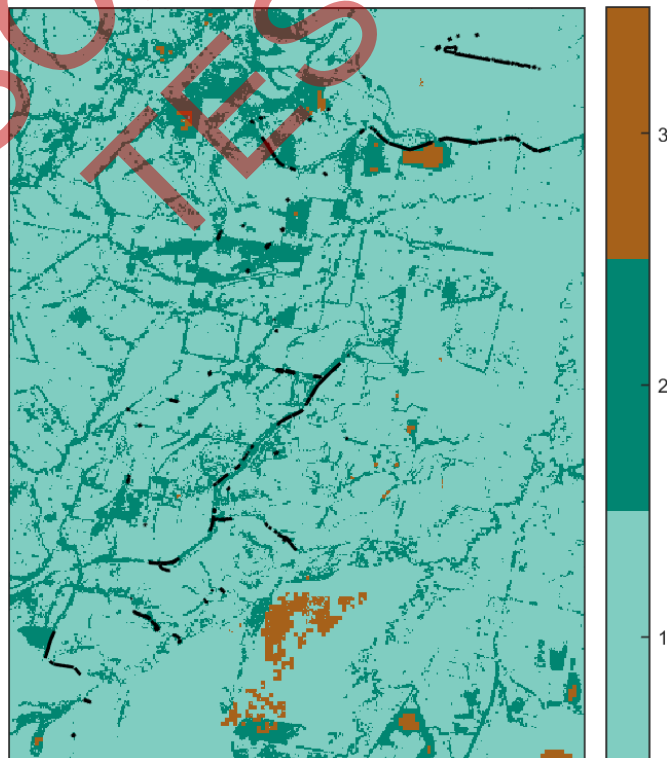
Report ID: Scenario Testing

Project ID	EHP10745_Delburn_VG94_noBuffer
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Assessment pathway

Assessment pathway	Detailed Assessment Pathway
Extent including past and proposed	15.604 ha
Extent of past removal	0.000 ha
Extent of proposed removal	15.604 ha
No. Large trees proposed to be removed	96
Location category of proposed removal	Location 3 The native vegetation is in an area where the removal of less than 0.5 hectares could have a significant impact on habitat for one or more rare or threatened species. The native vegetation is also in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map).

1. Location map



Scenario test – native vegetation removal

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 amount¹	0.517 general habitat units
Vicinity	West Gippsland Catchment Management Authority (CMA) or Latrobe City, South Gippsland Shire Council
Minimum strategic biodiversity value score ²	0.259
Large trees*	9 large trees
Species offset amount³	10.995 species units of habitat for Strzelecki Gum, <i>Eucalyptus strzeleckii</i>
Large trees*	87 trees
* The total number of large trees that the offset must protect	96 large trees to be protected in either the general, species or combination across all habitat units protected

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

SCENARIO TESTING

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

³ The species offset amount(s) required is the sum of all species habitat units in Appendix 1.

Appendix 4.2 – Scenario 2: Native Vegetation Removal Report

Scenario test – native vegetation removal

This report provides offset requirements for internal testing of different proposals to remove native vegetation. **This report DOES NOT support an application to remove, destroy or lop native vegetation under Clause 52.16 or 52.17 of planning schemes in Victoria.** A report must be obtained from the Department of Environment, Land, Water and Planning (DELWP).

Date of issue: 23/09/2019

Time of issue: 1:10 pm

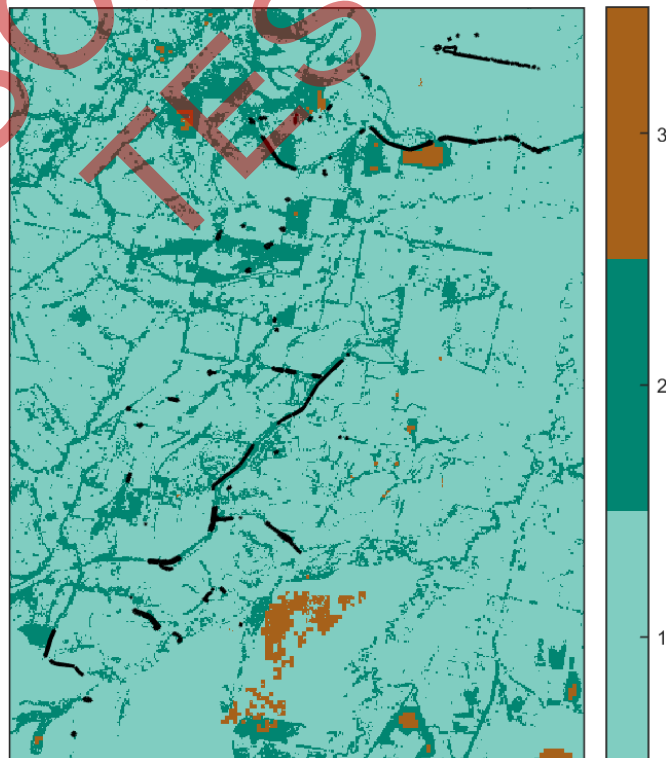
Report ID: Scenario Testing

Project ID	EHP10745_Delburn_VG94_w17mBuffer
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Assessment pathway

Assessment pathway	Detailed Assessment Pathway
Extent including past and proposed	41.412 ha
Extent of past removal	0.000 ha
Extent of proposed removal	41.412 ha
No. Large trees proposed to be removed	154
Location category of proposed removal	Location 3 The native vegetation is in an area where the removal of less than 0.5 hectares could have a significant impact on habitat for one or more rare or threatened species. The native vegetation is also in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map).

1. Location map



Scenario test – native vegetation removal

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 amount¹	0.509 general habitat units
Vicinity	West Gippsland Catchment Management Authority (CMA) or Latrobe City, South Gippsland Shire Council
Minimum strategic biodiversity value score ²	0.265
Large trees*	6 large trees
Species offset amount³	7.084 species units of habitat for Grey Goshawk, <i>Accipiter novaehollandiae novaehollandiae</i> 32.331 species units of habitat for Strzelecki Gum, <i>Eucalyptus strzeleckii</i>
Large trees*	148 trees
* The total number of large trees that the offset must protect	154 large trees to be protected in either the general, species or combination across all habitat units protected

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

SCENARIO TESTING

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

³ The species offset amount(s) required is the sum of all species habitat units in Appendix 1.