Seymour Wind Farm

Preliminary biodiversity assessment

DRAFT REPORT

Prepared for FERA Australia

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Biosis staff involved in this project were:

- Clare McCutcheon (zoological rapid field assessment)
- Michael Knudsen (mapping)
- Matt Looby (quality assurance).

SUMMARY

Biosis Pty Ltd was commissioned by FERA Australia (FERA) to undertake a preliminary biodiversity (ecological) assessment of the proposed Seymour Wind Farm, including a rapid field assessment. The study area consists of the proposed wind farm area and an area designated for a transmission easement each located approximately 95 kilometres north-east of Melbourne and approximately 15 kilometres east of Seymour. The study area generally occurs in the southern part of the Strathbogie Ranges extending south-east towards the Goulburn River and the uplands near Alexandra.

Ecological values

Key ecological values identified within the wind farm and transmission line study areas are as follows:

- Large extents of native vegetation, scattered trees, rocky outcrops, waterways, plantations and constructed dams.
- Two endangered Ecological Vegetation Classes (EVCs) (Grassy Woodland and Perched Boggy Shrubland) within the wind farm area and two endangered EVCs (Grassy Woodland and Floodplain Riparian Woodland) within the transmission line study area.
- Habitat for 31 threatened flora and 36 threatened fauna listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and/or Victoria *Flora and Fauna Guarantee Act 1988* (FFG Act) within the wind farm study area, including bird and bats species that may be at risk of collision with wind turbine generators and powerlines.
- Habitat for 26 threatened flora and 44 threatened fauna listed under the EPBC Act and/or the FFG Act within the transmission line study area.
- Three EPBC Act listed threatened ecological communities may occur within the wind farm and transmission line study areas:
  - White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Critically Endangered).
  - Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (Endangered).
  - Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains (Critically Endangered).
- Two FFG Act listed threatened fauna communities may occur within the wind farm and transmission line study areas:
  - Victorian Temperate Woodland Bird Community.
  - Lowland Riverine Fish Community of the Southern Murray Darling Basin.
- Wedge-tailed Eagle and other raptors are also likely to be abundant in the Strathbogie Ranges and will require consideration in terms of collision risk with turbines and power lines. Although these species may not be listed as threatened, they are apex predators and an iconic species in the region.
- Both study areas support extensive stands of native forest and woodland vegetation on private land, in conservation reserves, along waterways and roadsides, and on other public land tenures.

- The Goulburn River and its floodplain wetlands are significant landscape features in the transmission line study area.

Government legislation and policy

An initial assessment of the project in relation to key biodiversity legislation and policy is provided and summarised below.

Legislation / policy	Relevant ecological feature on site	Permit / approval required	Notes
EPBC Act	Threatened species and ecological communities	Referral recommended	Further biodiversity surveys and habitat mapping will be required to inform a referral process. Initial consultation with the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW) is recommended. If the project is deemed a controlled action, and an Environment Effects Statement is also required, then the project could be assessed under the Commonwealth-Victorian bilateral agreement.
FFG Act	Threatened species and ecological communities	Protected Flora Permit will be required for works on Crown or public land.	The study areas are a mix of private and public land. Initial consultation with the Victorian Government Department of Energy, Environment and Climate Action (DEECA) is recommended.
Planning & Environment Act	All indigenous vegetation to be removed.	Planning permit required to remove, destroy or lop native vegetation. Other permit triggers in planning scheme zones and overlays will apply to the project.	A planning permit application needs to address the Victoria's *Guidelines for the removal, destruction or lopping of native vegetation* and relevant planning scheme overlays. Initial consultation with DEECA and local Councils is recommended. The project design will need to avoid and minimise native vegetation removal as far as is practical, and FERA will need to provide compensatory biodiversity offsets for any vegetation removal.
CaLP Act	Noxious weeds and pest animals	N/A	FERA and any project landowners or land managers must take all reasonable steps to eradicate regionally prohibited weeds, prevent the growth and spread of regionally controlled weeds, and prevent the spread of and as far as possible eradicate established pest animals. The State is responsible for eradicating State prohibited weeds from all land in Victoria.

Legislation / policy	Relevant ecological feature on site	Permit / approval required	Notes
Environment Effects Act	Native vegetation, threatened species/communities, waterways, wetlands, public land and landscape features.	An EES referral to the Minister for Planning is recommended. An EES could be required based on clearing more than 10 hectares of native vegetation and/or impacts on threatened species, threatened communities and waterways or wetlands.	Further biodiversity surveys and habitat mapping will be required to inform a referral process. FERA will need to also consider other non-biodiversity related EES triggers. If the project requires an EES, and is also deemed controlled action under the EPBC Act, then the project could be assessed under the Commonwealth-Victorian bilateral agreement.
Water Act	Designated waterways (rivers, creeks and hydrological features)	Works on waterways permit	Development within the study areas will require consultation with, and potentially a works on waterways permit from, Goulburn Broken Catchment Management Authority.
Fisheries Act	Protected aquatic biota relevant to the study areas.	Comply with permit requirements.	N/A
SEPP (Waters)	Waterways, erosion risk, pollutants and riparian vegetation.	Comply with General Environmental Duty.	Environmental quality objectives and indicators are defined to protect beneficial uses (i.e. the uses and values of the water environment) and an attainment program provides guidance on protection of the beneficial uses. Impacts to surface water quality as a result of the project must not result in changes that exceed background levels and/or the water quality objectives to protect surface water uses and values.

Recommendations

Initial specific recommendations to avoid and minimise impacts on threatened species, communities and ecological values that should be considered at the early stages of project design and infrastructure siting include:

- Avoid siting turbines, infrastructure and transmission lines within, or in close proximity to, large patches of forest and woodland likely to support threatened flora and fauna such as large forest owls and arboreal mammals (e.g. Southern Greater Glider).
- To minimise collision risk, avoid siting turbines and transmission lines near landscape and habitat features that likely to support high levels of bird and bat activity. These features include large patches of forest and woodland, stands of scattered trees, well-connected roadside vegetation, significant rocky outcrops, waterways, wetlands/dams, riparian zones, escarpments and migratory pathways. More detailed mapping of these features will be required at the next stage of project planning to inform infrastructure siting.

- Undertake turbine and infrastructure siting to avoid areas of threatened woodland vegetation (Box-Gum Woodland and Grey Box Woodland) and to avoid and minimise impacts on derive native grassland (native pasture) that may support Striped Legless Lizard and Golden Sun Moth. More detailed mapping of these features will be required at the next stage of project planning to inform infrastructure siting.
- Waterway and floodplain crossings should be sited to minimise impacts on riparian vegetation, wetlands and instream habitats. The use of under-boring construction methods should be considered early in the design process to avoid surface impacts on these hydrological features.

These initial impact avoidance, minimisation and mitigation strategies are provided at a broad landscape level. They will need to be refined based on a detailed biodiversity survey and vegetation mapping program to guide the project through the planning approvals phase.

It is anticipated that EPBC Act and EE Act referrals will be required for the Seymour Wind Farm project. As such, it is recommended that FERA has early engagement with the Development Approvals and Design (Renewables) section of DEECA to seek guidance through an assessment process. It is also recommended that FERA has a pre-referral meeting with DCCEEW to consider assessment of the potential impacts that a proposed wind energy development may have on matters of national environmental significance.

A program of detailed biodiversity investigations will be required to determine existing conditions for ecological values. The program should include bird and bat utilisation studies, mapping the distribution of vegetation, threatened communities and habitat resources for key threatened fauna most likely to occur and that may be impacted by the project. This report provides further guidance on the survey program requirements (Section 4.4).

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Figures

1. Introduction

1.1. Project background

Biosis Pty Ltd was commissioned by FERA Australia (FERA) to undertake a preliminary biodiversity (ecological) assessment of the proposed Seymour Wind Farm, including a rapid field assessment. The objective was to provide a preliminary broad-scale understanding of ecological values and constraints within the proposed project area, regulatory requirements under relevant legislation, the likely planning pathway for the project, and to inform the development of a program that will take the project through the approvals process.

We understand that FERA is proposing the development of a new wind farm which will be bounded by Seymour in the south-west, Longwood in the north and Ruffy in the south-east. The final number and location of wind turbine generators (WTGs) is yet to be confirmed but may consist of approximately 100 WTGs (Figure 1).

The project also includes a connection to the South Morang to Dederang 330 kilovolt transmission line, and a new terminal station at this connection point. The transmission route has not yet been finalised but a potential route extends from the centre of the project area to the Glendale Plantation (Crown Land) where the easements for the 330 kilovolt transmission lines come together with that of the Eildon to South Morang 220 kilovolt line.

1.2. Scope of assessment

The scope of this assessment was to identify high level biodiversity constraints and describe biodiversity values within the two study areas (wind farm and transmission line). This preliminary assessment allows for broad recommendations to be provided in terms of avoidance, mitigation and/or further detailed assessment of biodiversity. The primary objectives of this investigation are to:

- Review publicly available databases and existing information relating to flora, fauna and threatened ecological communities.
- Review any existing relevant reports prepared on flora and fauna for the project area to date.
- Undertake preliminary desktop mapping of native vegetation, wetlands and fauna habitats using aerial photography interpretation and other remote sensed data sets.
- Undertake a rapid field assessment for a broad understanding of ecological values visible from public roadsides.
- Present findings within this preliminary biodiversity assessment report.

1.3. Study area

The study area generally occurs in the southern part of the Strathbogie Ranges extending south-east towards the Goulburn River and uplands near Alexandra. The study area is made up of a large indicative area for the wind farm and an indicative area for the transmission line (Figure 1). The wind farm area is located approximately 95 kilometres north-east of Melbourne and approximately 15 kilometres east of Seymour. The wind farm study area is further bounded by Avenel in the west (south of the Hume Freeway), Longwood in the north and Ruffy in the south-east. The transmission line study area is adjacent to the south-east of the wind farm study area and is bounded by Alexandra in the east, Woodbourne in the south and Yea in the west

(Figure 1). These initial study areas encompass 37,000 hectares and 41,000 hectares of private/public land, respectively.

The wind farm study area is within a rural landscape supporting grazing land, cropping land and areas of public land set aside for public use, conservation and resource extraction. Livestock grazing and horticulture appear to be the dominant land uses and the landscape is of hilly to mountainous granite geology. Aerial imagery indicates fragmented tree cover across the wind farm study area with some large blocks of forest and woodland on public and private land.

The transmission line study area runs from the southern part of the Strathbogie Ranges towards the Goulburn River floodplain and heavily dissected foothills and plateaux of the Great Dividing Range. A substantial portion of the Black Range State Forest (approximately 10,000 hectares) is located in the south-west of the transmission line study area. This landscape receives high to moderate rainfall and supports a range of geologies. Land uses include grazing, amenity agriculture, forestry, conservation reserves and water catchments.

The study area is within the:

- Highlands -Northern Fall, Central Victorian Uplands and Victorian Riverina bioregions.
- Goulburn River Basin and Goulburn Broken Catchment Management Authority (CMA).
- Strathbogie Shire, Mitchell Shire and Murrindindi Shire Council Local Government Areas (LGA).

These are summarised for the wind farm and transmission line in Table 1.

Table 1 Study area, bioregions and land management regions

Location	Wind farm study area	Transmission line study area
Interim Biogeographic Regionalisation for Australia (IBRA) bioregion	South Eastern Highlands, Victorian Midlands, Victorian Riverina	South Eastern Highlands, Victorian Midlands
IBRA subregion	Highlands - Northern Fall, Central Victorian Uplands, Victorian Riverina	Highlands - Northern Fall, Central Victorian Uplands
River Basin	Goulburn River	Goulburn River
Catchment Management Authority (CMA)	Goulburn Broken CMA	Goulburn Broken CMA
Local Government Authority	Strathbogie Shire, Mitchell Shire and Murrindindi Shire Council	Murrindindi Shire Council

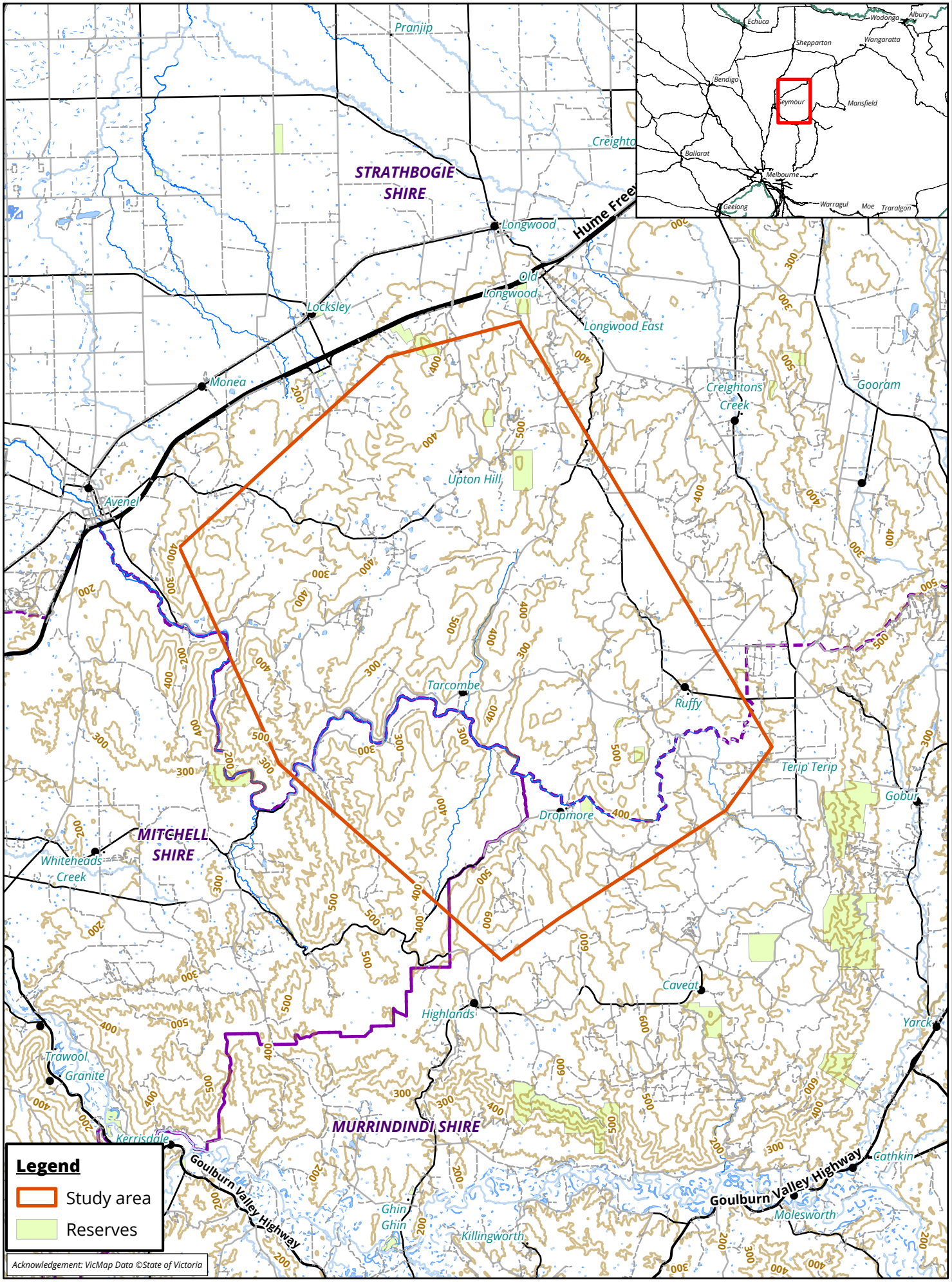

Figure 1.1 Location of the study area - Seymour, Victoria

Matter: 38133,
Date: 06 June 2023 ,
Prepared for: GZ, Prepared by: MK, Last edited by: mknudsen
Layout: 38133_F1_Locality
Project: P:\38100s\38133\Mapping\38133_SeymourWF.aprx

Scale: 1:200,000 @ A4
Coordinate System GDA 1994 MGA Zone 55

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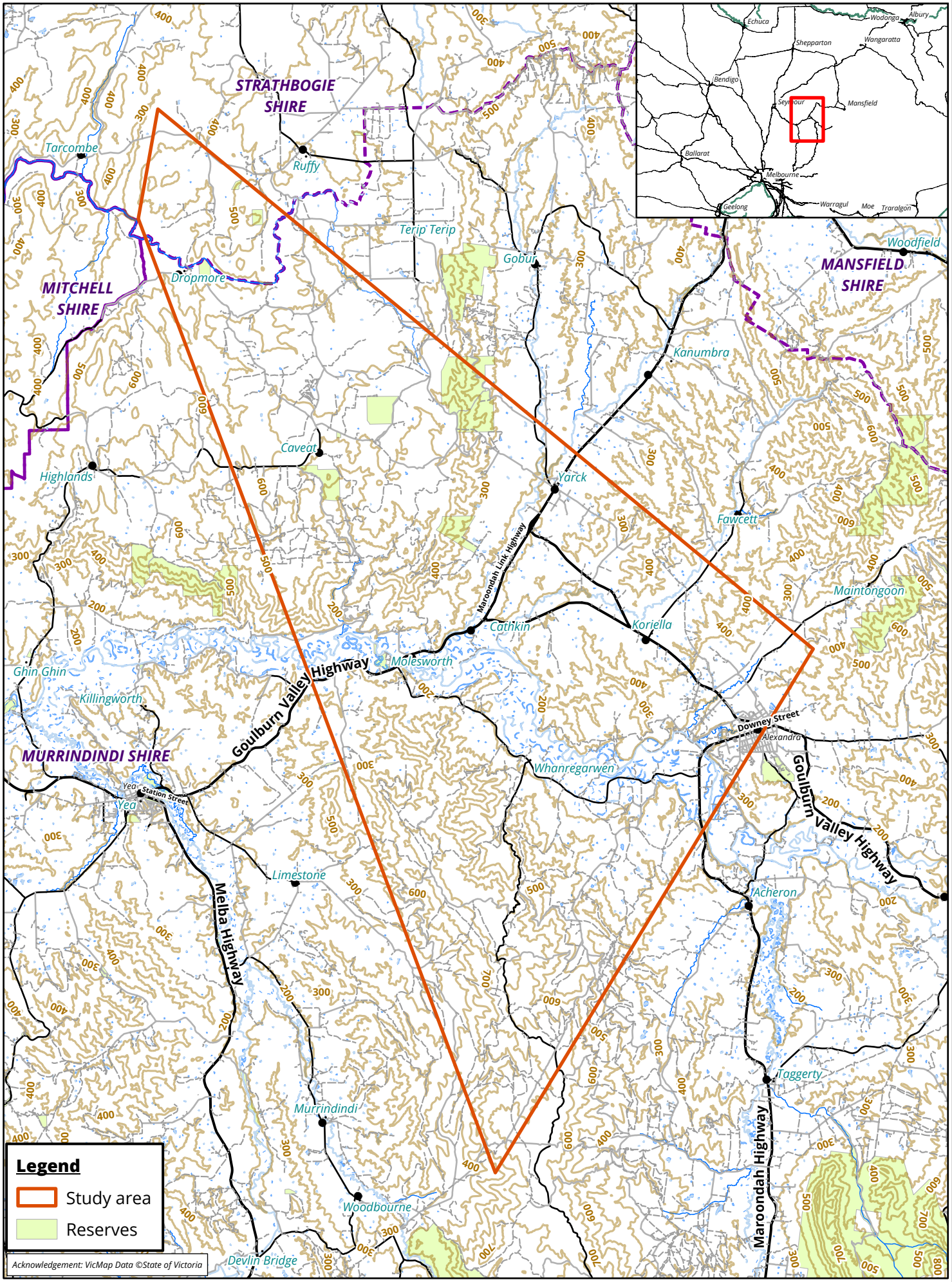

Figure 1.2 Location of the study area - Seymour, Victoria

Matter: 38133,
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Project: P:\38100s\38133\Mapping\38133_SeymourWF.aprx

Scale: 1:200,000 @ A4
Coordinate System GDA 1994 MGA Zone 55

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2. Methods

2.1. Desktop review

In order to provide a context for the study area, information about flora and fauna from within 10 kilometres of the study areas (the 'local area') was obtained from relevant biodiversity databases, many of which are maintained by the Victorian Government Department of Energy, Environment and Climate Action (DEECA) (formerly Department of Environment, Land, Water and Planning (DELWP)) or the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW). Records from the following databases were collated and reviewed:

- DEECA's Victorian Biodiversity Atlas (VBA), including the 'VBA_FLORA25, FLORA100 & FLORA Restricted' and 'VBA_FAUNA25, FAUNA100 & FAUNA Restricted' datasets
- DCCEEW's Protected Matters Search Tool for matters protected by the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

Other sources of biodiversity information were examined including:

- DEECA's NatureKit mapping tool.
- Atlas of Living Australia.
- Sheldon (2004) Brolga flocking database (which is contained in the VBA).
- Planning Scheme overlays relevant to biodiversity based on http://planningschemes.dpcd.vic.gov.au.

The desktop data collection and review also focused on identifying bird and bat species, which may be at risk of collision or disturbance from wind farm infrastructure. Particular attention was focused on the presence and risk to (but not necessarily limited):

- Microbats.
- Grey-headed Flying-fox.
- Migratory species, including shorebirds and White-throated Needletail.
- Brolga.
- Australasian Bittern.
- Forest Owls and raptors.

The desktop review has been divided into wind farm and transmission line study areas.

2.2. Definitions of threatened species or communities

The desktop assessment focused on identifying the known presence of threatened species, within the search area, based on VBA records and the potential presence as predicted by the PMST. Threatened species or communities include those species or communities that are listed under the EPBC Act and/or FFG Act. The conservation status of a species or ecological community is determined by its listing status under Commonwealth or State legislation and/or policy (Table 2).

Table 2 Conservation status of threatened species and ecological communities

Conservation status	
National	Listed as nationally critically endangered, endangered or vulnerable under the EPBC Act
State	Listed as extinct, extinct in the wild, critically endangered, endangered, vulnerable or conservation dependent in Victoria under the FFG Act

Lists of threatened species generated from the databases are provided in Appendix A (flora) and Appendix B (fauna). Only those species listed under the EPBC Act or the FFG Act (hereafter referred to as ' threatened species') are included in this assessment.

The species have been assessed to determine their likelihood of occurrence based on the process outlined below.

This desktop assessment can identify species most likely to occur, particularly where recent, or multiple database records are located within the project area. The desktop assessment therefore has limitations and can only provide a broad overview of most likely potential biodiversity values that may constrain the proposed project development. The likelihood of occurrence for threatened species can be reviewed and determined in more detail after completing field-based detailed native vegetation and fauna habitat mapping.

High level potential impacts, legislative and policy implications, and the need for targeted survey for these species is considered and outlined in Section 4.

2.3. Determining likelihood of occurrence of threatened species and communities

Likelihood of occurrence indicates the potential for a species or ecological community to occur regularly within the study area and is an important part of biodiversity and impact assessments. It is based on expert opinion, information in relevant biodiversity databases and reports, and an assessment of the habitats on site. At the desktop level, habitat assessment and suitability to inform the likelihood assessment is completely based on interpreting database records, aerial photography and EVC mapping. The rapid site assessment also informed likelihood assessments for threatened species and communities. The likelihood ranking for some species may change after detailed field assessments and targeted surveys.

Likelihood of occurrence is ranked as negligible, low, medium, high, or recorded. The rationale for the rank assigned is provided for each species in Appendix A (flora) and Appendix B (fauna). Where little or no suitable habitat within the study area is present for a species, the species is assigned a likelihood of low or negligible and not considered further in this report. A common assumption of likelihoods assessments is that a paucity of recent species records infers a loss or absence of the species (and suitable habitat) from the study area. In this study, however, paucity of recent species records may be the result of a lack of survey effort within private property. As a result, if suitable habitat is present, some species have been assigned a medium or high likelihood even if recent records are absent within the local area.

2.4. Desktop values mapping

A preliminary desktop mapping exercise was undertaken, using spatial data to identify native vegetation cover, fauna habitat features and locations of threatened species records.

The mapping involved:

- **Mapping of native vegetation and fauna habitat:** Broad mapping of ecological values within the wind farm and transmission line study areas – native vegetation cover which is likely to correspond with fauna habitat. Relevant layers include:
  - DEECA's Ecological Vegetation Class (EVC) modelling.
  - DEECA Victorian Wetland Inventory.
- **Mapping of threatened species records:** Mapping of threatened flora and fauna database records within 10 kilometres of the wind farm and transmission line study areas.

2.5. Rapid flora and fauna site assessment

The rapid field assessment of the wind farm and the transmission line study area was undertaken on 16 and 17 February 2023 by Georgina Zacks (Senior Botanist) and Clare McCutcheon (Senior Associate Zoologist), spending approximately 7.5 person hours in the field (excluding travel to the study area). The objectives of rapid field surveys for this broad-scale ecological values mapping stage were:

- To assess and validate land use, quality of native vegetation and EVC modelling identified in the preliminary mapping. This included identifying EVCs or landscape features likely to support threatened ecological communities.
- To broadly evaluate the existing habitat for the likely occurrence of threatened flora and fauna species.

The fauna assessment for the transmission line was based mostly on the desktop analysis and existing vegetation mapping due to restricted access to this area.

2.5.1. Permits

Biosis undertakes flora and fauna assessments under the following permits and approvals:

- Wildlife Authorisation issued by DEECA under the *Victorian Wildlife Act 1975* (Permit Number 10010193).
- Permit to Take/Keep Protected Flora issued by DEECA under the *Flora and Fauna Guarantee Act 1988* (FFG Act) (Permit Number 10010194).
- Permit to Take Protected Fish issued by DEECA under the *Flora and Fauna Guarantee Act 1988* (FFG Act) (Permit Number 10010195).
- Permit to Conduct Research in areas managed by the Parks Victoria issued by DEECA under the *National Parks Act 1975*, *Crown Land (Reserves) Act 1978* and *Parks Victoria Act 2018* (Permit Number 10010071).
- Permit to catch and release fish issued by the Victorian Fisheries Authority under the *Victorian Fisheries Act 1995* (Permit Number RP 1220, Personal File Number 13041).

- Approvals 18.21 and 20.21 issued by the Wildlife and Small Institutions Animal Ethics Committee of the Victorian Government Department of Economic Development, Jobs, Transport and Resources (DEDJTR).
- Scientific Procedures Fieldwork Licence issued by DEDJTR's Wildlife and Small Institutions Animal Ethics Committee (Licence Number 20020).

2.6. Limitations

Detailed flora and fauna assessments including the collection of species lists was outside the scope of this preliminary assessment. Rather, the purpose of the assessment was to broadly gain an understanding of the vegetation type and quality present within the landscape, the habitat it provides, and document other key ecological values within the study areas.

Due to private land access restrictions, the very large size of the study areas to be investigated and time constraints, the rapid field assessment was conducted from a vehicle on publicly accessible roads. As such, there are large portions of the study area which did not receive attention during the rapid field assessment. The ecological values and constraints for these sections have therefore been determined from desktop assessment only.

Desktop assessments can identify species most likely to occur, particularly where recent, or multiple database records are located within the project area. The desktop assessment therefore has limitations and can only provide a broad overview of most likely potential biodiversity values that may constrain the proposed project development. The likelihood of occurrence for threatened species/communities can be reviewed and determined in more detail after completing detailed field-based native vegetation and fauna habitat mapping.

Desktop assessments rely on existing data, submitted to public databases, some of which are based on habitat modelling. These generally reflect survey effort within a particular area and the likely presence of native vegetation or threatened species. While these data are informative in broadly identifying potential biodiversity values, constraints to development, and the likely presence of threatened species, desktop assessments are limited by the amount and quality of these data and the model assumptions.

It should be noted some EVCs that could be present within the study area may not have been captured in this desktop assessment due to the scale at which vegetation modelling is undertaken by DEECA. Some threatened species may not have been recorded in the project area and thus not reflected in the database searches or this desktop assessment. The likelihood of occurrence based on the database searches may also change after a detailed field assessment or targeted surveys. A field assessment to assess and map presence and extent of native vegetation and fauna habitat will thus be able to further inform the project's potential biodiversity impacts and requirements through the assessment pathways process. A number of species were recently added to the EPBC Act list on 31 March 2023. Where possible, these species have been included in the results, particularly for birds and bats. However, it should be noted that some of the recently EPBC Act listed species may not be included in this report.

2.7. Legislation and policy

The findings of the desktop assessment were considered in relation to key biodiversity legislation and policy implications, including:

- Matters listed under the EPBC Act.
- Threatened taxa, communities and threatening processes listed under Section 10 of the FFG Act and associated action statements and listing advice.
- *Planning and Environment Act 1987* – specifically Clauses 12.01-2, 52.17 and 66.02 and overlays in the Mitchell, Strathbogie and Murrindindi Planning Schemes relevant to the wind farm and transmission line study areas.
- Guidelines for the removal, destruction or lopping of native vegetation (DELWP 2017a).
- Noxious weeds and pest animals listed under the *Catchment and Land Protection Act 1994* (CaLP Act)
- *Environment Effects Act 1978.*
- *Fisheries Act 1995.*
- *Water Act 1989.*
- *Environment Protection Act 1971*: State Environmental Protection Policy (Waters) 2018.

This report does not address public land management or protection regulations such as the *National Parks Act 1975*, *Land Act 1958* and *Crown Land (Reserves) Act 1978*. These Act and associated regulations will need to be addressed if any works, infrastructure and impacts occur on public land or conservation reserves.

3. Results – Description of ecological values

The ecological features of the study area are described below and mapped in Figure 2. Figure 2 also shows the rapid field assessment survey effort.

Threatened species recorded or predicted to occur in the local area are provided in Appendix A (flora) and Appendix B (fauna), along with an assessment of the likelihood of the species occurring within the two study areas.

Based on the desktop assessment and rapid field assessment, we have identified the following key biodiversity constraints:

- Fixed constraints – including native vegetation cover, such as forests, woodland, derived native grasslands, and threatened flora and fauna habitat:
  - Native vegetation – treed and derived native grassland patches, scattered trees within paddocks.
  - Potential threatened flora and fauna habitat.
  - Wetlands (natural and created, e.g. dams).
  - Rivers and waterways.
- Dynamic constraints (volant fauna) – incorporating bats and birds, which are mobile and may interact with wind farm infrastructure:
  - Habitat (wetlands, rivers and creeks, woodlands, forests scattered trees, caves).
  - Presence and potential movement routes that may place individuals at risk of collision with turbines or transmission lines.

These constraints require individual consideration and different approaches at later stages to assess potential impacts of the Seymour Wind Farm on biodiversity values.

3.1. Landscape context

The wind farm and transmission line study areas are within a rural landscape that has been substantially cleared for agricultural grazing purposes. The study areas are mostly within the Central Victorian Uplands (CVU) and the Highlands – Northern Fall (HNF) bioregions. A small part of the wind farm study area is within the Victorian Riverina bioregion.

The Highlands – Northern Fall bioregion is defined by the north flowing watersheds of the Great Dividing Range. These dissected uplands have moderate to steep slopes, high plateaus and alluvial flats along the main river and creek valleys. The vegetation within the bioregion is generally a mosaic of Herb-rich Foothill Forest and Shrubby Dry Forest ecosystems dominating large areas of lower slopes. Montane Dry Woodland and Heathy Dry Forest ecosystems occur on the upper slopes and plateau. Grassy Dry Forest, Valley Grassy Forest, Plains Grassy Woodland and Floodplain Riparian Woodland ecosystems are associated with major river valleys (DEECA 2023).

The Central Victorian Uplands bioregion is located in the central Victoria. It is dominated by Lower Palaeozoic deposits giving rise to dissected uplands at higher elevations, amongst granitic and sedimentary (with Tertiary colluvial aprons) terrain with metamorphic and old volcanic rocks which have formed steeply sloped peaks

and ridges. The less fertile hills within the bioregion support Grassy Dry Forest and Heathy Dry Forest ecosystems. Herb-rich Foothill Forest and Shrubby Foothill Forest ecosystems dominate on the more fertile outwash slopes. The granitic and sedimentary terrain is dominated by Grassy Woodlands (much of which has been cleared). Lower lying valleys and plains are dominated by Valley Grassy Forest and Plains Grassy Woodland ecosystems (DEECA 2023).

The project will comprise a wind farm area designated for the construction of wind turbines, as well as a transmission line area. Impacts associated with each of these components will be different, and as such, ecological values are discussed separately for the wind farm study area and the transmission line study area.

3.2. Wind farm ecological values

3.2.1. Vegetation and fauna habitat (wind farm)

The study area supports a range of ecological features including areas of native vegetation, scattered trees, rocky outcrops, waterways, farmland and constructed dams. These features are described further in Table 3 and mapped in Figure 2.

Much of the wind farm study area is dominated by the topography of the Strathbogie Ranges, an undulating and elevated granitic landscape with rocky outcrops on many of the hilltops. Elevation varies, being approximately 200 metres above sea level (ASL) on the plains in the north of the wind farm study area, and with many of the hills in the south of the wind farm study area sitting at around 600 metres ASL. Some slopes are quite steep and exposed with shallow granitic soils, creating difficult and drought prone conditions for vegetation growth.

Many of the roads that traverse the wind farm study area are constructed to support local traffic only, and are a single sealed lane with an unsealed gravel shoulder. Generally speaking, vegetation in these road reserves comes right up to the existing edge of the road shoulder, and supports a high density of large trees and very high density of fallen logs. Some of the roadsides contain remnant grassy understorey, which is potential habitat for threatened species such as the Striped Legless Lizard.

Within private land, much of the study areas have been cleared and remnant native vegetation is restricted to linear corridors along road reserves, fencelines and watercourses, isolated scattered trees within paddocks, or is within isolated patches of vegetation especially on rocky outcrops.

The largest extents of remnant native vegetation within the wind farm study area are:

- Wallaby Gully (Upton Hill) Flora Reserve (public land) and contiguous remnant vegetation on private land to the south to County Creek Water Frontage.
- Monea South 142 Bushland Reserve (public land) and surrounding contiguous remnant vegetation on private land.
- Vegetation along waterways including Hughes Creek, County Creek, Stewart Creek, Boundary Creek, Woolshed Creek, Emu Waterholes Creek, Stony Creek (public land).
- North of and contiguous with Hughes Creek Flora Reserve (private land).
- Between Boundary Creek and Woolshed Creek (private land).
- Ruffy Bushland Reserve (public land) surrounding contiguous remnant vegetation on private land.

There are 22 EVCs modelled to occur across the three bioregions within the wind farm study area. Table 3 below outlines EVCs considered most relevant to the assessment in the context of a proposed wind farm development, including those which:

- Are most likely to occur in significant extents across the wind farm study area.
- May provide habitat for threatened species.
- Are likely to align with threatened ecological communities.

Vegetation descriptions are based on DEECA's EVC benchmarks for the relevant bioregions (source - https://www.environment.vic.gov.au/biodiversity/bioregions-and-evc-benchmarks).

Fauna habitat within the wind farm study area comprises a variety of woodland and forest habitat types. Throughout these habitat types, canopy trees and overstorey vegetation may provide suitable foraging habitat for a range of avifauna and arboreal mammals, including nationally and state listed threatened species. Large, hollow-bearing trees may also provide suitable nesting habitat for these species. Structurally complex understorey vegetation and areas with extensive woody debris also offer foraging habitats and refuge for ground dwelling mammals, reptiles and amphibians. Wetlands and waterways, as well as associated vegetation throughout the study area may provide habitat for amphibians and may support waterbirds. Scattered trees and introduced vegetation may also provide foraging and refuge habitat to several fauna species. Rocky outcrops are likely to be important habitats for small mammals, birds and reptiles.

Fauna habitat values may be further separated into:

- Fixed values – Including all habitat that may support ground-dwelling fauna and non-volant arboreal species (i.e. excluding birds and bats). These species are not at risk of collision with wind turbine infrastructure but are likely to be impacted by the removal of vegetation during the construction phase.
- Dynamic values – Including all habitat that may support birds and bats. This may include foraging and nesting/roosting habitat, as well as areas that facilitate local and migratory movements. These species are likely to be impacted by vegetation removal during the construction phase and also have the potential to collide with wind farm infrastructure during the operational phase.

Table 3 Summary of vegetation and habitat types within the wind farm study area

Vegetation or habitat type	Description	Location	Significant values
Herb-rich Foothill Forest EVC 23 **Bioregional Conservation Status (BCS):** Depleted (CVU), Least Concern (HNF)	A medium to tall open forest or woodland to 25 m tall with a small tree layer over a sparse to dense shrub layer. A high cover and diversity of herbs and grasses in the ground layer characterise this EVC. Canopy species include Narrow-leafed Peppermint *Eucalyptus radiata*, Broad-leafed Peppermint *E. dives*, Messmate Stringybark *E. obliqua* and Eurabbie *E. globulus* subsp. *bicostata*.	Occupies easterly and southerly aspects, mainly on lower slopes and in gullies. Modelled to occur extensively on the lower slopes within HNF subregion, around Wallaby Gully Flora Reserve in the north-east and across the slopes of the southern extent of the wind farm study area.	May support threatened orchids, understorey shrubs, bush-peas and wattles identified in Table 4. Canopy trees within this EVC may provide foraging and nesting habitat for a range if volant species (avifauna, bats) and arboreal mammals and reptiles. Understorey vegetation may support a range of ground-dwelling fauna.
Grassy Dry Forest EVC 22 **BCS:** Depleted (CVU), Least Concern (HNF)	The overstorey is dominated by a low to medium height forest of eucalypts to 20 m tall, sometimes resembling an open woodland with a secondary, smaller tree layer including a number of *Acacia* species. The understorey usually consists of a sparse shrub layer of medium height. The EVC is characterised by a ground layer dominated by a high diversity of drought-tolerant grasses and herbs, often including a suite of fern species. Canopy species include Broad-leafed Peppermint, Red Stringybark *E. macrorhyncha*, Bundy *E. goniocalyx* and Messmate Stringybark.	Occurs on a variety of gradients and altitudes and on a range of geologies. Modelled to occur extensively within the CVU subregion, often adjacent to EVC 23 on the northerly and westerly aspects of lower slopes.	May support threatened orchids, understorey shrubs, bush-peas and wattles identified in Table 4. Overstorey vegetation may provide foraging and nesting habitat for a range of avifauna and bat species. Overstorey vegetation may also provide habitat for arboreal mammals and reptiles, while understorey vegetation may support a range of ground dwelling fauna include mammals and reptiles.

Vegetation or habitat type	Description	Location	Significant values
Valley Grassy Forest EVC 47 **BCS:** Vulnerable CVU and HNF)	Open forest to 25 m tall may carry a variety of eucalypts, usually species that prefer more moist or more fertile conditions over a sparse shrub cover. In season, a rich array of herbs, lilies, grasses and sedges dominate the ground layer but at the drier end of the spectrum the ground layer may be sparse and slightly less diverse, but with the moisture-loving species still remaining. Canopy species include Yellow Box *E. melliodora*, Narrow-leafed Peppermint, Messmate Stringybark and Candlebark *E. rubida*.	Occurs on fertile, well-drained colluvial or alluvial soils on gently undulating lower slopes and valley floors. Modelled to occur extensively across the CVU subregion on the lower gradient land connecting ridges and hills.	May support threatened orchids, understorey shrubs, sedges, creepers, bush-peas and wattles identified in Table 4. Areas of this EVC may align with White Box – Yellow Box – Blakely's Red Gum threatened ecological community where Yellow Box is dominant. Diverse eucalypt assemblage within this EVC may provide foraging and nesting habitat for a variety of arboreal mammals and avifauna. Grassy understorey vegetation may support ground dwelling mammals and areas with high native grass cover may provide habitat for grassland specialists such as Striped Legless Lizard and Golden Sun Moth.
Riparian Forest EVC 18 **BCS:** Depleted (CVU), Least Concern (HNF)	A tall forest to 30 m, often with an open to sparse secondary tree layer of *Acacias* and scattered dense patches of shrubs, ferns, grasses and herbs. Canopy species include Narrow-leafed Peppermint, Eurabbie and Manna Gum *E. viminalis.*	Associated with alluvial terraces but occasionally occurring in the heads of gullies leading into creeks and rivers. Modelled to occur along the upper reaches of watercourses including Hughes Creek, Woolshed Creek and Boundary Creek.	May support threatened tree species, understorey shrubs, sedges, wattles and creepers identified in Table 4. Canopy trees and *Acacia* dominated secondary layer may provide foraging habitat for arboreal mammals and avifauna, while large canopy trees may also provide nesting habitat. Well vegetated riparian habitat located closer to streams and creeks may also provide refuge for waterbirds.

Vegetation or habitat type	Description	Location	Significant values
Riparian Shrubland EVC 19 **BCS:** Rare (CVU)	Diverse, medium to tall shrubland to 8 m tall, often forming dense thickets along the stream's edge during long periods without flooding. Sedges and rushes common to riparian environments dominate the understorey. Shrub layer dominated by Blackwood *Acacia melanoxylon* and Mountain Tea-tree *Leptospermum grandifolium.*	Occurs on rocky substrates of major streams and banks and channels of rocky creeks and along perennial streams in gorge tracts. Modelled to occur in CVU subregion along the mid-reaches of watercourses including Hughes Creek.	May support threatened tree species, understorey shrubs, sedges, wattles and creepers identified in Table 4. Densely vegetated sections may provide habitat for ground dwelling mammals, reptiles and amphibians. Sections located close to waterways may also provide refuge for waterbirds.
Grassy Woodland EVC 175 **BCS:** Endangered (CVU and HNF)	A variable open eucalypt woodland to 15 m tall over a diverse ground layer of grasses and herbs. The shrub component is usually sparse. Canopy species include Broad-leafed Peppermint, Candlebark, Brittle Gum and *E. mannifera* subsp. *mannifera*. Drooping Sheoak *Allocasuarina verticillata* may also contribute to canopy cover.	On sites with moderate fertility on gentle slopes or undulating hills on a range of geologies.	May support threatened orchids, understorey shrubs, sedges, creepers, bush-peas and wattles identified in Table 4. Areas of this EVC may align with White Box – Yellow Box – Blakely's Red Gum threatened ecological community where Yellow Box is dominant. May support Grey Box Woodland Community where Grey Box trees are present. Canopy trees may provide foraging habitat for avifauna while understory vegetation may support ground-dwelling mammals and reptiles.
Granitic Hills Woodland EVC 72 **BCS:** Depleted (CVU)	A low woodland to 10 m with the canopy trees often being stunted. Canopy species include Silver Bundy *E. nortonii*, Red Stringybark and Bundy.	Mainly restricted to granite rocky outcrops. Modelled to occur in CVU subregion on the northerly and westerly aspects of hills and slopes including Crotty Knob, around Mount Tenneriffe and around the confluence of Hughes Creek and Discovery Creek.	May support threatened orchids, understorey shrubs, bush-peas and wattles identified in Table 4. Canopy trees may provide nesting and foraging habitat for a range of avifauna and arboreal reptiles. Understorey vegetation may support ground dwelling mammals and reptiles.

Vegetation or habitat type	Description	Location	Significant values
Perched Boggy Shrubland EVC 185 **BCS:** Endangered	A dense shrubland to 3 m tall over a ground layer of herbs, sedges and often abundant Sphagnum moss. Character species include Pricky Tea-tree *L. continentale*, Oven Wattle *Acacia pravissima* and Mountain Baeckea *Baeckea utilis*.	Occurs in valleys on granitic massif plateaus at 400-600 m ASL in areas with more than 900 mm annual rainfall. It occurs on all aspects of gentle slopes above drainage lines or across hillsides between drainage lines. Localised occurrences in the south-east of the wind farm study area in the vicinity of Ruffy township.	May support threatened tree species, understorey shrubs, sedges, wattles and creepers identified in Table 4. These perched bogs are considered locally significant in the Strathbogie Ranges for their botanical and hydrological significance. Soils are extremely saturated sandy clay, which may be associated with an impermeable clay layer or a hydrological phenomenon creating a soak or spring effect. Dense shrubland vegetation may provide foraging habitat and refuge for ground-dwelling fauna. Soaks and saturated areas may support a number of amphibian and wetland bird species.
Scattered trees	A range of Eucalypt, Wattle or She-oak species that occur as isolated paddock trees or in small clumps as a result of land clearing for agriculture.	Throughout cleared and grazed or cropped farmland.	Scattered trees throughout the study area may provide foraging habitat for arboreal mammals and avifauna. Larger, hollow-bearing trees may also provide nesting habitat for these species.
Derived native grasslands and pastures	Unimproved pasture may support derived native grasslands dominated by grazing-tolerant native grasses and herbs. These grasslands are derived from the original forest and woodland vegetation that has been historically cleared for farming.	Throughout cleared and grazed farmland and around rocky outcrops.	May provide habitat for ground-dwelling birds, mammals, reptiles and invertebrates. Open farmland provides foraging habitat for woodland birds and raptors.

Vegetation or habitat type	Description	Location	Significant values
Wetlands (including natural wetlands and farm dams)	The hilly terrain restricts natural wetlands to small temporary freshwater marshes, sedgelands and meadows, including perched bogs supported by groundwater discharge. The DEECA wetland layer indicates a scattered occurrence of small wetlands and linear drainage features across the landscape. Farm dams provide constructed wetland habitat and their value depends on the extent of fringing and emergent vegetation, livestock access and proximity to other natural and created wetlands.	Scattered across the Strathbogie Ranges foothills and plateau.	Wetlands and associated fringing vegetation may provide suitable habitat for a range of waterbirds and amphibians. Constructed dams may support amphibians and may also provide occasional habitat for waterbirds.
Creeks	Several permanent and seasonal creeks are issued from the Strathbogie Ranges and flow into the Goulburn River or out onto the plains north of the Hume Freeway. These creeks support a range of aquatic habitat features, substrate types and riparian vegetation.	Creeks and drainage lines throughout the study area.	Creeks, as well as associated fringing vegetation may provide suitable habitat for a range of waterbirds, amphibians, fish and crustaceans.
Predominantly introduced vegetation	Pasture, softwood plantation, ornamental plantings and crops.	Farmland throughout the study area.	Introduced vegetation, particularly dense stands of pasture or woody weed thickets may provide refuge for ground-dwelling birds, mammals and reptiles. Open farmland provides foraging habitat for woodland birds and raptors. Pine plantations may provide food sources for large cockatoos.

3.2.2. Threatened species (wind farm)

Threatened species recorded or predicted to occur within 10 kilometres of the wind farm study area or from the relevant catchment (aquatic species) are listed in Appendix A (flora) and Appendix B (fauna). These records are also presented in Figure 3. A total of 31 threatened flora species and 36 threatened fauna species are considered to have a medium or higher likelihood of occurrence within the wind farm study area.

A summary of these species is included in Table 4 (flora) and Table 5 (fauna).

Table 4 Summary of EPBC and FFG Act listed flora species most likely to occur in the wind farm study area

Species name	Listing status
River Swamp Wallaby-grass	Vulnerable under the EPBC Act.
Matted Flax-lily	Endangered under the EPBC Act. Critically Endangered under the FFG Act.
Trailing Hop-bush	Vulnerable under the EPBC Act.
Clover Glycine	Vulnerable under the EPBC Act. Vulnerable under the FFG Act.
Euroa Guinea-flower	Vulnerable under the EPBC Act. Critically Endangered under the FFG Act.
Ausfeld's Wattle	Endangered under the FFG Act.
Snowy River Wattle	Endangered under the FFG Act.
Deane's Wattle	Vulnerable under the FFG Act.
Sticky Wattle	Vulnerable under the FFG Act.
Woolly Wattle	Vulnerable under the FFG Act.
Hickory Wattle	Vulnerable under the FFG Act.
Buloke	Critically Endangered under the FFG Act.
Buloke Mistletoe	Critically Endangered under the FFG Act.
Tiny Daisy	Endangered under the FFG Act.
Wine-lipped Spider-orchid	Critically Endangered under the FFG Act.
Eastern Bitter-cress	Endangered under the FFG Act.
Cottony Cassinia	Endangered under the FFG Act.
Late-flower Flax-lily	Critically Endangered under the FFG Act.
Hairy Hop-bush	Endangered under the FFG Act.
Common Pipewort	Endangered under the FFG Act.

Species name	Listing status
Yarra Gum	Critically Endangered under the FFG Act.
Austral Crane's-bill	Endangered under the FFG Act.
Delicate Crane's-bill	Endangered under the FFG Act.
Narrow Goodenia	Endangered under the FFG Act.
Benambra Club-sedge	Vulnerable under the FFG Act.
Green Leek-orchid	Endangered under the FFG Act.
Sharp Greenhood	Vulnerable under the FFG Act.
Flat-leaf Bush-pea	Endangered under the FFG Act.
Cupped Bush-pea	Endangered under the FFG Act.
Small-flower Wallaby-grass	Endangered under the FFG Act.
Fireweed Groundsel (Euroa variant)	Critically Endangered under the FFG Act.

Table 5 Summary of EPBC and FFG Act listed fauna species most likely to occur in the wind farm study area

Species name	Listing status	Area of value within the study area
Birds		
Australasian Bittern	Endangered under the EPBC Act. Critically Endangered under the FFG Act.	The species may occupy wetlands and waterways within the study area. The species may also be present within riparian vegetation along waterways and wetland areas.
Gang-gang Cockatoo	Endangered under the EPBC Act.	The species occupies a range of forest and woodland habitats. Areas of value within the study area may include the following EVCs; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Riparian Forest, Grassy Woodland and Granitic Hills Woodland. In addition, scattered trees and riparian vegetation associated with creeks and waterways may also occasionally support the species.
Swift Parrot	Critically Endangered under the EPBC Act. Critically Endangered under the FFG Act.	The species occupies a range of forest and woodland habitats when overwintering on mainland Australia. Areas of potential values within the study area include the following EVCs; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Riparian Forest, Grassy Woodland and Granitic Hills Woodland. In addition, scattered trees and riparian vegetation associated with creeks and waterways may also occasionally support the species.

Species name	Listing status	Area of value within the study area
Blue-winged Parrot	Vulnerable under the EPBC Act	The species occupies a range of coastal, sub-coastal and semi-arid regions throughout south-eastern Australia. It favours heathy woodland for breeding and nests in tree hollows in eucalypt forests and woodlands. Areas of potential values within the study area include the following EVCs; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Riparian Forest, Grassy Woodland and Granitic Hills Woodland. In addition, scattered trees and riparian vegetation associated with creeks and waterways may also occasionally support the species.
Brown Treecreeper	Vulnerable under the EPBC Act	The species generally inhabits open eucalypt forests, woodlands and Mallee. Areas of potential values within the study area include the following EVCs; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Riparian Forest, Grassy Woodland and Granitic Hills Woodland. In addition, scattered trees and riparian vegetation associated with creeks and waterways may also occasionally support the species.
Southern Whiteface	Vulnerable under the EPBC Act	The species occupies a range of open woodlands and shrublands with both grassy and shrubby understories. Areas of potential values within the study area include the following EVCs; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Riparian Forest, Riparian Shrubland, Grassy Woodland and Granitic Hills Woodland. In addition, scattered trees and riparian vegetation associated with creeks and waterways may also occasionally support the species.
White-throated Needletail	Vulnerable under the EPBC Act. Vulnerable under the FFG Act.	The species is unlikely to utilise the terrestrial habitat within the study area but may utilise the aerial space above the study area. As such, it may be observed flying over any portion of the study area.
Painted Honeyeater	Vulnerable under the EPBC Act. Vulnerable under the FFG Act.	The species typically utilises dry open woodland and forest habitats with nectar producing trees. Areas of value within the study area are likely to include the following EVCs; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest and Grassy Woodland. In addition, scattered trees and riparian vegetation associated with creeks and waterways may also occasionally support the species.
Regent Honeyeater	Critically Endangered under the EPBC Act. Critically Endangered under the FFG Act.	The species typically utilises dry open woodland and forest habitats with nectar producing trees. Areas of value within the study area are likely to include the following EVCs; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest and Grassy Woodland. In addition, scattered trees and riparian vegetation associated with creeks and waterways may also occasionally support the species.
Diamond Firetail	Vulnerable under the EPBC Act. Vulnerable under the FFG Act.	The species inhabits open forests and woodlands with a grassy ground layer. Areas of value within the study area are likely to include Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Riparian Forest and Grassy Woodland EVCs. In addition, scattered trees and riparian vegetation associated with creeks and waterways may also occasionally support the species.

Species name	Listing status	Area of value within the study area
Hooded Robin	Endangered under the EPBC Act. Vulnerable under the FFG Act.	The species inhabits woodlands of eucalypt, Mallee and semi-cleared farmland. Areas of value within the study area are likely to include Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Grassy Woodland and both Riparian Forest and Riparian Shrubland EVCs. Areas of cleared agricultural land with some remnant native vegetation may also provide some value. In addition, scattered trees and riparian vegetation associated with creeks and waterways may also occasionally support the species.
Bush Stone-curlew	Critically Endangered under the FFG Act.	The species inhabits open woodland habitat as well as treed farmland areas. Areas of value within the study area are likely to include Herb-rich Foothill Forest, Grassy Dry Forest and Grassy Woodland EVCs, as well as patches of farmland with scattered trees.
Australasian Shoveler	Vulnerable under the FFG Act.	The species occupies a variety of wetlands, preferring large, permanent, freshwater lakes and swamps with dense fringing vegetation. Areas of value withing the study area are likely to include wetlands and waterways as well as Riparian Forest and Riparian Shrubland EVCs. Constructed dams may also provide occasional habitat for the species.
Hardhead	Vulnerable under the FFG Act.	The species occupies a variety of wetlands, preferring large, permanent, freshwater lakes and swamps with dense fringing vegetation. Areas of value withing the study area are likely to include wetlands and waterways as well as Riparian Forest and Riparian Shrubland EVCs. Constructed dams may also provide occasional habitat for the species.
Blue-billed Duck	Vulnerable under the FFG Act.	The species occupies a variety of wetlands, preferring large, permanent, freshwater lakes and swamps with dense fringing vegetation. Areas of value withing the study area are likely to include wetlands and waterways as well as Riparian Forest and Riparian Shrubland EVCs. Constructed dams may also provide occasional habitat for the species.
Musk Duck	Vulnerable under the FFG Act.	The species occupies a variety of wetlands, preferring large, permanent, freshwater lakes and swamps with dense fringing vegetation. Areas of value withing the study area are likely to include wetlands and waterways as well as Riparian Forest and Riparian Shrubland EVCs. Constructed dams may also provide occasional habitat for the species.
Little Eagle	Vulnerable under the FFG Act.	The species inhabits woodland habitats and open areas, foraging primarily on rabbits. Riparian habitat may also be utilised for nesting. Areas of value within the study area are likely to include; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest and Grassy Woodland EVCs. The Riparian Forest EVC may also provide some suitable nesting habitat for the species. Scattered trees may also provide nesting and perching habitat for the species.

Species name	Listing status	Area of value within the study area
Square-tailed Kite	Vulnerable under the FFG Act.	The species utilises woodlands, open forest and partially cleared farmland habitats. Areas of value within the study area are likely to include; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest and Grassy Woodland EVCs. Cleared agricultural land may also provide some foraging opportunities for the species. Scattered trees may also provide nesting and perching habitat for the species.
Barking Owl	Critically Endangered under the FFG Act.	The species inhabits forests and woodlands habitats. Areas of value within the study area are likely to include Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Grassy Woodland and Riparian Forest EVCs. Scattered trees may also provide nesting and perching habitat for the species.
Powerful Owl	Vulnerable under the FFG Act.	The species inhabits forests and woodlands habitats. Areas of value within the study area are likely to include Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Grassy Woodland and Riparian Forest EVCs. Scattered trees may also provide nesting and perching habitat for the species.
Grey-crowned Babbler	Vulnerable under the FFG Act.	The species typically inhabits open woodland and forest vegetation. Areas of value within the study area are likely to include Valley Grassy Forest and Grassy Woodland EVCs. In addition, scattered trees and riparian vegetation associated with creeks and waterways may also occasionally support the species.
Speckled Warbler	Endangered under the FFG Act.	The species inhabits woodland habitats with rocky gullies, ridges, tussock grasses and a sparse shrub understorey. Areas of value within the study area are likely to include Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest and Grassy Woodland EVCs. In addition, scattered trees and riparian vegetation associated with creeks and waterways may also occasionally support the species.
Mammals		
Southern Greater Glider	Endangered under the EPBC Act. Vulnerable under the FFG Act.	The species typically inhabits wet and damp sclerophyll forest with large hollow-bearing trees. Areas of value within the study area are likely to include the following EVCs; Herb-rich Foothill Forest, Valley Grassy Forest and Riparian Forest. Scattered trees may provide suitable foraging habitat and if hollows are present, may provide nesting habitat.
Brush-tailed Phascogale	Vulnerable under the FFG Act.	The species typically inhabits drier forests and woodlands. Areas of value within the study area are likely to include; Grassy Dry Forest and Grassy Woodland EVCs. Scattered trees may provide suitable foraging habitat and if hollows are present, may provide nesting habitat. Scattered trees may provide suitable foraging habitat and if hollows are present, may provide nesting habitat.
Squirrel Glider	Vulnerable under the FFG Act.	The species typically inhabits drier forests and woodlands. Areas of value within the study area are likely to include; Grassy Dry Forest and Grassy Woodland EVCs. Scattered trees may provide suitable foraging habitat and if hollows are present, may provide nesting habitat.

Species name	Listing status	Area of value within the study area
Platypus	Vulnerable under the FFG Act.	The species occupies a variety of freshwater waterbodies, particularly those with stable banks suitable for burrows, and shallow waters for foraging. Wetlands and waterways throughout the study area are likely to be areas of value, as well as riverbank areas along the Riparian Forest and Riparian Shrubland EVCs.
Eastern Horseshoe Bat	Endangered under the FFG Act.	The species inhabits a variety of forest and woodland habitats, particularly where caves and mines are present for roosting. Areas of value within the study area are likely to include; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Riparian Forest and Grassy Woodland EVCs. Scattered trees may provide suitable foraging habitat and if hollows are present, may provide nesting habitat.
Reptiles		
Striped Legless Lizard	Vulnerable under the EPBC Act. Endangered under the FFG Act.	The species inhabits areas of natural/derived temperate grassland, grassy woodland and exotic grassland. Areas of value within the study area are likely to be limited to the Grassy Woodland, Valley Grassy Forest EVCs, and derived native grasslands in farmland areas and roadsides with grassy understorey. Areas with tussock forming, introduced grasses may also support the species.
Bearded Dragon	Vulnerable under the FFG Act.	The species inhabits woodlands, forests and heathlands with abundant cover of course woody debris. Areas of value within the study area are likely to include; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest and Grassy Woodland EVCs.
Lace Monitor	Endangered under the FFG Act.	The species inhabits a variety of wooded habitats. Areas of value within the study area are likely to include; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Riparian Forest and Grassy Woodland EVCs.
Frogs		
Growling Grass Frog	Vulnerable under the EPBC Act. Vulnerable under the FFG Act.	The species typically inhabits waterbodies with abundant emergent and surrounding vegetation. Areas of value within the study area are likely to include waterbodies and waterways, as well as Riparian Forest and Riparian Shrubland EVCs. All EVCs located within close proximity to waterbodies, or with adequate moisture may be considered valuable to the species.
Brown Toadlet	Endangered under the FFG Act.	A wide variety of woodland, forest and grassland habitats, where it shelters under leaf litter and other debris in moist soaks and depressions. Breeding occur in swamps and inundated habitats, and along creek lines. Areas of value within the study area are likely to include any wetland habitats and waterways. All EVCs located within close proximity to waterbodies, or with adequate moisture may be considered valuable to the species.

Species name	Listing status	Area of value within the study area
Fish		
Macquarie Perch	Endangered under the EPBC Act. Endangered under the FFG Act.	Areas of value within the study area include wetlands and waterways particularly, those near to Hughes Creek.
Southern Pygmy Perch (Murray-Darling lineage)	Vulnerable under the EPBC Act. Vulnerable under the FFG Act.	Areas of value within the study area include wetlands and waterways particularly, those near to Hughes Creek.
Invertebrates		
Golden Sun Moth	Vulnerable under the EPBC Act. Vulnerable under the FFG Act.	The species occupies a range of grassland habitats including natural/derived temperate grassland, grassy woodland and pasture supporting spear grasses and wallaby grasses and exotic grassland. Areas of value within the study area are likely to include; Grassy Dry Forest and Grassy Woodland EVCs, as well as cleared areas supporting derived native grassland and exotic grassy vegetation.
Murray Spiny Crayfish	Vulnerable under the FFG Act.	The species occupies cool-water streams in pasture and sclerophyll forest. Areas of value within the study area include wetlands and waterways particularly, those near to Hughes Creek.

3.2.3. Threatened ecological communities (wind farm)

Five EPBC Act and three FFG Act listed threatened ecological communities are modelled or predicted to occur within 10 kilometres of the wind farm study area. These communities and a description of their likely occurrence are presented in Table 12 of Appendix A.2. Threatened ecological communities cannot be mapped accurately at a desktop level but are generally associated with endangered woodland EVCs in the study area.

Of the five nationally listed communities, three have potential to occur within the wind farm study area, including:

- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (Endangered)
  - There is some potential for this community to occur on flat plains in the northly extent of the wind farm study area within the Riverina subregion. The valleys around Yarck and Molesworth may also support this community.
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains (Critically Endangered)
  - There is some potential for this community to occur on isolated drainage lines or in seasonally inundated depressions.
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Critically Endangered)
  - It is likely that this community was prevalent throughout much of the wind farm study area prior to European settlement, however as the community typically occupies fertile soils much of its original extent has been cleared for agricultural purposes. Within the wind farm study area, this

community could persist within less-disturbed areas, probably on less-favourable agricultural land such as those areas with shallow soils or steeper slopes.

No threatened flora communities listed under the FFG Act are considered likely to occur within the wind farm study area. Two threatened fauna communities listed under the FFG Act are considered likely to occur within the study area:

- Victorian Temperate Woodland Bird Community
  - The Victorian Temperate Woodland Bird Community has been defined as a suite of 24 bird species, mainly associated with drier woodlands on the slopes and plains north of the Great Dividing Range, that seem to have declined markedly in numbers since records began. The community is likely to be present within drier woodlands throughout the study area but may also be present in riparian habitats.
- Lowland Riverine Fish Community of the Southern Murray Darling Basin
  - The Lowland Riverine Fish Community of the southern Murray-Darling Basin is generally restricted to lowland river reaches and associated floodplains of the Murray River tributaries in Victoria that drain the northern slopes of the Great Dividing Range, together with the lowland section and floodplain of the Murray River upstream of the South Australian border. The ichthyofauna composition is characterised by a suit of native species including Trout Cod *Maccullochella macquariensis*, Murray Cod *M. peelii* and Macquarie Perch *Macquaria australasica*. While it is possible that the community may be present in waterways within the wind farm area, the distribution is more likely to be restricted to tributaries directly connected to the Goulburn River.

3.2.4. Other ecological values (wind farm)

Waterways and creeks intersecting the wind farm area may provide habitat for a range of fish and other aquatic species. In particular, tributaries associated with more permanent waterways such as Hughes Creek in the southern portion of the study area may provide consistent habitat for these species. Waterways and creeks are also likely to provide suitable habitat for waterbirds.

The rapid site inspection also identified substantial amounts of woody debris along road reserves throughout the study area. This may provide important refuge and habitat for a range of ground-dwelling fauna and will require consideration during the design of access tracks.

The desktop data collection and review also focused on identifying bird and bat species (dynamic fauna values), which may be at risk of collision or disturbance from wind farm infrastructure. Bird and bat species identified to be at risk of collisions with wind farm infrastructure and likely to require further attention include 22 threatened woodland and waterbird species and one species of bat (Eastern Horseshoe Bat) (Table 5). In addition, the site may support a number of migratory bird species including Latham's Snipe *Gallinago hardwickii* (Appendix B.2). Wedge-tailed Eagle, and other raptors, are also likely to be abundant in the Strathbogie Ranges and will require consideration in terms of collision risk with turbines. Although these species are not listed as threatened, they are apex predators and an iconic species in the region.

3.3. Transmission line ecological values

3.3.1. Vegetation and fauna habitat (transmission line)

The transmission line study area supports a range of ecological features including areas of floodplain habitat, native vegetation, scattered trees, rocky outcrops, waterways, farmland and constructed dams. These features are described further in Table 6 and mapped in Figure 2.

The northern half of the transmission line study areas is within the western Strathbogie Ranges, an undulating and elevated granitic landscape with rocky outcrops on many of the hilltops. On the southern side of the Strathbogie Ranges the landscape drains into the Goulburn River, which travels east to west through the centre of the transmission line study area between Alexandra and Molesworth. Elevation varies from approximately 170 metres ASL along the Goulburn River, and reaching up to 680 meters ASL in the Strathbogie Ranges.

Within private land, much of the study area has been cleared and remnant native vegetation is restricted to linear corridors along road reserves, fencelines and water courses, isolated scattered trees within paddocks, or is within isolated patches of vegetation.

The largest extents of remnant native vegetation within the transmission line study area are represented by:

- Black Range State Forest, Caveat Nature Conservation Reserve, Yarck Nature Conservation Reserve, Molesworth Bushland Reserve and Dropmore G46 Bushland Reserve (all on public land) and surrounding contiguous remnant vegetation on private land.
- Vegetation along waterways including the Goulburn River, Chrystal Creek, Johnson Creek, Spring Creek, Hughes Creek, Reedy Creek and Running Creek (public land).

Some significant tracts of native vegetation do remain on private land within the Strathbogie Ranges in the transmission line study area.

The largest contiguous extent of remnant native vegetation in the transmission line study area is in Black Range State Forest. This area is mostly Herb-rich Foothill Forest vegetation with a history of logging, so consequently supports a low density of large trees.

As with the wind farm area, fauna habitat within the transmission line study area comprises a variety of woodland and forest habitat types. Throughout these habitat types, canopy trees and overstory vegetation may provide suitable foraging habitat for a range of avifauna and arboreal mammals, including nationally and state listed threatened species. Large, hollow-bearing trees may also provide suitable nesting habitat for these species. Structurally complex understory vegetation and areas with extensive woody debris also offer foraging habitats and refuge for ground dwelling mammals, reptiles and amphibians. Wetlands and waterways, as well as associated vegetation throughout the study area may provide habitat for amphibians and may support waterbirds. Scattered trees and introduced vegetation may also offer foraging and refuge potential to several fauna species. The transmission line area crosses the Goulburn River, which supports a range of fish and amphibian species and may provide habitat for waterbirds in floodplain wetlands and stream habitats.

Fauna habitat values may be further separated into:

- Fixed values – Including all habitat that may support ground-dwelling fauna and non-volant arboreal species (i.e. excluding birds and bats). These species are not at risk of collision with wind turbine infrastructure but are likely to be impacted by the removal of vegetation during the construction phase.

- Dynamic values – Including all habitat that may support birds and bats. This may include foraging and nesting/roosting habitat, as well as areas that facilitate local and migratory movements. These species are likely to be impacted by vegetation removal during the construction phase and also have the potential to collide with wind farm infrastructure during the operational phase.

Table 6 Summary of vegetation and habitat types within the transmission line study area

Vegetation or habitat type	Description	Location	Significant values
Herb-rich Foothill Forest EVC 23 **BCS:** Depleted (CVU), Least Concern (HNF)	A medium to tall open forest or woodland to 25 m tall with a small tree layer over a sparse to dense shrub layer. A high cover and diversity of herbs and grasses in the ground layer characterise this EVC. Canopy species include Narrow-leafed Peppermint *Eucalyptus radiata*, Broad-leafed Peppermint *E. dives*, Messmate Stringybark *E. obliqua* and Eurabbie *E. globulus* subsp. *bicostata*.	Occupies easterly and southerly aspects, mainly on lower slopes and in gullies. Modelled to occur extensively across the transmission line study area, mostly within the HNF subregion. Large tracts are modelled across the hills surrounding Caveat in the north and Limestone in the south.	May support threatened orchids, understorey shrubs, bush-peas and wattles identified in Table 7. Canopy trees within this EVC may provide foraging and nesting habitat for a range if volant species (avifauna, bats) and arboreal mammals and reptiles. Understorey vegetation may support a range of ground-dwelling fauna.
Grassy Dry Forest EVC 22 **BCS:** Depleted (CVU), Least Concern (HNF)	The overstorey is dominated by a low to medium height forest of eucalypts to 20 m tall, sometimes resembling an open woodland with a secondary, smaller tree layer including a number of *Acacia* species. The understorey usually consists of a sparse shrub layer of medium height. The EVC is characterised by a ground layer dominated by a high diversity of drought-tolerant grasses and herbs, often including a suite of fern species. Canopy species include Broad-leafed Peppermint, Red Stringybark *E. macrorhyncha*, Bundy *E. goniocalyx* and Messmate Stringybark.	Occurs on a variety of gradients and altitudes and on a range of geologies. Modelled to occur extensively across the transmission line study area, often adjacent to EVC 23 on the northerly and westerly aspects of lower slopes.	May support threatened orchids, understorey shrubs, bush-peas and wattles identified in Table 7. Overstorey vegetation may provide foraging and nesting habitat for a range of avifauna and bat species. Overstorey vegetation may also provide habitat for arboreal mammals and reptiles, while understory vegetation may support a range of ground dwelling fauna include mammals and reptiles.

Vegetation or habitat type	Description	Location	Significant values
Floodplain Riparian Woodland EVC 56 **BCS:** Endangered (CVU)	An open woodland to 20 m tall over a medium to tall shrub layer with a ground layer consisting of amphibious and aquatic herbs and sedges. Canopy usually dominated by River Red-gum *E. camaldulensis.*	Occurs along the banks and floodplains of the larger meandering rivers and major creeks. Modelled to occur extensively across the CVU subregion, along the course of the Goulburn River.	May support threatened tree species, understorey shrubs, sedges, herbs, wattles and creepers identified in Table 7. River Red-gum habitat within this study area may provide suitable hollows for a range of avifauna and arboreal mammals. Ground layer vegetation may provide suitable habitat for several amphibian species.
Plains Grassy Woodland EVC 55	An open, eucalypt woodland to 15 m tall, with an understorey of a few sparse shrubs over a species-rich grassy and herbaceous ground layer. Canopy species include River Red-gum, Manna Gum and Swamp Gum *E. ovata.*	Occupies poorly drained, fertile soils on flat or gently undulating plains at low elevations. Modelled to occur extensively across the CVU subregion, on gently undulating plains adjacent the Goulburn River floodplain.	May support threatened tree species, understorey shrubs, sedges, herbs, wattles and creepers identified in Table 7. Canopy and understorey vegetation may provide foraging habitat for avifauna and arboreal mammals. Large hollow-bearing trees may also be utilised for nesting. Ground layer vegetation may provide foraging habitat and refuge for ground-dwelling fauna.

Vegetation or habitat type	Description	Location	Significant values
Grassy Woodland EVC 175 **BCS:** Endangered (CVU and HNF)	A variable open eucalypt woodland to 15 m tall over a diverse ground layer of grasses and herbs. The shrub component is usually sparse. Canopy species include Broad-leafed Peppermint, Candlebark, Brittle Gum and *E. mannifera* subsp. *mannifera*. Drooping Sheoak *Allocasuarina verticillata* may also contribute to canopy cover.	On sites with moderate fertility on gentle slopes or undulating hills on a range of geologies. Modelled to occur across the CVU subregion on low gradient hills between Koriella, Cathkin and Yarck.	May support threatened orchids, understorey shrubs, sedges, creepers, bush-peas and wattles identified in Table 7. Areas of this EVC may align with White Box – Yellow Box – Blakely's Red Gum threatened ecological community where Yellow Box is dominant. May support Grey Box Woodland Community where Grey Box trees are present. Canopy trees may provide foraging habitat for avifauna while understory vegetation may support ground-dwelling mammals and reptiles.
Valley Grassy Forest EVC 47 **BCS:** Vulnerable (CVU and HNF)	Open forest to 25 m tall may carry a variety of eucalypts, usually species that prefer more moist or more fertile conditions over a sparse shrub cover. In season, a rich array of herbs, lilies, grasses and sedges dominate the ground layer but at the drier end of the spectrum the ground layer may be sparse and slightly less diverse, but with the moisture-loving species still remaining. Canopy species include Yellow Box E. melliodora, Narrow-leafed Peppermint, Messmate Stringybark and Candlebark *E. rubida*.	Occurs on fertile, well-drained colluvial or alluvial soils on gently undulating lower slopes and valley floors. Modelled to occur on the lower gradient land connecting ridges and hills in the south of the transmission line study area.	May support threatened orchids, understorey shrubs, sedges, creepers, bush-peas and wattles identified in Table 7. Areas of this EVC may align with White Box – Yellow Box – Blakely's Red Gum threatened ecological community where Yellow Box is dominant. Diverse eucalypt assemblage within this EVC may provide foraging and nesting habitat for a variety of arboreal mammals and avifauna. Grassy understory vegetation may support ground dwelling mammals and areas with high native grass cover may provide habitat for grassland specialists such as Striped Legless Lizard and Golden Sun Moth.

Vegetation or habitat type	Description	Location	Significant values
Riparian Forest EVC 18 **BCS:** Depleted (CVU), Least Concern (HNF)	A tall forest to 30 m, often with an open to sparse secondary tree layer of *Acacias* and scattered dense patches of shrubs, ferns, grasses and herbs. Canopy species include Narrow-leafed Peppermint, Eurabbie and Manna Gum *E. viminalis.*	Associated with alluvial terraces but occasionally occurring in the heads of gullies leading into creeks and rivers. Modelled to occur along the upper reaches of watercourses including Scrubby Creek, Edward Creek and Crystal Creek in the south of the study area and Running Creek and Reedy Creek in the north.	May support threatened tree species, understorey shrubs, sedges, herbs, wattles and creepers identified in Table 7. Canopy trees and *Acacia* dominated secondary layer may provide foraging habitat for arboreal mammals and avifauna, while large canopy trees may also provide nesting habitat. Well vegetated riparian habitat located closer to streams and creeks may also provide refuge for waterbirds.
Scattered trees	A range of Eucalypt, Wattle or She-oak species that occur as isolated paddock trees or in small clumps as a result of land clearing for agriculture.	Throughout cleared and grazed or cropped farmland.	Scattered trees throughout the study area may provide foraging habitat for arboreal mammals and avifauna. Larger, hollow-bearing trees may also provide nesting habitat for these species.
Derived native grasslands and pastures	Unimproved pasture may support derived native grasslands dominated by grazing-tolerant native grasses and herbs. These grasslands are derived from the original forest and woodland vegetation that has been historically cleared for farming.	Throughout cleared and grazed farmland and around rocky outcrops.	May provide habitat for ground-dwelling birds, mammals, reptiles and invertebrates. Open farmland provides foraging habitat for woodland birds and raptors.

Vegetation or habitat type	Description	Location	Significant values
Wetlands (including natural wetlands and farm dams)	The Goulburn River Floodplain supports semi-permanent wetlands. The remaining terrain is generally hilly and restricts natural wetlands to small temporary freshwater marshes, sedgelands and meadows, including perched bogs supported by groundwater discharge. The DEECA wetland layer indicates larger wetlands along the Goulburn River and a scattered occurrence of small wetlands and linear drainage features across the landscape. Farm dams provide constructed wetland habitat and their value depends on the extent of fringing and emergent vegetation, livestock access and proximity to other natural and created wetlands.	Scattered across the Strathbogie Ranges foothills and plateau.	Wetlands and associated fringing vegetation may provide suitable habitat for a range of waterbirds and amphibians. Constructed dams may support amphibians and may also provide occasional habitat for waterbirds.
Rivers and creeks	Several permanent and seasonal rivers and creeks are issued from the Strathbogie Ranges and the Great Diving Range. These waterways support a range of aquatic habitat features, substrate types and riparian vegetation.	Rivers, creeks and drainage lines throughout the study area.	Rivers and creeks, as well as associated fringing vegetation may provide suitable habitat for a range of waterbirds, amphibians, fish and crustaceans.
Predominantly introduced vegetation	Pasture, softwood plantation, urban areas, ornamental plantings and crops.	Farmland and towns throughout the study area.	Introduced vegetation, particularly dense stands of pasture or woody weed thickets may provide refuge for ground-dwelling birds, mammals and reptiles. Open farmland provides foraging habitat for woodland birds and raptors. Pine plantations may provide food sources for large cockatoos.

3.3.2. Threatened species (transmission line)

Threatened species recorded or predicted to occur within 10 kilometres of the transmission line study area or from the relevant catchment (aquatic species) are listed in Appendix A (flora) and Appendix B (fauna). These records are also presented in Figure 3. A total of 26 threatened flora species and 44 threatened fauna species are considered to have a medium or higher likelihood of occurrence within the transmission line study area. A summary of these species is included in Table 7 (flora) and Table 8 (fauna).

Table 7 Summary of EPBC and FFG Act listed flora species most likely to occur in the transmission line study area

Species name	Listing status
River Swamp Wallaby-grass	Vulnerable under the EPBC Act.
Matted Flax-lily	Endangered under the EPBC Act. Critically Endangered under the FFG Act.
Trailing Hop-bush	Vulnerable under the EPBC Act.
Clover Glycine	Vulnerable under the EPBC Act. Vulnerable under the FFG Act.
Euroa Guinea-flower	Vulnerable under the EPBC Act. Critically Endangered under the FFG Act.
Round-leaf Pomaderris	Critically Endangered under the EPBC Act. Critically Endangered under the FFG Act.
Woolly Wattle	Vulnerable under the FFG Act.
Large-leaf Cinnamon-wattle	Endangered under the FFG Act.
Velvet Apple-berry	Endangered under the FFG Act.
Wiry Bossiaea	Endangered under the FFG Act.
Tiny Daisy	Endangered under the FFG Act.
Wine-lipped Spider-orchid	Critically Endangered under the FFG Act.
Forest Sedge	Endangered under the FFG Act.
Arching Flax-lily	Threatened under the FFG Act.
Late-flower Flax-lily	Critically Endangered under the FFG Act.
Hairy Hop-bush	Endangered under the FFG Act.
Common Pipewort	Endangered under the FFG Act.
Yarra Gum	Critically Endangered under the FFG Act.
Veiled Fringe-sedge	Endangered under the FFG Act.
Western Golden-tip	Endangered under the FFG Act.
Silky Golden-tip	Endangered under the FFG Act.
Rough Daisy-bush	Endangered under the FFG Act.

Species name	Listing status
Tree Geebung	Endangered under the FFG Act.
Green Leek-orchid	Endangered under the FFG Act.
Sharp Greenhood	Vulnerable under the FFG Act.
Floodplain Fireweed	Endangered under the FFG Act.

Table 8 Summary of EPBC and FFG Act listed fauna species most likely to occur in the transmission line study area

Species name	Listing status	Area of value within the study area
Birds		
Australasian Bittern	Endangered under the EPBC Act. Critically Endangered under the FFG Act.	The species may occupy wetlands and waterways within the study area. The species may also be present within riparian vegetation in close proximity to waterways.
Gang-gang Cockatoo	Endangered under the EPBC Act.	The species occupies a range of forest and woodland habitats. Areas of value within the study area may include the following EVCs; Herb-rich Foothill Forest, Grassy Dry Forest, Floodplain Riparian Woodland, Grassy Woodland, Valley Grassy Forest and Riparian Forest. In addition, scattered trees and riparian vegetation associated with creeks and waterways may also occasionally support the species.
Swift Parrot	Critically Endangered under the EPBC Act. Critically Endangered under the FFG Act.	The species occupies a range of forest and woodland habitats when overwintering on mainland Australia. Areas of potential values within the study area include the following EVCs; Herb-rich Foothill Forest, Grassy Dry Forest, Floodplain Riparian Woodland, Grassy Woodland, Valley Grassy Forest and Riparian Forest. In addition, scattered trees and riparian vegetation associated with creeks and waterways may also occasionally support the species.
Blue-winged Parrot	Vulnerable under the EPBC Act	The species occupies a range of coastal, sub-coastal and semi-arid regions throughout south-eastern Australia. It favours heathy woodland for breeding and nests in tree hollows in eucalypt forests and woodlands. Areas of potential values within the study area include the following EVCs; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Riparian Forest, Grassy Woodland and Granitic Hills Woodland. In addition, scattered trees and riparian vegetation associated with creeks and waterways may also occasionally support the species.
Brown Treecreeper	Vulnerable under the EPBC Act	The species generally inhabits open eucalypt forests, woodlands and Mallee. Areas of potential values within the study area include the following EVCs; Herb-rich Foothill Forest, Grassy Dry Forest, Floodplain Riparian Woodland, Valley Grassy Forest, Riparian Forest, Grassy Woodland. In addition, scattered trees and riparian vegetation associated with creeks and waterways may also occasionally support the species.

Species name	Listing status	Area of value within the study area
Southern Whiteface	Vulnerable under the EPBC Act	The species occupies a range of open woodlands and shrublands with both grassy and shrubby understories. Areas of potential values within the study area include the following EVCs; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Grassy Woodland. In addition, scattered trees and introduced understory vegetation may also occasionally support the species.
White-throated Needletail	Vulnerable under the EPBC Act. Vulnerable under the FFG Act.	The species is unlikely to utilise the terrestrial habitat within the study area but may utilise the aerial space above the study area. As such, it may be observed flying over any portion of the study area.
Pilotbird	Vulnerable under the EPBC Act.	The species is predominantly ground-dwelling and utilises ground vegetation and debris, as well as lower storey vegetation in wet forest environments. Areas of potential values within the study area include the following EVCs; Herb-rich Foothill Forest, Floodplain Riparian Woodland and Riparian Forest. Introduced ground and low-story vegetation may also occasionally support the species.
Painted Honeyeater	Vulnerable under the EPBC Act. Vulnerable under the FFG Act.	The species typically utilises dry open woodland and forest habitats with nectar producing trees. Areas of value within the study area are likely to include the following EVCs; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest and Grassy Woodland. In addition, scattered trees and riparian vegetation associated with creeks and waterways may also occasionally support the species.
Regent Honeyeater	Critically Endangered under the EPBC Act. Critically Endangered under the FFG Act.	The species typically utilises dry open woodland and forest habitats with nectar producing trees. Areas of value within the study area are likely to include the following EVCs; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest and Grassy Woodland. In addition, scattered trees and riparian vegetation associated with creeks and waterways may also occasionally support the species.
Diamond Firetail	Vulnerable under the EPBC Act. Vulnerable under the FFG Act.	The species inhabits open forests and woodlands with a grassy ground layer. Areas of value within the study area are likely to include Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Riparian Forest and Grassy Woodland EVCs. In addition, scattered trees and riparian vegetation associated with creeks and waterways may also occasionally support the species.
Hooded Robin	Endangered under the EPBC Act. Vulnerable under the FFG Act.	The species inhabits woodlands of eucalypt, Mallee and semi-cleared farmland. Areas of value within the study area are likely to include Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Grassy Woodland and both Riparian Forest and Riparian Shrubland EVCs. Areas of cleared agricultural land with some remnant native vegetation may also provide some value.
Lewin's Rail	Vulnerable under the FFG Act.	The species may occupy wetlands and waterways within the study area. The species may also be present within riparian vegetation in close proximity to waterways.

Species name	Listing status	Area of value within the study area
Eastern Great Egret	Vulnerable under the FFG Act.	The species may occupy wetlands and waterways within the study area. The species may also be present within riparian vegetation in close proximity to waterways.
Magpie Goose	Vulnerable under the FFG Act.	The species occupies a variety of wetlands, preferring large, permanent, freshwater lakes and swamps with dense fringing vegetation. Areas of value withing the study area are likely to include wetlands and waterways as well as Riparian Forest and Riparian Shrubland EVCs.
Australasian Shoveler	Vulnerable under the FFG Act.	The species occupies a variety of wetlands, preferring large, permanent, freshwater lakes and swamps with dense fringing vegetation. Areas of value withing the study area are likely to include wetlands and waterways as well as Riparian Forest and Riparian Shrubland EVCs.
Hardhead	Vulnerable under the FFG Act.	The species occupies a variety of wetlands, preferring large, permanent, freshwater lakes and swamps with dense fringing vegetation. Areas of value withing the study area are likely to include wetlands and waterways as well as riparian vegetation in close proximity to waterways. Constructed dams may also occasionally support the species.
Blue-billed Duck	Vulnerable under the FFG Act.	The species occupies a variety of wetlands, preferring large, permanent, freshwater lakes and swamps with dense fringing vegetation. Areas of value withing the study area are likely to include wetlands and waterways as well as riparian vegetation in close proximity to waterways. Constructed dams may also occasionally support the species.
Musk Duck	Vulnerable under the FFG Act.	The species occupies a variety of wetlands, preferring large, permanent, freshwater lakes and swamps with dense fringing vegetation. Areas of value withing the study area are likely to include wetlands and waterways as well as riparian vegetation in close proximity to waterways. Constructed dams may also occasionally support the species.
Little Eagle	Vulnerable under the FFG Act.	The species inhabits woodland habitats and open areas, foraging primarily on rabbits. Riparian habitat may also be utilised for nesting. Areas of value within the study area are likely to include; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Floodplain Riparian Woodland, Riparian Forest and Grassy Woodland EVCs. Cleared agricultural land may also provide some foraging opportunities for the species. Scattered trees may provide nesting and perching habitat and introduced vegetation supporting rabbits may provide foraging potential.
White-bellied Sea-Eagle	Endangered under the FFG Act.	The species is typically associated with waterways when inland and areas of value within the study area are likely to include wetlands, waterways and riparian vegetation.
Square-tailed Kite	Vulnerable under the FFG Act.	The species utilises woodlands, open forest and partially cleared farmland habitats. Areas of value within the study area are likely to include; Herb-rich Foothill Forest, Grassy

Species name	Listing status	Area of value within the study area
		Dry Forest, Valley Grassy Forest and Grassy Woodland EVCs. Cleared agricultural land may also provide some foraging opportunities for the species.
Powerful Owl	Vulnerable under the FFG Act.	The species inhabits forests and woodlands habitats. Areas of value within the study area are likely to include Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Grassy Woodland, Floodplain Riparian Woodland and Riparian Forest EVCs. Scattered trees may also provide nesting and perching habitat for the species.
Masked Owl	Critically Endangered under the FFG Act.	The species inhabits a variety of lowland forests and woodlands. Areas of value within the study area are likely to include Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Grassy Woodland, Floodplain Riparian Woodland and Riparian Forest EVCs. Scattered trees may also provide nesting and perching habitat for the species.
Sooty Owl	Endangered under the FFG Act.	The species typically occurs in tall, wet forests and rainforests. Areas of value within the study area are likely to include Herb-rich Foothill Forest, Floodplain Riparian Woodland and Riparian Forest EVCs. Scattered trees, particularly those located close to riparian vegetation, may also provide nesting and perching habitat for the species.
Speckled Warbler	Endangered under the FFG Act.	The species inhabits woodland habitats with rocky gullies, ridges, tussock grasses and a sparse shrub understorey. Areas of value within the study area are likely to include Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest and Grassy Woodland EVCs.
Mammals		
Southern Greater Glider	Endangered under the EPBC Act. Vulnerable under the FFG Act.	The species typically inhabits wet and damp sclerophyll forest with large hollow-bearing trees. Areas of value within the study area are likely to include the following EVCs; Herb-rich Foothill Forest, Valley Grassy Forest, Floodplain Riparian Woodland and Riparian Forest. Scattered trees with hollows may also provide nesting habitat.
Leadbeater's Possum	Critically Endangered under the EPBC Act. Critically Endangered under the FFG Act.	The species occurs in Montane and sub-alpine forests and woodland, and in lowland swamp forests. Areas of value within the study area are likely to include the following EVCs; Herb-rich Foothill Forest, Valley Grassy Forest, Floodplain Riparian Woodland and Riparian Forest. Scattered trees with hollows may also provide nesting habitat.
Brush-tailed Phascogale	Vulnerable under the FFG Act.	The species typically inhabits drier forests and woodlands. Areas of value within the study area are likely to include; Grassy Dry Forest and Grassy Woodland EVCs.
Common Dunnart	Vulnerable under the FFG Act.	The species occupies heathland, forests and woodlands with complex lower and ground story vegetation. Areas of value within the study area are likely to include; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Grassy Woodland, Floodplain Riparian Woodland and Riparian Forest EVCs.

Species name	Listing status	Area of value within the study area
Platypus	Vulnerable under the FFG Act.	The species occupies a variety of freshwater waterbodies, particularly those with stable banks suitable for burrows, and shallow waters for foraging. Wetlands and waterways throughout the study area are likely to be areas of value, as well as river bank areas along the riparian vegetation.
Dingo	Vulnerable under the FFG Act.	The species uses a range of terrestrial environments and may be present across all EVCs and habitats within the study area.
Eastern Horseshoe Bat	Endangered under the FFG Act.	The species inhabits a variety of forest and woodland habitats, particularly where caves and mines are present for roosting. Areas of value within the study area are likely to include; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Floodplain Riparian Woodland, Riparian Forest and Grassy Woodland EVCs.
Reptiles		
Striped Legless Lizard	Vulnerable under the EPBC Act. Endangered under the FFG Act.	The species inhabits areas of natural and derived temperate grassland, grassy woodland and exotic grassland. Areas of value within the study area are likely to be limited to the Grassy Dry Forest and Grassy Woodland EVCs, and derived native grassland/pasture. Areas with tussock forming, introduced grasses may also support the species.
Lace Monitor	Endangered under the FFG Act.	The species inhabits a variety of wooded habitats. Areas of value within the study area are likely to include; Herb-rich Foothill Forest, Grassy Dry Forest, Valley Grassy Forest, Riparian Forest and Grassy Woodland EVCs.
Murray River Turtle	Critically Endangered under the FFG Act.	Areas of value within the study area include creeks and waterways, particularly those connected to the Goulburn River.
Frogs		
Growling Grass Frog	Vulnerable under the EPBC Act. Vulnerable under the FFG Act.	The species typically inhabits waterbodies with abundant emergent and surrounding vegetation. Areas of value within the study area are likely to include waterbodies and waterways, as well as Riparian Forest and Riparian Shrubland EVCs.
Brown Toadlet	Endangered under the FFG Act.	A wide variety of woodland, forest and grassland habitats, where it shelters under leaf litter and other debris in moist soaks and depressions. Breeding occurs in swamps and inundated habitats, and along creek lines. Areas of value within the study area are likely to include any wetland habitats and waterways. All EVCs located within close proximity to waterbodies, or with adequate moisture may be considered valuable to the species.
Fish		
Barred Galaxias	Endangered under the EPBC Act. Critically Endangered under the FFG Act.	Areas of value within the study area include wetlands and waterways particularly, those which are connected to the Rubicon River.

Species name	Listing status	Area of value within the study area
Macquarie Perch	Endangered under the EPBC Act. Endangered under the FFG Act.	Areas of value within the study area include wetlands and waterways particularly, those near to Hughes Creek.
Southern Pygmy Perch (Murray-Darling lineage)	Vulnerable under the EPBC Act. Vulnerable under the FFG Act.	Areas of value within the study area include wetlands and waterways particularly, those near to Hughes Creek.
Invertebrates		
Golden Sun Moth	Vulnerable under the EPBC Act. Vulnerable under the FFG Act.	The species occupies a range of grassland habitats including natural and derived temperate grassland, grassy woodland and pasture supporting spear grasses and wallaby grasses and exotic grassland. Areas of value within the study area are likely to include; Grassy Dry Forest and Grassy Woodland EVCs, as well as cleared areas supporting derived native and exotic grassy vegetation.
Alpine Darner Dragonfly	Vulnerable under the FFG Act.	Likely to be associated with wetlands, rivers and creeks within the study area.
Murray Spiny Crayfish	Threatened under the FFG Act.	The species occupies cool-water streams in pasture and sclerophyll forest. Areas of value within the study area include wetlands and waterways particularly, those near to Hughes Creek.

3.3.3. Threatened ecological communities (transmission line)

Four EPBC Act listed threatened ecological communities are modelled or predicted to occur within 10 kilometres of the transmission line study area. These communities and a description of their likely occurrence are presented in Table 13 of Appendix A.2. Threatened ecological communities cannot be mapped accurately at a desktop level but are generally associated with endangered woodland EVCs in the study area.

Of these nationally listed communities, three have potential to occur within the transmission line study area, including:

- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (Endangered)
  - There is some potential for this community to occur in valleys around Yarck and Molesworth.
- White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland
  - It is likely that prior to European settlement this community was prevalent throughout much of the transmission line study area, however as it typically occurs on fertile soils much of its original extent has been cleared for agricultural purposes. The character Eucalypt species of this community were observed within the study area during the rapid field assessment, particularly on the foothills between Molesworth, Alexandra and Yarck. The community is likely to persist within less-disturbed areas (e.g. less-favourable agricultural land) and is associated with Valley Grassy Forest EVC 47 and Grassy Woodland EVC 175, both of which are modelled to occur within the transmission line study area.
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains

  - This community occurs on flat plains grading into slopes, below 500 metres ASL. There is some potential for the community to occur on isolated drainage lines or seasonally inundated depressions.

No threatened flora communities listed under the FFG Act are considered likely to occur within the transmission line study area.

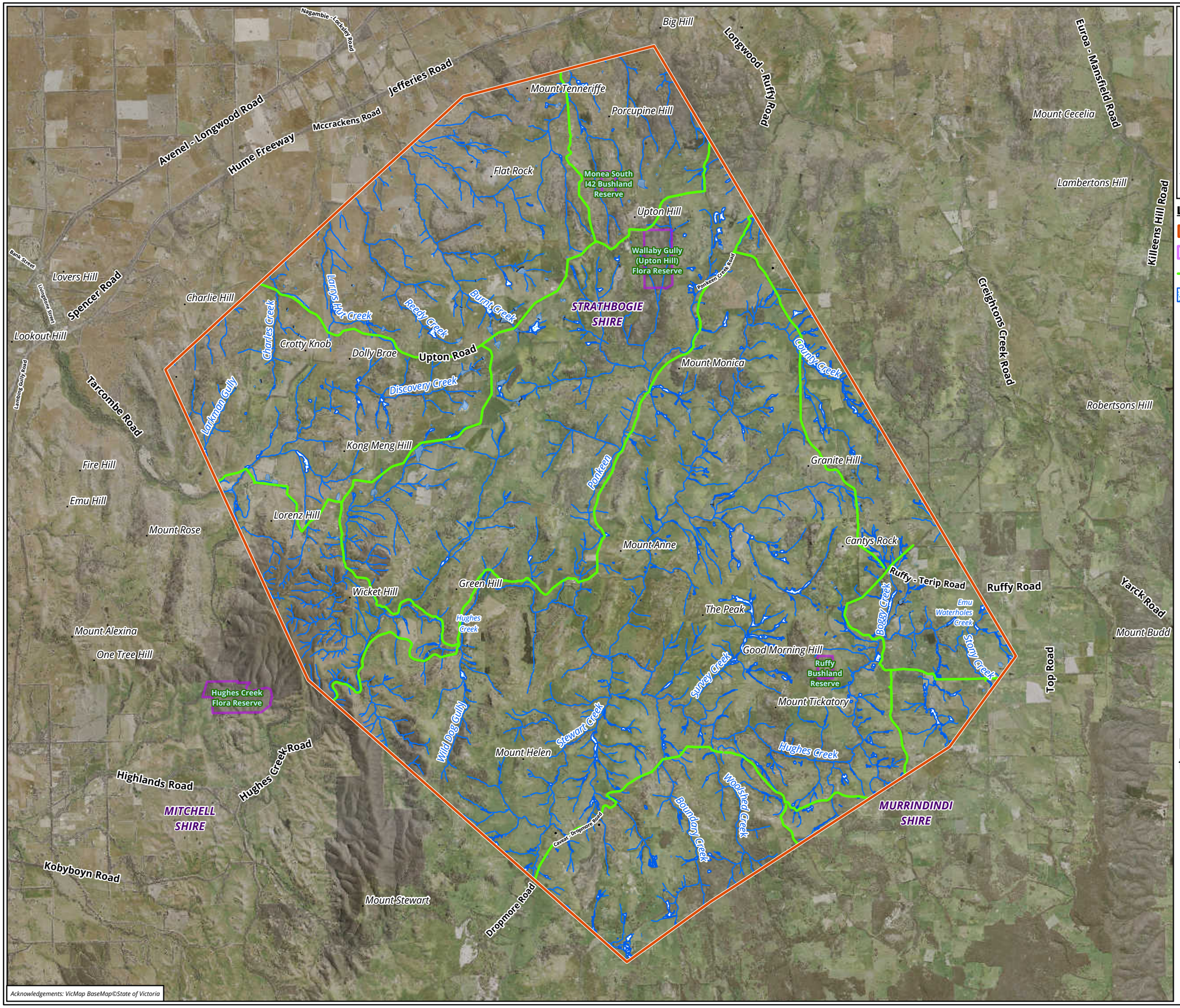
Two threatened fauna communities listed under the FFG Act are considered likely to occur within the transmission line study area:

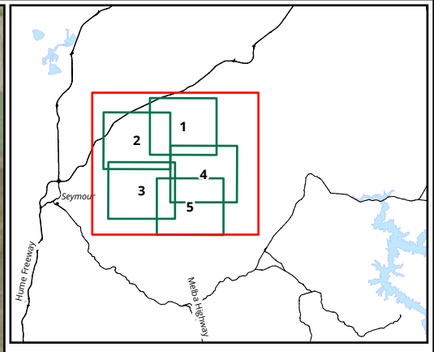
- Victorian Temperate Woodland Bird Community
  - The Victorian Temperate Woodland Bird Community has been defined as a suit of 24 bird species, mainly associated with drier woodlands on the slopes and plains north of the Great Dividing Range, that seem to have declined markedly in numbers since records began. The community is likely to be present within drier woodlands throughout the study area but may also be present in riparian habitats.
- Lowland Riverine Fish Community of the Southern Murray Darling Basin
  - The Lowland Riverine Fish Community of the southern Murray-Darling Basin is generally restricted to lowland river reaches and associated floodplains of the Murray River tributaries in Victoria that drain the northern slopes of the Great Dividing Range, together with the lowland section and floodplain of the Murray River upstream of the South Australian border. The ichthyofauna composition is characterised by a suit of native species including Trout Cod *Maccullochella macquariensis*, Murray Cod *M. peelii* and Macquarie Perch *Macquaria australasica*. A large portion on the transmission line area is intersected by the Gouldburn river and it is possible that this community may be present within the river and surrounding tributaries.

3.3.4. Other ecological values (transmission line)

Waterways and creeks intersecting the transmission line area may provide habitat for a range of fish and other aquatic species. In particular, the Goulburn River, its floodplain and its tributaries which intersect a large portion of the study area as well as other more permanent waterways such as Hughes Creek in the north of the study area may provide regular habitat for these species. Floodplains, waterways and creeks are also likely to provide suitable habitat for waterbirds.

The desktop data collection and review also focused on identifying bird and bat species (dynamic fauna values), which may be at risk of collision or disturbance from wind farm infrastructure such as powerlines. Bird and bat species identified to be at risk of collisions with powerline collision and likely to require further attention include 26 threatened woodland and waterbird species and one species of bat (Eastern Horseshoe Bat) (Table 5). In addition, the transmission line corridor may support a number of migratory bird species including Latham's Snipe *Gallinago hardwickii* (Appendix B.2). Once again, Wedge-tailed Eagle may require consideration in the transmission line corridor.





Legend

- Study area
- Park or reserve
- Rapid field assessment survey effort
- DEECA Wetland

Figure 2.1 Windfarm ecological features and survey effort

0 1 2 3 4 5 Kilometers

N

Scale: 1:100,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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Matter: 38133,
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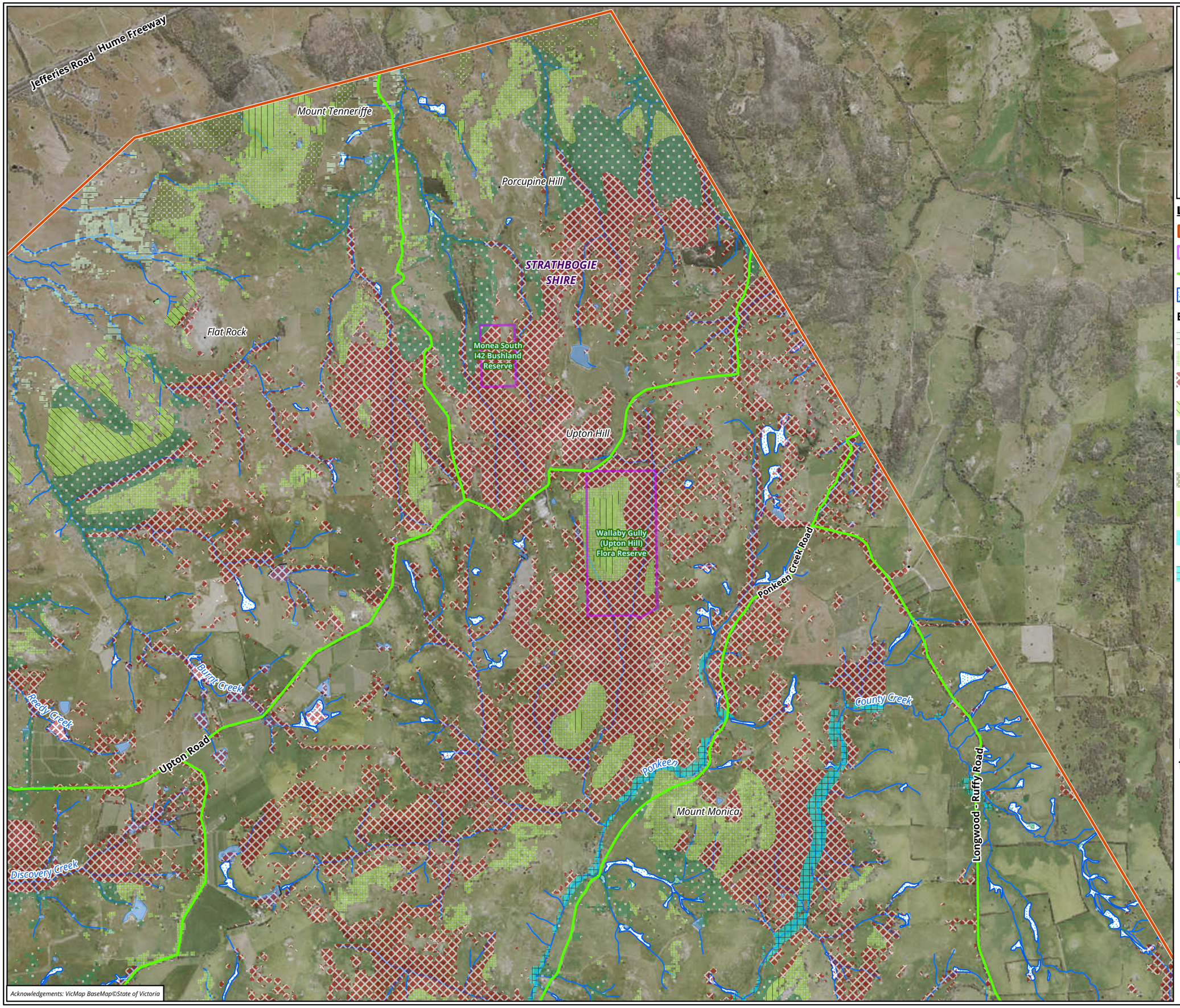

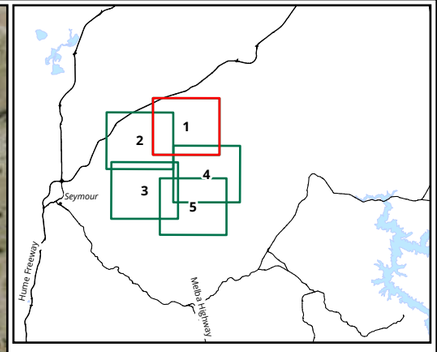

Legend

- Study area
- Park or reserve
- Rapid field assessment survey effort
- DEECA Wetland

Ecological vegetation class

- 175 Grassy Woodland
- 22 Grassy Dry Forest
- 23 Herb-rich Foothill Forest
- 248 Grassy Dry Forest/Granitic Hills Woodland Complex
- 47 Valley Grassy Forest
- 55 Plains Grassy Woodland
- 72 Granitic Hills Woodland
- 73 Rocky Outcrop Shrubland/Rocky Outcrop Herbland Mosaic
- 83 Swampy Riparian Woodland
- 84 Riparian Forest/Swampy Riparian Woodland/Riparian Shrubland/Riverine Escarpment Scrub Mosaic

Figure 2.2 Windfarm ecological features and survey effort

0 0.4 0.8 1.2 1.6 2

Kilometers

Scale: 1:40,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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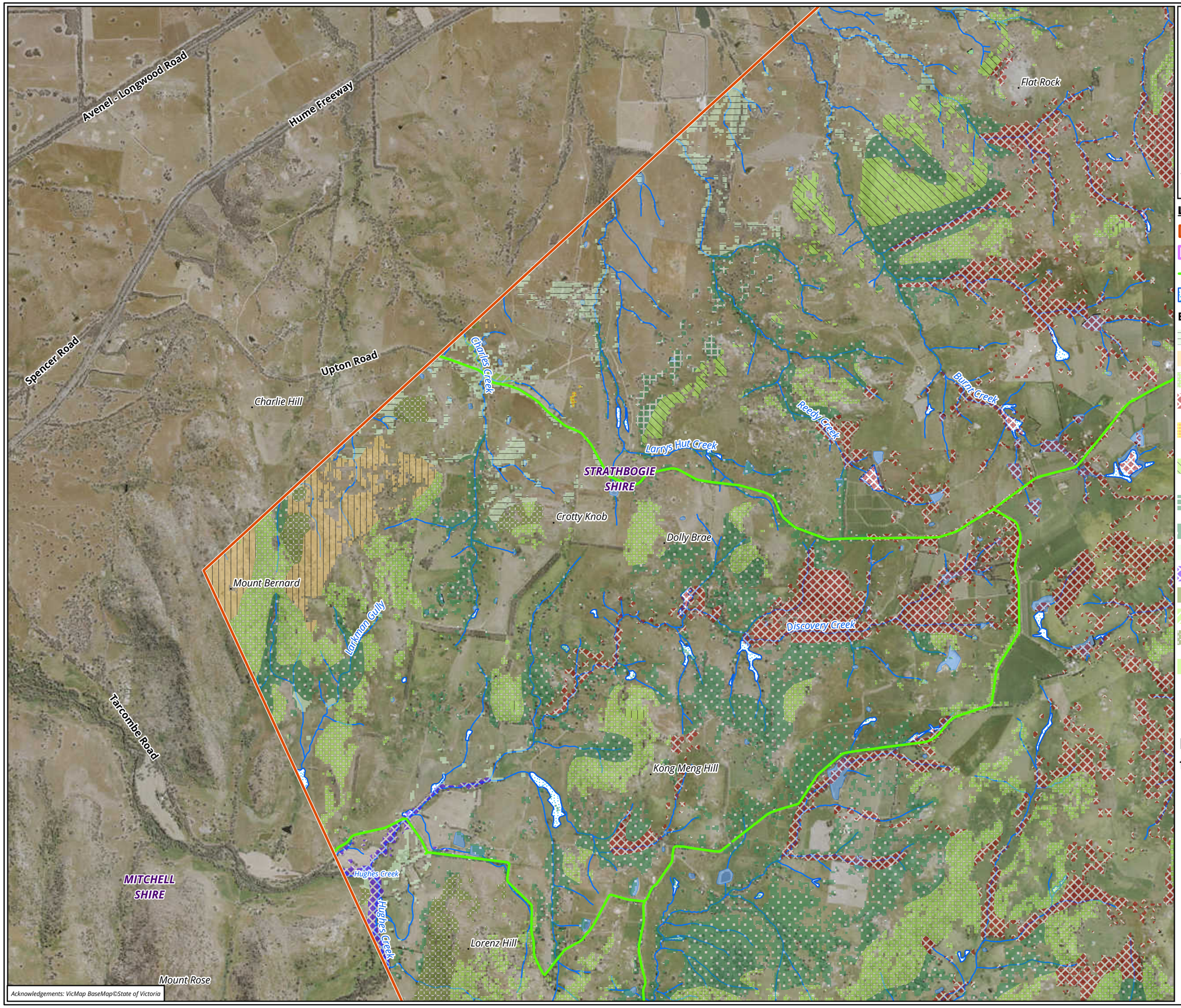

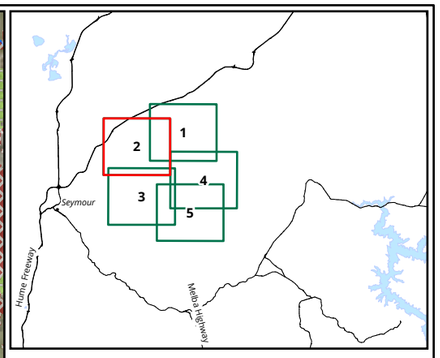

Legend

- Study area
- Park or reserve
- Rapid field assessment survey effort
- DEECA Wetland

Ecological vegetation class

- 175 Grassy Woodland
- 20 Heathy Dry Forest
- 22 Grassy Dry Forest
- 23 Herb-rich Foothill Forest
- 245 Granitic Hills Woodland/Heathy Dry Forest Mosaic
- 248 Grassy Dry Forest/Granitic Hills Woodland Complex
- 268 Valley Grassy Forest/Grassy Woodland Complex
- 47 Valley Grassy Forest
- 55 Plains Grassy Woodland
- 56 Floodplain Riparian Woodland
- 61 Box Ironbark Forest
- 68 Creekline Grassy Woodland
- 72 Granitic Hills Woodland
- 73 Rocky Outcrop Shrubland/Rocky Outcrop Herbland Mosaic

Figure 2.3 Windfarm ecological features and survey effort

0 0.4 0.8 1.2 1.6 2

Kilometers

Scale: 1:40,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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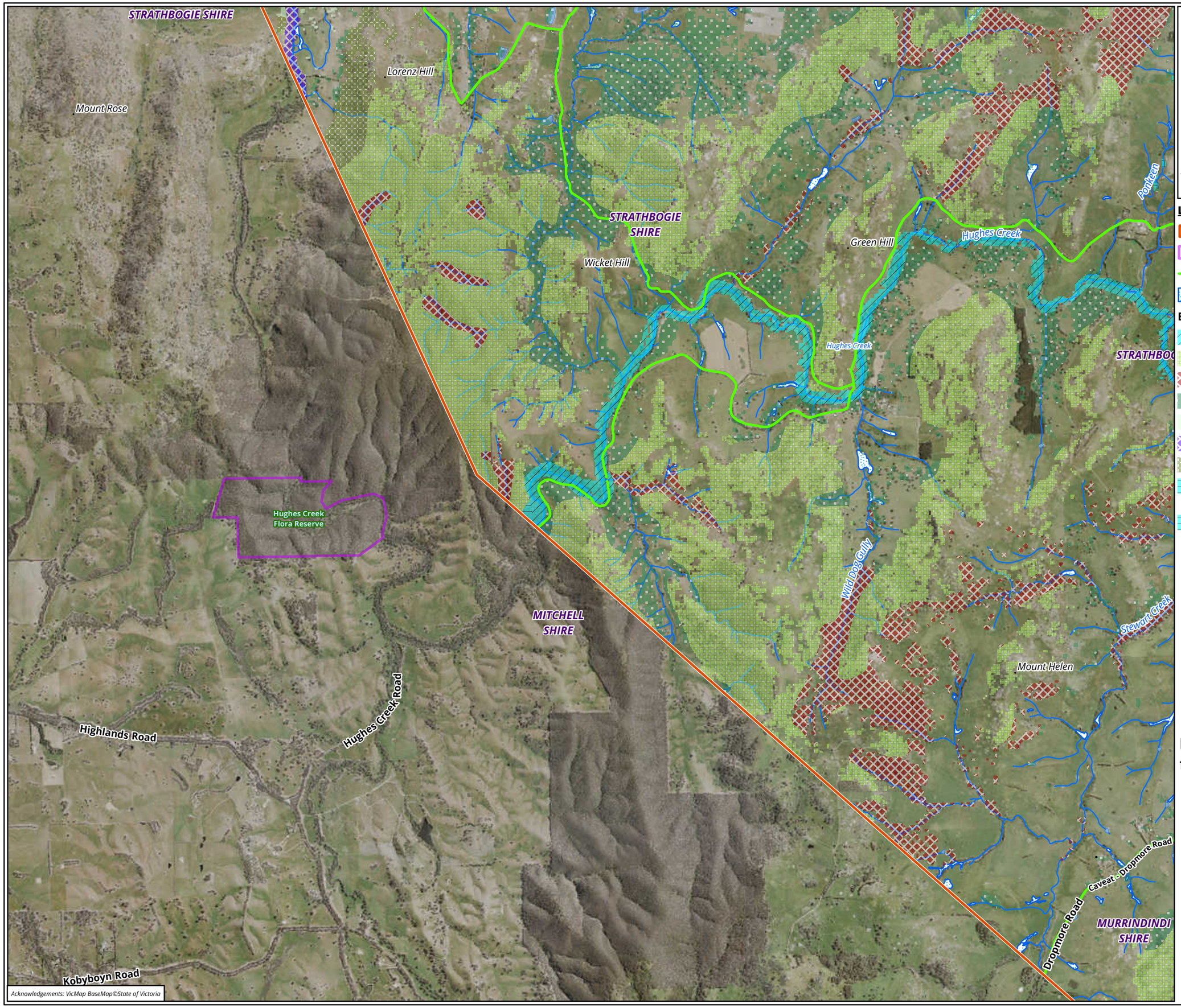

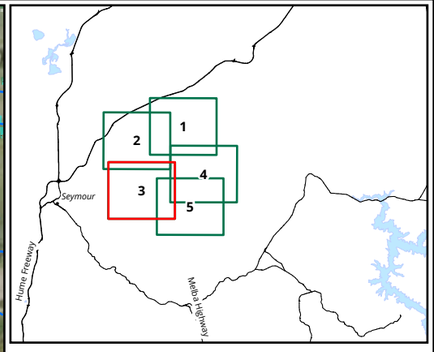

Legend

- Study area
- Park or reserve
- Rapid field assessment survey effort
- DEECA Wetland

Ecological vegetation class

- 19 Riparian Shrubland
- 22 Grassy Dry Forest
- 23 Herb-rich Foothill Forest
- 47 Valley Grassy Forest
- 55 Plains Grassy Woodland
- 56 Floodplain Riparian Woodland
- 72 Granitic Hills Woodland
- 82 Riverine Escarpment Scrub
- 84 Riparian Forest/Swampy Riparian Woodland/Riparian Shrubland/Riverine Escarpment Scrub Mosaic

Figure 2.4 Windfarm ecological features and survey effort

0 0.4 0.8 1.2 1.6 2

Kilometers

Scale: 1:40,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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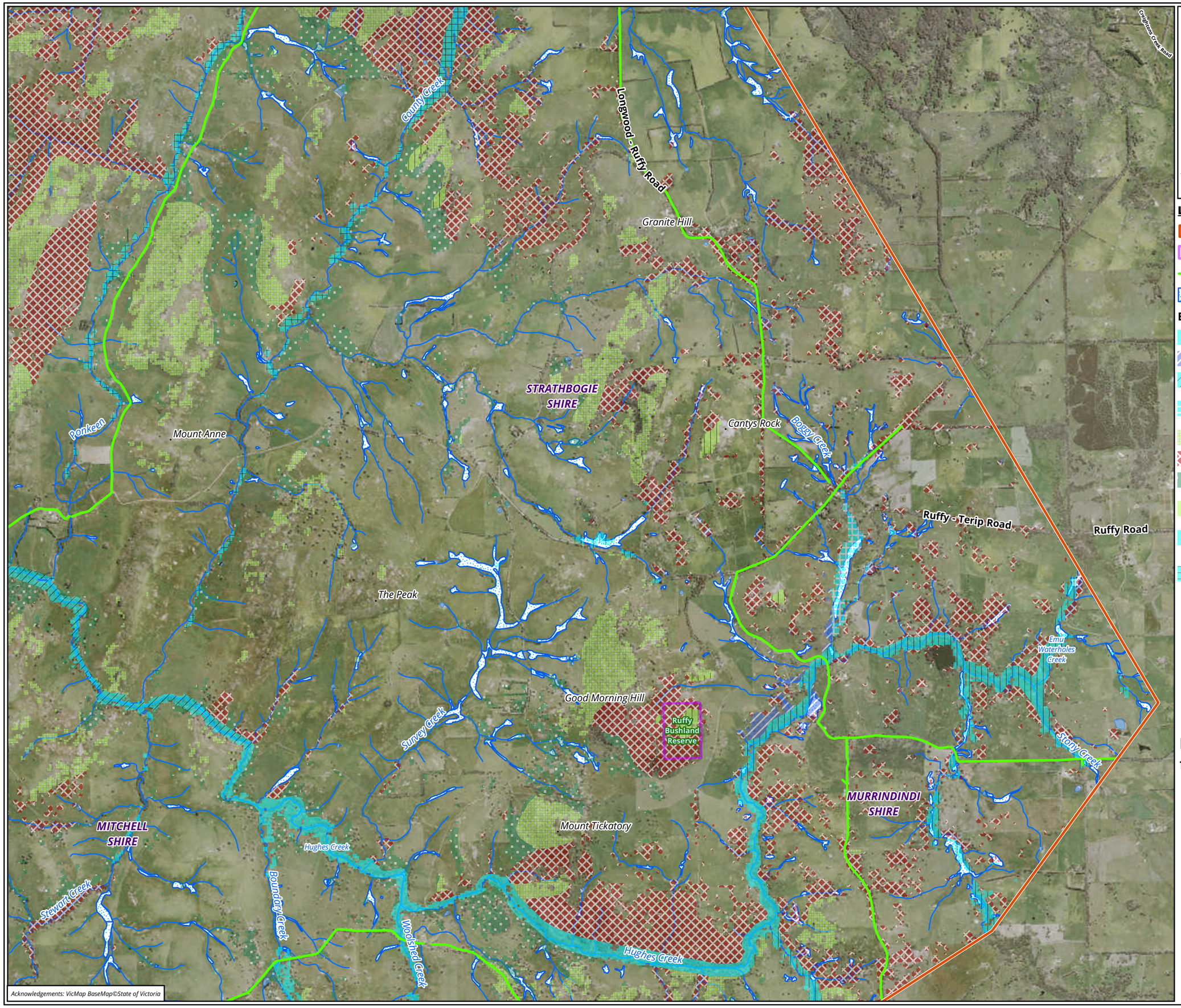

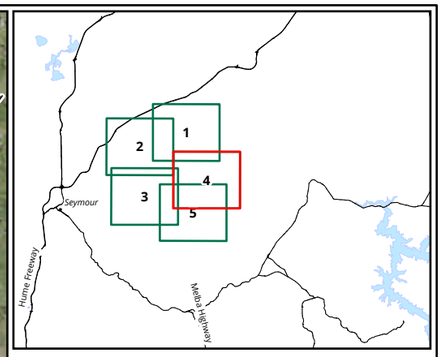

Legend

- Study area
- Park or reserve
- Rapid field assessment survey effort
- DEECA Wetland

Ecological vegetation class

- 18 Riparian Forest
- 185 Perched Boggy Shrubland
- 19 Riparian Shrubland
- 212 Swampy Riparian Woodland/ Perched Boggy Shrubland Mosaic
- 22 Grassy Dry Forest
- 23 Herb-rich Foothill Forest
- 47 Valley Grassy Forest
- 73 Rocky Outcrop Shrubland/Rocky Outcrop Herbland Mosaic
- 83 Swampy Riparian Woodland
- 84 Riparian Forest/Swampy Riparian Woodland/Riparian Shrubland/Riverine Escarpment Scrub Mosaic

Figure 2.5 Windfarm ecological features and survey effort

0 0.4 0.8 1.2 1.6 2

Kilometers

Scale: 1:40,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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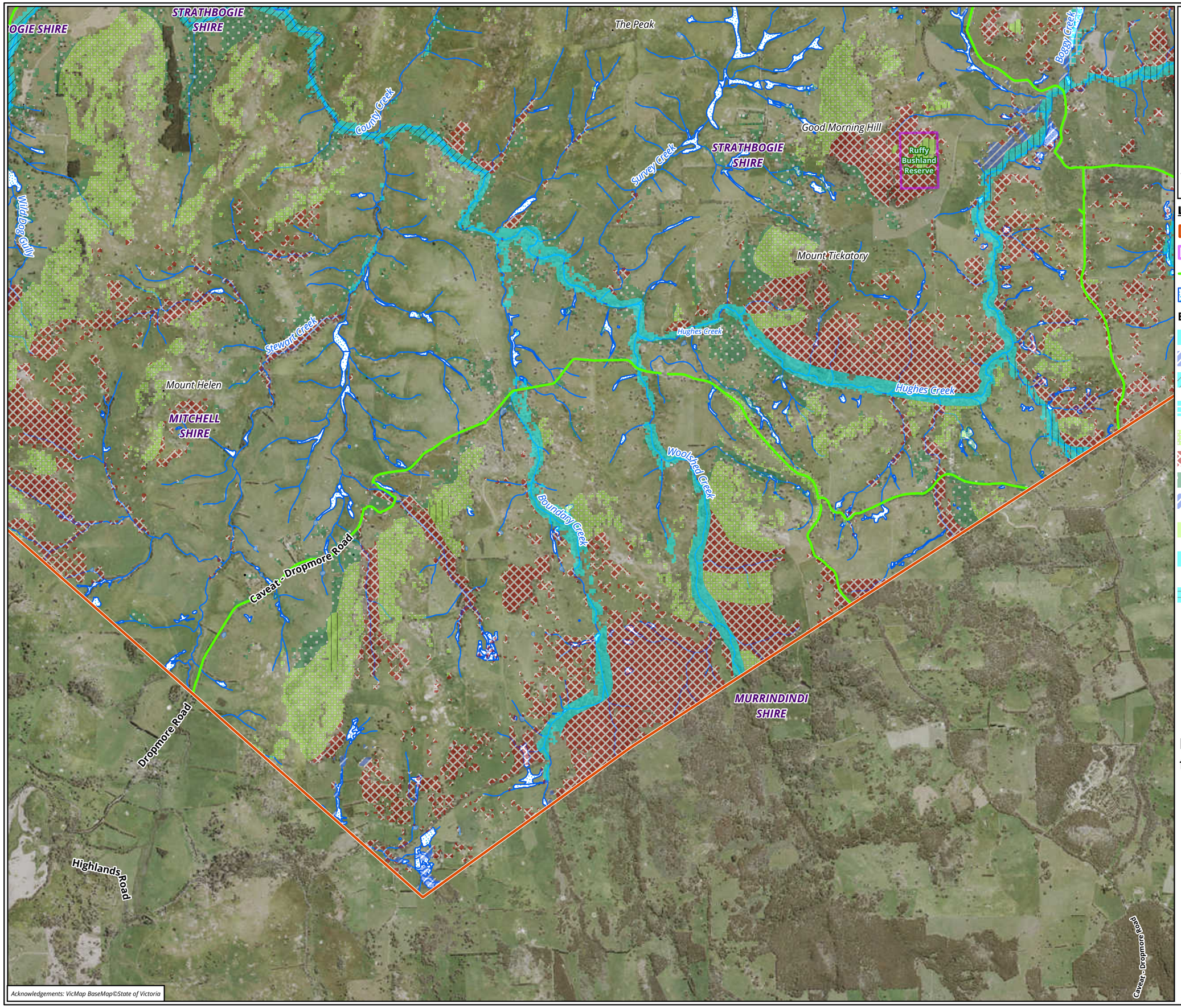

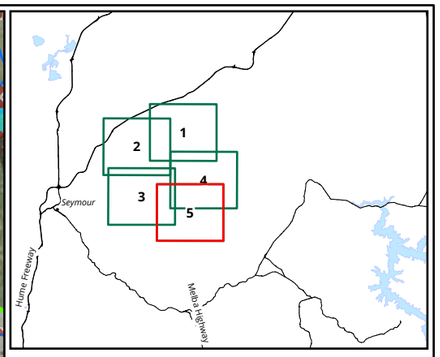

Legend

- Study area
- Park or reserve
- Rapid field assessment survey effort
- DEECA Wetland

Ecological vegetation class

- 18 Riparian Forest
- 185 Perched Boggy Shrubland
- 19 Riparian Shrubland
- 212 Swampy Riparian Woodland/ Perched Boggy Shrubland Mosaic
- 22 Grassy Dry Forest
- 23 Herb-rich Foothill Forest
- 47 Valley Grassy Forest
- 59 Riparian Thicket
- 73 Rocky Outcrop Shrubland/Rocky Outcrop Herbland Mosaic
- 83 Swampy Riparian Woodland
- 84 Riparian Forest/Swampy Riparian Woodland/Riparian Shrubland/Riverine Escarpment Scrub Mosaic

Figure 2.6 Windfarm ecological features and survey effort

0 0.4 0.8 1.2 1.6 2

Kilometers

Scale: 1:40,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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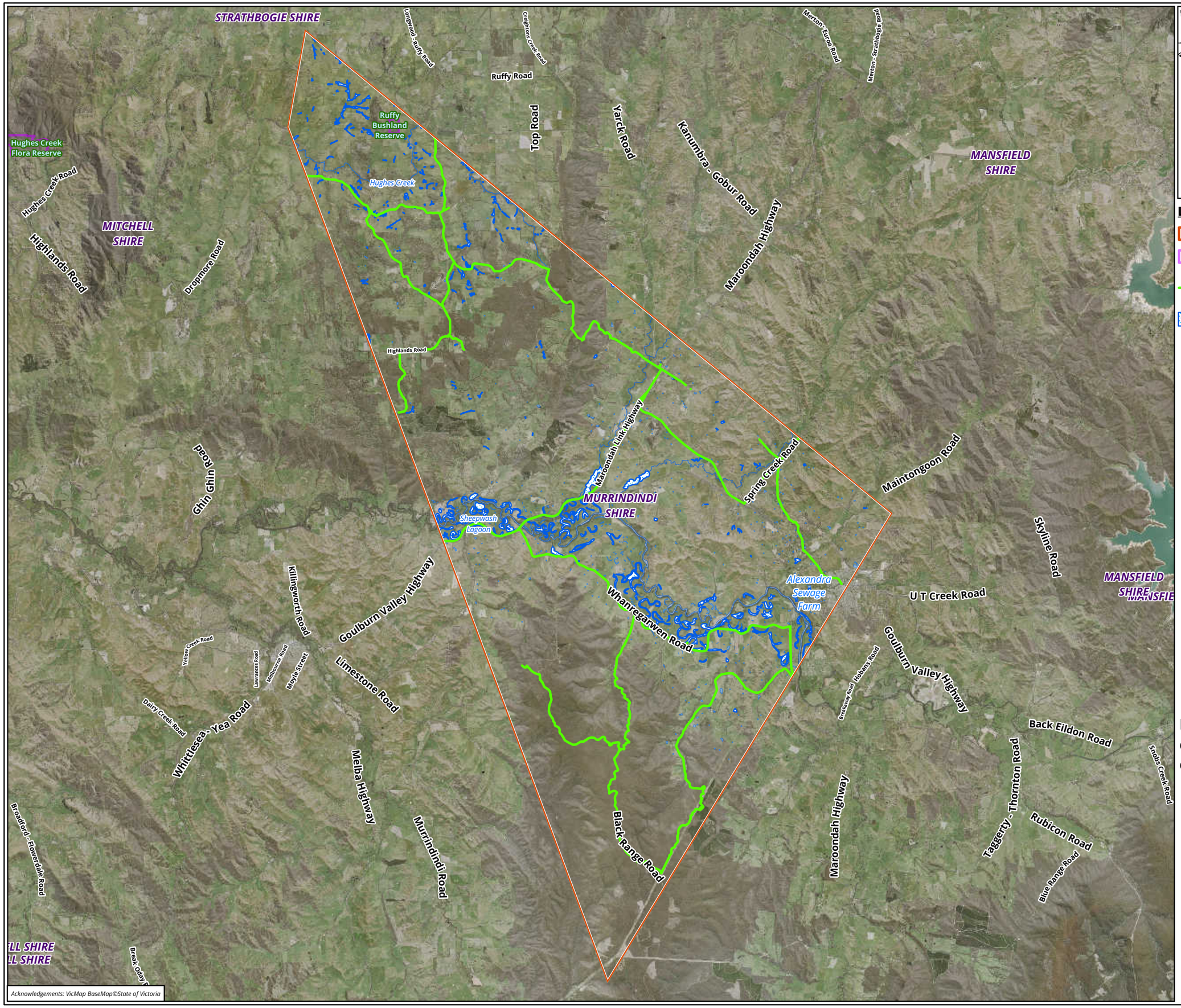

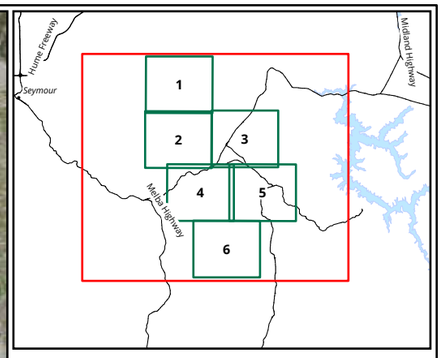

Legend

- Study area
- Park or reserve
- Rapid field assessment survey effort
- DEECA Wetland

Figure 2.1 Transmission line ecological features and survey effort

0 1.5 3 4.5 6 7.5

Kilometers

Scale: 1:160,000 @ A3

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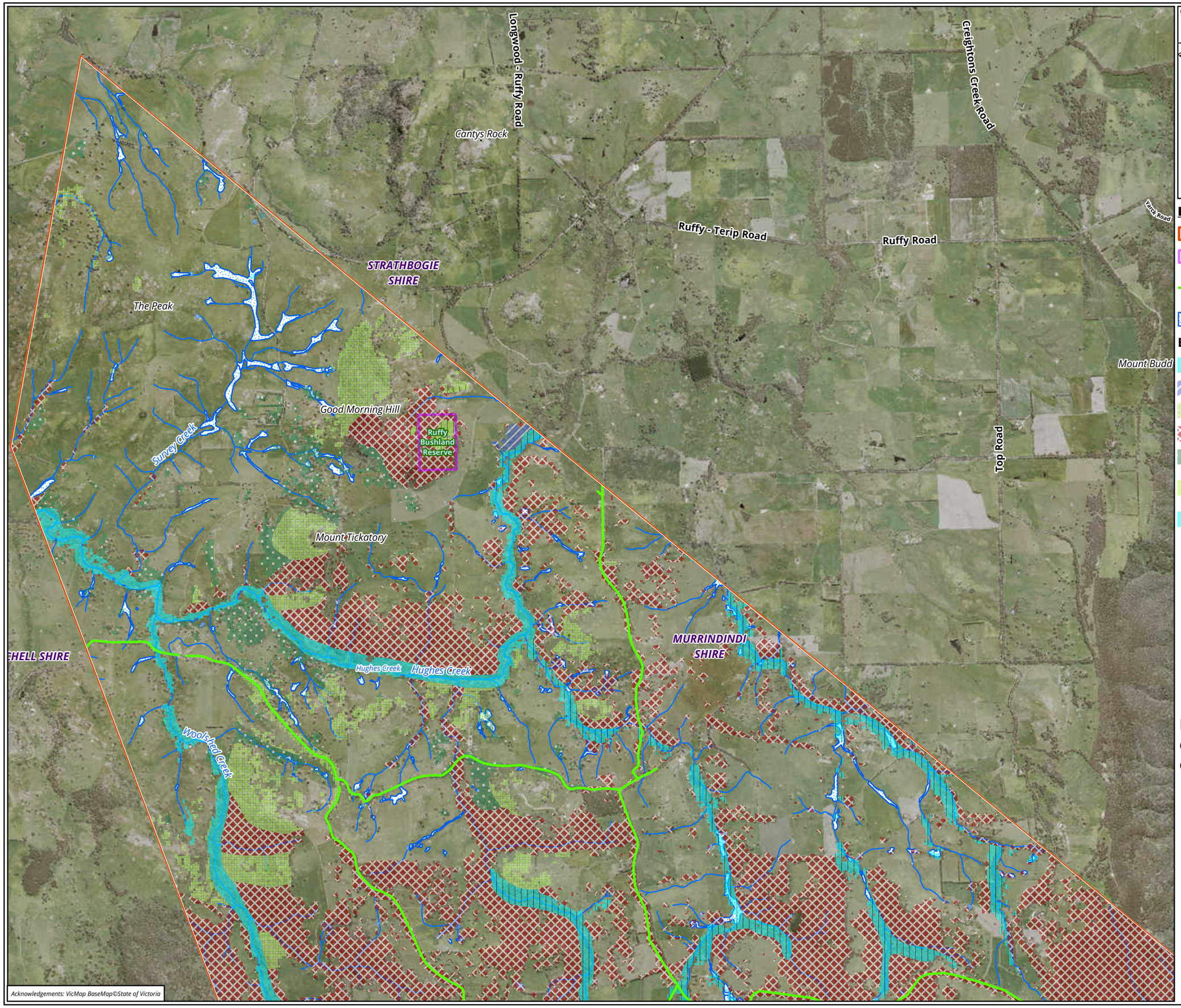

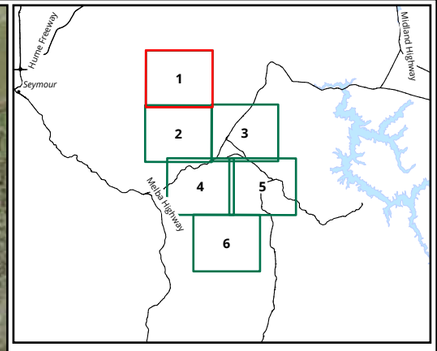

Legend

- Study area
- Park or reserve
- Rapid field assessment survey effort
- DEECA Wetland

Ecological vegetation class

- 18 Riparian Forest
- 185 Perched Boggy Shrubland
- 22 Grassy Dry Forest
- 23 Herb-rich Foothill Forest
- 47 Valley Grassy Forest
- 73 Rocky Outcrop Shrubland/Rocky Outcrop Herbland Mosaic
- 83 Swampy Riparian Woodland

Figure 2.2 Transmission line ecological features and survey effort

0 0.4 0.8 1.2 1.6 2

Kilometers

Scale: 1:40,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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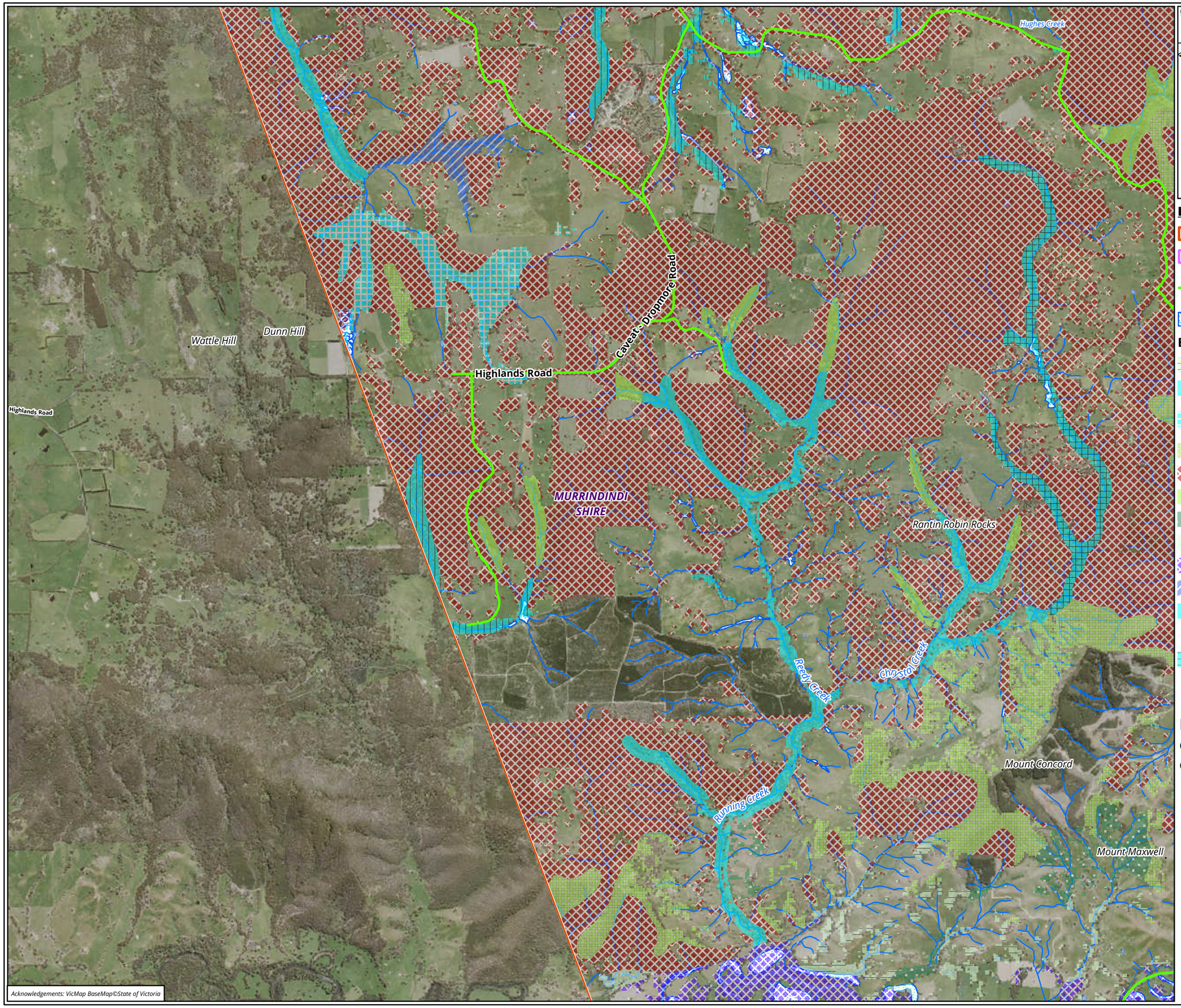

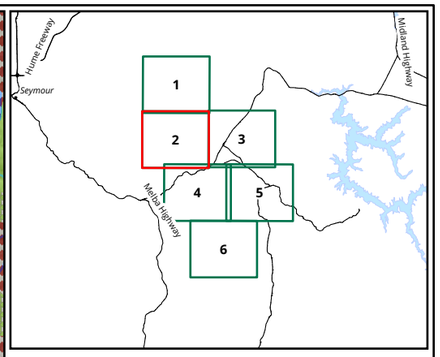

Legend

- Study area
- Park or reserve
- Rapid field assessment survey effort
- DEECA Wetland

Ecological vegetation class

- 175 Grassy Woodland
- 18 Riparian Forest
- 212 Swampy Riparian Woodland/ Perched Boggy Shrubland Mosaic
- 22 Grassy Dry Forest
- 23 Herb-rich Foothill Forest
- 29 Damp Forest
- 47 Valley Grassy Forest
- 55 Plains Grassy Woodland
- 56 Floodplain Riparian Woodland
- 59 Riparian Thicket
- 83 Swampy Riparian Woodland
- 84 Riparian Forest/Swampy Riparian Woodland/Riparian Shrubland/Riverine Escarpment Scrub Mosaic

Figure 2.3 Transmission line ecological features and survey effort

0 0.4 0.8 1.2 1.6 2

Kilometers

Scale: 1:40,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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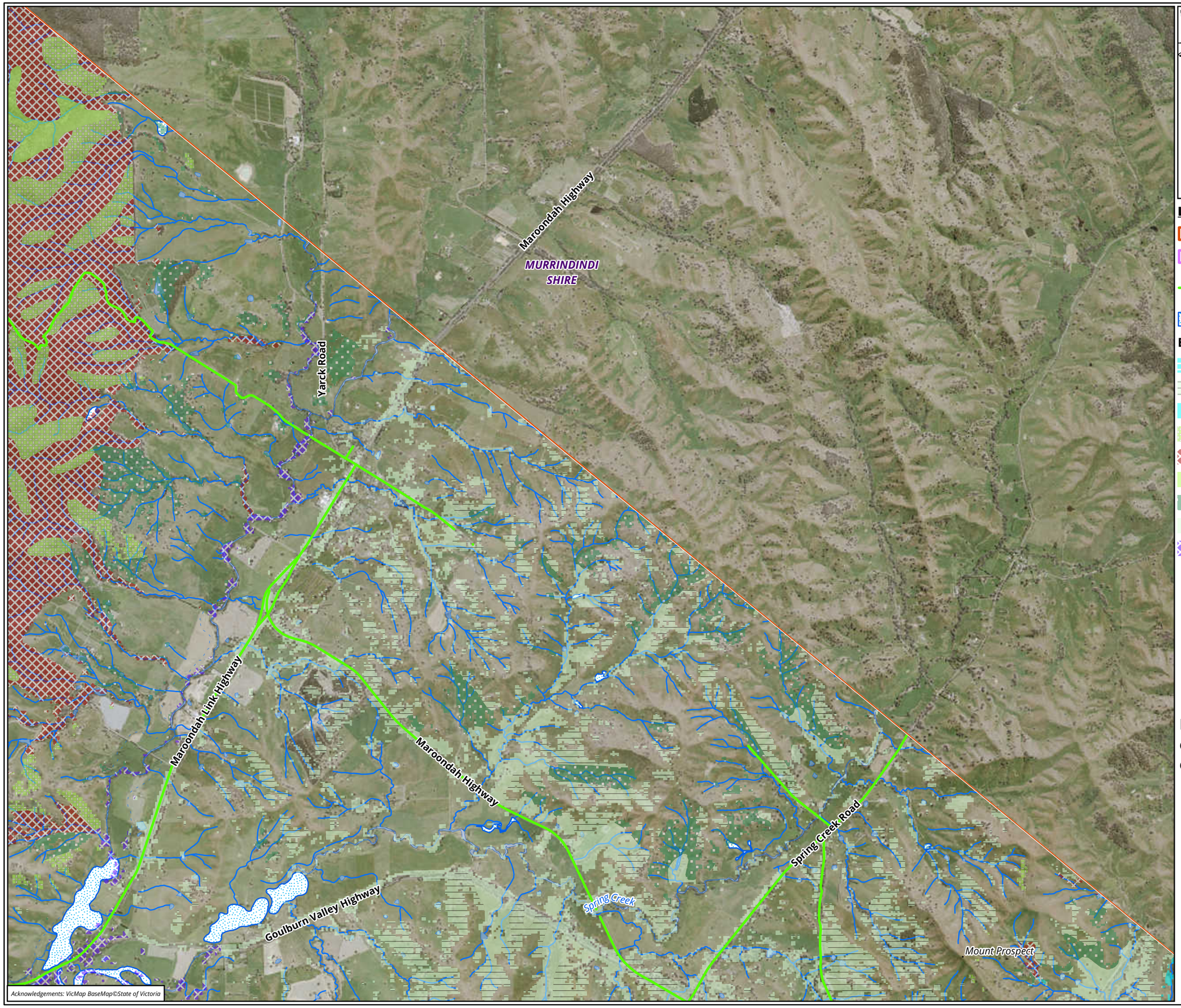

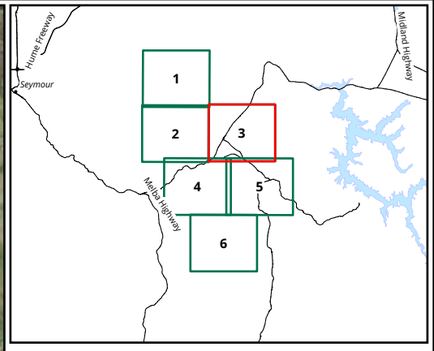

Legend

- Study area
- Park or reserve
- Rapid field assessment survey effort
- DEECA Wetland

Ecological vegetation class

- 126 Swampy Riparian Complex
- 175 Grassy Woodland
- 18 Riparian Forest
- 22 Grassy Dry Forest
- 23 Herb-rich Foothill Forest
- 29 Damp Forest
- 47 Valley Grassy Forest
- 55 Plains Grassy Woodland
- 56 Floodplain Riparian Woodland

Figure 2.4 Transmission line ecological features and survey effort

0 0.4 0.8 1.2 1.6 2

Kilometers

Scale: 1:40,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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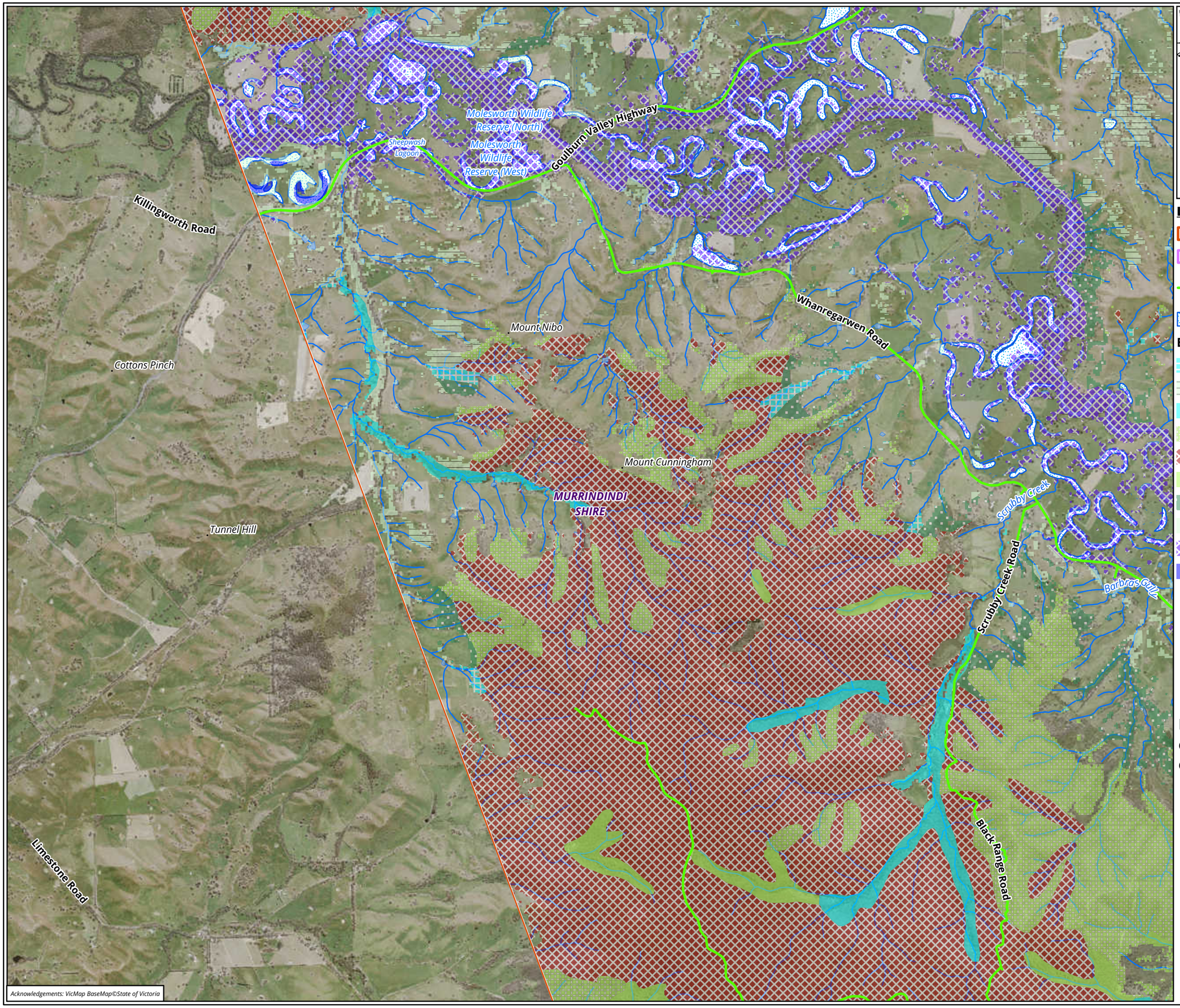

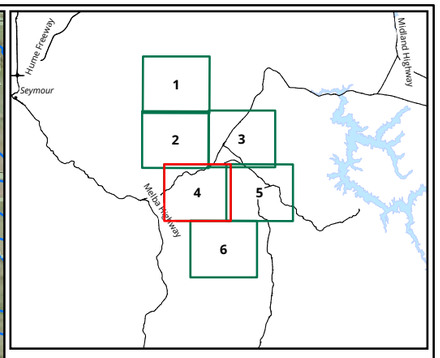

Legend

- Study area
- Park or reserve
- Rapid field assessment survey effort
- DEECA Wetland

Ecological vegetation class

- 126 Swampy Riparian Complex
- 175 Grassy Woodland
- 18 Riparian Forest
- 22 Grassy Dry Forest
- 23 Herb-rich Foothill Forest
- 29 Damp Forest
- 47 Valley Grassy Forest
- 55 Plains Grassy Woodland
- 56 Floodplain Riparian Woodland
- 74 Wetland Formation

Figure 2.5 Transmission line ecological features and survey effort

0 0.4 0.8 1.2 1.6 2

Kilometers

Scale: 1:40,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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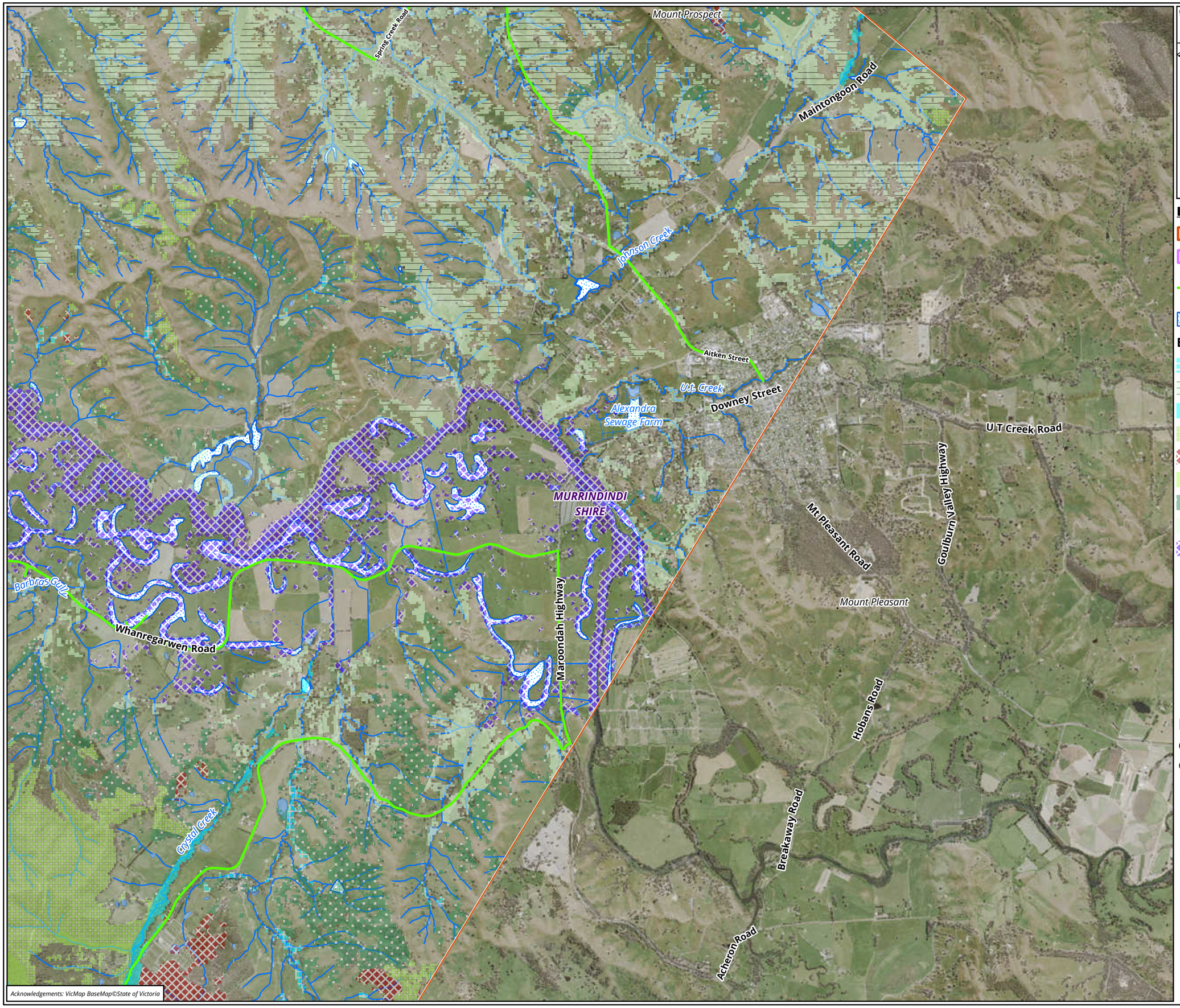

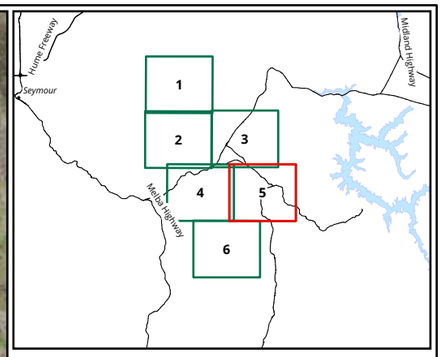

Legend

- Study area
- Park or reserve
- Rapid field assessment survey effort
- DEECA Wetland

Ecological vegetation class

- 126 Swampy Riparian Complex
- 175 Grassy Woodland
- 18 Riparian Forest
- 22 Grassy Dry Forest
- 23 Herb-rich Foothill Forest
- 29 Damp Forest
- 47 Valley Grassy Forest
- 55 Plains Grassy Woodland
- 56 Floodplain Riparian Woodland

Figure 2.6 Transmission line ecological features and survey effort

0 0.4 0.8 1.2 1.6 2

Kilometers

Scale: 1:40,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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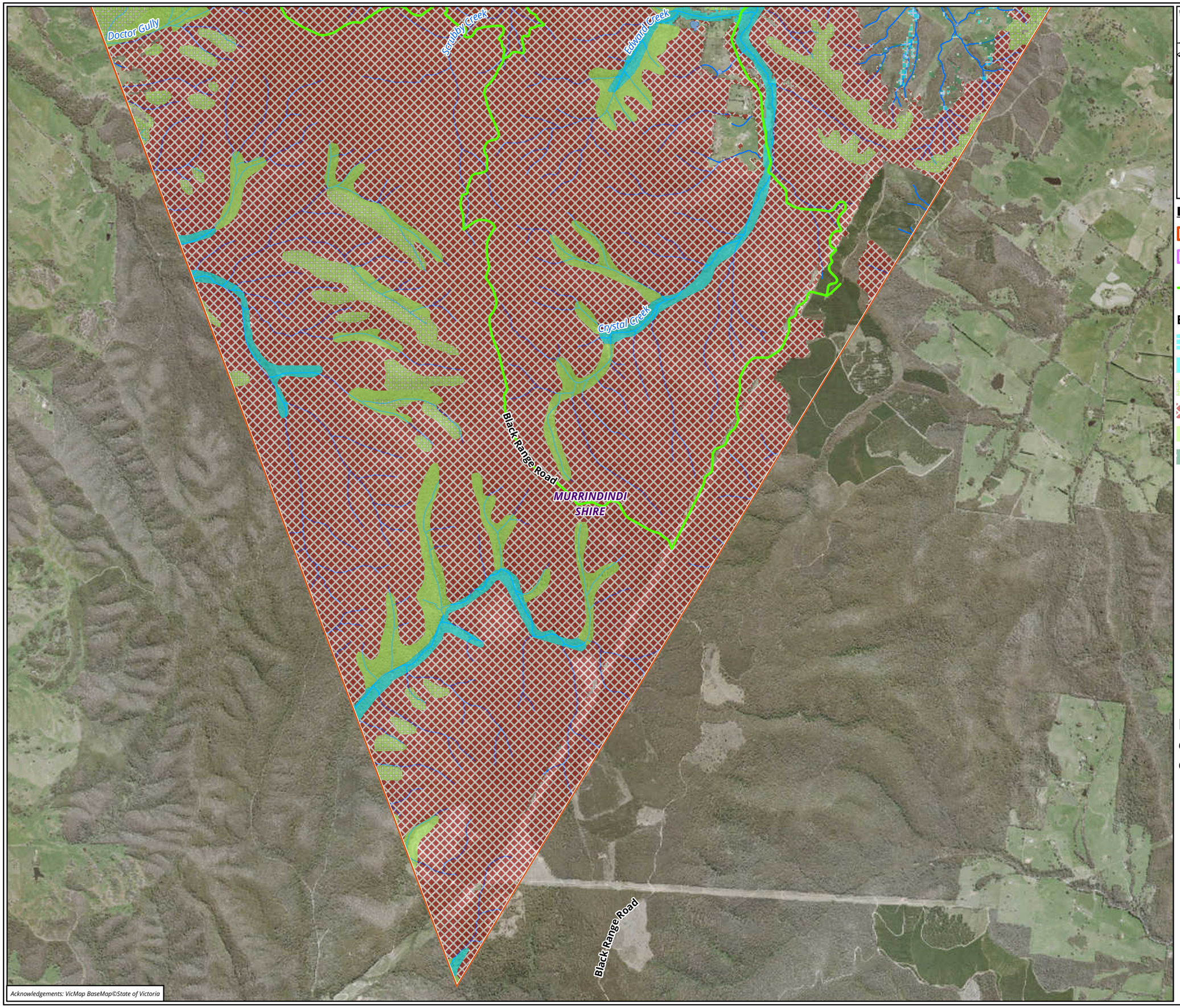

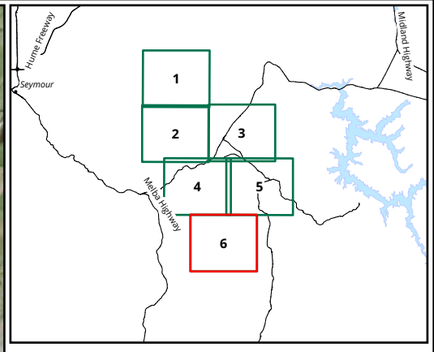

Legend

- Study area
- Park or reserve
- Rapid field assessment survey effort

Ecological vegetation class

- 126 Swampy Riparian Complex
- 18 Riparian Forest
- 22 Grassy Dry Forest
- 23 Herb-rich Foothill Forest
- 29 Damp Forest
- 47 Valley Grassy Forest

Figure 2.7 Transmission line ecological features and survey effort

0 0.4 0.8 1.2 1.6 2

Kilometers

Scale: 1:40,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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Date: 06 June 2023 ,
Prepared for: GZ, Prepared by: MK, Last edited by: mknudsen
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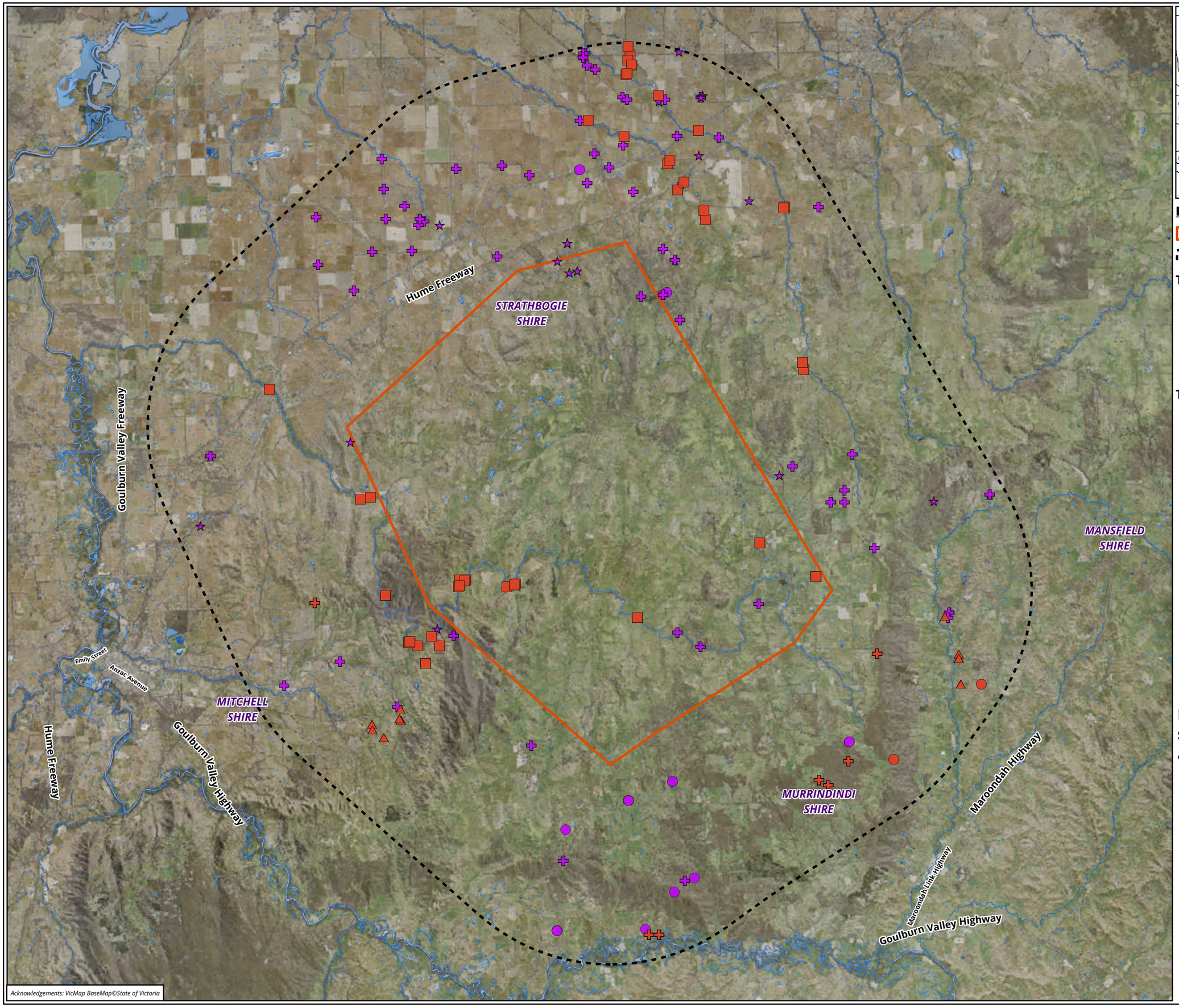

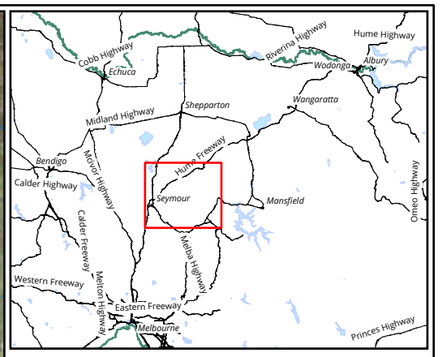

Legend

- Study area
- 10km study area buffer

Threatened fauna EPBC listed

- Amphibians
- Fish
- Invertebrates
- Mammals

Threatened fauna FFG listed

- Amphibians
- Fish
- Invertebrates
- Mammals
- Reptiles

Figure 3.1 VBA threatened species records (all except birds and bats)

0 1.5 3 4.5 6 7.5

Kilometers

Scale: 1:175,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N

biosis

Matter: 38133,
Date: 06 June 2023 ,
Prepared for: GZ, Prepared by: MK, Last edited by: mknudsen
Layout: 38133_F3_VBA
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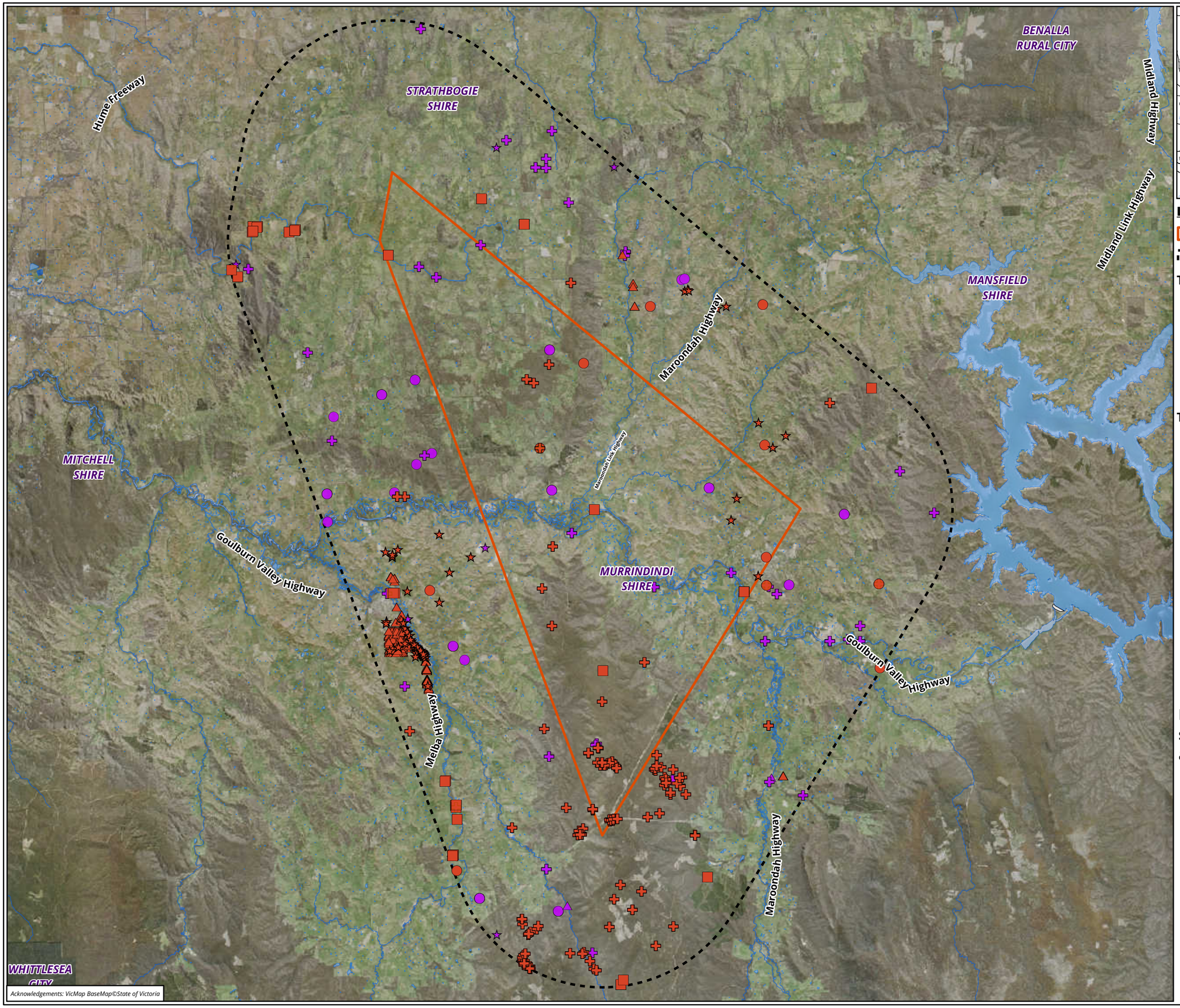

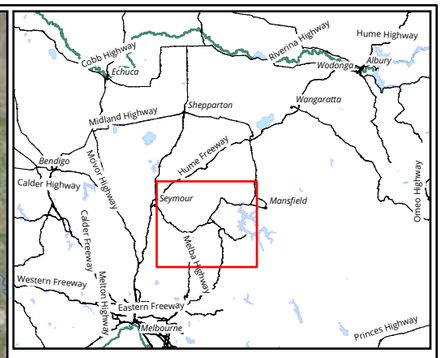

Legend

- Study area
- 10km study area buffer

Threatened fauna EPBC listed

- Amphibians
- Fish
- Invertebrates
- Mammals
- Reptiles

Threatened fauna FFG listed

- Amphibians
- Fish
- Invertebrates
- Mammals
- Reptiles

Figure 3.2 VBA threatened species records (all except birds and bats)

0 2 4 6 8 10

Kilometers

Scale: 1:230,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N

biosis

Matter: 38133,
Date: 06 June 2023 ,
Prepared for: GZ, Prepared by: MK, Last edited by: mknudsen
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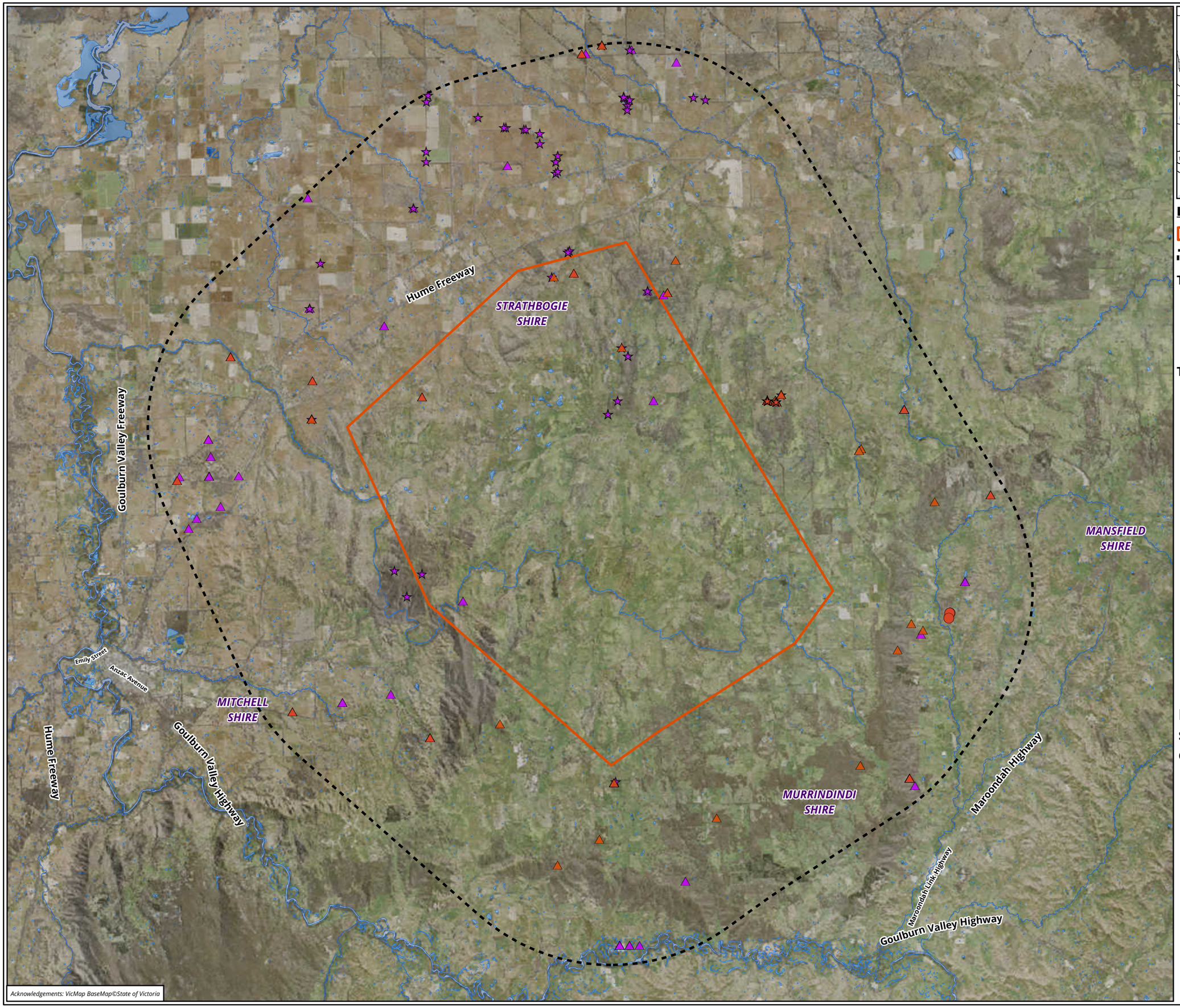

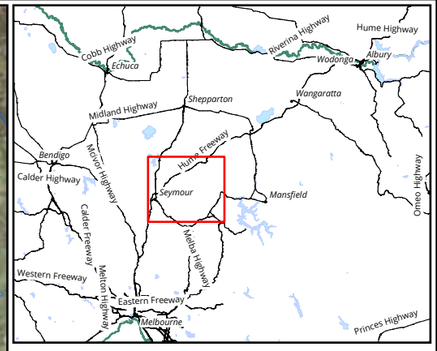

Legend

- Study area
- 10km study area buffer

Threatened fauna FFG listed

- Bats
- Non-passerine birds
- Passerine birds

Threatened fauna EPBC listed

- Bats
- Non-passerine birds
- Passerine birds

Figure 4.1 VBA threatened species records birds and bats only

0 1.5 3 4.5 6 7.5

Kilometers

Scale: 1:175,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N

biosis

Matter: 38133,
Date: 07 June 2023 ,
Prepared for: GZ, Prepared by: MK, Last edited by: mknudsen
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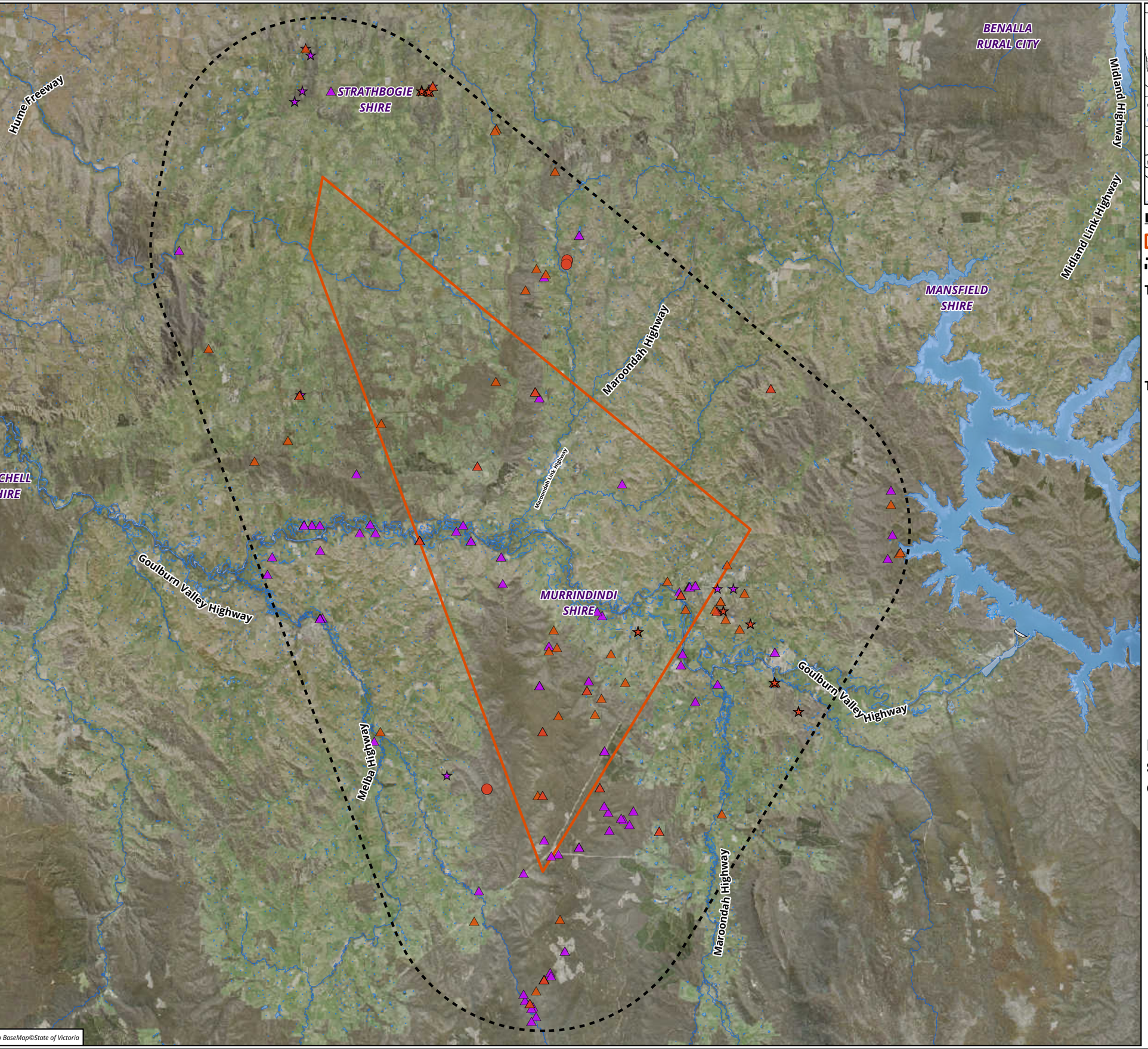

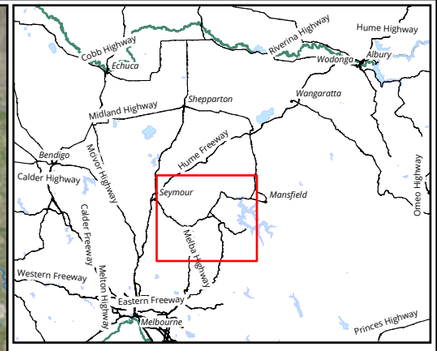

Legend

- Study area
- 10km study area buffer

Threatened fauna EPBC listed

- Bats
- Non-passerine birds
- Passerine birds

Threatened fauna FFG listed

- Bats
- Non-passerine birds
- Passerine birds

Figure 4.2 VBA threatened species records birds and bats only

0 2 4 6 8 10

Kilometers

Scale: 1:230,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N

biosis

Matter: 38133,
Date: 07 June 2023 ,
Prepared for: GZ, Prepared by: MK, Last edited by: mknudsen
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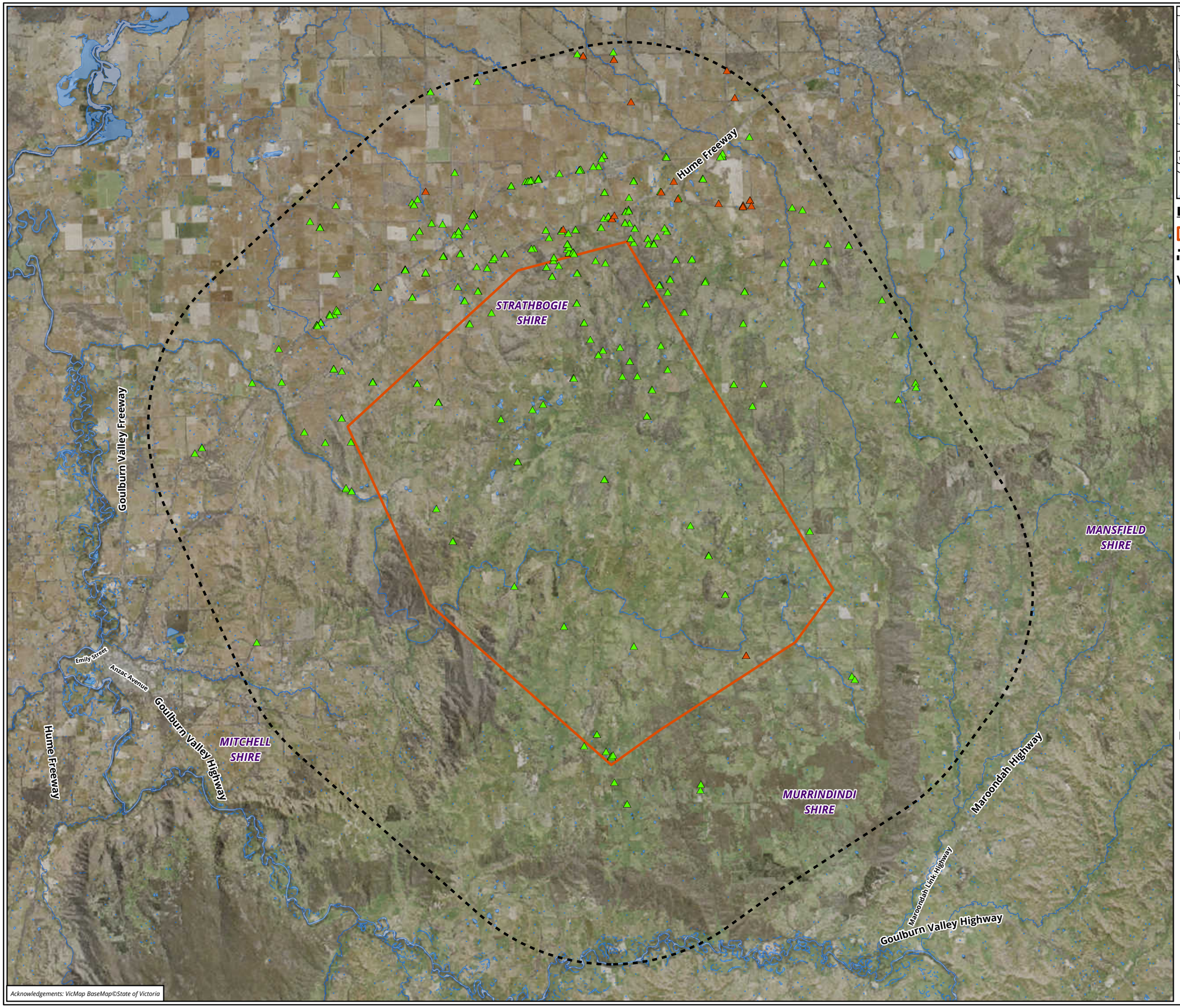

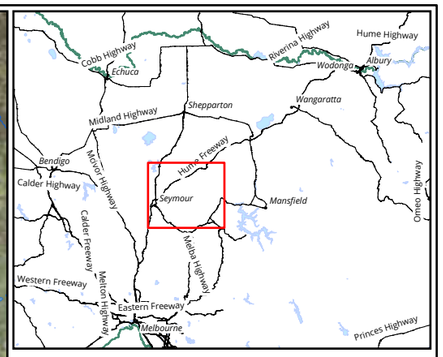

Legend

- Study area
- 10km study area buffer

VBA - Threatened flora record

- FFG listed flora
- EPBC listed flora

Figure 5.1 VBA threatened flora records

0 1.5 3 4.5 6 7.5

Kilometers

Scale: 1:175,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N

biosis

Matter: 38133,
Date: 14 June 2023 ,
Prepared for: GZ, Prepared by: MK, Last edited by: mknudsen
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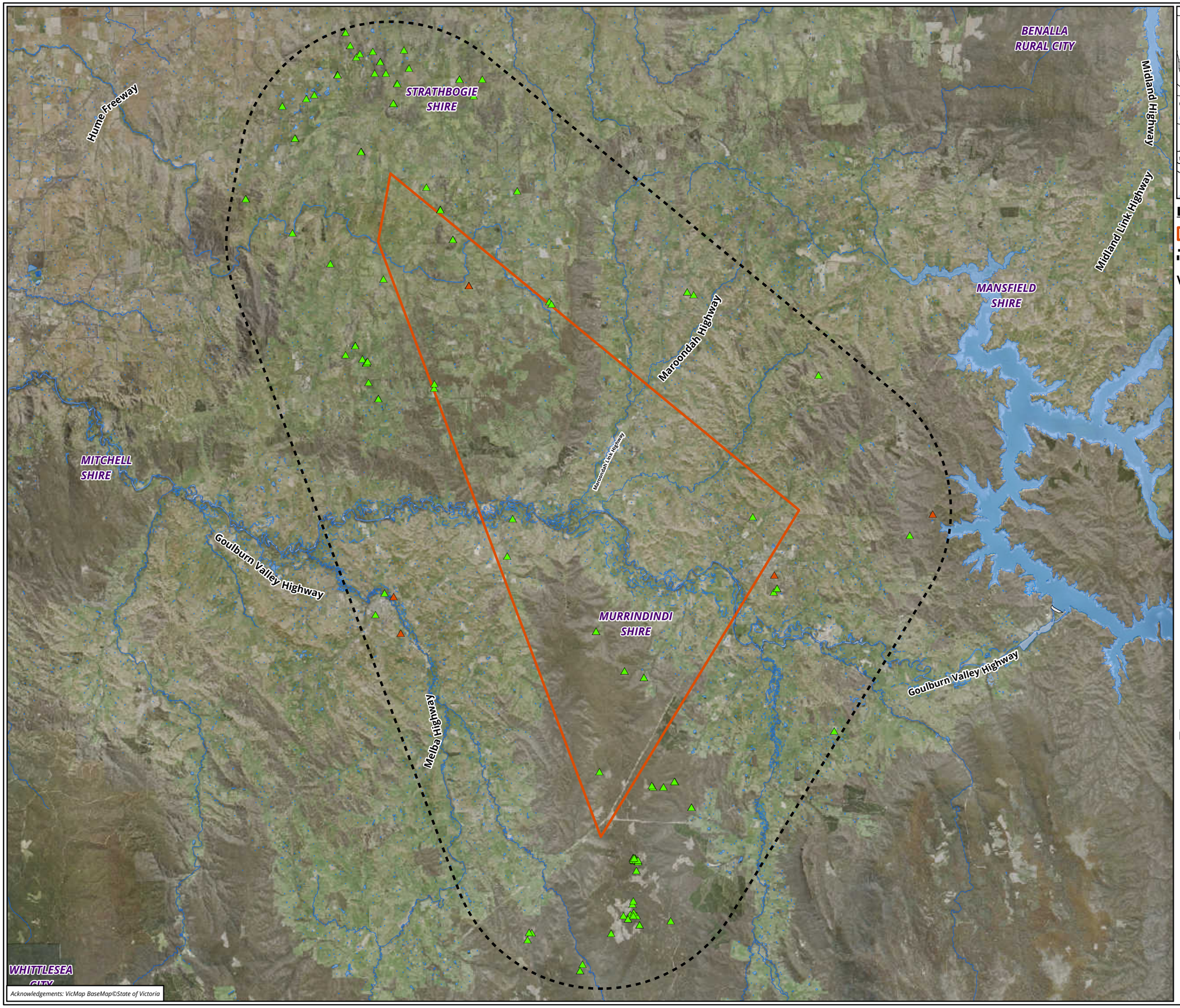

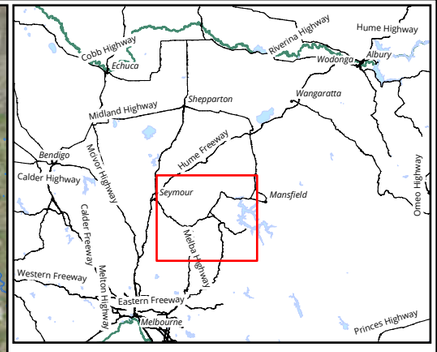

Legend

- Study area
- 10km study area buffer

VBA - Threatened flora record

- FFG listed flora
- EPBC listed flora

Figure 5.2 VBA threatened flora records

0 2 4 6 8 10

Kilometers

Scale: 1:230,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N

biosis

Matter: 38133,
Date: 14 June 2023 ,
Prepared for: GZ, Prepared by: MK, Last edited by: mknudsen
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38133_SeymourWF.aprx

4. Conclusions and recommendations

This section outlines significant biodiversity values in the two project study areas and provides an initial assessment of the project's potential biodiversity impacts against relevant legislation and policy.

4.1. Summary of biodiversity values

A large portion of the study area is dominated by farmland, particularly in the proposed wind farm study area. However, both the wind farm and transmission line study areas also support a variety of woodland and forest habitat types, rocky outcrops, scattered trees, native pastures, waterways and floodplains, plantations and larger tracts of native forest. The diversity of vegetation and habitat types provides foraging habitat for a range of avifauna and arboreal mammals, including nationally and state listed threatened species summarised in this report. Woodland and derived native grassland vegetation is likely to represent nationally and state listed threatened ecological communities, particularly in the northern part of the wind farm study area and in the valleys to the south of the Strathbogie Ranges. Structurally complex understorey vegetation and derived native grassland (native pasture) with woody debris offer foraging habitats and refuge for ground dwelling mammals, reptiles, amphibians and invertebrates. Wetlands and waterways, as well as associated riparian zones and floodplain wetlands, provide habitat for amphibians and waterbirds. Scattered trees, plantations and introduced pasture offer foraging and refuge habitat for woodland birds, large mobile fauna species, reptiles and frogs. Significant waterways across the two study areas include Hughes Creek, Home Creek and the Goulburn River, all of which support a range of fish, amphibian and crustacean species and may provide habitat for waterbirds.

4.2. Recommendations to avoid, minimise and mitigate project impacts

At the early stages of project design, the primary measure to reduce impacts to biodiversity values is to avoid and minimise removal of native vegetation and terrestrial and aquatic habitat. It is critical that this is considered during the design phase of the project, when key decisions are made about the location of turbines, access roads, transmission lines and any other infrastructure such as substations and batteries. The high-level constraints and results of this assessment should be incorporated into the initial stages of the project design.

Typically, wind farm projects in Victoria are able to avoid significant impacts on native vegetation, threatened flora and threatened terrestrial and aquatic fauna habitat by project design aimed at avoiding and minimising removal of native vegetation. Impacts on the majority of the terrestrial flora, ecological communities and non-volant fauna values listed in Section 3.1 and Section 3.2 can be avoided by following these principles and process.

Many threatened EPBC Act and FFG Act volant (flying) fauna, well as EPBC Act listed migratory birds, may use the entire project footprint. Understanding their site utilisation and potential collision risk will be important to assess the project's potential impact on threatened birds and bats, and to inform the planning approval implications, further assessment and referral requirements.

Utilisation by some threatened bird species is not readily captured through systematic fixed-point bird utilisation surveys, which are conducted during daylight hours. These include species that are mostly active at night or dusk and dawn, such as Australasian Bittern and owl species. The project will need to assess whether the site contains important habitat for migratory shorebirds, using criteria set out in the EPBC Act Policy

Statement 3.21—Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species.

Initial specific recommendations to avoid and minimise impacts on threatened species, communities and ecological values that should be considered at the early stages of project design and infrastructure siting include:

- Avoid siting WTGs, infrastructure and transmission lines within, or in close proximity to, large patches of forest and woodland likely to support threatened flora and fauna such as large forest owls and arboreal mammals such as Southern Greater Glider. These areas have been mapped at a desktop level in Figure 2 and Figure 3.
- To minimise collision risk, avoid siting WTGs and transmission lines near landscape and habitat features that likely to support high levels of bird and bat activity. These features include large patches of forest and woodland, stands of scattered trees, dense roadside vegetation, significant rocky outcrops, waterways, wetlands/dams, riparian zones, and migratory pathways. More detailed mapping of these features would be required and the next stage of project planning to inform infrastructure siting.
- Undertake WTG and infrastructure siting to avoid areas of threatened woodland vegetation (Box-Gum Woodland and Grey Box Woodland) and to avoid and minimise impacts on derived native grassland (native pasture) that may support Striped Legless Lizard and Golden Sun Moth. More detailed mapping of these features would be required and the next stage of project planning to inform infrastructure siting.
- Waterway and floodplain crossings should be sited to minimise impacts on riparian vegetation, wetlands and instream habitats. The use of under-boring construction methods should be considered early in the design process to avoid surface impacts on these hydrological features. Waterway and wetland mapping is included in Figure 2.

These initial impact avoidance, minimisation and mitigation strategies are provided at a broad landscape level. They will need to be refined based on a detailed biodiversity survey and vegetation mapping program to guide the project through the planning approvals phase.

Section 4.4 sets out recommendations for studies designed to obtain the required information about all key species.

4.3. Initial assessment against biodiversity legislation and policy

The following section provides an overview of biodiversity protection legislation and government policy that is relevant to the Seymour Wind Farm project. Implications that need to be considered at the early project planning stages are also considered below.

4.3.1. Commonwealth – *Environment Protection and Biodiversity Conservation Act 1999*

The EPBC Act applies to developments and associated activities that have the potential to significantly impact on Matters of National Environmental Significance (MNES) protected under the Act.

The EPBC Act may be triggered when an 'action' may result in a 'significant impact' upon any matter of national environmental significance (MNES). Relevant terms are defined in the Act. A person who proposes to take an action that will have, or is likely to have, a significant impact on a MNES must refer that action to the

Australian Government Minister for the Environment for a decision on whether assessment and approval is required under the EPBC Act. Substantial penalties apply for taking such an action without approval.

Further information including a guide to the referral process is available at http://www.environment.gov.au/epbc/index.html

Project implications

The desktop assessment and rapid field inspection has identified several EPBC Act listed fauna, flora and threatened ecological communities within the project study areas, including bird species that may be at risk of collision with wind farm infrastructure within the wider 10 kilometre search area. The project may result in a significant impact on the following MNES subject to further impact assessments based on turbine and infrastructure placement:

- EPBC listed species and communities.
- Migratory species.

The EPBC Act is therefore likely to be triggered and a referral for a decision of the proposed action to the Australian Government Minister for the Environment will be required. However, it is advisable for a well-informed EPBC Act referral to have a refined scale and scope of the wind farm, including transmission line routes (but not necessarily the final design).

4.3.2. State – *Flora and Fauna Guarantee Act 1988 (FFG Act)*

The FFG Act is the key piece of Victorian legislation for the conservation of threatened species and communities and for the management of potentially threatening processes. Under the FFG Act a permit is required from DEECA to 'take' protected flora species. Permit exemptions under the FFG Act generally apply to the non-commercial removal of protected flora from private land, unless there is 'critical habitat' that has been declared on the land. Authorisation under the FFG Act is required to collect, kill, injure or disturb listed fish on private or public land.

Link for further information: https://www.environment.vic.gov.au/conserving-threatened-species/victorias-framework-for-conserving-threatened-species

The FFG Act defines public land as Crown land or land owned by, or vested in, a public authority, while private land is defined as any land other than public land. A public authority is defined in the FFG Act as a body established for a public purpose by or under any Act and includes:

- An Administrative Office
- A Government Department
- A municipal council
- A public entity
- A State-owned enterprise.

Native vegetation in the study areas may support the Victorian Temperate Woodland Bird threatened community, and is likely to contain populations of threatened and protected flora and fauna.

Project implications

The study areas cover both private land and public land. The provisions of the FFG Act will apply directly via protected flora permitting requirements for impacts on Crown/public land (e.g. roadsides, state forests), and will also be considered by the Responsible Authority in determining its response to an application for native vegetation removal under Clause 52.17 of the Planning Schemes.

In addition to the requirement for a protected flora permit, it is a requirement of the FFG Act that a public authority, in performing its functions, must consider the objectives of the FFG Act and the impact on biodiversity. As FERA is not a public authority, the public authority duty provisions will not directly apply to the project.

4.3.3. State – *Catchment and Land Protection Act 1994* (CaLP Act)

The CaLP Act identifies and classifies certain species as noxious weeds or pest animals, and provides a system of controls on noxious species.

Declared noxious weeds and established pest animals will be present throughout the study areas.

Project implications

FERA and any project landowners or land managers must take all reasonable steps to eradicate regionally prohibited weeds, prevent the growth and spread of regionally controlled weeds, and prevent the spread of and as far as possible eradicate established pest animals. The State is responsible for eradicating State prohibited weeds from all land in Victoria.

Further information is at http://agriculture.vic.gov.au/agriculture/pests-diseases-and-weeds

4.3.4. State – *Planning and Environment Act 1987* (incl. Planning Schemes)

The *Planning and Environment Act 1987* controls the planning and development of land in Victoria, and provides for the development of planning schemes for all municipalities.

Of particular relevance to the development proposal are controls relating to the removal, destruction or lopping of native vegetation contained within the Mitchell, Strathbogie and Murrindindi Planning Schemes (the Schemes), including permit requirements. The Schemes (Clause 73.01) define 'native vegetation' as 'Plants that are indigenous to Victoria, including trees, shrubs, herbs, and grasses'. It is an objective of Clause 12.01-2 of the State Planning Policy Framework (Native Vegetation Management) that removal of native vegetation results in no net loss in the contribution made by native vegetation to Victoria's biodiversity.

Clause 52.17 (Native Vegetation) requires a planning permit to remove, destroy or lop native vegetation including some dead native vegetation. Decision guidelines that must be considered by the referral or responsible authority are contained in Section 7 of the Victoria's Guidelines for the removal, destruction or lopping of native vegetation, and referred to in Clause 52.17-4. Clause 52.17 does not apply if a Native Vegetation Precinct Plan corresponding to the land is incorporated in the Scheme.

Under Clause 66.02 a permit application to remove, destroy or lop native vegetation is required to be referred to DEECA as a recommending referral authority if any of the following apply:

- The class of application is on the detailed assessment pathway
- A property vegetation precinct plan applies to the site or

- The native vegetation is on Crown land occupied or managed by the Responsible Authority.

The need for a permit to remove native vegetation may also be triggered by environmental or vegetation protection overlays within the Scheme. The location of the overlays in relation to the study area can be determined via the following link: https://www.planning.vic.gov.au/schemes-and-amendments/browse-planning-schemes

The provisions of the following overlays relevant to biodiversity and vegetation management apply to the study areas across the three municipalities:

- Erosion Management Overlay (EMO) covering the southern part of the Strathbogie Ranges and uplands near Alexandra.
- Environmental Significance Overlay covering Hughes Creek.
- Flood Overlay (FO) and Land Subject to Inundation (LSIO) covering the Goulburn River floodplain, Hughes Creek and surrounds.
- Significant Landscape Overlay (SLO) covering several valleys in the study areas.
- Vegetation Protection Overlay (VPO) covering some local roadsides and linear vegetation.
- Bushfire Management Overlay (BMO) covering large parts of the study area.

Project implications

A planning permit will be required for native vegetation removal, destruction and/or lopping for works associated with windfarm development. Responsible authorities (e.g. Council or the Minister for Planning) and DEECA as a referral authority will consider the avoid, minimise and offset requirements of Clause 52.17 in all decisions making related to native vegetation removal and biodiversity impacts. Therefore, the project design will need to avoid and minimise native vegetation removal as far as is practical, and FERA will need to provide compensatory biodiversity offsets for any vegetation removal.

Planning scheme overlays may also include specific planning permit triggers and restrict biodiversity impacts and vegetation removal. The project will need to address the specific application requirements and decision guidelines in these overlays.

4.3.5. State – Victoria's Guidelines for the removal, destruction or lopping of native vegetation

The Guidelines are incorporated into the Victoria Planning Provisions and all planning schemes in Victoria (DELWP 2017a). The purpose of the Guidelines is to guide how impacts to biodiversity should be considered when assessing a permit application to remove, destroy or lop native vegetation. The objective for the guidelines in Victoria is 'No net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation'.

Project implications

Responsible authorities (e.g. Council or the Minister for Planning) and DEECA as a referral authority will consider the avoid, minimise and offset requirements of the Guidelines in all decisions making related to native vegetation removal and biodiversity impacts.

4.3.6. State – Environment Effects Act 1978

The *Environment Effects Act 1978* establishes a process to assess the environmental impacts of a project. If applicable, the Act requires that an Environment Effects Statement (EES) be prepared by the proponent. The EES is submitted to the Minister for Planning and enables them to assess the potential environmental effects of the proposed development.

The general objective of the assessment process is to provide for the transparent, integrated and timely assessment of the environmental effects of projects capable of having a significant effect on the environment (DSE 2005b).

The *Ministerial Guidelines for Assessment of Environmental Effects under the Environment Effects Act 1978* (DSE 2005b) provide a range of criteria that can be used to determine whether an EES may be required for a project. These criteria relate to individual potential environmental effects and a combination of (two or more) potential environmental effects.

Project implications

The project will need a detailed assessment against the individual potential effects criteria and the combination of potential effects criteria outlined in the *Ministerial Guidelines*. An initial review of these criteria as they relate to biodiversity and landscape values suggests the project may trigger an EES referral, refer to Table 9 below. The *Ministerial Guidelines* are not binding, and the decision as to whether an EES is required is ultimately at the discretion of the Minister for Planning.

Table 9 Initial assessment of the project against the individual and combined EES referral criteria

EES referral criteria	Project impact and response
Individual types of effects	
Potential clearing of 10 ha or more of native vegetation from an area that: • **is of an Ecological Vegetation Class identified as endangered by the Department of Sustainability and Environment (in accordance with Appendix 2 of Victoria's Native Vegetation Management Framework); or** • **is, or is likely to be, of very high conservation significance (as defined in accordance with Appendix 3 of Victoria's Native Vegetation Management Framework); and** • **is not authorised under an approved Forest Management Plan or Fire Protection Plan**	This criterion may be triggered based on amount of clearing required for wind farm infrastructure and the transmission line and the presence of endangered EVCs. The clearing footprint would need to be determined as part of initial design and siting considerations.
Potential long-term loss of a significant proportion (e.g. 1 to 5 percent depending on the conservation status of the species) of known remaining habitat or population of a threatened species within Victoria	Key threatened species recorded or with potential habitat in the study areas are outlined in this report. There is potential for long-term loss of threatened species habitats or populations, but this outcome is dependent on design and siting of all wind farm infrastructure, bird/bat collision risks and the location and alignment of the transmission line.

EES referral criteria	Project impact and response
Potential long-term change to the ecological character of a wetland listed under the Ramsar Convention or in 'A Directory of Important Wetlands in Australia'	This criterion has very low potential to be triggered as the project study area is remote from listed Ramsar sites and is unlikely to directly impact on a DIWA wetland.
Potential extensive or major effects on the health or biodiversity of aquatic, estuarine or marine ecosystems, over the long term	This criterion has some potential to be triggered based on the presence of major creeks and the Goulburn River in the study areas. Impacts to riparian vegetation health and connectivity could occur as a result of the transmission line corridor. Such impacts could be avoided and minimised through careful alignment of project infrastructure across and near waterways and wetlands.
Potential extensive or major effects on the health, safety or well-being of a human community, due to emissions to air or water or chemical hazards or displacement of residences	This criterion is beyond the scope of this preliminary biodiversity assessment but will need to be considered by FERA in their broader project impact assessment.
Potential greenhouse gas emissions exceeding 200,000 tonnes of carbon dioxide equivalent per annum, directly attributable to the operation of the facility.	This criterion is beyond the scope of this preliminary biodiversity assessment but will need to be considered by FERA in their broader project impact assessment.
A combination of potential environmental effects	
Potential clearing of 10 ha or more of native vegetation, unless authorised under an approved Forest Management Plan or Fire Protection Plan	This criterion may be triggered if project impacts exceed 10 hectares of clearing.
Matters listed under the *Flora and Fauna Guarantee Act 1988*: • **potential loss of a significant area of a listed ecological community; or** • **potential loss of a genetically important population of an endangered or threatened species (listed or nominated for listing), including as a result of loss or fragmentation of habitats; or** • **potential loss of critical habitat; or** • **potential significant effects on habitat values of a wetland supporting migratory bird species**	This criterion may be triggered as: • The FFG Act Temperate Woodland Bird and Lowland Riverine Fish Community of the Southern Murray Darling Basin listed community occur in the project study areas. • A genetically important population of several sedentary species may be present in the study areas (e.g. Southern Greater Glider, Striped Legless Lizard or Golden Sun Moth). • No critical habitat has been declared in the project study area. • There is potential for impacts on seasonal and floodplain wetlands in the study areas (especially along the Goulburn River and perched bogs in the Strathbogie Ranges).
Potential extensive or major effects on landscape values of regional importance, especially where recognised by a planning scheme overlay or within or adjoining land reserved under the *National Parks Act 1975*	This criterion may be triggered as: • The project occurs in an elevated landscape with nearby conservation reserves and State Forests. • Planning scheme overlays, such as SLOs and ESOs, cover parts of the study areas.

EES referral criteria	Project impact and response
Potential extensive or major effects on land stability, acid sulphate soils or highly erodible soils over the short or long term	This criterion has a low potential to be triggered as parts of the study areas are covered by an Erosion Management Overlay. This outcome is dependent on design and siting of all wind farm infrastructure in relation to steep slopes and erodible soils.
Potential extensive or major effects on beneficial uses of waterbodies over the long term due to changes in water quality, stream flows or regional groundwater levels	This criterion is beyond the scope of this preliminary biodiversity assessment but will need to be considered by FERA in their broader project impact assessment.
Potential extensive or major effects on social or economic well-being due to direct or indirect displacement of non-residential land use activities	This criterion is beyond the scope of this preliminary biodiversity assessment but will need to be considered by FERA in their broader project impact assessment.
Potential for extensive displacement of residences or severance of residential access to community resources due to infrastructure development	This criterion is beyond the scope of this preliminary biodiversity assessment but will need to be considered by FERA in their broader project impact assessment.
Potential significant effects on the amenity of a substantial number of residents, due to extensive or major, long-term changes in visual, noise and traffic conditions	This criterion is beyond the scope of this preliminary biodiversity assessment but will need to be considered by FERA in their broader project impact assessment.
Potential exposure of a human community to severe or chronic health or safety hazards over the short or long term, due to emissions to air or water or noise or chemical hazards or associated transport	This criterion is beyond the scope of this preliminary biodiversity assessment but will need to be considered by FERA in their broader project impact assessment.
Potential extensive or major effects on Aboriginal cultural heritage	A Cultural Heritage Assessment or Cultural Heritage Management Plan (CHMP) will be required for the project to determine if this criterion is triggered.
Potential extensive or major effects on cultural heritage places listed on the Heritage Register or the Archaeological Inventory under the *Heritage Act 1995.*	A Historic Heritage Assessment will be required for the project to determine if this criterion is triggered.

4.3.7. *Fisheries Act 1995*

The *Fisheries Act 1995* provides a legislative framework for the regulation, management and conservation of Victorian fisheries including aquatic habitats.

A person must not take, injure, damage, destroy or release any protected aquatic biota. Protected aquatic biota includes all species of the family Syngnathidae (seahorses, sea dragons and pipefish), and any fish or aquatic invertebrate or community that is listed under the FFG Act.

Project implications

Protected aquatic biota relevant to the study areas include:

- Barred Galaxias.
- Macquarie Perch.
- Southern Pygmy Perch.
- Murray Spiny Crayfish.

4.3.8. State – *Water Act 1989*

The primary purpose of the *Water Act 1989* is to provide a framework for the allocation and management of surface water and groundwater throughout Victoria. It provides a principal mechanism for maintenance of ecosystem functions including those of aquatic ecosystems. Under By-Laws created by the relevant Authority under the Act, the authorities regulate the works within and in the vicinity of waterways.

The project may involve construction or maintenance activities that will affect beds and banks of waterways, riparian vegetation (e.g. transmission lines) or quality of water in many waterways across the wind farm and transmission line study areas.

Project implications

Development within the study areas will require consultation with, and potentially a works on waterways permit from, Goulburn Broken Catchment Management Authority.

4.3.9. State – Environment Protection Act 2017: Environmental Reference Standards

The *Environment Protection Act 2017* provides a legal framework for the systematic and strategic management of potential and realised environmental impacts. The *Environment Protection Act 2017*, the Environment Protection Regulations 2021 and Environment Reference Standards (ERS) introduced from 1 July 2021 provide a regulatory framework designed to prevent harm by eliminating or minimising risks of harm to human health and the environment.

Under the regulatory changes, SEPP (Waters) will not continue as a subordinate instrument under the EP Act, and its formal statutory role ended on 1 July 2021. Much of the content of SEPP (Waters) has been saved under the Environment Protection Transitional Regulations 2021 for a period of 2 years after the commencement of the Environment Protection Regulations 2021. As SEPP (Waters) contributes to the state of knowledge and provides guidance on compliance with the General Environmental Duty (GED), the policy remains relevant to the protection and management of Victoria's water environments, including surface waters, estuarine and marine waters and groundwaters.

While not being saved under the Environment Protection Transitional Regulations 2021, the following clauses of SEPP (Waters) applicable to the project remain relevant as they provide guidance for compliance with the GED under the *Environment Protection Act 2017*:

Clause 42 – Construction activities:

- Minimise soil erosion, land disturbance and discharge of sediment and other pollutants to surface waters.

- Where construction activities impinge on surface waters, construction managers need to monitor affected surface waters to assess whether beneficial uses are being protected.

Clause 45 – Native vegetation protection and rehabilitation:

- Minimise the removal of and rehabilitate native vegetation within or adjacent to surface waters.

Project implications

The ERS requires that aquatic ecosystem values be protected. Environmental quality objectives and indicators are defined to protect beneficial uses (i.e. the uses and values of the water environment) and an attainment program provides guidance on protection of the beneficial uses. Impacts to surface water quality as a result of the project must not result in changes that exceed background levels and/or the water quality objectives to protect surface water uses and values.

4.3.10. Summary of biodiversity legislation and policy implications

It is anticipated that EPBC Act and EE Act referrals will be required for the Seymour Wind Farm project.

We recommend that FERA Australia has early engagement with the Development Approvals and Design, Renewables section of DEECA to seek guidance through an assessment process. Consultation with local government with regard to planning scheme requirements is also recommended.

We also recommend that FERA Australia has a pre-referral meeting with DCCEEW to consider assessment of the potential impacts that a proposed wind energy development may have on MNES (see https://www.dcceew.gov.au/environment/epbc/publications/pre-referral-meeting-guidance).

4.4. Biodiversity survey and technical studies program

A program of detailed investigations will be required to determine existing conditions for ecological values. They will include mapping the distribution of vegetation, threatened communities and habitat resources for key threatened fauna most likely to occur and that may be impacted by the project.

Results from these studies will inform design of a project aimed at avoidance and maximum reduction of potential impacts on important biodiversity values. This detailed data will also inform a subsequent impact assessment prepared for project approvals. The objectives, scope and methods for detailed biodiversity investigations should be informed by the best available science and should be developed in consultation with DEECA and DCCEEW to ensure, to the greatest extent possible, that the investigations meet with their expectations. Biosis can work with FERA to develop an appropriate survey strategy and program. An overview of likely investigations is summarised below:

- Flora and fauna site assessment, including detailed mapping of native vegetation and fauna habitat on the site is recommended in a more refined investigation area. This would be followed by a design process to avoid impacts on native vegetation, threatened communities and threatened flora/fauna habitat where possible. This process may also minimise survey requirements for threatened species, particularly if early engagement is conducted with regional DEECA staff. A detailed flora and fauna assessment will allow a more refined assessment of potential impacts and regulatory requirements and identify the need for targeted threatened species surveys. This will also help ascertain whether the *Interim Guidelines for assessment, avoidance mitigation and offsetting of potential wind farm impacts on the Victorian Brolga Population 2011* (DSE 2012) apply to the Seymour wind farm project.
- Bird and bat utilisation surveys to characterise bird and bat fauna that may be impacted by the project. Bird utilisation surveys provide a systematic mechanism to collect data about use of the site

by diurnal birds in a form that is also applicable to quantified collision risk modelling that may be required to assess project's impact on bird species. Ultrasonic bat surveys undertaken over a 12-month period can ascertain the potential presence of the Eastern Horseshoe Bat and other microbat species.

- Nocturnal bird (owl) surveys, particularly in or near heavily forested areas.
- Additional targeted flora and fauna surveys may be required for the following species once an impact footprint has been refined:
  - Forest, woodland, wetland and grassland threatened flora.
  - Arboreal mammals (e.g. spotlighting surveys for Gliders and Brush-tailed Phascogale).
  - Reptiles (e.g. tile surveys for Striped Legless Lizard).
  - Amphibians (e.g. Growling Grass Frog and Brown Toadlet)
  - Terrestrial and aquatic invertebrates and fishes (e.g. Golden Sun Moth and galaxiids).
- Targeted investigations to ascertain whether the study area or any parts of it meet the definition for important migratory shorebird habitat for Latham's Snipe and other wetland bird species.
- Design and conduct other targeted species investigations, determined and directed by the outcomes of a detailed flora and fauna site assessment and in consultation with DEECA.

Detailed pre-approval surveys will be required in any areas of impact, which would require surveys across at least a 12-month period, to capture variation in seasonal detectability. Interim bird and bat management guidance was released in December 2021 by DCCEEW, which further outlines requirements to conduct at least 24 months of site utilisation surveys for birds and bats. The site utilisation surveys must be undertaken for each relevant season over a minimum two years (up to 8 survey events) to account for climatic variations, and to capture migratory and cryptic bird and bat species.

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APPENDICES

Appendix A. Flora

The following abbreviations and symbols are relevant to this Appendix.

Code	Meaning	Reference
National listings (EPBC Act)		
EX	Extinct	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
CR	Critically endangered	
EN	Endangered	
VU	Vulnerable	
PMST	Protected Matters Search Tool	
State listings (FFG Act and DEECA Advisory List)		
x	Extinct	Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act)
cr	Critically endangered	
e	Endangered	
v	Vulnerable	
t	Threatened	
P	Protected (public land only)	
Weed status (CaLP Act, DCCEEW Weeds of National Significance)		
SP	State prohibited species	Victorian *Catchment and Land Protection Act 1994* (CaLP Act)
RP	Regionally prohibited species	
RC	Regionally controlled species	
R	Restricted species	
WoNS	Weed of National Significance	Australian Weeds Strategy (DAWR 2017)
vh	Very high risk	DEECA's Advisory List of Environmental Weeds (ARI 2018)
h	High risk	
mh	Moderately high risk	
m	Medium risk	
l	Lower risk	
p	Potential risk	
Other		
#	Native species outside its natural range	Victorian Biodiversity Atlas (VBA)

Appendix A.1. Listed flora species

The following table includes threatened flora species that have potential to occur within the study areas. The list of threatened species is sourced from the VBA and PMST (accessed in January 2023). Where years are specified for the most recent database records, these refer to records from the VBA unless otherwise specified. Where no year is specified, the PMST has predicted that the species has potential to occur. A proportion of the flora habitat descriptions have been reproduced with permission from the Royal Botanic Gardens Victoria (RBGV 2020).

Table 10 Threatened flora species recorded or predicted to occur within 10 km of the wind farm study area

Scientific name	Common name	Conservation status		Most recent database record	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG				
National significance							
Amphibromus fluitans	River Swamp Wallaby-grass	VU			Swampy areas, mainly along the Murray River between Wodonga and Echuca with scattered records from southern Victoria.	**Medium**	Suitable habitat for this species likely to occur on the fringes of waterways and farm dams, however the species has not been previously recorded in the local area
Brachyscome muelleroides	Mueller Daisy	VU	e	2002	Floodplains of the Murray River and its tributaries.	**Low**	Previously recorded just north of the WF study area in the vicinity of Locksley. However, as a floodplain species, there is limited suitable habitat within the WF study area which mostly lies within the CVU and HNF subregions.
Caladenia concolor	Crimson Spider-orchid	VU	e	1988	Open, grassy understorey in Box Ironbark and dry foothill forests.	**Low**	Within Victoria, this species is known from Beechworth and Chiltern areas. Additional populations are thought to occur in the Broadford area to the west of the WF study area. Suitable habitat (Box-Ironbark Forest) is limited within the study area.

Scientific name	Common name	Conservation status		Most recent database record	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG				
Dianella amoena	Matted Flax-lily	EN	cr		Lowland grassland and grassy woodland, on well-drained to seasonally waterlogged fertile sandy loam soils to heavy cracking clays.	**Medium**	Suitable habitat for this species may be present in less-disturbed grassy woodland EVCs.
Dodonaea procumbens	Trailing Hop-bush	VU			Sandy or clay soils in low-lying, winter-wet areas in grasslands, woodlands, and low-open forest.	**Medium**	Although it has not been previously recorded in the local area, the disjunct and sporadic population distribution of this species means it cannot be discounted from occurring within the study area as suitable winter-wet low-lying woodland habitat is present.
Eucalyptus crenulata	Buxton Gum	EN	e	2017	Alluvial soils in seasonally inundated depressions along river flats; records away from Buxton and Yering in the northeast are likely to be introductions.	**Low**	Species is known from local area around Buxton, and previous records from within the local area are likely of planted specimens.
Glycine latrobeana	Clover Glycine	VU	v	2011	Grasslands and grassy woodlands, particularly those dominated by Kangaroo Grass.	**High**	Previously recorded within the WF study area (2011) near Hughes Creek, south of Mount Tickatory. Extensive areas of suitable habitat for the species present.
Hibbertia humifusa subsp. erigens	Euroa Guinea-flower	VU	cr	2018	Eucalypt woodlands with a tall shrub understorey on shallow, sandy loams; occasionally in Buloke dominated woodlands.	**High**	Multiple previous records just outside the WF study area in the vicinity of Big Hill Nature Conservation Reserve (1995) and known populations around Old Longwood. Suitable habitat for the species is present.

Scientific name	Common name	Conservation status		Most recent database record	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG				
Lepidium aschersonii	Spiny Peppercress	VU	e		Heavy clay soils near salt lakes on the volcanic plains; disjunct records near Lake Omeo.	**Negligible**	No previous records in the local area, study area not within the known distribution of this species. Suitable clay soils on volcanic plains not present within the study area.
Lepidium monoplocoides	Winged Peppercress	EN	e		A variety of grassland, wetland and floodplain communities on finely textured soils; sometimes in exposed, sparsely vegetated sites, on dry and eroded clay scolds.	**Negligible**	No previous records in the local area, and this species' distribution within Victoria lies within the north-west of the state.
Leucochrysum albicans subsp. tricolor	White Sunray	EN	e		Grasslands of the Victorian Volcanic Plains, primarily on acidic clay soils derived from basalt, with occasional occurrences on adjacent sedimentary, sandy-clay soils.	**Negligible**	This species occurs in volcanic grassland remnants, which are not present within the WF study area.
Pimelea spinescens subsp. spinescens	Spiny Rice-flower	CR	cr		Primarily grasslands featuring a moderate diversity of other native species and inter-tussock spaces, although also recorded in grassland dominated by introduced perennial grasses.	**Low**	The distribution for this species is further to the west, and generally on basalt-derived soils. No optimal habitat for this species within the WF study area.

Scientific name	Common name	Conservation status		Most recent database record	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG				
Prasophyllum validum	Sturdy Leek-orchid	VU			Apparently endemic to Victoria where scattered across northern and western open forest and woodland communities on stony and sandy soils.	**N/A**	N/A - PMST result is Prasophyllum validum EPBC listed VU, however, species in VIC is categorised under Prasophyllum aff. validum which is not EPBC listed.
Pterostylis chlorogramma	Green-striped Greenhood	VU	e		Heathy woodland; more specific habitat requirements are poorly known.	**Low**	While the species' range is uncertain due to confusion with closely allied species, all previous species records lie >65 kilometres south-west of the WF study area.
Senecio macrocarpus	Large-headed Fireweed	VU	cr		Grassland, shrubland and woodland habitats on heavy soils subject to waterlogging and/or drought conditions in summer.	**Low**	No recent records within the local area. Distribution generally associated with basalt-derived soils west of Melbourne. Limited suitable habitat within the WF study area
Senecio psilocarpus	Swamp Fireweed	VU			Seasonally inundated herb-rich swamps, growing on peaty soils or volcanic clays.	**Low**	Species prefers volcanic clays or peaty soils which are not prevalent in the study area so suitable habitat is limited, and the species distribution is generally further south-west than the study area.
Xerochrysum palustre	Swamp Everlasting	VU	cr		Sedge-swamps and shallow freshwater marshes and swamps in lowlands, on black cracking clay soils.	**Low**	Species has a wide distribution however there are no previous records in the local area. There is some suitable swampy habitat present in the study area.

Scientific name	Common name	Conservation status		Most recent database record	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG				
State significance							
Acacia ausfeldii	Ausfeld's Wattle		e	1988	Dry forest and Mallee communities in north-central Victoria.	**High**	Multiple records within the study area (including within Wallaby Gully [Upton Hill] Flora Reserve. Extensive areas of suitable habitat within the study area
Acacia boormanii	Snowy River Wattle		e	2017	Restricted mostly to open-forest on rocky slopes and along banks of the Snowy River and its tributaries, with outlying populations at Mt Typo and Gapsted in the Myrtleford area.	**High**	Recently recorded within the study area (2017) in the vicinity of Hughes Creek. Suitable habitat along this waterway and others within the WF study area.
Acacia deanei subsp. paucijuga	Deane's Wattle		v	1987	Common in dry forests, often on stony slopes and rocky outcrops.	**High**	Previously recorded in the north of the WF study area, just south of the Hume Freeway. Extensive areas of suitable habitat on stony slopes and rocky outcrops in the study area
Acacia howittii	Sticky Wattle		v	2017	Moist forest. Natural occurrences are confined to South Gippsland and Central Highlands.	**Medium**	A number of recent previous records (2017) just outside the WF study area, south of Old Longwood. Suitable moist forest habitat present in the WF study area.
Acacia lanigera var. lanigera	Woolly Wattle		v	2011	Growing in open eucalypt forest on shale and granite hills in shallow stony or sandy soils.	**High**	Multiple recent records within the study area and extensive suitable habitat for the species
Acacia penninervis var. penninervis	Hickory Wattle		v	2021	Dry open grassy woodlands on rocky ground.	**High**	Known population with multiple records south of Longwood in the north of the WF study area. Extensive suitable rocky habitat within the study area.

Scientific name	Common name	Conservation status		Most recent database record	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG				
Allocasuarina luehmannii	Buloke		cr	2017	Non-calcareous soils in drier areas on slopes and plains; often in woodlands associated with Grey Box.	**Medium**	Species' core distribution lies on floodplain landscapes however some suitable habitat is present within the WF study area and there are recent previous records from just outside the study area
Almaleea capitata	Slender Parrot-pea		e	2008	Confined to a few damp to wet heathlands in the eastern sub-alps (e.g. Forlorn Hope Plain, Diggers Holes, Wonnangatta valley and near Mt Cobberas).	**Low**	Previously recorded in the vicinity of the study area north of Highlands. However, the is well east of the core distribution for the species, suitable habitat for the species is restricted and limited within the study area.
Amyema linophylla subsp. orientalis	Buloke Mistletoe		cr	2017	Likely to occur anywhere where its host plant Buloke *Allocasuarina leuhmannii* is present.	**Medium**	Host plant may occur within the WF study area
Brachyscome ptychocarpa	Tiny Daisy		e	2001	Found in granitic outcrops, commonly growing in mossy hollows in rocks.	**Medium**	Previously recorded in the Strathbogies north of Molesworth. Suitable habitat (mossy hollows within rocky granitic outcrops) present within the study area.
Caladenia oenochila	Wine-lipped Spider-orchid		cr	1998	Foothill forest and heathy woodland in low hills.	**Medium**	Previously recorded in the vicinity of the study area, north of Highlands. A relatively common species in shady, moist habitat in grassy forest or woodlands, suitable habitat present within the study area.

Scientific name	Common name	Conservation status		Most recent database record	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG				
Cardamine microthrix	Eastern Bitter-cress		e	1995	Areas near streams and lagoons.	**Medium**	Previously recorded outside of the WF study area just north of the Hume Freeway. Species distribution covers much of the eastern half of Victoria. Suitable stream-side habitat present within the study area.
Cassinia ozothamnoides	Cottony Cassinia		e	2020	Dry-open forests and scrubs on poor stony or shaly soils.	**High**	Multiple records outside the WF study area just north of the Hume Freeway. Suitable habitat on disturbed stony soils present within the study area.
Corymbia maculata	Spotted Gum		v	2017	In Victoria, naturally confined to a small population near Mt Tara in the east of the state.	**Negligible**	Species restricted to the east of Victoria, and previous records from within the local area are likely of planted specimens
Dianella tarda	Late-flower Flax-lily		cr	2021	Heavy soils in grassy woodland environments dominated by River Red-gum Eucalyptus camaldulensis and Yellow Box E. melliodora.	**High**	Multiple previous records and extensive suitable habitat present within the WF study area
Dodonaea boroniifolia	Hairy Hop-bush		e	2011	On or near granite or sandstone outcrops in eucalypt woodland, grassland or heath.	**High**	Multiple records within the study area, and suitable habitat present in woodlands on stony outcrops.
Eriocaulon scariosum	Common Pipewort		e	2017	Bog communities and drainage areas, often where there is running water.	**High**	Previously recorded in the study area, and suitable habitat is present within perched bogs and at the margins of dams and watercourses etc.

Scientific name	Common name	Conservation status		Most recent database record	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG				
Eucalyptus sideroxylon subsp. sideroxylon	Mugga		e	2017	Typically found on poor, shallow soils, including sands, gravels, ironstones and clays.	**Low**	Species' range in Victoria is confined to the Chiltern area, northern Warby Range and south of Winton. Previous records from within the local area are likely of planted specimens.
Eucalyptus yarraensis	Yarra Gum		cr	1994	Valley flats and along stream on soils subject to periodic inundation or waterlogging.	**Medium**	Previously recorded along Grassy Creek within the study area. Suitable habitat present along water courses within the study area.
Geranium solanderi var. solanderi s.s.	Austral Crane's-bill		e	1988	Grasslands or grassy woodlands where hydrology is not a limiting factor.	**Medium**	Recorded outside the WF study area north of the Hume Freeway. Some suitable sheltered woodland habitat present within the study area along watercourses.
Geranium sp. 3	Pale-flower Crane's-bill		e	2011	Grasslands and dry woodlands.	**Low**	Species currently only known from Stawell, Yan Yean, Eltham and Bonegilla areas.
Geranium sp. 6	Delicate Crane's-bill		e	2011	Sheltered sites.	**High**	Species known from the Strathbogie Ranges, and recently recorded (2011) in the study area.
Goodenia macbarronii	Narrow Goodenia		e	2012	Sandy to clay/silt soils in areas that are moist or wet year round, such as spring-soaks and alluvial fans of drainage lines, and including disturbed areas.	**Medium**	Previously recorded in the north-east of the WF study area, south of Longwood. Suitable habitat present in seasonally-wet areas in this area.
Isolepis gaudichaudiana	Benambra Club-sedge		v	2017	Moist open situations scattered around the Snowy Range, Dargo High Plains and Benambra area.	**Medium**	Previously recorded near Ponkeen Creek in the study area. Some suitable habitat present along water courses in the study area.

Scientific name	Common name	Conservation status		Most recent database record	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG				
Juncus psammophilus	Sand Rush		e	2011	Confined to Eucalyptus camaldulensis woodland along the banks of sandy streams, and seasonally inundated flats and roadside depressions in E. microcarpa woodland.	**Low**	No records within the study area, one recent record north of the Hume Freeway in the local area. Species' distribution generally further north on floodplains adjacent to water courses.
Melaleuca armillaris subsp. armillaris	Giant Honey-myrtle		e	2017	Near coastal heath/scrub, rocky coast and foothill outcrops.	**Negligible**	Species confined to near-coastal sandy heaths and scrubs in the far east of Victoria, and previous records from within the local area are likely of planted specimens.
Prasophyllum lindleyanum	Green Leek-orchid		e	1998	Fertile soils in woodland or scrubby heath.	**Medium**	Previously recorded in the vicinity of the study area north of Highlands. A widespread species however is localised and uncommon. Suitable habitat present within woodlands in the study area.
Pterostylis X ingens	Sharp Greenhood		v	1967	Moist areas in open forest.	**Medium**	Previous records north of Highlands in the Strathbogie Range however these records have very low accuracy (4 km). Suitable habitat along swamps and stream edges present within the study area.
Pultenaea platyphylla	Flat-leaf Bush-pea		e	1987	Confined to dry forest on granite hills, particularly in the Warby Range and near Beechworth.	**High**	Previous records within the study area and suitable habitat on granitic hills throughout the study area.

Scientific name	Common name	Conservation status		Most recent database record	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG				
Pultenaea vrolandii	Cupped Bush-pea		e	1989	Dry forest with granitic geology.	**Medium**	Previous records are centred around the eastern half of the Strathbogie Range, however suitable habitat is present on granitic soils within the study area.
Rytidosperma monticola	Small-flower Wallaby-grass		e	2011	Tablelands up to c. 1400m ASL, and common on heathlands with shallow soils over sandstone, and in grasslands with heavier, deep soils.	**Medium**	Previously recorded in the vicinity of the study area north of Hughes Creek Flora Reserve. Suitable habitat present in dry grassy woodland within the study area.
Senecio linearifolius var. graniticola	Fireweed Groundsel (Euroa variant)		cr	2011	Endemic to the Strathbogie Ranges in woodlands on soils derived from granite.	**High**	Species endemic to the Strathbogie Ranges, previously recorded within the study area. Suitable habitat present on granitic soils

Table 11 Threatened flora species recorded or predicted to occur within 10 km of the transmission line study area

Scientific name	Common name	Conservation status		Most recent database record	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG				
National significance							
Amphibromus fluitans	River Swamp Wallaby-grass	VU			Swampy areas, mainly along the Murray River between Wodonga and Echuca with scattered records from southern Victoria.	**Medium**	Suitable habitat for this species may occur on the fringes of waterways and farm dams.
Caladenia concolor	Crimson Spider-orchid	VU	e	1988	Open, grassy understorey in Box Ironbark and dry foothill forests.	**Low**	Within Victoria, this species is known from Beechworth and Chiltern areas. Additional populations are thought to occur in the Broadford area to the west of the WF study area. Suitable habitat (Box-Ironbark Forest) is limited within the study area.
Dianella amoena	Matted Flax-lily	EN	cr	2011	Lowland grassland and grassy woodland, on well-drained to seasonally waterlogged fertile sandy loam soils to heavy cracking clays.	**Medium**	Suitable habitat for this species may be present in less-disturbed grassy woodland EVCs.
Dodonaea procumbens	Trailing Hop-bush	VU			Sandy or clay soils in low-lying, winter-wet areas in grasslands, woodlands, and low-open forest.	**Medium**	Although it has not been previously recorded in the local area, the disjunct and sporadic population distribution of this species means it cannot be discounted from occurring within the study area as suitable winter-wet low-lying woodland habitat is present.
Glycine latrobeana	Clover Glycine	VU	v	2011	Grasslands and grassy woodlands, particularly those dominated by Kangaroo Grass.	**Medium**	Recently recorded north of the TL study area (2011). Extensive areas of suitable habitat for the species likely to be present.

Scientific name	Common name	Conservation status		Most recent database record	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG				
Hibbertia humifusa subsp. erigens	Euroa Guinea-flower	VU	cr		Eucalypt woodlands with a tall shrub understorey on shallow, sandy loams; occasionally in Buloke dominated woodlands.	**Medium**	Previously recorded in the eastern Strathbogie Ranges, suitable habitat is present within the TL study area.
Lepidium aschersonii	Spiny Peppercress	VU	e		Heavy clay soils near salt lakes on the volcanic plains; disjunct records near Lake Omeo.	**Negligible**	No previous records in the local area, study area not within the known distribution of this species. Suitable clay soils on volcanic plains not present within the study area.
Leucochrysum albicans subsp. tricolor	White Sunray	EN	e		Grasslands of the Victorian Volcanic Plains, primarily on acidic clay soils derived from basalt, with occasional occurrences on adjacent sedimentary, sandy-clay soils.	**Negligible**	This species occurs in volcanic grassland remnants, which are limited within the TL study area.
Pomaderris vacciniifolia	Round-leaf Pomaderris	CR	cr		Endemic in Victoria. Largely confined to moist forest and scrubs in the upper catchment of the Yarra, Plenty and Yea Rivers in an area bounded by Healesville, Marysville and Whittlesea, but also in the Tyers-Walhalla areas.	**Medium**	Species recently recorded on the Yea River near Devlin Bridge, just outside the local area. Some suitable habitat present within remnant vegetation north of the Black Range State Forest within the TL study area.

Scientific name	Common name	Conservation status		Most recent database record	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG				
Prasophyllum morganii	Mignonette Leek-orchid	VU	x		Known from only one location near Cobungra in Snow Gum open forest at about 1000 m ASL. Presumed to be extinct.	**Negligible**	Species presumed extinct.
Prasophyllum pallidum s.l.	Pale Leek-orchid	VU		1986	In Victoria, confined to the west between Edenhope, Nhill and Stawell where occurring in heathy woodland and box-ironbark forest on clayey and/or gravelly (often lateritic) soils	**N/A**	Species recognised as P. roseum in Victoria, which is not EPBC listed.
Prasophyllum validum	Sturdy Leek-orchid	VU			Apparently endemic to Victoria where scattered across northern and western open forest and woodland communities on stony and sandy soils.	**N/A**	N/A - PMST result is Prasophyllum validum EPBC listed VU, however, species in VIC is categorised under Prasophyllum aff. validum which is not EPBC listed.
Pterostylis chlorogramma	Green-striped Greenhood	VU	e		Heathy woodland; more specific habitat requirements are poorly known.	**Low**	While the species' range is uncertain due to confusion with closely allied species, all previous species records lie >45 kilometres south-west of the TL study area.
Senecio macrocarpus	Large-headed Fireweed	VU	cr		Grassland, shrubland and woodland habitats on heavy soils subject to waterlogging and/or drought conditions in summer.	**Low**	No recent records within the local area. Distribution generally associated with basalt-derived soils west of Melbourne. Limited suitable habitat within the TL study area.

Scientific name	Common name	Conservation status		Most recent database record	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG				
Senecio psilocarpus	Swamp Fireweed	VU			Seasonally inundated herb-rich swamps, growing on peaty soils or volcanic clays.	**Low**	Species prefers volcanic clays or peaty soils which are not prevalent in the study area so suitable habitat is limited, and the species distribution is generally further south-west than the TL study area.
Thesium australe	Austral Toad-flax	VU	e		Most commonly in damp grassland and woodland, including subalpine grassy heathlands.	**Low**	Suitable habitat present within the study area however there are no previous records in the local area. All recent records for this species are much further east of the study area in highland environments.
Xerochrysum palustre	Swamp Everlasting	VU	cr		Sedge-swamps and shallow freshwater marshes and swamps in lowlands, on black cracking clay soils.	**Low**	Species has a wide distribution however there are no previous records in the local area. There is some suitable swampy habitat present in the study area.
State significance							
Acacia lanigera var. lanigera	Woolly Wattle		v	2011	Growing in open eucalypt forest on shale and granite hills in shallow stony or sandy soils.	**High**	Multiple recent records within the study area and extensive suitable habitat for the species
Acacia leprosa var. *uninervia*	Large-leaf Cinnamon-wattle		e	2020	Eucalyptus forest in ranges northeast of Melbourne and near Mt Buffalo, with scattered occurrences west toward Ballarat.	**High**	Multiple recent records within Black Range State Forest in the TL study area, suitable habitat present in this area.

Scientific name	Common name	Conservation status		Most recent database record	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG				
Almaleea capitata	Slender Parrot-pea		e	2008	Confined to a few damp to wet heathlands in the eastern sub-alps (e.g. Forlorn Hope Plain, Diggers Holes, Wonnangatta valley and near Mt Cobberas).	**Low**	Previously recorded in the vicinity of the study area north of Highlands. However, the is well east of the core distribution for the species, suitable habitat for the species is restricted and limited within the study area.
Billardiera scandens s.s.	Velvet Apple-berry		e	2011	Common in heathland, woodland and forests from near sea level to the subalps.	**High**	Multiple records within the study area, TL study area within the species core distribution. A common species in woodlands and forests within its distribution.
Bossiaea cordigera	Wiry Bossiaea		e	1988	Moist habitats in heathland, heathy woodland and open-forest.	**Medium**	Previously recorded within Black Range State Forest in the TL study area, suitable habitat present in this area.
Brachyscome ptychocarpa	Tiny Daisy		e	2001	Found in granitic outcrops, commonly growing in mossy hollows in rocks.	**Medium**	Previously recorded in the Strathbogies north of Molesworth. Suitable habitat (mossy hollows within rocky granitic outcrops) present within the study area.
Caladenia oenochila	Wine-lipped Spider-orchid		cr	1998	Foothill forest and heathy woodland in low hills.	**Medium**	Previously recorded in the vicinity of the study area, north of Highlands. A relatively common species in shady, moist habitat in grassy forest or woodlands, suitable habitat present within the study area.
Carex alsophila	Forest Sedge		e	2020	Endemic in Victoria, occurring in mountain gullies and swamps.	**Medium**	Suitable habitat present in Black Range State Forest however the core distribution for this species generally lies to the south of the TL study area

Scientific name	Common name	Conservation status		Most recent database record	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG				
Corybas aconitiflorus	Spurred Helmet-orchid		e	2019	Coastal scrubs, heath, heathy woodland and moist foothill forest in damp, shady sites.	**Low**	One recent record (2019) outside the study area in Black Range State Forest. Species distribution generally further south and closer to the coast.
Dianella sp. aff. *longifolia (*Benambra*)*	Arching Flax-lily		t	2011	The habitat requirements of this species are poorly known.	**Medium**	Previously recorded east of the TL study area, south of Eildon. Suitable habitat present in grassland and grassy woodlands with rocky outcrops.
Dianella tarda	Late-flower Flax-lily		cr	2018	Heavy soils in grassy woodland environments dominated by River Red-gum Eucalyptus camaldulensis and Yellow Box E. melliodora.	**Medium**	Species distribution generally further north however suitable habitat for the species is present within the TL study area.
Diuris punctata var. *punctata*	Purple Diuris		e	1888	Fertile, loamy soils and periodically wet areas in lowland grasslands, grassy woodlands, heathy woodlands and open heathlands.	**Low**	No recent records for the species in the local area. Occurrence of the species has been much reduced by clearing for agriculture. Suitable habitat for the species limited within the study area.
Dodonaea boroniifolia	Hairy Hop-bush		e	2011	On or near granite or sandstone outcrops in eucalypt woodland, grassland or heath.	**High**	Previously recorded within the study area, and suitable habitat present in woodlands on stony outcrops.
Epilobium curtisiae	Bald-seeded Willow-herb		e	1989	Confined to alpine and subalpine areas where it grows in moist peaty depressions in grassland or in temporary shallow pools.	**Negligible**	Species confined to alpine and sub-alpine habitat, which are not present within the study area.

Scientific name	Common name	Conservation status		Most recent database record	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG				
Eriocaulon scariosum	Common Pipewort		e	2012	Bog communities and drainage areas, often where there is running water.	**High**	Previously recorded in the study area, and suitable habitat is present at the margins of dams and watercourses etc.
Eucalyptus yarraensis	Yarra Gum		cr	1994	Valley flats and along stream on soils subject to periodic inundation or waterlogging.	**Medium**	Previously recorded east of the study area along Grassy Creek near Ruffy. Suitable habitat present along water courses within the study area.
Fimbristylis velata	Veiled Fringe-sedge		e	2009	Drying mud beside lakes and rivers and in seasonally wet depressions.	**High**	Recently recorded (2009) in the study area in the vicinity of the Goulburn River near Molesworth. Suitable habitat present along watercourses.
Goodia medicaginea	Western Golden-tip		e	1989	Drier sites within wet or dry sclerophyll forests.	**Medium**	No previous records in the study area and only one in the local area. However, suitable habitat present in dry forest within the study area.
Goodia pubescens	Silky Golden-tip		e	2020	Wet and dry sclerophyll forests.	**High**	Multiple records just outside and to the south of the TL study area within Black Range State Forest. Suitable habitat present within the study area.
Olearia asterotricha	Rough Daisy-bush		e	2020	Moist forests and swampy heathlands.	**Medium**	Recently recorded to the south of the study area in Black Range State Forest. Suitable habitat present in the study area in moist forest and heathland.
Persoonia arborea	Tree Geebung		e	1988	Confined to wet montane forests of the Yarra, Thomson, Latrobe and Bunyip River watersheds and sometimes locally common.	**Medium**	Recorded to the south of the study area in Black Range State Forest. Some suitable habitat present in the study area in wet montane forest.

Scientific name	Common name	Conservation status		Most recent database record	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG				
Prasophyllum lindleyanum	Green Leek-orchid		e	1998	Fertile soils in woodland or scrubby heath.	**Medium**	Previously recorded in the vicinity of the study area north of Highlands. A widespread species however is localised and uncommon. Suitable habitat present within woodlands in the study area.
Prasophyllum roseum	Pink-lip Leek-orchid			1986	Heathy woodland and box-ironbark forest on clayey and/or gravelly (often lateritic) soils.	**Negligible**	Confined to the west of the state between Edenhope, Nhill and Stawell.
Prasophyllum sp. aff. *validum*	Woodland Leek-orchid		e	1995	Apparently endemic to Victoria where scattered across northern and western open forest and woodland communities on stony and sandy soils.	**Low**	Distribution of species poorly known, however not previously recorded in the local area.
Pterostylis X *ingens*	Sharp Greenhood		v	1967	Moist areas in open forest.	**Medium**	Previous records north of Highlands in the Strathbogie Range however these records have very low accuracy (4 km). Suitable habitat along swamps and stream edges present within the study area.
Senecio campylocarpus	Floodplain Fireweed		e	2011	Clay loam soils in forests and woodlands, typically in areas that are seasonally inundated.	**Medium**	Species previously recorded on the Yea/Goulburn Rivers near Yea. Suitable habitat present along the Goulburn River within the study area.

Appendix A.2. Threatened ecological communities

The following table includes the threatened ecological communities that have potential to occur within the wind farm study area (Table 12) and the transmission line study area (Table 13). The list of threatened ecological communities has been compiled with reference to characteristics of FFG Act threatened communities (SAC 2013) and predictive output from the PMST (accessed on 18 January 2023).

Table 12 Threatened ecological communities predicted to occur within 10 km of the wind farm study area.

Ecological community	Status	Comments
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	EN	This community occurs on broad riverine plains of the Murray Darling Depression and Riverina Bioregions. It is unlikely to occur within the wind farm study area as only a very small portion is within the Riverina bioregion, with the majority being within the South Eastern Highlands and Victorian Midlands bioregions.
Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	EN	This community occurs on low-relief productive soils derived from alluvial or colluvial materials. There is some potential for the community to occur on flatter soils in the north of the wind farm study area, for example in areas modelled as EVC 175 or Plains Woodland EVC 55.
Natural Grasslands of the Murray Valley Plains	CR	This community occurs predominately across the southern parts of the Riverina bioregion and the Murray Darling Depression bioregion. It is unlikely to occur within the wind farm study area as only a very small portion is within the Riverina bioregion, with the majority being within the South Eastern Highlands and Victorian Midlands bioregions.
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	CR	This community occurs on flat plains grading into slopes, below 500 m ASL. There is some potential for the community to occur on isolated drainage lines or depressions which are seasonally inundated.
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	CR	This community occurs on moderate to highly fertile soils between 170 to 1200 m ASL stretching from southern Queensland into central Victoria. It is likely that prior to European settlement this community was prevalent throughout much of the wind farm study area, however as it typically occurs on fertile soils much of its original extent has been cleared for agricultural purposes. Within the wind farm study area, this community could persist within less-disturbed areas. It is associated with Valley Grassy Forest EVC 47 and Grassy Woodland EVC 175, both of which are modelled to occur.
Creekline Grassy Woodland (Goldfields) Community	L	This community is associated with the Box-Ironbark ecosystems of Victoria and occurs along shallow or ephemeral drainage lines on the lower slopes of these ecosystems. It is unlikely to occur within the

Ecological community	Status	Comments
		study areas, as generally its distribution lies further to the west within the Goldfields bioregion.
Grey Box - Buloke Grassy Woodland Community	L	This community occurs on flat or very gently undulating plains in northern Victoria and a few places in central Victoria. The study areas lie across undulating footslopes and hills, with limited flat plains landscape. This community is unlikely to occur within the study areas, as generally its distribution lies further north.
Northern Plains Grassland Community	L	This community is restricted to the naturally treeless plains of northern Victoria. The study areas lie across undulating footslopes and hills, with limited flat plains landscape. This community is unlikely to occur within the study areas, as generally its distribution lies further north.

Table 13 Threatened ecological communities predicted to occur within 10 km of the transmission line study area.

Ecological community	Status	Comments
Alpine Sphagnum Bogs and Associated Fens	EN	This community occurs across alpine, subalpine and montane environments, often (but not always) above the climatic treeline. The elevation of the transmission line study area is too low for this community to occur.
Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	EN	This community occurs on low-relief productive soils derived from alluvial or colluvial materials. There is potential for this community to occur on flatter plains between Alexandra and the Maroondah Link Highway in the south-east of the transmission line study area.
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	CR	This community occurs on flat plains grading into slopes, below 500 m ASL. There is some potential for the community to occur on isolated drainage lines or depressions which are seasonally inundated.
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	CR	This community occurs on moderate to highly fertile soils between 170 to 1200 m ASL stretching from southern Queensland into central Victoria. It is likely that prior to European settlement this community was prevalent throughout much of the transmission line study area, however as it typically occurs on fertile soils much of its original extent has been cleared for agricultural purposes. Within the transmission line study area, this community could persist within less-disturbed areas. It is associated with Valley Grassy Forest EVC 47 and Grassy Woodland EVC 175, both of which are modelled to occur.

Appendix B. Fauna

The following abbreviations and symbols are relevant to this Appendix:

Code	Meaning	Reference
National listings (EPBC Act)		
EX	Extinct	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
CR	Critically endangered	
EN	Endangered	
VU	Vulnerable	
PMST	Protected Matters Search Tool	
State listings (FFG Act)		
x	Extinct	Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act)
cr	Critically endangered	
e	Endangered	
v	Vulnerable	
t	Threatened	
P	Protected (fish only)	
Pest animal status (CaLP Act and Fisheries Act)		
PS	Declared pest animal	Victorian *Catchment and Land Protection Act 1994* (CaLP Act)
N	Declared noxious aquatic species	*Victorian Fisheries Act 1995*

Appendix B.1. Listed fauna species

The following table includes a list of threatened fauna species that have potential to occur within the study area. The list of threatened species is sourced from the VBA and PMST (accessed on January 2023). Where years are specified for the most recent database records, these refer to records from the VBA unless otherwise specified. Where no year is specified, the PMST has predicted that the species has potential to occur.

Table 14 Threatened fauna species recorded or predicted to occur within 10 km of the wind farm study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
National significance									
Pedionomus torquatus	Plains-wanderer	CR	cr	cr		PMST	Native grassland with a sparse, open structure.	**Low**	Study area is beyond the current known and expected range of the species
Rostratula australis	Australian Painted-snipe	EN	cr	cr		PMST	Shallows of well-vegetated freshwater wetlands.	**Low**	Study area is beyond the current known and expected range of the species
Botaurus poiciloptilus	Australasian Bittern	EN	en	cr	1994	PMST	Shallow freshwater and brackish wetlands with abundant emergent aquatic vegetation.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Falco hypoleucos	Grey Falcon	VU	en	v		PMST	Lightly timbered plains and Acacia scrub.	**Low**	No local records and habitat within the study area is unlikely to be suitable

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Callocephalon fimbriatum	Gang-gang Cockatoo	EN			2018	PMST	S Vic to E NSW. Forests and woodlands from coast to alpine areas. Autumn-winter dispersal from highlands to lower elevations. Forages in eucalypts, acacias and some exotic garden trees and shrubs.	**High**	Numerous recent local records of the species and habitat within the study area is likely to be suitable
Polytelis swainsonii	Superb Parrot	VU	en	e		PMST	Red-gum and box-dominated forests and woodlands.	**Low**	Scattered recent records to the north of the study area but in Victoria, the range of the species is largely restricted to the Barmah forest and other sites along the Murray River
Lathamus discolor	Swift Parrot	CR	en	cr	2017	PMST	A range of forests and woodlands, especially those supporting nectar-producing tree species. Also well-treed urban areas.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Neophema chrysostoma	Blue-winged Parrot	VU				PMST	A range of coastal, sub-coastal and semi-arid regions throughout south-eastern Australia. Favor heathy woodland for breeding, particularly sites recently disturbed by fire or logging. Nests in tree hollows in coastal eucalypt forests and woodlands. Feeds on seeds of a range of native grasses and herbs. Flocks of several thousand occasionally recorded in winter, when majority of Tasmanian population migrates to Victoria.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Climacteris picumnus	Brown Treecreeper	VU	nt				Often observed feeding on insects as it spirals up trees or when hopping along the ground or on fallen litter. Generally inhabits open eucalypt forests, woodlands and Mallee, often where there are stands of dead trees.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Aphelocephala leucopsis	Southern Whiteface	VU					A range of open woodlands and shrublands with grassy and shrub vegetation in the understory.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Hirundapus caudacutus	White-throated Needletail	VU	vu	v	2007	PMST	An almost exclusively aerial species within Australia, occurring over most types of habitat, particularly wooded areas.	**Medium**	Numerous recent local records of the species. Likely to pass over the study area
Thalassarche cauta	Shy Albatross	EN	vu	e	2006		Sub-Antarctic to temperate waters off southern Australia, in all months. Often close inshore. Breeds on Albatross Is. (Bass Strait); the Mewstone & Pedra Branca Is. (S. Tas.).	**Negligible**	Pelagic species, no suitable habitat within the study area
Numenius madagascariensis	Eastern Curlew	CR	vu	cr		PMST	Large intertidal sandflats, banks, mudflats, estuaries, inlets, coastal lagoons and bays.	**Negligible**	No suitable shorebird habitat within the study area
Calidris ferruginea	Curlew Sandpiper	CR	en	cr		PMST	Large intertidal sandflats, banks, mudflats, estuaries, inlets, sewage farms, saltworks, harbours, coastal lagoons and bays.	**Negligible**	No suitable shorebird habitat within the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Grantiella picta	Painted Honeyeater	VU	vu	v	2018	PMST	Dry open woodlands and forests. Typically forages for fruit and nectar in mistletoes and in tree canopies.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Anthochaera phrygia	Regent Honeyeater	CR	cr	cr		PMST	A range of dry woodlands and forests dominated by nectar-producing tree species.	**Medium**	Species range is now largely restricted to NE Vic. However, numerous local records suggest that the species may occasionally occur within the study area
Stagonopleura guttata	Diamond Firetail	VU	nt	v	2019		Open forests and woodlands with a grassy ground layer.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Melanodryas cucullata	Hooded Robin	EN	nt	v	2011		Woodlands of eucalypt, Mallee, semi-cleared farmland.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Dasyurus maculatus maculatus	Spot-tailed Quoll	EN	en	e	1957		Rainforest and wet and dry sclerophyll forests and woodlands.	**Low**	Some suitable habitat likely to occur within the study area, but no recent local records of the species
Petauroides volans	Southern Greater Glider	EN	vu	v	2019	PMST	Wet and damp sclerophyll forest with large hollow-bearing trees.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Petaurus australis	Yellow-bellied Glider	VU				PMST	Sclerophyll forest with large hollow-bearing trees, prefers mature eucalypt dominated forest and woodland. Distributed along South-eastern Australia.	**Low**	Scattered recent records to the south of the study area but the core range of the species is largely concentrated in SE Vic
Pseudomys fumeus	Smoky Mouse	EN	en	e		PMST	Coastal heath and heathy woodland, wet forest, sub-alpine heath and dry sclerophyll forest.	**Low**	Study area is beyond the current known and expected range of the species
Pteropus poliocephalus	Grey-headed Flying-fox	VU	vu	v		PMST	Rainforest, wet and dry sclerophyll forest, woodland and urban areas.	**Low**	Some suitable habitat likely to occur within the study area, but only a single recent local records of the species to the north of the study area
Aprasia parapulchella	Pink-tailed Worm-Lizard	VU	en	e		PMST	Woodland and grassland with partially buried rocks.	**Low**	Species known distribution is restricted to the Greater Bendigo region and Mount Sugarloaf. Species has highly specific habitat requirements

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Delma impar	Striped Legless Lizard	VU	en	e		PMST	Natural temperate grassland, grassy woodland and exotic grassland.	**Medium**	A single recent record of this species to the east of Seymour but numerous recent records to the south of Mount Eaglehawk and Mount Broughton. Habitat within the study area is likely to be suitable
Crinia sloanei	Sloane's Froglet	EN		e		PMST	Adults are most common in woodlands, floodplains, grasslands, and open and disturbed areas.	**Negligible**	Study area is beyond the known and expected range of the species
Litoria raniformis	Growling Grass Frog	VU	en	v	2001	PMST	Still or slow-flowing waterbodies and surrounding terrestrial vegetation.	**Medium**	Historic local records of the species and a single recent record near the study area. Likely to be some suitable habitat within the study area.
Galaxias rostratus	Flat-headed Galaxias	CR	vu	v	1985	PMST	Still or slow-moving waters of rivers, billabongs, lakes and swamps.	**Low**	No recent records of the species from local waterways
Maccullochella macquariensis	Trout Cod	EN	cr	e	1992	PMST	Streams characterised by a high abundance of large woody debris.	**Low**	No recent records of the species from local waterways

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Maccullochella peelii	Murray Cod	VU	vu	e	1970	PMST	A diverse range of stream habitats in the Murray-Darling basin; principally the main channels of rivers and their major tributaries.	**Low**	No recent records of the species from local waterways
Macquaria australasica	Macquarie Perch	EN	en	e	2006	PMST	Streams with clear water and deep, rocky holes with abundant cover.	**Medium**	Several recent records of the species from Hughes Creek within the study area
Bidyanus bidyanus	Silver Perch	CR	vu	e	1922		Lowland streams within the Murray-Darling Basin.	**Low**	No recent records of the species from local waterways
Nannoperca australis (Murray-Darling lineage)	Southern Pygmy Perch (Murray-Darling lineage)	VU	vu	v	2011		Well-vegetated, slow-flowing or still waters including streams, lakes, billabongs and other types of wetlands. The species is found in populations upstream of the Avoca River, and recently been discovered in tributaries of the upper Lachlan and upper Murray River catchments.	**Medium**	Several recent records of the species from Hughes Creek within the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Synemon plana	Golden Sun Moth	VU	cr	v	2012	PMST	Natural temperate grassland, grassy woodland and pasture supporting spear grasses and wallaby grasses and exotic grassland dominated by Chilean needle grass.	**Medium**	Recent local records to the west of Mount Stewart and some suitable habitat is likely to be present within the study area
Keyacris scurra	Key's Matchstick Grasshopper	EN		t		PMST		**Negligible**	Study area is well beyond species known range
State significance									
Burhinus grallarius	Bush Stone-curlew		en	cr	1998		Open woodland, treed farmland.	**Medium**	Scattered local records of the species and some suitable habitat likely to be present within the study area
Antigone rubicunda	Brolga		vu	e	1975		Shallow freshwater and brackish wetlands, crops, grassland and pasture.	**Low**	Records of the species from Nagambie and surrounds but no recent records within the study area and surrounds
Spatula rhynchotis	Australasian Shoveler		vu	v	1990		Variety of wetlands, with a preference for large, permanent, freshwater lakes/swamps with dense fringing vegetation.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Aythya australis	Hardhead		vu	v	2019		Deep freshwater swamps and wetlands, with abundant aquatic and terrestrial vegetation for roosting. Can occur in sheltered estuaries.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Oxyura australis	Blue-billed Duck		en	v	1989		Open or densely vegetated wetlands.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Biziura lobata	Musk Duck		vu	v	1991		Deep, permanent freshwater wetlands with areas of open water and patches of dense aquatic vegetation.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Hieraaetus morphnoides	Little Eagle		vu	v	2020		Woodland and open areas. Rabbits are a key component of their diet. Nesting occurs in mature trees in open woodland or riparian vegetation.	**High**	Numerous local records of the species and likely to be some suitable habitat within the study area
Lophoictinia isura	Square-tailed Kite		vu	v	1991		Eucalypt woodlands, open forest and partially cleared farmland.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Falco subniger	Black Falcon		vu	cr	1978		Woodlands, open country and around terrestrial wetlands areas, including rivers and creeks. Mostly hunts over open plains and undulating land with large tracts of low vegetation. Primarily occurs in arid and semi-arid zones in the north, north-west and west of Victoria, though can be forced into more coastal areas by droughts and subsequent food shortages.	**Low**	No recent records of the species within the local area
Ninox connivens	Barking Owl		en	cr	2020		Eucalypt forests and woodlands.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Ninox strenua	Powerful Owl		vu	v	2020		Eucalypt forests and woodlands, well-treed urban areas.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Actitis hypoleucos	Common Sandpiper		vu	v		PMST	Migrates to Australia from Eurasia in August where it inhabits a wide variety of coastal and inland wetlands with muddy margins before departing north in March.	**Negligible**	No suitable shorebird habitat within the study area
Tringa nebularia	Common Greenshank		vu	e		PMST	A variety of ephemeral and permanent inland wetlands and sheltered coastal wetlands.	**Negligible**	No suitable shorebird habitat within the study area
Oreoica gutturalis	Crested Bellbird		nt	e	1958		Drier woodlands, Mallee, mulga, box-ironbark forest.	**Low**	Study area is beyond the known range of the species
Pomatostomus temporalis	Grey-crowned Babbler		en	v	2018		Open forests and woodlands.	**Medium**	Scattered records to the north of the study area and likely to be some suitable habitat within the study area
Pyrrholaemus sagittatus	Speckled Warbler		vu	e	2017		Eucalypt woodland with rocky gullies, ridges, tussock grasses and a sparse shrub understorey.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Phascogale tapoatafa	Brush-tailed Phascogale		vu	v	2018		Drier sclerophyll forests and woodlands.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Petaurus norfolcensis	Squirrel Glider		en	v	2018		Drier woodlands, riverine woodland and coastal forest.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Ornithorhynchus anatinus	Platypus		vu	v	2020		A variety of freshwater waterbodies, particularly those with stable banks suitable for burrows, and shallow waters for foraging.	**Medium**	Records of the species from Hughes Creek
Rhinolophus megaphyllus megaphyllus	Eastern Horseshoe Bat		vu	e	2017		A variety of forests and woodlands; requires caves and mines for roosting.	**Medium**	Scattered local records of the species and some suitable habitat likely to be present within the study area
Pogona barbata	Bearded Dragon		vu	v	2015		Woodlands, forests and heathlands with abundant cover of course woody debris.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Varanus varius	Lace Monitor		en	e	2019		A variety of wooded habitats, including woodlands; shelters in hollow trunks, limbs and logs.	**High**	Numerous local records of the species and likely to be some suitable habitat within the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Pseudophryne bibronii	Brown Toadlet		en	e	2021		A wide variety of woodland, forest and grassland habitats, where it shelters under leaf litter and other debris in moist soaks and depressions. Breeds in swamps and inundated habitats, and along creek lines.	**High**	Numerous local records of the species and likely to be some suitable habitat within the study area
Euastacus armatus	Murray Spiny Crayfish		nt	t	2008		Large and small flowing, cool-water streams in pasture and sclerophyll forest.	**Medium**	Records of the species from Hughes Creek

Table 15 Threatened fauna species recorded or predicted to occur within 10 km of the transmission line study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
National significance									
Rostratula australis	Australian Painted-snipe	EN	cr	cr	1980	PMST	Shallows of well-vegetated freshwater wetlands.	**Low**	Study area is beyond the current known and expected range of the species
Botaurus poiciloptilus	Australasian Bittern	EN	en	cr	1979	PMST	Shallow freshwater and brackish wetlands with abundant emergent aquatic vegetation.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Falco hypoleucos	Grey Falcon	VU	en	v		PMST	Lightly timbered plains and Acacia scrub.	**Low**	No local records and habitat within the study area is unlikely to be suitable
Callocephalon fimbriatum	Gang-gang Cockatoo	EN			2019	PMST	S Vic to E NSW. Forests and woodlands from coast to alpine areas. Autumn-winter dispersal from highlands to lower elevations. Forages in eucalypts, acacias and some exotic garden trees and shrubs.	**High**	Numerous recent local records of the species and habitat within the study area is likely to be suitable

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Lathamus discolor	Swift Parrot	CR	en	cr		PMST	A range of forests and woodlands, especially those supporting nectar-producing tree species. Also well-treed urban areas.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Neophema chrysostoma	Blue-winged Parrot	VU				PMST	A range of coastal, sub-coastal and semi-arid regions throughout south-eastern Australia. Favour heathy woodland for breeding, particularly sites recently disturbed by fire or logging. Nests in tree hollows in coastal eucalypt forests and woodlands. Feeds on seeds of a range of native grasses and herbs. Flocks of several thousand occasionally recorded in winter, when majority of Tasmanian population migrates to Victoria.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Climacteris picumnus	Brown Treecreeper	VU	nt			PMST	Often observed feeding on insects as it spirals up trees or when hopping along the ground or on fallen litter. Generally inhabits open eucalypt forests, woodlands and Mallee, often where there are stands of dead trees.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Aphelocephala leucopsis	Southern Whiteface	VU				PMST	A range of open woodlands and shrublands with grassy and shrub vegetation in the understory.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Hirundapus caudacutus	White-throated Needletail	VU	vu	v	2012	PMST	An almost exclusively aerial species within Australia, occurring over most types of habitat, particularly wooded areas.	**Medium**	Numerous recent local records of the species. Likely to pass over the study area
Numenius madagascariensis	Eastern Curlew	CR	vu	cr		PMST	Large intertidal sandflats, banks, mudflats, estuaries, inlets, coastal lagoons and bays.	**Negligible**	No suitable shorebird habitat within the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Calidris ferruginea	Curlew Sandpiper	CR	en	cr		PMST	Large intertidal sandflats, banks, mudflats, estuaries, inlets, sewage farms, saltworks, harbours, coastal lagoons and bays.	**Negligible**	No suitable shorebird habitat within the study area
Pycnoptilus floccosus	Pilotbird	VU			2016	PMST	E Vic to SE NSW. Largely ground-dwelling among leaf litter, logs and lower storey vegetation of wet sclerophyll forests and rainforest. Less often, alpine and coastal woodlands.	**High**	Numerous recent local records of the species to the south and east of the study area and likely to be suitable habitat within the study area.
Grantiella picta	Painted Honeyeater	VU	vu	v	2017	PMST	Dry open woodlands and forests. Typically forages for fruit and nectar in mistletoes and in tree canopies.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Anthochaera phrygia	Regent Honeyeater	CR	cr	cr	2003	PMST	A range of dry woodlands and forests dominated by nectar-producing tree species.	**Medium**	Species range is now largely restricted to NE Vic. However, numerous local records suggest that the species may occasionally occur within the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Stagonopleura guttata	Diamond Firetail	VU	nt	v	2018		Open forests and woodlands with a grassy ground layer.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Melanodryas cucullata	Hooded Robin	EN	nt	v	2011		Woodlands of eucalypt, Mallee, semi-cleared farmland.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Dasyurus maculatus maculatus (SE mainland population)	Spot-tailed Quoll	EN	en	e	1960	PMST	Rainforest and wet and dry sclerophyll forests and woodlands.	**Low**	Some suitable habitat likely to occur within the study area, but no recent local records of the species
Petauroides volans	Southern Greater Glider	EN	vu	v	2021	PMST	Wet and damp sclerophyll forest with large hollow-bearing trees.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Petaurus australis	Yellow-bellied Glider	VU			2021	PMST	Sclerophyll forest with large hollow-bearing trees, prefers mature eucalypt dominated forest and woodland. Distributed along South-eastern Australia.	**Low**	Scattered recent records to the south of the study area but the core range of the species is largely concentrated in SE Vic

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Gymnobelideus leadbeateri	Leadbeater's Possum	CR	en	cr	2021	PMST	Montane ash forest, sub-alpine Snow Gum Eucalyptus pauciflora woodland and lowland swamp forest in Victoria's Central Highlands.	**Medium**	Numerous recent local records of the species to the south and south-east of the study area and may be some suitable habitat towards the southern portions of the study area.
Mastacomys fuscus mordicus	Broad-toothed Rat	VU	en	v		PMST	Sub-alpine Woodland, Heathland, Sedgeland, and sedge-dominated areas within forest.	**Low**	Study area is beyond the current known and expected range of the species
Pseudomys fumeus	Smoky Mouse	EN	en	e		PMST	Coastal heath and heathy woodland, wet forest, sub-alpine heath and dry sclerophyll forest.	**Low**	Study area is beyond the current known and expected range of the species
Pteropus poliocephalus	Grey-headed Flying-fox	VU	vu	v		PMST	Rainforest, wet and dry sclerophyll forest, woodland and urban areas.	**Low**	Some suitable habitat likely to occur within the study area, but only a single recent local records of the species to the north of the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Delma impar	Striped Legless Lizard	VU	en	e	2016	PMST	Natural temperate grassland, grassy woodland and exotic grassland.	**Medium**	A single recent records of this species to the east of Seymour but numerous recent records to the south of Mount Eaglehawk and Mount Broughton. Habitat within the study area is likely to be suitable
Liopholis montana	Mountain Skink	EN	dd			PMST	Alpine woodland and montane forest environments along the Great Dividing Range in Victoria to the upper Yarra River valley. An exceptionally low altitude population has also been recorded in the Wombat SF. Relatively little is known about the species' biology and ecology.	**Low**	Study area is beyond the current known and expected range of the species
Tympanocryptis pinguicolla	Grassland Earless Dragon	EN	cr	cr		PMST	Natural temperate grassland.	**Low**	Study area is beyond the current known and expected range of the species

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Litoria spenceri	Spotted Tree Frog	CR	cr	cr		PMST	Rocky areas along streams within forest and woodland.	**Low**	Study area is beyond the current known and expected range of the species
Litoria raniformis	Growling Grass Frog	VU	en	v	2001	PMST	Still or slow-flowing waterbodies and surrounding terrestrial vegetation.	**Medium**	Historic local records of the species and a single recent record near the study area. Likely to be some suitable habitat within the study area.
Galaxias rostratus	Flat-headed Galaxias	CR	vu	v	2002	PMST	Still or slow-moving waters of rivers, billabongs, lakes and swamps.	**Low**	No recent records of the species from local waterways
Galaxias fuscus	Barred Galaxias	EN	cr	cr		PMST	Cool and clear montane streams above 400 m ASL with coarse substrates.	**Medium**	Records of the species from waterways to the south of the study area.
Maccullochella macquariensis	Trout Cod	EN	cr	e	1970	PMST	Streams characterised by a high abundance of large woody debris.	**Low**	No recent records of the species from local waterways

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Maccullochella peelii	Murray Cod	VU	vu	e	1970	PMST	A diverse range of stream habitats in the Murray-Darling basin; principally the main channels of rivers and their major tributaries.	**Low**	No recent records of the species from local waterways
Macquaria australasica	Macquarie Perch	EN	en	e	2006	PMST	Streams with clear water and deep, rocky holes with abundant cover.	**Medium**	Several recent records of the species from Hughes Creek within the study area
Bidyanus bidyanus	Silver Perch	CR	vu	e	1922		Lowland streams within the Murray-Darling Basin.	**Low**	No recent records of the species from local waterways
Nannoperca australis (Murray-Darling lineage)	Southern Pygmy Perch (Murray-Darling lineage)	VU	vu	v	2002	PMST	Well-vegetated, slow-flowing or still waters including streams, lakes, billabongs and other types of wetlands. The species is found in populations upstream of the Avoca River, and recently been discovered in tributaries of the upper Lachlan and upper Murray River catchments.	**Medium**	Several recent records of the species from Hughes Creek within the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Synemon plana	Golden Sun Moth	VU	cr	v	2018	PMST	Natural temperate grassland, grassy woodland and pasture supporting spear grasses and wallaby grasses and exotic grassland dominated by Chilean needle grass.	**Medium**	Recent local records to the west of Mount Stewart and some suitable habitat is likely to be present within the study area
Keyacris scurra	Key's Matchstick Grasshopper	EN		t		PMST		**Negligible**	Study area is well beyond species known range
State significance									
Lewinia pectoralis	Lewin's Rail		vu	v	2017		Swamps, dense riparian vegetation and saltmarsh.	**Medium**	Recent local records of the species and likely to be some suitable habitat within the study area
Ardea alba modesta	Eastern Great Egret		vu	v	2019		Flooded crops, pasture, swamps, lagoons, saltmarsh, sewage ponds, estuaries, dams, roadside ditches. Breeds in trees standing in water.	**High**	Numerous recent local records of the species and likely to be some suitable habitat within the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Ixobrychus dubius	Australian Little Bittern		en	e	1989		Freshwater swamps, lakes and rivers with dense reedbeds, saltmarsh and coastal lagoons.	**Low**	No recent local records of the species
Anseranas semipalmata	Magpie Goose		nt	v	2006		Swamps, lakes, sewage ponds, flooded pasture, dams.	**Medium**	A single recent local record of the species. May occasional occur in the local area
Spatula rhynchotis	Australasian Shoveler		vu	v	2001		Variety of wetlands, with a preference for large, permanent, freshwater lakes/swamps with dense fringing vegetation.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Aythya australis	Hardhead		vu	v	2019		Deep freshwater swamps and wetlands, with abundant aquatic and terrestrial vegetation for roosting. Can occur in sheltered estuaries.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Oxyura australis	Blue-billed Duck		en	v	1989		Open or densely vegetated wetlands.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Biziura lobata	Musk Duck		vu	v	2001		Deep, permanent freshwater wetlands with areas of open water and patches of dense aquatic vegetation.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Hieraaetus morphnoides	Little Eagle		vu	v	2008		Woodland and open areas. Rabbits are a key component of their diet. Nesting occurs in mature trees in open woodland or riparian vegetation.	**High**	Numerous local records of the species and likely to be some suitable habitat within the study area
Haliaeetus leucogaster	White-bellied Sea-Eagle		vu	e	2012		Coastal areas such as beaches and estuaries, inland wetlands and major inland streams.	**High**	Numerous local records of the species and likely to be some suitable habitat within the study area
Lophoictinia isura	Square-tailed Kite		vu	v	1989		Eucalypt woodlands, open forest and partially cleared farmland.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Falco subniger	Black Falcon		vu	cr	1978		Woodlands, open country and around terrestrial wetlands areas, including rivers and creeks. Mostly hunts over open plains and undulating land with large tracts of low vegetation. Primarily occurs in arid and semi-arid zones in the north, north-west and west of Victoria, though can be forced into more coastal areas by droughts and subsequent food shortages.	**Low**	No recent records of the species within the local area
Ninox strenua	Powerful Owl		vu	v	2021		Eucalypt forests and woodlands, well-treed urban areas.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Tyto novaehollandiae	Masked Owl		en	cr	2020		A variety of lowland forests and woodlands.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Tyto tenebricosa	Sooty Owl		vu	e	2020		Tall, wet eucalypt forest and rainforest.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Actitis hypoleucos	Common Sandpiper		vu	v		PMST	Migrates to Australia from Eurasia in August where it inhabits a wide variety of coastal and inland wetlands with muddy margins before departing north in March.	**Negligible**	No suitable shorebird habitat within the study area
Coracina maxima	Ground Cuckoo-shrike		vu	e	1903		Open woodland, farmland, mulga, spinifex with scattered trees.	**Low**	No recent records of the species within the local area and study area is beyond the current known and expected range of this species
Pyrrholaemus sagittatus	Speckled Warbler		vu	e	1999		Eucalypt woodland with rocky gullies, ridges, tussock grasses and a sparse shrub understorey.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Phascogale tapoatafa	Brush-tailed Phascogale		vu	v	2012		Drier sclerophyll forests and woodlands.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Sminthopsis murina murina	Common Dunnart		vu	v	2020		Found in heathland areas, open forests and woodlands that have structurally complex microhabitats. Common Dunnart prefer dry sclerophyll forest and Mallee heath with high rock and crevice density.	**Medium**	Local records of the species and likely to be some suitable habitat within the study area
Ornithorhynchus anatinus	Platypus		vu	v	2018		A variety of freshwater waterbodies, particularly those with stable banks suitable for burrows, and shallow waters for foraging.	**Medium**	Records of the species from Hughes Creek

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Canis lupus dingo	Dingo		dd	v	2021		Virtually all terrestrial environments but range reduced by exclusion fencing, persecution and hybridisation with domestic dogs.	**Medium**	Local record of the species from Black Range State Forest
Rhinolophus megaphyllus megaphyllus	Eastern Horseshoe Bat		vu	e	2017		A variety of forests and woodlands; requires caves and mines for roosting.	**Medium**	Scattered local records of the species and some suitable habitat likely to be present within the study area
Varanus varius	Lace Monitor		en	e	2018		A variety of wooded habitats, including woodlands; shelters in hollow trunks, limbs and logs.	**High**	Numerous local records of the species and likely to be some suitable habitat within the study area
Pseudemoia rawlinsoni	Glossy Grass Skink		vu	e	1902		Damp environments like drainage lines, soaks and the margins of creeks, particularly in dense vegetation including rank grass, reeds and sedges. Also the fringes of coastal saltmarshes.	**Low**	Study area is beyond the current known and expected range of the species

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Emydura macquarii	Murray River Turtle		vu	cr	1989		A medium sized freshwater turtle that inhabits inland river systems including the Murray-Darling catchment.	**Medium**	Records of the species from tributaries of the Goulburn River
Pseudophryne bibronii	Brown Toadlet		en	e	2015		A wide variety of woodland, forest and grassland habitats, where it shelters under leaf litter and other debris in moist soaks and depressions. Breeds in swamps and inundated habitats, and along creek lines.	**High**	Numerous local records of the species and likely to be some suitable habitat within the study area
Hemiphlebia mirabilis	Ancient Greenling Damselfly		en	e	1997		Permanent freshwater ponds, riverine lagoons and swamps that may seasonally dry out.	**Low**	No recent records of the species within the study area
Austroaeschna (Austroaeschna) flavomaculata	Alpine Darner Dragonfly		vu	v	2002			**Medium**	Recent local records of the species from Black Range State Forest

Scientific name	Common name	Conservation status			Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	VIC	FFG					
Euastacus armatus	Murray Spiny Crayfish		nt	t	2008		Large and small flowing, cool-water streams in pasture and sclerophyll forest.	**Medium**	Records of the species from Hughes Creek

Appendix B.2. Migratory species (EPBC Act listed)

Table 16 Migratory fauna species recorded or predicted to occur within 10 km of the wind farm study area

Scientific name	Common name	Most recent record
Migratory species		
Gallinago hardwickii	Latham's Snipe	2000
Plegadis falcinellus	Glossy Ibis	2020
Hirundapus caudacutus	White-throated Needletail	2007
Apus pacificus	Fork-tailed Swift	2001
Thalassarche cauta	Shy Albatross	2006
Numenius madagascariensis	Eastern Curlew	PMST
Actitis hypoleucos	Common Sandpiper	PMST
Tringa nebularia	Common Greenshank	PMST
Calidris ferruginea	Curlew Sandpiper	PMST
Calidris acuminata	Sharp-tailed Sandpiper	PMST
Calidris melanotos	Pectoral Sandpiper	PMST
Motacilla flava	Yellow Wagtail	PMST
Rhipidura rufifrons	Rufous Fantail	2006
Myiagra cyanoleuca	Satin Flycatcher	2012

Table 17 Migratory fauna species recorded or predicted to occur within 10 km of the transmission line study area

Scientific name	Common name	Most recent record
Migratory species		
Gallinago hardwickii	Latham's Snipe	2018
Plegadis falcinellus	Glossy Ibis	1973
Hirundapus caudacutus	White-throated Needletail	2012
Apus pacificus	Fork-tailed Swift	2019
Numenius madagascariensis	Eastern Curlew	PMST
Actitis hypoleucos	Common Sandpiper	PMST
Calidris ferruginea	Curlew Sandpiper	PMST
Calidris acuminata	Sharp-tailed Sandpiper	PMST
Calidris melanotos	Pectoral Sandpiper	PMST
Motacilla flava	Yellow Wagtail	PMST
Rhipidura rufifrons	Rufous Fantail	2017
Myiagra cyanoleuca	Satin Flycatcher	2019
Monarcha melanopsis	Black-faced Monarch	PMST